



Fisheries New Zealand

Tini a Tangaroa

Review of Sustainability Measures for the October 2018/19 Fishing Year

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

Fisheries New Zealand Decision Paper

Prepared by Fisheries New Zealand

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PART 1: INTRODUCTION AND PURPOSE

1. This decision document seeks your decisions on:
 - a. implementing a closure of the Kaipara Harbour recreational scallop fishery under section 11 of the Fisheries Act 1996 (the Act); and
 - b. setting the total allowable catch (TAC), allowance for customary Māori fishing, allowance for recreational fishing, allowance for all other sources of mortality caused by fishing, total allowable commercial catch (TACC), and deemed values for the stocks discussed in this paper.
2. Your decisions will generally have effect from 1 October 2018.
3. Fisheries New Zealand has consulted and provided for input and participation of tangata whenua, having particular regard for kaitiakitanga, on proposals to:
 - a. implement a closure of the Kaipara Harbour recreational scallop fishery under section 11 of the Act; and
 - b. amend the TAC, allowances, and TACC for 19 stocks (ELE 3, GLM 9, GUR 3, KIN 3, LFE 20, 21, 22 & 23; LIN 5, OEO 4, ORH 3B, PAU 5B, SCI 3, SFE 20, 21, 22 & 23; SPO 7, and STN 1); the TAC, allowances, TACC, and deemed values for seven stocks (FLA 1, JDO 1 & 7, and TAR 1, 2, 3 & 7); and the deemed values for six stocks (BNS 3, PIL 7 & 8, SKI 3 & 7, and TRE 1).
4. This Decision Document provides you with Fisheries New Zealand’s final advice on these proposals. The paper is divided into separate parts. Your general statutory considerations are set out in Part 2. Key issues raised by submitters, and Fisheries New Zealand’s response, are set out in Part 3. Parts 4, 5, 6 and 7 contain the review aspects of each stock, including the initial proposals and rationale, relevant background information, specific legal considerations, a summary of submissions and Fisheries New Zealand’s responses, analysis of management options, and Fisheries New Zealand’s recommendations.
5. Part 8 provides the analysis and advice on deemed values. The Deemed Value Guidelines are contained in an Addendum in Part 8.
6. The Fisheries New Zealand-commissioned report “Making Sense of the Numbers” included in the socio-economic analysis for east coast tarakihi (TAR 1, 2, 3 & 7) is included in full in Appendix 1.
7. The full submissions that Fisheries New Zealand received on the relevant initial proposals are contained in Appendix 2.

PART 2: STATUTORY CONSIDERATIONS

1 Introduction

7. This section provides an overview of your legal obligations under the Fisheries Act 1996 (the Act or the Fisheries Act) in relation to this sustainability round. It includes discussion on the setting or varying of the Total Allowable Catch (TAC), Total Allowable Commercial Catch (TACC) and deemed values for New Zealand fish stocks.
8. Where relevant, stock-specific details relating to these obligations are set out in the section of the discussion paper relating to each stock.

1.1 SECTION 5(a) – INTERNATIONAL OBLIGATIONS

9. Section 5(a) states 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. 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.
10. 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 CBD). International obligations also derive from New Zealand being a signatory to a number of international conventions. Of particular relevance are the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), and the Convention on Migratory Species (CMS).

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

11. Section 5(b) states 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 (the Settlement Act). This obligation furthers the agreements expressed in the Deed of Settlement referred to in the Preamble to the Settlement Act.
12. 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.

1.3 SECTION 8 – PURPOSE OF THE FISHERIES ACT 1996

13. Section 8 states the purpose of the Act is to provide for the utilisation of fisheries resources while ensuring sustainability.
14. “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.”

15. 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. In the attribution of due weight to each policy that given to utilisation must not be such as to jeopardise sustainability”.¹

1.4 SECTION 9 – ENVIRONMENTAL PRINCIPLES

16. Section 9 prescribes three environmental principles that you must take into account when exercising powers in relation to the utilisation of fisheries resources or ensuring sustainability.

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

17. The Act defines “associated or dependent species” as any non-harvested species taken or otherwise affected by the taking of a harvested species. “Harvested species” is defined to mean any fish, aquatic life or seaweed that may for the time being be taken with lawful authority. This principle is focussed on species (such as protected species) for which a permission to target commercially cannot be given.

18. 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.

19. 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.

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

20. “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.

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

21. Habitat is defined in the Oxford Dictionary of English to mean the natural home or environment of an animal, plant or species. In Fisheries New Zealand’s view, this means those waters and substrates necessary for fish to spawn, breed, feed or grow to maturity. These should be protected and adverse effects on them avoided, remedied, or mitigated.

¹ New Zealand Recreational Fishing Council Inc v Sanford Limited and Ors [2009] NZSC 54 (“Kahawai”) at [39].

1.5 SECTION 10 – INFORMATION PRINCIPLES

22. Section 10 prescribes four information principles that you must take into account when exercising powers in relation to the utilising of fisheries resources or ensuring sustainability:
- 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.
23. Incomplete information suggests caution in decision-making, not deferral of a decision completely. “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
24. 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.
25. As a general principle, information outlined in the Fisheries New Zealand Fishery Assessment Plenary Report, is considered the best available information on stock status and should be given significant weighting. The information presented in the Plenary Report is subject to a robust process of scientific peer review and is assessed against the Research and Science Information Standard for New Zealand Fisheries.³ Corroborated anecdotal information also has a useful role to play in the stock assessment process and in the management process.

1.6 SECTION 11 – SUSTAINABILITY MEASURES

26. Section 11(1) states you may from time to time set or vary any sustainability measures (such as a TAC) after taking into account:
- (a) Any effects of fishing on the stock and the aquatic environment;
 - (b) Any existing controls that apply to the stock or area concerned; and
 - (c) The natural variability of the stock concerned.
27. These factors are discussed in the section of the decision document relating to each stock.
28. Section 11(2) states that before any sustainability measure is set or varied you must have regard to any provision of:
- (a) Any regional policy statement, regional plan, or proposed regional plan under the Resource Management Act 1991;

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

³ A non-binding Fisheries New Zealand Policy Document.

- (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 you 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.

29. 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; and
- (c) Any decisions not to require conservation services or fisheries services.

30. Services of particular relevance to the decisions in this paper relate to programmed research used to monitor stock abundance. To date national fisheries plans have been approved only for deepwater and highly migratory species, and none are currently in force.

1.7 SECTION 12 – CONSULTATION AND INPUT AND PARTICIPATION OF TANGATA WHENUA

31. Section 12(1) states that 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 interests; and
- 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.

32. The Act defines Kaitiakitanga 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.

33. Te Ohu Kaimoana has a mandate to represent Mandated Iwi Organisations who hold commercial fishing assets on behalf of their iwi, and is consulted on that basis, as well as a holder of fishing assets who may be affected by a decision. Iwi Fisheries Forums and Forum Fisheries Plans are the main ways in which input and participation of tangata whenua is provided for. Information provided by Forums and iwi views on the management of fisheries resources and fish stocks as set out in Iwi Fisheries Plans are the ways in which tangata whenua have exercised kaitiakitanga in respect of the stocks and areas covered in this sustainability round.

34. Section 12(2) says that as soon as practicable after setting or varying any sustainability measure, you shall give the persons consulted under s12(1), the reasons in writing for your decisions.

1.8 SECTIONS 13 &14 - SETTING AND VARIATION OF THE TOTAL ALLOWABLE CATCH (TAC)

1.8.1 Section 13 – Total Allowable Catch

35. The TAC for most stocks in the Quota Management System (QMS) is set and varied under section 13 of the Act.
36. Under s13 the general premise is to set a TAC that maintains the biomass of a fishstock at or above a level that can produce the maximum sustainable yield (MSY) or enables the stock to move to that level. That biomass level is abbreviated as B_{MSY} .
37. 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.
38. Section 13(2) states that you shall set a TAC that:
- (a) maintains the stock at or above a level that can produce the maximum sustainable yield, having regard to the interdependence of stocks; or
 - (b) enables the level of any stock whose current level is below that which can produce the maximum sustainable yield 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 the maximum sustainable yield, having regard to the interdependence of stocks; and
 - within a period appropriate to the stock, having regard to the biological characteristics of the stock and any environmental conditions affecting the stock; or
 - (c) enables the level of any stock whose current level is above that which can produce the maximum sustainable yield to be altered in a way and at a rate that will result in the stock moving towards or above a level that can produce the maximum sustainable yield, having regard to the interdependence of stocks.
39. 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 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.
40. 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 are required to have regard to such social, cultural, and economic factors as you consider relevant. This provision applies to TACs set under s13(2)(b) or (c), or s13(2A) (if applicable).

41. Section 13(4) says you may from time to time vary any TAC by increasing or reducing it and in doing that you must have regard to the matters specified in subsections (2), (2A) if applicable and (3).
42. 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.

1.8.2 Section 14 – Alternative Total Allowable Catch for stock specified in Schedule 3

43. Section 14 says that notwithstanding anything in section 13, if satisfied, in the case of any quota management stock listed in Schedule 3, that the purpose of this Act would be better achieved by setting or varying a TAC otherwise than in accordance with section 13(2) you may at any time, set or vary a TAC for that stock that you consider appropriate to achieve the purpose of this Act. In other words, section 14 allows a TAC to be set or varied for the limited number of stocks listed on Schedule 3 otherwise than by reference to B_{MSY} ⁴.

44. Schedule 3 stocks are ones where:

- It is not possible because of the biological characteristics of the stock to estimate B_{MSY} ;
- A national allocation for New Zealand has been determined as part of an international agreement;
- The stock is managed on a rotational or enhanced basis; or
- The stock comprises one or more highly migratory species.

45. Section 14(8) of the Act allows for stocks to be added to or deleted from Schedule 3.

1.9 SECTIONS 20 & 21 - SETTING AND VARIATION OF THE TOTAL ALLOWABLE COMMERCIAL CATCH

46. After setting or varying the TAC, a separate decision arises in respect of allocating the TAC, i.e., deciding what portion of the TAC is to be available for commercial and other purposes.
47. Section 20 requires a TACC to be set for each QMS stock and allows it to be varied from time to time. A TACC can be set at zero. This would occur in situations where the TAC was set at zero for sustainability reasons (i.e. the fishery was closed).
48. Section 21 of the Act says that in setting or varying the TACC you must have regard to the TAC and allow for:
 - a) Māori customary non-commercial fishing interests;
 - b) Recreational interests; and

⁴ Stocks included in this sustainability round to which section 14 applies are Green-lipped Mussel 9 (GLM9), Southern Bluefin Tuna (STN1), Longfin Eel 20-23 (LFE 20-23), and Shortfin Eel 20-23 (SFE20-23).

- c) All other mortality to that stock caused by fishing.
49. Section 10(d) of the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992 provides that rights and interests of Māori in non-commercial fishing have no legal effect, are not enforceable in civil proceedings and shall not provide a defence to any criminal, regulatory or other proceeding, except to the extent provided for in regulations made under section 89 of the Fisheries Act 1983, (now section 186 of the Fisheries Act 1996). This means that customary non-commercial interests to be allowed for are those carried out under the following regulations:
- Fisheries (Kaimoana Customary Fishing) Regulations 1998;
 - Fisheries (South Island Customary Fishing) Regulations 1999;
 - Waikato-Tainui (Waikato River Fisheries) Regulations 2011;
 - Fisheries (Ngati Tuwharetoa, Raukawa and Te Arawa River Iwi) Regulations 2017;
 - Regulations 50-52 of the Fisheries (Amateur Fishing) Regulations 2013; and
 - Te Arawa Lakes (Fisheries) Regulations 2006 (made under the Te Arawa Lakes Settlement Act 2006).
50. In allowing for Māori customary non-commercial interests, the allowance should reflect what fishers operating under the various regulations set out above will be able to catch, taking into account that all the regulations require a written or a recorded oral authorisation before fishing can take place. Our advice is that in making an allowance, you should use best available information on actual harvest.
51. When allowing for Māori customary non-commercial interests, you must take into account:
- a) Any mātaihai 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 or size of a species for customary fishing purposes or recognising a customary fishing practice in the area.
52. The intent is that the purposes of measures enacted to provide for customary fishing are not adversely affected, and reasons for limited customary take are not ignored, when setting the customary allowance.
- 1.9.1 Judicial guidance
53. Relevant judicial findings provide useful guidance in terms of your allocation decisions under section 21 of the Act.
54. In a case relating to Kahawai the Supreme Court said that the wording of the Act sets out a particular order of decisions – after allowing for Māori customary non-commercial fishing interest, recreational fishing interests, and all other sources of fishing-related mortality, the remainder constitutes the TACC.⁵ On their ordinary meaning the words “allow for” require you both to take into account those interests, and to make provision for them in the calculation of the total allowable commercial catch.⁶ That does not, however, mandate any particular outcome.⁷

⁵ *New Zealand Recreational Fishing Council Inc v Sanford Limited and Ors* (Supreme Court, SC 40/2008, 29 May 2009), para 53.

⁶ *Ibid*, para 55.

⁷ *Sanford Limited and Ors v New Zealand Recreational Fishing Council Inc and Anor* (Court of Appeal, CA 163/07, 11 June 2008), para 57.

55. Importantly, the Act does not confer priority for any interest over the other⁸ and does not limit the relative weight which you may give to the interests of competing sectors.⁹ It leaves that judgement to you.
56. The Courts have also provided guidance as to the nature of the allowances to be provided. Where there are competing demands exceeding an available resource it could perhaps be said you can “allow for” use by dispensing a lesser allotment than complete satisfaction, creating not a full priority but some degree of shared pain.¹⁰ The requirement to “allow for” the recreational interest can be construed as meaning to “allow for in whole or part”.¹¹ The Supreme Court stated that the Act envisages that the allowance for recreational interest, as well as Māori customary fishing interests and the TACC, will be a reasonable one in all the circumstances.¹²
57. Section 21 is concerned with allocation of a limited resource and that what is allowed for non-commercial fishing interests will impact on the total allowable commercial catch.¹³
58. The consideration of the wellbeing factor (as expressed in section 8 of the Act) requires a balance of competing interests, especially in the case of a shared fishery.¹⁴
59. In terms of recreational interests, the Supreme Court stated that “Although what the Minister allows for, is an estimate of what recreational interests will catch, it is an estimate of a catch which the Minister is able to control. The Minister is, for example, able to impose bag and fish length limits. The allowance accordingly represents what the Minister considers recreational interests should be able to catch but also all that they will be able to catch. The Act envisages that the relevant powers will be exercised as necessary to achieve that goal”.¹⁵
60. In terms of commercial interests, a decision you make which impacts adversely on holders of ITQ which advantaged—deliberately or incidentally—non-commercial interests, does not in itself imply an improper purpose.¹⁶ It is an inherent element of the QMS that the TACC can be reduced, with a consequential reduction in ACE. In considering a reduction of the TACC, you must weigh the economic impact of your proposed course of action on individual quota holders and on the QMS generally.¹⁷
61. The interests of commercial fishers are not just the economic interests of the proprietors of the fishing businesses, but also include those of employees, consumers who are able to purchase the fish as a result of the commercial catch being sold at retail, fish merchants, suppliers to the commercial fishers and others affected by any relevant downstream

⁸ *New Zealand Recreational Fishing Council Inc v Sanford Limited and Ors* (Supreme Court, SC 40/2008, 29 May 2009), para 65.

⁹ *Sanford Limited and Ors v New Zealand Recreational Fishing Council Inc and Anor* (Court of Appeal, CA 163/07, 11 June 2008), para 61.

¹⁰ *Roach v Minister of Fisheries* (HC, Wellington CP715/91, 12/10/92, McGechan J), p 16

¹¹ *New Zealand Federation of Commercial Fishermen (Inc) & Ors v Minister of Fisheries & Ors* (HC, Wellington CP237/95, 24/4/97), p 150.

¹² *New Zealand Recreational Fishing Council Inc v Sanford Limited and Ors* (Supreme Court, SC 40/2008, 29 May 2009), para 65.

¹³ *Ibid*, para 53

¹⁴ *Sanford Limited and Ors v New Zealand Recreational Fishing Council Inc and Anor* (Court of Appeal, CA 163/07, 11 June 2008), para 61.

¹⁵ *New Zealand Recreational Fishing Council Inc v Sanford Limited and Ors* (Supreme Court, SC 40/2008, 29 May 2009), para 56.

¹⁶ *New Zealand Federation of Commercial Fishermen (Inc) & Ors v Minister of Fisheries & Ors* (HC, Wellington CP237/95, 24/4/97, McGechan J) p 89

¹⁷ *New Zealand Fishing Industry Association (Inc) and Ors v Minister of Fisheries and Ors* (Court of Appeal, CA82/97, 22/7/97, at p 16

effects of the location of fishing businesses, such as processing businesses in particular geographical locations.¹⁸

62. No implied obligation to attain proportionality between commercial and recreational catch arises from the legislation. The imprecise [estimation] of the recreational catch precludes strict proportionality.¹⁹ Further, in the Snapper 1 case the Court of Appeal said:

*“We can see no reason why either as his primary purpose or as a consequence of some other purpose the Minister should not be able to vary the ratio between commercial and recreational interests.”*²⁰

*“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.”*²¹

63. The High Court earlier said in that case:

*“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. Both are within the Act.”*²²

64. The Courts have also emphasised the importance of decisions undertaken for sustainability purposes not being undermined by increased fishing by one or other of the fishing sectors. In the Snapper 1 case the High Court said:

*“When Parliament empowered the Minister to reduce the TACC for conservation purposes—not to improve recreational catch rate—it expected the Minister to take any concurrent steps necessary to minimise sabotage by recreational fishing. . . . The significant point is that both law and common sense dictate that a Minister should not reduce the TACC for conservation reasons unless able to take, and taking, reasonable steps to avoid the reduction being rendered futile through increased recreational fishing.”*²³

65. While this statement relates to reduction of the TACC, the principle equally applies in situations where measures are enacted to rebuild a fishery. Litigation relating to management decisions for kahawai involved this very issue, where the failure to agree to a reduction in the daily bag limit was found to be unlawful.²⁴

¹⁸ *Sanford Limited and Ors v New Zealand Recreational Fishing Council Inc and Anor* (Court of Appeal, CA 163/07, 11 June 2008), para 61.

¹⁹ *New Zealand Federation of Commercial Fishermen (Inc) & Ors v Minister of Fisheries & Ors* (HC, Wellington CP237/95, 24/4/97, McGechan J) p 18

²⁰ *New Zealand Fishing Industry Association (Inc) and Ors v Minister of Fisheries and Ors* (Court of Appeal, CA82/97, 22/7/97) at p 17-18

²¹ *Ibid*, p 18.

²² *New Zealand Federation of Commercial Fishermen (Inc) & Ors v Minister of Fisheries & Ors* (HC, Wellington CP237/95, 24/4/97, McGechan J) at p 89.

²³ *New Zealand Federation of Commercial Fishermen (Inc) & Ors v Minister of Fisheries & Ors* (HC, Wellington CP237/95, 24/4/97, McGechan J) p 102.

²⁴ *New Zealand Recreational Fishing Council Inc & Anor v Minister of Fisheries* (HC, Auckland CIV 2005-404-4495, 21 March 2007, Harrison J). at paras 110-126.

66. In respect of quota granted to iwi under the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992 and the Maori Fisheries Act 1989, in the Snapper 1 case the Court of Appeal said:

*“Under the settlement Maori became holders of quota along with all other holders. Their rights were in our view no more and no less than those of non-Maori quota holders.”*²⁵

*“Under s5 of the 1996 Act the Minister in making future decisions is obliged to act in a manner consistent with the Settlement Act. The idea that the settlement is any the less just, honourable and durable should Maori quota be reduced, is unpersuasive. An asset which Maori obtained under the settlement had within it the capacity for diminution. If that capacity is lawfully realised, there cannot be any complaint on the basis that the settlement has been broken or have not proved durable. Something which was liable to happen under the settlement has happened. A reduction in TACC, which is otherwise lawful, cannot be viewed as a decision by the Minister inconsistent with the Settlement Act.”*²⁶

67. While the Court of Appeal was dealing with a TAC/TACC reduction for sustainability purposes, the same principle would apply in terms of an adjustment of the ratio of the TAC allocated to commercial and non-commercial fishing interests.

1.10 HAURAKI GULF MARINE PARK ACT 2000

68. Section 11(2) of the Fisheries Act requires you to have regard to sections 7 and 8 of the Hauraki Gulf Marine Park Act 2000 (HGMPA) before setting or varying a sustainability measure (such as a TAC).
69. Section 13 of the HGMPA says all persons exercising powers or carrying out functions for the Hauraki Gulf under various specified Acts, including the Fisheries Act, must, in addition to any other requirement specified in those Acts, have particular regard to sections 7 and 8 of the HGMPA. This would apply to the setting or varying of TACCs, and deemed values.
70. Section 7(1) of the HGMPA says the interrelationship between the Hauraki Gulf, its islands, and catchments and the ability of that interrelationship to sustain the life-supporting capacity of the environment of the Hauraki Gulf and its islands are matters of national significance.
71. Section 7(2) says the life-supporting capacity of the environment of the Gulf and its islands includes the capacity—
- (a) to provide for—
 - (i) the historic, traditional, cultural, and spiritual relationship of the tangata whenua of the Gulf with the Gulf and its islands; and
 - (ii) the social, economic, recreational, and cultural well-being of people and communities:
 - (b) to use the resources of the Gulf by the people and communities of the Gulf and New Zealand for economic activities and recreation:

²⁵ *New Zealand Fishing Industry Association (Inc) and Ors v Minister of Fisheries and Ors* (Court of Appeal, CA82/97, 22/7/97) at p 20.

²⁶ *Ibid*, at p 21.

- (c) to maintain the soil, air, water, and ecosystems of the Gulf.
72. Section 8 says that to recognise the national significance of the Hauraki Gulf, its islands, and catchments, the objectives of management are:
- (a) the protection and, where appropriate, the enhancement of the life-supporting capacity of the environment of the Hauraki Gulf, its islands, and catchments:
 - (b) the protection and, where appropriate, the enhancement of the natural, historic, and physical resources of the Hauraki Gulf, its islands, and catchments:
 - (c) the protection and, where appropriate, the enhancement of those natural, historic, and physical resources (including kaimoana) of the Hauraki Gulf, its islands, and catchments with which tangata whenua have an historic, traditional, cultural, and spiritual relationship:
 - (d) the protection of the cultural and historic associations of people and communities in and around the Hauraki Gulf with its natural, historic, and physical resources:
 - (e) the maintenance and, where appropriate, the enhancement of the contribution of the natural, historic, and physical resources of the Hauraki Gulf, its islands, and catchments to the social and economic well-being of the people and communities of the Hauraki Gulf and New Zealand:
 - (f) the maintenance and, where appropriate, the enhancement of the natural, historic, and physical resources of the Hauraki Gulf, its islands, and catchments, which contribute to the recreation and enjoyment of the Hauraki Gulf for the people and communities of the Hauraki Gulf and New Zealand.
73. There are eight stocks in this sustainability round where the quota management area boundaries are within or partly within the boundaries of the Hauraki Gulf Marine Park, namely:
- Flatfish 1 (FLA 1)
 - John Dory 1 (JDO1)
 - Longfin Eel 20 (LFE 20) and Longfin Eel 21 (LFE 21)
 - Shortfin Eel 20 (SFE 20) and Shortfin Eel 21 (SFE 21)
 - Southern Bluefin Tuna 1 (STN 1)
 - Tarakihi 1 (TAR 1)

PART 3: KEY ISSUES RAISED IN SUBMISSIONS

1 Introduction

74. This section summarises key issues raised in submissions, including generic issues raised in multiple submissions, and Fisheries New Zealand’s response to these issues.

1.1 TIMEFRAMES FOR CONSULTATION

75. Iwi Fisheries Fora (i.e. Mai i Nga Kuri a Whareki Tihirau Fisheries Forum, Te Tai Hauauru Iwi Forum, et al) submitted that the consultation period was insufficient for their purposes.
76. Fisheries Inshore New Zealand submitted that the consultation period was insufficient to allow for proper discussions with their stakeholders. This was not simply a request for a longer consultation period – they also requested enhanced engagement opportunities (management-focused) well in advance of the consultation period (i.e. on a quarterly basis).
77. Te Ohu Kaimoana submitted there was an initial lack of consultation time allotted (but acknowledged the extension to 5 weeks). Given the complexity of Treaty obligations, they expect consultation timeframes to be longer.
78. New Zealand Sport Fishing Council (also representing New Zealand Angling & Casting Association and LegaSea) objected to “truncated” consultation timetables, saying it was not possible to adequately consult with their members in the time allocated.

1.1.1 Fisheries New Zealand response

79. Fisheries New Zealand’s public consultation processes generally provide four to six weeks for public submission. The consultation periods on sustainability measures are limited by the requirement to have measures in place prior to the start of the fishing year (1 October) and completion of science processes.
80. In terms of this year’s October sustainability round review; while the proposals for North Island longfin and shortfin eels stocks had a consultation period of six weeks, the proposals for other fishstocks had a consultation period of four weeks. However, prior to public consultation, 19 meetings with stakeholders and tangata whenua also occurred, where Fisheries New Zealand sought input on the options being developed for consultation.
81. We recognise that limiting engagement creates difficulties for representative bodies in getting input from their constituents. Fisheries New Zealand is therefore continuing to look at different ways of engaging to allow for more input and transparency around decision making processes. We have a range of initiatives underway, planned or under consideration:
- **Shared fisheries:**
Fisheries New Zealand has identified a number of key stocks that are of primary importance to all stakeholders and tangata whenua. We are operating different engagement processes for these stocks that involves community driven multi-

stakeholder forums and public meetings. The approach has been trialled and refined in blue cod (Marlborough Sounds and strategy development) and snapper in area 7 (Golden and Tasman Bays).

- **Greater interactive online presence:**
Fisheries New Zealand has also, this year, made more use of social media channels and used new online surveys and submission forms. These new approaches appear to have been successful at making information more accessible, and increasing participation in the consultation process. For example, more than half of submitters for this year's sustainability round review used the online survey, and most of the remaining submitters used the submission form emailed to Fisheries New Zealand's dedicated submissions inbox.
- **More agile decision making:**
The agile decision making framework, in particular greater use of harvest control rules, will reduce focus on annual consultation processes. While consultation will still be required, stakeholders and Tangata whenua will be incentivised to focus attention on long term objectives for a stock and how those objectives will be achieved via decision rules, rather than the specific changes. This will allow shorter, more focused consultation and more responsive management.

1.2 SHELVING OF ANNUAL CATCH ENTITLEMENT (ACE)

82. ACE shelving is a formal agreement among quota owners in a stock to forgo harvesting a specified proportion of the Total Allowable Commercial Catch (TACC) by each transferring an agreed proportion of their Annual Catch Entitlement (ACE) to a non-fishing entity.
83. A joint submission from Southern Inshore Fisheries, Fisheries Inshore New Zealand, and Te Ohu Kaimoana (the Joint Submitters) propose that shelving of ACE to a neutral third party is a viable way of reducing the commercial catch for the TAR stocks, submitting that:
 - You are obliged to take this into account under s11 before deciding whether additional measures (such as a TAC reduction) are required;
 - The Fisheries Act is structured in a way that enables you to give full consideration of the relevant fisheries management regime for a stock before considering whether or not a sustainability measure should even be proposed;
 - In particular section 11(1) requires that, before proposing to set or vary a sustainability measure, you must give full consideration to a range of measures including the effects on fishing on the aquatic environment; and
 - Shelving ACE provides potential to respond to fisheries management challenges in near real time and addresses short term changes in abundance without placing Settlement and quota assets at risk.
84. Environment and Conservation Organisations of New Zealand (ECO) submitted on the shelving of quota, arguing that in principle they do not support it. Their rationale is that shelving goes against the fundamental direction of the quota management system and the setting of catch limits.

1.2.1 Fisheries New Zealand response

85. Section 11 sets out various matters you must take into account, or have regard to, before setting or varying any sustainability measure under Part 3 (including a TAC).
86. Section 11(1)(a) refers to the effects of fishing on any stock and the aquatic environment. To the extent a voluntary shelving agreement has in your view an effect on fishing, through impacting on the amount of stock removed from the biomass, this is a matter that can be taken into account under s 11(1)(a) in considering proposed sustainability measures.
87. However, it must be taken into account alongside (as well as the natural variability of the stock) the existing controls under the Act that apply to the stock (s 11(1)(b)) - the current TAC is a control under the Act; voluntary shelving agreements are not.
88. While the joint submitters consider the existence of a shelving agreement indicates a TAC change is not necessary (i.e., any sustainability concern is addressed by that agreement), Fisheries New Zealand considers the existence of a shelving agreement may (depending on the specifics of each case) also indicate that the TAC is set artificially high – i.e., if taken, the fish stock will not be maintained above or moved towards the level that produces MSY as envisaged by the Act (section 13(2) in particular). This will, of course, depend upon the best available information about the status of the stock. But the Supreme Court in the Kahawai case stated that “It is implicit in the scheme of the Act that the total *allowable* catch is the total that is allowed to be caught”, and that “Because the total allowable catch is set at a level consistent with sustainability of the stock, that catch is available for full utilisation”.²⁷
89. Fisheries New Zealand considers that where a sustainability concern is evident (i.e., the stock is below the target level) setting (or varying) an appropriate TAC is the primary tool to ensure sustainability and to rebuild the stock at a “way and rate” that you consider appropriate. An existing or proposed ACE shelving agreement is something you may consider in determining that “way or rate” of recovery.
90. Assuming the TAC is set within a tolerable range, you may decide that an adjustment to TAC is not necessary, or adopt a less aggressive reduction given the impact shelving agreements would also have on the way in which and rate at which a stock moves towards or above the level that can produce B_{MSY} . In this sense shelving agreements (and their outcomes) may complement a properly set TAC.
91. However, an ACE shelving agreement is not an alternative to a properly set TAC. In setting the TAC, you must be satisfied that, if the TAC is taken, it will do what section 13(2) of the Act requires – maintain or move the stock to at or above B_{MSY} within a period appropriate to the particular stock.
92. Section 13(4) provides that you may, from time to time, by notice in the Gazette, vary any TAC set for any quota management stock by increasing or reducing the TAC. When considering any variation, you are required to have regard to the matters specified in subsections (2), (2A) (if applicable) and (3) and the purpose of the Act. In deciding whether to exercise your discretion to vary TAC shelving is therefore a permissive consideration (it can be considered before making a decision to set or vary a sustainability

²⁷ *New Zealand Recreational Fishing Council Inc v Sanford Ltd* [2009] NZSC 54, [2009] 3 NZLR 438 at [62].

measure (s 11(1)(a)), and more specifically can be considered when considering the way and rate at which you may move stock to B_{MSY}). However, and as stated above, while shelving can be considered, where a sustainability concern is evident (i.e., the stock is below the target level) varying a TAC is the primary tool to ensure sustainability.

1.3 SETTING ALLOWANCES

93. Te Ohu Kaimoana notes that Section 5 (b) of the Fisheries Act 1996 obliges “all persons exercising or performing functions, duties, or powers conferred or imposed by or under it” to “act in a manner consistent with the provisions of the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992 (TOW(FC)SA)”.
94. They consider that whenever you make a decision to implement a sustainability measure or to provide for utilisation, you must ensure your decision is consistent with, and does not undermine, the Fisheries Settlement. The following matters are particularly relevant.
95. Te Ohu Kaimoana then say that to protect Māori fisheries settlement rights, the following approach should be taken to adjusting the TAC:
 - a) the recreational allowance should not be increased above the level it was first set by the Minister when the TAC was set for any particular stock; and
 - b) if, in order to ensure sustainability, the TAC, TACC and the recreational allowance is reduced, the allowance can be increased back to its initial level when the stock rebuilds;
 - c) all increases to a TAC should be allocated to the commercial sector after providing for non-commercial customary fishing and other fisheries-related sources of mortality;
 - d) the customary allowance is based on customary needs and managed through kaitiaki. In some instances, customary needs may not be fully identified and there may be insufficient capacity to harvest what is needed. Therefore, there can be expected to be increases to the customary allowance over time as both needs are better identified and capacity to harvest is realised;
 - e) in situations where the abundance of a stock drops, kaitiaki will respond appropriately.
96. Te Ohu Kaimoana say that when the Interim Fisheries Settlement was agreed between Māori and the Crown in 1988, the Crown undertook to provide Māori with 10% of the quota for all stocks in the Quota Management System (QMS) at that time. When the Deed of Settlement was finalised, it was agreed that all stocks introduced to the QMS from that time would generate a 20% share for Māori. They consider that as part of this agreement, Māori agreed that the QMS was an appropriate regime for managing commercial fisheries. But they note that at the time of the Settlement the only proportional interests held were by quota owners (who owned a share of the TACC). Allowances for customary and recreational interest were for a fixed amount.
97. Te Ohu Kaimoana then say that, when adjusting the TAC, you must ensure the integrity of Māori fishing rights is maintained. This means:

- a) priority should be given to the customary allowance for stocks that Iwi and hapū require to meet their customary non-commercial needs; and
 - b) the proportion of the TACC that makes up the TAC should not be reduced (but can be increased) by reallocations to the recreational sector. Any reallocation to the recreational sector has the effect of reducing the overall value of settlement quota.
98. Te Ohu Kaimoana views recreational fishing as a privilege which should not be exercised at the expense of Māori commercial and non-commercial fishing rights. They consider that in recent times the recreational sector has effectively operated within an unconstrained allowance – which provides little incentive for the recreational sector to exercise responsibilities to constrain catch within the recreational limit. Similarly, this provides little incentive for the commercial sector to work collaboratively to increase stock abundance given the likelihood that any benefits of a rebuild will be allocated to the recreational sector. They acknowledge there are input controls such as bag limits; however, there is no effective constraint on total catch.
99. Te Ohu Kaimoana does not support decisions that increase the recreational allowance at the expense of the TACC. They consider kinds of re-allocations affect the rights of settlement quota holders and reduce the incentives on the commercial sector to take responsibility and invest in good management.
100. New Zealand Sport Fishing Council (also representing LegaSea) submitted that a non-proportional allocation policy for non-commercial catch should be developed.

1.3.1 Fisheries New Zealand response

101. In Fisheries New Zealand's view, Te Ohu Kaimoana's argument is not correct. The law provides you with considerable discretion in making allocation decisions and the matters you consider relevant. Quota allocated to Māori as part of pre- or post-settlement obligations had the same attributes as all other quota in relation to the ability of the Crown to reduce or increase the amount of ACE generated by shares in the fishery by adjustment to the TAC and TACC.
102. This position has been confirmed by the courts. In the Snapper 1 case the Court of Appeal rejected Te Ohu Kaimoana's argument that the Minister had failed in his duty to specifically and separately consider the interests of Māori before reducing the TACC. The Court went on to say:
- Under the settlement Māori became holders of quota along with all other holders. Their rights were no more and no less than those on non-Māori quota holders
 - The Minister was accordingly obliged to give them exactly the same consideration as all other quota holders.
103. Te Ohu Kaimoana effectively advocate for an allocation policy that benefits commercial and customary fishers until such time as the recreational sector's catch is capped and controlled.
104. Fisheries New Zealand acknowledge the benefits of providing greater certainty to stakeholders and tangata whenua around how and when government makes an allocation decision. However, for such a policy to be broadly supported, and therefore successful, it

needs to treat sectors with a degree of fairness, and recognise the various benefits that can be generated from allocation decisions in differing circumstances.

105. Fisheries New Zealand does not consider the approach proposed by Te Ohu Kaimoana is fair, tenable, or promotes best value use of fisheries resources in a way consistent with the purposes and principles of the Act. We also do not accept that recreational fishers should be effectively penalised for any perceived shortfall in the legislative framework.
106. Further, we do not accept that recreational catch is currently uncontrolled, we note that the Courts have stated that the Minister is obliged to take all reasonable steps to manage catch within the allowances and TACC set. The current tools are adequate to manage recreational catch (particularly when it is not managed annually as the TACC is).
107. In considering an allocation decision it is useful to first understand the nature of the TAC, and allowances and the TACC. Legislative and judicial guidance on these matters is noted in the sections above. Neither the allowances nor the TACC are absolute limits on the catch that can be taken by respective sectors. Over-catch of the TACC is subject to a civil payment (deemed value), but not prevented unless an overfishing threshold is in place. Catch against the recreational allowance is based on an average over a number of years which reflects variation influenced by environmental factors (changes in fish distribution and abundance), weather and population change. Monitoring catch by each sector is important to ensure sustainability. Monitoring catch is also important, so that potential benefits from harvest allocated to one sector are not being implicitly reallocated to another.
108. Once you have decided on a TAC, the allocation decision depends on the nature of the fishery. If the TAC (and therefore allowances or the TACC) is not fully caught or is being increased, it may be possible to meet the catch needs of each sector in full. If the stock is fully allocated (i.e. competing demands for the resource exceed the TAC), then you have considerable discretion about how to meet the needs of various sectors in part or in full. From a policy perspective, factors relevant to the exercise of your discretion include:
 - a) Population trends;
 - b) Assessment of relative value of resource to respective sectors (including popularity and importance of the resource, economically, socially, and culturally);
 - c) Current fishing practices (including overfishing, voluntary shelving or closures by a stakeholder/participant);
 - d) Initiatives undertaken to develop or enhance the resource; and
 - e) Social, cultural and economic impact of allocative decisions.
109. You have a choice about how much weight you give the existing proportions for each sector within the TAC. Industry often express strong support for a proportional allocation policy based on maintaining the existing proportions of the TAC. They consider this beneficial because it provides a degree of certainty around how allocation decisions will be treated. In the absence of any information to suggest better fisheries management outcomes could be obtained (ie better value from the overall harvest of the fishery), Fisheries New Zealand considers that proportional allocation approach has merit and will often provide an option based on proportional allocation for your consideration. However, it is not without problems. Much like allocating quota, the period on which the proportions are fixed gives rise to conflict and debate amongst sectors.

110. Existing allocations in most key shared fisheries have been based largely on historic catch information. In most fisheries this historic information is uncertain. Also, the recreational sector has opposed proportional allocation because they believe their current share of the resource (based on historic or current catch) is not reflective of their desired share. Instead, it reflects the depleted state of many inshore fisheries, the relative difference in fishing power between sectors, and their consequent ability to harvest at low stock levels. Fixing proportions of the TAC also does not allow recognition of changes in the relative value of harvest to each sector over time.
111. Other than CRA 2 in April 2018, the most recent major allocation decisions were for two the key snapper fisheries (areas 1 and 7). In these decisions, the previous Minister exercised his discretion to adjust the proportional shares to better reflect relative value between sectors. In the snapper fishery, best available information indicated roughly equivalent value between sectors. However, the shares within the TAC were 70/30 in favour of the commercial sector. Predictably, the industry has expressed concern (reflected in particular in the Te Ohu Kaimoana submission) about this approach.

1.4 PREFERENTIAL ALLOCATION (“SECTION 28N”) RIGHTS

112. Some submitters have expressed concerns over the impacts of preferential allocation (“28N”) rights that arise from decisions on sustainability measures and management controls. A joint submission from Southern Inshore Fisheries, Fisheries Inshore New Zealand and Te Ohu Kaimoana (the Joint Submitters) makes the following points:
- Where a fishery that has 28N rights associated with it has its TACC reduced then, in the absence of any other change, when the fishery recovers and the TACC is subsequently increased triggering 28N rights, the proportionate share of quota that iwi hold will be reduced. This is a permanent reduction in the proportionate share that iwi have in the TACC of that fishery;
 - This is directly contrary to the Fisheries Settlement and furthering the agreements expressed in the Deed of Settlement, as required by section 3 of the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992;
 - It undermines the agreement between the Crown and Māori, that Māori would receive 10% of all stocks in the QMS at the time of the interim fisheries settlement in 1989; and
 - In light of your obligations under s5(b) (discussed at 1.2 above), you must be advised that before you make any decisions under the Fisheries Act that will as a consequence trigger 28N rights, all other options to achieve the same effect that do not trigger 28N rights should be examined and wherever possible used.
113. Jeremy Cooper of the Paua Industry Council submitted that the Council can only support a TACC increase at this time if it is done in a way which does not reduce the quota share holdings of other owners. They point out that an increase will immediately result in the re-allocation of quota shares, including settlement quota, permanently to 28N rights holders. The Council feels that individuals should not bear the cost of a Crown liability.

1.4.1 Fisheries NZ response

114. Preferential allocation (“28N”) rights originated under sections 28N and 28OE of the Fisheries Act 1983. In preparation for commencement of the quota system, the Crown offered to purchase quota from fishers to reduce TACCs to sustainable levels. Those fishers who did not sell had their quota reduced without compensation, but became entitled to have those reductions restored in full in the future should the TACC for that relevant stock be increased.
115. Preferential allocation rights continue to be provided for under section 23 of the Fisheries Act, but the way they work has changed somewhat from when they were first introduced. When first introduced, the rights were to be satisfied as a preferential allocation from the increased tonnage arising from an increase in the TACC.
116. The QMS was changed to a proportional share based system in 1990. So now, when the TACC is increased for a stock that has 28N rights associated with it the quota shares of owners who do not have 28N rights are reduced and redistributed to the holders of 28N rights. This is done in accordance with formulas set out in section 23 of the Act, and is an automatic consequence of an increase in the TACC. So it amounts to a permanent reallocation of quota shares, rather than the one-off nature of the original scheme. However, this is the scheme that Parliament has put in place.
117. In the Snapper 1 case, the Court of Appeal rejected in full a TOKM argument that the Minister had failed in his duty to specifically and separately consider the interests of Māori before reducing the TACC. The Court went on to say:
- Under the settlement, Māori became holders of quota along with all other holders. Their rights were no more and no less than those on non-Māori quota holders
 - The Minister was accordingly obliged to give them exactly the same consideration as all other quota holders.
118. Fisheries New Zealand does not agree with the Joint Submitters submission. As noted above, the operation of the 28N rights regime under s 23 is an automatic consequence of an increase in the TACC of those stocks which carry 28N rights. It is not in itself a reason for not setting a TAC and TACC in accordance with (and as required by) the Act.
119. In this sustainability round review, 28N rights are associated with the following stocks:
- JDO 1 (proposed reduction in the TACC);
 - PAU 5B (proposed increase in TACC); and
 - TAR 2 (proposed reduction in the TACC).
120. The reallocation of the proportion of quota shares in the fishery occurs only when the TACC is increased. A reduction to the TACC does not trigger any change in relation to 28N rights. As TACC reductions are being proposed for JDO 1 and TAR 2, 28N rights will not be triggered for these stocks (despite what the Joint Submitters say above). As a TACC increase is proposed for PAU 5B, 28N rights would be triggered for this stock, but there is only 157 kg of such rights outstanding, so the impact on quota shares will be small. The implications of this change are described in more detail in the PAU 5B paper.

1.5 HARVEST STRATEGY STANDARD

121. Te Ohu Kaimoana note the reliance by Fisheries New Zealand on the Harvest Strategy Standard to support decision making. They consider that employing the default target levels and timeframes for fisheries management has the real potential to undermine the purpose of the Act. They consider the target reference points promoted by Fisheries New Zealand are inherently setting utilisation targets that the Act enables people to consider and take the necessary actions to achieve. They view the Harvest Strategy Standard as being too prescriptive and taking away the opportunity for stakeholders to consider and determine the best balance between sustainability and use for a stock.
122. They consider that application of the Harvest Strategy Standard has the potential to have significant adverse social and economic impacts, if applied without careful consideration of the specific circumstances of the fishery and the range of existing mechanisms to promote recovery. In view of this, Te Ohu Kaimoana considers the unique biological and environmental conditions facing each stock and socio-economic implications to be an important explicit consideration when contemplating management targets.
123. Environmental groups consider that Fisheries New Zealand's use of the Harvest Strategy Standard to guide the management of fishstocks towards target biomass levels does not meet international best practice for the precautionary management of fishstocks to ensure sustainability. They submit that, as a guiding document, the Harvest Strategy Standard needs to be updated, especially to take account of the particular biological characteristics of species vulnerable to fishing pressure and species with a key role in ecosystem functions.

1.5.1 Fisheries New Zealand response

124. The Harvest Strategy Standard 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 on 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.
125. The Harvest Strategy Standard outlines Fisheries New Zealand's approach to relevant sections of the Act and, as such, forms a core input to the Fisheries New Zealand's advice to you on the management of fisheries, particularly the setting of TACs under sections 13 and 14.
126. There are a range of metrics specified in the Harvest Strategy Standard and its supporting documentation, "Operational Guidelines for New Zealand's Harvest Strategy Standard (Guidelines)" which are treated as defaults: i.e., where proposed management options depart from the Harvest Strategy Standard, they must be justified in terms of the particular circumstances that warrant such departure.
127. The Guidelines include a range of analytical proxies for B_{MSY} , F_{MSY} and MSY that can be used in the absence of adequate information to estimate the MSY reference points themselves. The analytical proxies for B_{MSY} are based on a percentage of the estimate of unexploited biomass (i.e., $\%B_0$) and informed by theoretical modelling of fish population dynamics or large scale analyses (i.e., meta-analyses) of information collected from high information stocks or groups of stocks.

128. The default values for the current analytical proxies for B_{MSY} contained in the Guidelines vary according to the estimated productivity of the species or fish stock under consideration. Productivity is considered to be an operational substitute for resilience, and productivity is categorised into low, medium, or high based on several productivity measures relating to growth, mortality, and generation time.
129. The majority of stocks in New Zealand are categorised as low or medium productivity. The current Harvest Strategy Standard default analytical proxies for B_{MSY} vary across the productivity categories, e.g., 25% B_0 , 35% B_0 , and 40% B_0 for high, medium, and low productivity stocks respectively.
130. The target biomass levels proposed under the standard are applied as interim targets only in the absence of a stock specific management target. There is nothing preventing stakeholders working with Fisheries New Zealand to develop alternative, agreed management targets that meet your legislative obligations.
131. Specifically in relation to Te Ohu Kaimoana and Fisheries Inshore New Zealand concerns around the need to develop target levels through stock specific management assessments. However Fisheries New Zealand notes that management strategy evaluation is unlikely to produce markedly different results. This work was undertaken for snapper one. The Harvest Strategy Standard default target level for snapper one was 40% based on productivity of the species. Management strategy evaluation determined a stock specific target level of 43%.

1.6 INTERPRETATION OF THE FISHERIES ACT 1996

132. The Environmental Defence Society submitted that Fisheries New Zealand has misinterpreted the Fisheries Act 1996 (the Act), specifically in relation to s9(b), s9(c), s10 and s11. On this basis they submit that recommendations contained in the Discussion Paper are not sound and so infer that you should not make decisions on this basis.
133. The Environmental Defence Society submitted that you must consider the effects of fishing when ensuring the sustainability of fish stocks as per s8 of the Act; in particular, your decision must be consistent with avoiding, remedying, and mitigating any adverse effects of fishing on all marine species, as well as on the marine ecosystems which they comprise. EDS submit that Fisheries New Zealand's comments that proposals would not lead to further impacts on the environment are misleading due to the nature of fishing activities having ongoing and cumulative impacts.
134. The Environmental Defence Society considers that your obligations to consider other regional policies and plans under s11 of the Act, including land based activities managed under the Resource Management Act 1991, have not sufficiently been taken into account, especially with regard to inshore fisheries where environmental factors are likely to be strongly influencing fishery sustainability concerns.

1.6.1 Fisheries New Zealand response

135. Fisheries New Zealand notes that the discussion document does not set out the full statutory requirements you are required to consider for the purposes of consultation. Each stock section in this final advice paper sets out information we have in relation to s.9

(environmental principles), s.10 (information principles) and s.11 (sustainability measures), including application of relevant plans under the Resource Management Act 1991.

1.7 INFORMATION AND CERTAINTY

136. Several submissions noted or alluded to a perception that uncertainty is considered, and thereby *applied*, differently when deciding on either an increase or decrease in the TAC and TACC for a stock. At the same time, environmental interests submitted for a precautionary approach to take precedence in almost all cases.

137. ECO is concerned that the level of research that is being undertaken on the status of fish stocks and the effects of fishing on the environment has continued to decline since the introduction of the QMS. The Environmental Defence Society submits that due to the lack of research regarding the status of fish stocks and the effects of fishing activities, there is considerable uncertainty in the information provided to you for decisions on management that should be taken into account under consideration of s10 of the Act.

1.7.1 Fisheries New Zealand response

138. Under the information principles (s.10), less than full information suggests caution in decision-making, not deferral of a decision completely. “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.”²⁸

139. 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.

140. As a general principle, information outlined in the Fisheries New Zealand Fishery Assessment Plenary Report is considered the best available information on stock status and should be given significant weighting. The information presented in the Plenary Report is subject to a robust process of scientific peer review, and is assessed against the Research and Science Information Standard for New Zealand Fisheries.²⁹ Corroborated anecdotal information also has a useful role to play in the stock assessment process and in the management process.

141. Each of the stock specific sections of this paper outline the nature and extent of any uncertainty in information so that you are able to give appropriate weight to the information in your decision-making. As noted, in general, the more uncertain the information, the more cautious you should be as to the extent it influences your decision-making.

²⁸ *Greenpeace NZ Inc v Minister of Fisheries* (HC, Wellington CP 492/93, 27/11/95, Gallen J) p 32.

²⁹ A non-binding Fisheries New Zealand Policy Document.

1.8 NUMBER OF STOCKS REVIEWED

142. Sealord Group considers that there is a lack of agility within current processes for the review of TACCs, which is financially detrimental for fishers. They claim the review process is too slow to address changes in abundance that are driving catches that significantly exceed the allotted ACE.
143. Fisheries Inshore New Zealand submitted that the number of inshore finfish stocks reviewed in the sustainability round was too small. In particular, they submit that reviewing approximately 12 stocks a year is not sufficient to allow for a smooth transition to an electronically monitored environment.

1.8.1 Fisheries New Zealand response

144. Fisheries New Zealand reviewed 32 stocks in the October process this year, which is the highest number reviewed for over a decade. However, we agree that there will be a need to increase our ability to review stocks to make best use of digital monitoring information and improve the responsiveness of the management regime.
145. Policy changes to improve the agility of decision making processes are proposed for consultation as part of the fisheries change process. If the proposals are implemented they will increase our ability to review more stocks by reducing the administrative burden of the process (consultation timeframes and level of conflict between user groups). In addition, Fisheries New Zealand received additional funding in Budget 2018 for 6 FTEs to help support implementation of digital monitoring and more regional based engagement. We are anticipating this additional resourcing and revised processes for amendment to sustainability measures will allow us to review up to approximately 40 stocks per year.

1.9 ALL OTHER SOURCES OF MORTALITY TO THE STOCK CAUSED BY FISHING

146. New Zealand Sports Fishing Council (also representing LegaSea and the New Zealand Angling and Casting Association) submitted that Fisheries New Zealand do not have a consistent rationale or policy on setting an allowance for other sources of fishing related mortality – particularly discarded trawl caught fish. They submit that a combination of minimum legal size and economic considerations results in discarded fish, and so are calling for a more ‘consistent’ approach. Simultaneously, the submission supported a default setting of 10% of the TACC for other sources of fisheries related mortality and ask that any variation from this is explained.

1.9.1 Fisheries New Zealand response

147. The allowance for other sources of fisheries related mortality accounts for mortality from illegal fishing and damaged or lost gear, along with mortality of fish that may be legally returned to the sea. It relates to fish that is not landed and not able to be accurately accounted for by the fisher. The information used to set the allowance is, by its nature, highly uncertain. Fisheries New Zealand tends to set a generic allowance based on method of fishing, i.e. 10% of the TACC when the majority of harvest is taken by trawl and for other methods based on best available information.

148. Introduction of digital monitoring will allow us to better estimate this allowance in the future. More generally, Fisheries New Zealand supports better calculation and attribution of this allowance to the sector that causes it. If the catch can be attributed to a sector, then it provides a collective incentive for the sector to reduce their other sources of fisheries related mortality in return for an increase in their landed catch allowance or TACC.

Southern Bluefin Tuna (STN 1)

1 Summary

149. Fisheries New Zealand recently consulted with tangata whenua and stakeholders on three options for management settings for southern bluefin tuna (*Thunnus maccoyii*). These options are set out in Table 1. The options chosen for the discussion paper came from early feedback from stakeholders, particularly Options 2 and 3, which reflected preliminary views expressed by Te Ohu Kaimoana and the New Zealand Sports Fishing Council, respectively.

Table 1: Proposed management settings in tonnes for southern bluefin tuna (STN 1) from 1 October 2018, with the percentage change relative to the *status quo* in brackets.

Option	Total Allowable Catch (TAC)	Total Allowable Commercial Catch (TACC)	Allowances		
			Customary Māori	Recreational	All other mortality to the stock caused by fishing
Current settings (as at 1 October 2017)	1000	971	1	8	20
Option 1 (2017/18 in-season settings)	1088 ↑ (9%)	1047 ↑ (8%)	1	20 ↑ (150%)	20
Option 2	1088 ↑ (9%)	1059 ↑ (9%)	1	8	20
Option 3	1088 ↑ (9%)	1027 ↑ (6%)	1	40 ↑ (400%)	20
Option 4 (new) <i>Recommended</i>	1088 ↑ (9%)	1039 ↑ (7%)	4 ↑ (300%)	25 ↑ (212.5%)	20

150. Fisheries New Zealand also consulted on proposed management constraints for the recreational sector fishing for southern bluefin tuna, noting that such constraints would not be part of this immediate 1 October sustainability round decision.

151. This decision document provides you with Fisheries New Zealand's final advice on the setting of the revised TAC, allowances and TACC. It also comprises relevant background, statutory considerations, and a summary of submissions.

152. All submissions received by Fisheries New Zealand are available in their entirety as part of Appendix 2.

153. Following feedback from consultation, Fisheries New Zealand is recommending that you set a TAC of 1088 tonnes with a four tonne allowance for customary fishing, a 25 tonne allowance for recreational interests, a 20 tonne allowance for other sources of fishing related mortality, and a 1039 tonne TACC (Option 4).

2 Need for review

154. Southern bluefin tuna is a highly valued species, currently subject to a regional rebuilding plan under the Commission for the Conservation of Southern Bluefin Tuna (CCSBT). The CCSBT is the regional fisheries management organisation responsible for the management of southern bluefin tuna. The CCSBT sets the global total allowable catch (GTAC) for southern bluefin tuna in three year blocks, with the GTAC allocated to individual member countries. A recent increase in New Zealand's national allocation presents an opportunity for New Zealand to increase its utilisation of southern bluefin tuna within the confines of the rebuilding strategy.

2.1 CONTEXT

2.1.3 Biological information

155. Southern bluefin tuna (*Thunnus macoyii*) is a highly migratory species, traversing between the high seas and states' exclusive economic zones throughout the southern hemisphere, primarily in waters between 30 and 45 degrees south. Southern bluefin tuna are apex predators and have been recorded to live up to 40 years old, weighing over 200 kilograms and reaching over two metres in length.
156. Adults are broadly distributed in the South Atlantic, Indian and western South Pacific Oceans, and are predominantly found in temperate latitudes. Juveniles are broadly distributed along the continental shelf of Western and South Australia and in high seas areas of the Indian Ocean. Southern bluefin tuna caught in the New Zealand exclusive economic zone appear to represent the easternmost extent of the stock.³⁰
157. There is some uncertainty about the average size and age that southern bluefin tuna become mature. Available information suggests that maturity may be at around 1.5 metres in length and no younger than eight years of age. The Indian Ocean is the only known area that spawning takes place, and this occurs between September and April.³¹

2.1.2 Current stock status

158. The best available information on the global population of southern bluefin tuna is provided by the CCSBT. The most recent stock assessment conducted in 2017 suggests that the southern bluefin tuna stock remains at a low state, estimated to be 13% of the initial spawning stock biomass, and below the level to produce maximum sustainable yield (MSY). There has, however, been improvement since previous stock assessments, which indicated the stock was at 5.5% of original biomass in 2011 and 9% in 2014. This has resulted in the increase of the GTAC and member country allocations, including New Zealand's.

³⁰ Ministry for Primary Industries, Fisheries Assessment Plenary, November 2017 Stock Assessments and Stock Status for Southern Bluefin Tuna

³¹ <https://www.ccsbt.org>

2.1.3 International management context

159. The objective of the CCSBT Convention is to ensure, through appropriate management, the conservation and optimum utilisation of southern bluefin tuna. There is no defined convention area for the CCSBT and the Convention simply applies to all southern bluefin tuna regardless of where or how they are caught. New Zealand is a founding member of the CCSBT along with Australia and Japan. Other members of the CCSBT now include the European Union, the Fishing Entity of Taiwan, Indonesia, Japan, Republic of Korea and South Africa.
160. In 2011, the CCSBT agreed that a science-based management procedure would be used to guide the setting of the GTAC for southern bluefin tuna. The management procedure is designed to recommend an appropriate global catch limit that will allow the spawning stock biomass to achieve the interim rebuilding target of 20% of unfished spawning stock biomass by 2035 (with 70% certainty).
161. This interim target is currently under review by CCSBT members, with New Zealand strongly advocating for a more ambitious rebuilding target (i.e. reaching a higher level of unfished spawning stock biomass within a shorter timeframe).
162. For the three year block from 2018 to 2020, the CCSBT raised the GTAC by 3000 tonnes to 17,647 tonnes. As a result of this, New Zealand’s national allocation has increased by 88 tonnes to 1088 tonnes per annum. Evaluations of the management procedure indicated that, even with such an increase, the target biomass level will be reached by 2035.

Table 2: Global Total Allowable Catch and New Zealand country allocation (in tonnes)

	2010	2011	2012	2013	2014	2015-2017	2018-2020
GTAC	9,449	9,449	10,449	10,949	12,449	14,647	17,647
New Zealand Allocation	570	570	800	830	910	1,000	1,088

163. The GTAC is allocated to CCSBT members based on an agreed formula. Starting in 2018, members are required to account for all fishing mortality of southern bluefin tuna (including commercial fishing, customary fishing, recreational fishing, and other fishing-related mortality) from within their national allocation.
164. There was no formal definition of the catch to be counted against national allocations (i.e. attributed catch) at CCSBT prior to the agreement reached in 2014 and members applied their country allocation in a variety of ways. This recent decision provides clarity and balance in the ongoing management of the stock. New Zealand already accounts for all sources of mortality as part of its country allocation and the change now brings other CCSBT members in line with that practice.
165. New Zealand was pivotal in not only developing the agreed definition of attributable catch, but also bringing about changes to the scientific process that would incorporate all sources of mortality when determining the current status of the stock and projecting its recovery. These changes represent significant enhancements in the regional management of the stock and are world-leading in terms of other tuna commissions.

2.1.4 Domestic management context

166. In New Zealand, southern bluefin tuna is managed within the quota management system with a 1 October to 30 September fishing year. Earlier this year, you approved the use of

an in-season increase in the 2017-18 fishing year to allow New Zealand to benefit in the first fishing year of the three-year CCSBT allocation block. These decisions lapse at the end of the 2017-18 fishing year. The changes proposed as part of the 1 October 2018 sustainability round are required to adjust the final two years of the three-year allocation block.

167. Southern bluefin tuna was introduced into the quota management system on 1 October 2004 under a single Quota Management Area (STN 1), which also covers catch by New Zealand flagged vessels beyond the New Zealand exclusive economic zone. The STN 1 TAC is split between the customary Māori non-commercial allowance, the recreational allowance, an allowance for other sources of fishing related mortality, and the TACC.
168. Southern bluefin tuna is listed under the Third Schedule of the Fisheries Act 1996 (the Fisheries Act), which allows an alternative TAC to be set under section 14 since a national allocation of southern bluefin tuna for New Zealand has been determined as part of an international agreement.
169. The policy guidance in the national Harvest Strategy Standard states that, where an international organisation or agreement has adopted harvest strategies and rebuilding plans that meet or exceed the minimum standards contained in the Standard, the approach of the Ministry and Ministry representatives to the international organisation or agreement will generally be to support those strategies. This approach has been reflected in the position taken by New Zealand officials at CCSBT when advocating for a precautionary approach in rebuilding the stock.

2.1.5 Fishery characterisation

Customary Māori fishery

170. Customary non-commercial fishing for southern Bluefin tuna is fishing which is undertaken under the Fisheries (South Island Customary Fishing) Regulations 1999, the Fisheries (Kaimoana Customary Fishing) Regulations 1998, or regulations 50-52 of the Fisheries (Amateur Fishing) Regulations 2013. There are no records of southern bluefin tuna being taken under customary authorisation.
171. However, during engagement with iwi at fisheries forums, tangata whenua have indicated an intention to take southern bluefin tuna using some of the regulatory mechanisms listed above or which are expected to be developed in the future. Feedback from those forums also suggested that southern bluefin tuna was in fact being used for customary purposes but taken under the recreational framework. Based on these responses, Fisheries New Zealand believes that previous estimates of customary catch that relied solely on authorisations which had been issued likely underrepresented the amount of southern bluefin tuna used for customary purposes.

Recreational fishery

172. Based largely on environmental factors, it is assumed that the take of southern bluefin tuna by recreational fishers in New Zealand prior to 2007 was uncommon. This is due to southern bluefin tuna being found in winter months and in areas that were not typically recreationally fished. However, reports of recreationally caught southern bluefin tuna became somewhat more prevalent after 2007 following the development of a recreational Pacific bluefin tuna fishery on the west coast of the South Island.

173. Compulsory reporting for recreational amateur charter vessel operators was introduced in November 2010 under the Fisheries (Amateur Fishing) Regulations. This requires amateur charter vessel operators to report catch to Fisheries New Zealand on a number of shared species of interest, including southern bluefin tuna. In 2017, 47 southern bluefin tuna were reported by amateur charter vessel operators in New Zealand fisheries waters with an estimated total weight of 3.4 tonnes. Details of reported catches prior to 2017 are shown in Table 3.
174. Fisheries New Zealand also collects information on southern bluefin tuna from New Zealand Sport Fishing Council records. Sport fishing club records provide an important source of information on tagging and landings of southern bluefin tuna caught by recreational fishers. In 2017, sport fishing club records reported 266 southern bluefin tuna were landed with an estimated total weight of 19.4 tonnes, which is well above previous records (Table 3).

Table 3: Reported catch of southern bluefin tuna in the recreational fishery

	2012	2013	2014	2015	2016	2017
New Zealand Sports Fishing Council fish landed	0	0	2	1	7	266
Charter vessel fish landed	4	12	0	5	36	47
Estimated total weight (kilograms)*	196	550	-	1,100	1,440	24,300

* This includes New Zealand Sports Fishing Council fish, charter vessel fish, and an estimate of unreported catch and estimated additional catch in August and September not recorded in the estimate based on big game records.

175. A combination of factors, including favourable weather conditions, proximity of fish to the shore, and increased recreational interest in southern bluefin tuna, resulted in significantly higher levels of catch on the east coast on the North Island during 2017. The total estimated weight of 2017 recreational southern bluefin tuna catch was 24.3 tonnes. This estimate was based on records from amateur charter vessel operators, sport fishing clubs, provisions for unreported catch, and an estimate of additional catch in August and September.
176. Additionally, Fisheries New Zealand collects information on recreational catch taken from commercial vessels (under an exemption provided for in the Fisheries Act 1996), which was not included in the 24.3 tonne estimate mentioned above. Just over one tonne of southern bluefin tuna was reported under this exemption during the 2016-17 fishing year. This catch must be taken by recreational means and is not to be sold, and therefore should be considered as part of the overall recreational take.
177. The total estimated recreational catch in 2016-17, including big game records and catch taken from commercial vessels is around 25.3 tonnes. It is considered that this is likely to be an underestimate as not all recreational fishers are members of fishing clubs or report their catch.
178. Following the rapid development of the southern bluefin tuna recreational fishery in 2017, Fisheries New Zealand has contracted targeted research to improve estimates of the recreational catch and size composition of southern bluefin tuna in New Zealand fisheries waters. The results from this research are not yet available and therefore Fisheries New Zealand does not have a revised estimate for the current season. However, interim results

suggest that southern bluefin tuna recreational catch in the 2018 year will be less than 2017.

179. Researchers have been conducting surveys targeting the Waihou Bay boat ramp in the eastern Bay of Plenty, where most of the recreational effort and landings occurred in 2017. Researchers are also counting the number of boat trailers present at noon. It should be noted that, for health and safety reasons, the interviewers do not conduct interviews after dark. The recorded landings therefore likely underestimate the landings on the day, given that some fishers are returning late in the evening.
180. As a means of comparison however, landed catch at Waihou Bay to 29 July 2018 is 61 individual southern bluefin tuna, with most of these caught over two weather windows in late June. At the same time last year, the Waihou Bay landed catch was 208 fish, mostly landed over 10 days in mid-July. Last year, the Whakatane Club had weighed 17 southern bluefin tuna by the 29th of July, while this year only 9 had been weighed by that date. This highlights the high level of variability in this fishery and the reliance on favourable weather conditions and availability of fish for the recreational sector.
181. The count of the number of boat trailers present at noon is used as a proxy for effort and certainly indicates that there was considerable interest directly aimed at the recreational southern bluefin tuna fishery again this year, with 188 boats counted on a single day. This level of fishing effort is significant with respect to the future management of the recreational fishery. It is considered that recreational effort will not decrease significantly in the near future, and therefore it is expected that recreational catch is unlikely to decline to previous levels.

Commercial fishery

182. Southern bluefin tuna is a valuable product, primarily sold for use as sashimi in the Japanese market. The New Zealand commercial southern bluefin tuna fishery provided export earnings of around \$10 million NZD in 2017.³²
183. Longline fishing targeting southern bluefin tuna primarily occurs off the west coast of the South Island and along the east coast of the North Island. The fishing season for southern bluefin tuna generally begins in April/May and finishes in July/August. Southern bluefin tuna commercial catch has steadily increased in recent years, in part reflecting increases to the New Zealand national allocation over that time (shown in Figure 1). Commercial catch has typically been close to the allocation set. For the 2016-17 fishing year, the New Zealand southern bluefin tuna TACC was 971 tonnes. Actual commercial catch was 913 tonnes.

³² This figure is based on export data figures compiled by Statistics New Zealand. Values are calculated as "Free On Board" (FOB) - The value of export goods, including raw material, processing, packaging, storage and transportation up to the point where the goods are about to leave the country as exports. FOB does not include storage, export transport, or insurance cost to get the goods to the export market.

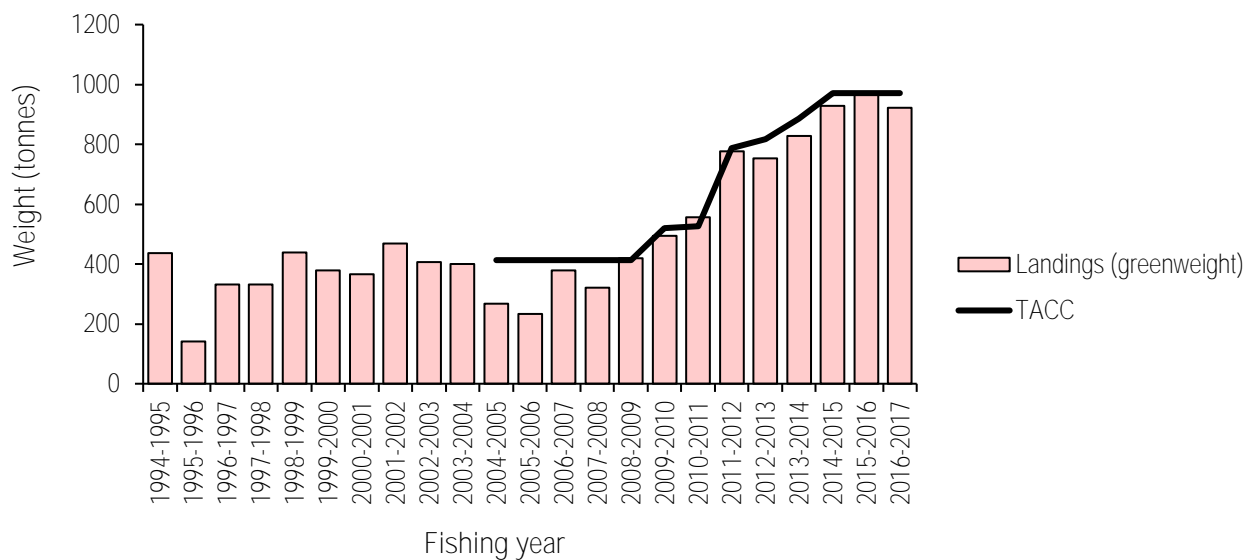


Figure 1: Commercial landings and TACC of southern bluefin tuna from 1994 to 2017 within New Zealand fishing waters (STN 1).

184. Since the introduction of southern bluefin tuna into the quota management system in 2004, the number of vessels operating in the fishery has declined from 99 to 31 (2016-17 fishing year). The fleet is primarily comprised of smaller vessels, which are typically at sea for only a few days each trip, and take southern bluefin tuna both as a target, and as a bycatch of bigeye tuna and swordfish target sets.

2.2 OPTIONS CONSULTED ON

185. As part of its 1 October 2018 sustainability round, Fisheries New Zealand consulted on proposed changes to a number of stocks, including southern bluefin tuna. A discussion document was sent to relevant stakeholders and posted on the Fisheries New Zealand website. Officials from Fisheries New Zealand have also held information sessions in Napier and Auckland, where stakeholders from all sectors were provided with the opportunity to provide feedback and seek clarification on the options being considered. Fisheries New Zealand officials were also present at iwi fisheries forums to answer questions and encourage input.

Table 1. Initial options proposed during consultation - Proposed management settings in tonnes for southern bluefin tuna (STN 1) from 1 October 2018, with the percentage change relative to the *status quo* in brackets.

Option	Total Allowable Catch (TAC)	Total Allowable Commercial Catch (TACC)	Allowances		
			Customary Māori	Recreational	All other mortality to the stock caused by fishing
Current settings (as at 1 October 2017)	1000	971	1	8	20
Option 1 (2017/18 in-season settings)	1088 ↑ (9%)	1047 ↑ (8%)	1	20 ↑ (150%)	20
Option 2	1088 ↑ (9%)	1059 ↑ (9%)	1	8	20
Option 3	1088 ↑ (9%)	1027 ↑ (6%)	1	40 ↑ (400%)	20

2.3 VIEWS OF SUBMITTERS

2.3.1 Input and participation of tangata whenua

186. 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.
187. Fisheries New Zealand provided for input and participation of tangata whenua through pre-consultation engagement with Iwi Fisheries Forums and Māori fisheries representatives. Throughout the process, Fisheries New Zealand has also worked with Te Ohu Kaimoana representatives.
188. Information to assist input and participation on STN 1 was also provided at the Te Waka a Māui me Ōna Toka Iwi Forum, the Te Hiku o te Ika Fisheries Forum, the Mai I nga Kuri a Whareki Tihirau Iwi Fisheries Forum, and the Nga Hapu o te Uru Fisheries Forum.
189. Discussions in the margins at the Mai I nga Kuri a Whareki Tihirau Iwi Fisheries Forum reflected a genuine desire from some iwi to start taking southern bluefin tuna under customary permits going forward. One member of the forum informed Fisheries New Zealand that members of his iwi had caught southern bluefin tuna in 2017, but had not realised that there was a customary allowance for this species and would be encouraging Māori to use the customary allowance in 2018.
190. During input and participation discussions with iwi and hapū from the mid-north North Island, including Ngāti Hine, Te Uri o Hau, Ngāti Wai and Ngāti Whatua, concerns were raised over how low the customary allowance for southern bluefin tuna is, and it was stated that at the very least the customary allowance should be aligned with the recreational allowance.
191. During input and participation discussions at the Te Hiku o Te Ika Far North Iwi Fisheries Forum, concerns were also raised around how low the customary allowance is and

comments were made that forum members did not want their customary rights undermined through the sustainability round process.

192. Fisheries New Zealand also reached out directly to Te Whānau-ā-Apanui, an iwi in the eastern Bay of Plenty where the majority of the recreational take of southern bluefin tuna occurs, to provide input and participation into fisheries management decisions for southern bluefin tuna. Fisheries New Zealand has not received a response from Te Whānau-ā-Apanui to date.
193. A formal response was received from Te Rūnanga o Ngāti Whātua, the sole representative body and authorised voice to deal with issues affecting the whole of Ngāti Whātua. Te Rūnanga o Ngāti Whātua's response did not state a preferred option for southern bluefin tuna. However, Te Rūnanga o Ngāti Whātua suggested that there should be an increase in the customary allowance to mirror that of the recreational allowance.
194. A formal response was also received from Ngāti Kahungunu Iwi Incorporated, the mandated iwi organisation for Ngāti Kahungunu, stating that they support Option 2.
195. A formal response was received from Te Runanga o Ngāti Hine and Nga Tirairaka o Ngati Hine Environmental Organisation, both detailed that they support a decrease in the TACC and insist that the customary allowance be increased to match the allowance allocated for the recreational sector.
196. A formal response was received from the Iwi Collective Partnership (ICP), a fisheries seafood collective of 15 North Island based Iwi Members who are owners of Settlement Quota allocated under the Fisheries Treaty Settlement. ICP noted their historical support for the in-season increase, however now supports the views of Te Ohu Kaimoana and expressed concerns on the impact of increasing recreational allocations on the Fisheries Settlement.

2.3.2 Kaitiakitanga

197. Under Section 12(1)(b) you must also have particular regard to kaitiakitanga before setting or varying a TAC. Under the Fisheries Act, kaitiakitanga is 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.
198. Relevant Iwi or Iwi Fisheries Forum Fisheries Plans provide a view of the objectives and outcomes iwi seek from the management of the fishery and can provide an indication of how tangata whenua exercise kaitiakitanga over fisheries resources. Iwi views from Forum meetings and submissions received from iwi can also provide an indication.
199. Southern bluefin tuna is identified as a taonga species in the Te Waipounamu Iwi Fisheries Plan, the Mai i Nga Kuri a Whareki Tihirau Fisheries Forum Plan, and the Nga Hapu o te Uru Fisheries Plan.
200. Fisheries New Zealand considers that the management options recommended in this advice paper are in keeping with the objectives of these plans.

2.3.2 Te Ohu Kaimoana

201. The response from Te Ohu Kaimoana states their desire for you to set the recreational allowance at or close to zero to reflect the level of recreational catch at the time of the Deed of Settlement. Te Ohu Kaimoana also recommend that measures be put in place to ensure that recreational catch is managed within the recreational allowance set.
202. Te Ohu Kaimoana also reiterate the points made as part of their response to the most recent in-season increase for STN 1, including their belief that the New Zealand allocation at CCSBT was initially limited to commercial catch and their belief that New Zealand negotiators should have argued for other sources of mortality to be added to commercial catch rather than deducted from it.
203. Te Ohu Kaimoana also suggest that no changes can be made to the customary allowance, since the options considered in the consultation document did not propose such a change.

2.3.3 Recreational stakeholders

204. A submission from the New Zealand Sports Fishing Council, a recognised national sports organisation with over 34,000 members from 56 clubs nationwide, supported Option 3. New Zealand Sports Fishing Council supports 40 tonnes to be put aside for recreational harvest, to allow for the development of the southern bluefin tuna recreational fishery.
205. New Zealand Sports Fishing Council noted that estimates for recreational harvest of southern bluefin tuna in 2018 will not be available until the end of August, but current indications suggest that recreational harvest will be less than in 2017. However, interest in the fishery is growing, with up to 200 boats with recreational fishers targeting southern bluefin tuna seen during a good weather window in July around Waihou Bay.
206. New Zealand Sports Fishing Council also notes the significant expenditure on recreational fishing, and its important economic contribution to regional New Zealand. The development of the southern bluefin tuna recreational fishery also allows for an extended game fishing season and is already creating international interest.
207. New Zealand Sports Fishing Council recommends that you should set an adequate allowance for this new recreational fishery as it is critical to avoiding allocation disputes in the future, and notes its support for the development of an allocation policy for non-commercial catch.
208. New Zealand Sports Fishing Council believes that the recreational fishing community has shown responsibility this season through the use of voluntary measures and initiatives, such as creating best practice handling technique guidelines, and want the opportunity to responsibly develop the recreational southern bluefin tuna fishery going forward.

2.3.4 Commercial stakeholders

209. The Highly Migratory Species Committee (HMS Committee), which operates as part of Fisheries Inshore New Zealand, presented a submission raising concerns on the wider management of the southern bluefin tuna fishery. However, a diversity of views within the Committee on the setting of the TAC and its allocations meant that they were unable to provide a position on the options presented.

210. The HMS Committee's main concern is with the current management of the recreational sector in the southern bluefin tuna fishery – particularly the lack of constraints on catch. They argue that it is inappropriate to consider a change in allocation when there are no mechanisms in place to ensure that such an allocation is not exceeded.
211. Mr Ben Turner, a commercial fisher and quota holder, also provided an individual submission. Mr Turner supports a recreational allowance of 40 tonnes that could be revised down should it not be reached. Mr Turner believes that such an allowance would increase New Zealand's credibility at CCSBT when advocating for improved accountability from other members. Mr Turner also suggests a number of management alternatives for the recreational sector, which will be further assessed as part of that separate process.
212. Independent Fisheries support Option 2 until Fisheries New Zealand gather more precise data on the level of recreational catch, believing that the commercial fishing industry should not be penalised with a lower TACC because of unreliable catch data for the recreational fishing sector.
213. Sealord support Option 1, which maintains the allocations set as part of the most recent in-season review.
- 2.3.5 Environmental non-Governmental organisation stakeholders
214. The Environment and Conservation Organisations of NZ (ECO), the national alliance of 48 Groups with a concern for the environment, provided a submission. ECO does not support an increase in the catch limit for southern bluefin tuna given that the stock is still under 20% of unfished spawning stock biomass, and believes that this fishery should be closed.
- 2.3.6 Fisheries New Zealand online survey
215. Fisheries New Zealand also consulted using a simple online survey that was shared on various New Zealand Facebook fishing groups. This survey asked for feedback on TAC changes and potential recreational management measures for southern bluefin tuna. There were 164 participants, with the majority self-identifying as recreational fishers and smaller numbers self-identifying as commercial, tangata whenua, general public and other.
216. 43% of all participants supported Option 3. Submitters advocated that this is a new, exciting and significant recreational fishery that should not be stifled at this early stage of its development. Submissions also noted the potential economic benefits for local rural communities (e.g. Waihou Bay) during the traditionally quiet winter months. Submitters also see tourism potential in the development of a southern bluefin tuna recreational fishery, as this is an opportunity for New Zealand to attract international game fishers over the winter months. Submitters also suggested the potential economic benefit to the retail sector, and the genuine desire to see this fishery develop.
217. 27% supported Option 1, suggesting that a 20 tonne allocation for the recreational sector is a fair amount to reflect the significant effort involved for recreational fishers in this fishery. One submission also included a call for increasing the customary allowance.
218. 12% supported Option 2, with no further comments.

219. 18% supported an “other “option, which generally stated that there should be either a decrease, or no increase in the TAC, due to sustainability concerns with the southern bluefin tuna fishery. One submitter stated that all of the increase should go to the recreational sector.

2.4 SETTING THE TAC

220. Southern bluefin tuna is listed under Schedule 3 of the Fisheries Act as a stock managed with an alternative total allowable catch based on the fact that a national allocation for New Zealand has been determined as part of an international agreement.
221. In deciding whether to increase the TAC and how to allocate the increased allocation, you are required to take into account the following environmental principles:
- a) associated or dependent species should be maintained above a level that ensures their long-term viability;
 - b) biological diversity of the aquatic environment should be maintained; and
 - c) habitat of particular significance for fisheries management should be protected.
222. Below is a summary of the interactions between the southern bluefin tuna fishery and the aquatic environment, and how these are likely to be affected by the proposals.

2.4.1 Maintaining viability of associated or dependent species (section 9(a))

Fish bycatch

223. Bigeye tuna, Pacific bluefin tuna, swordfish, and blue sharks are the main fish species associated with the New Zealand southern bluefin tuna surface longline fishery. These species were introduced into the Quota Management System on 1 October 2004 and the TACCs are generally under-caught. Other associated fish species, such as albacore and striped marlin, are not managed under the Quota Management System and have no current sustainability concerns. Fishers are required to report the catch of all species when providing their monthly returns.
224. The recreational fishery for southern bluefin tuna is a targeted one and unlikely to give rise to significant bycatch of other fish species.
225. Fisheries New Zealand considers that the potential increase in effort associated with the options proposed in this paper would not be substantial enough to give rise to concerns related to fish bycatch.

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

Seabirds

226. Seabird interactions with New Zealand’s fisheries are managed under the framework of the 2013 National Plan of Action to Reduce the Incidental Captures of Seabirds in New Zealand Fisheries’ (NPOA Seabirds), which is currently under review.
227. The NPOA Seabirds 2013 established a risk-based approach to managing fishing interactions with seabirds. As a priority, management actions are targeted at the seabird

species most at risk, but also aim to minimise captures of all seabird species to the extent practicable.

228. Seabird interactions with vessels in the New Zealand southern bluefin tuna surface longline fishery generally occur at low level, but include a number of species at high risk from bycatch during fishing.³³
229. Regulatory and non-regulatory management measures are in place to mitigate and manage interactions with seabirds. Regulatory measures require commercial fishers setting surface longlines to use at least two out of three prescribed mitigation measures:
 1. Use tori lines; and
 2. *Either:*
 - a. Set lines at night; *or*
 - b. Use weighted lines.
230. Non-regulatory management measures include initiatives by the Department of Conservation's Protected Species Liaison Officer Programme, such as vessel-specific management plans that describe on-board practices that fishers employ to reduce the risk of seabird capture, and direct mentoring of vessel operators.
231. Fisheries New Zealand does not have any estimates of seabird captures related to recreational fishing for southern bluefin tuna, but information is being collected on this as part of the recreational national panel survey.
232. Fisheries New Zealand considers that the potential increase in effort associated with the options presented in this paper would not be substantial enough to significantly exacerbate the risk to seabirds from the fishery.

Marine mammals

233. Fur seal interactions with vessels in the New Zealand southern bluefin tuna fishery have been observed, with most being released alive. The Department of Conservation classifies the fur seal population as, "Not Threatened – least concern", and note that the New Zealand population has been increasing in recent years and is estimated at being over 200,000 fur seals.³⁴
234. There were three observed bottlenose dolphin captures in the southern bluefin tuna surface longline fishery between the 2010/11-2015/16 fishing years. All of the three bottlenose dolphins were released alive.³⁵ Observer coverage in the southern bluefin commercial fishery in 2017 was 19% in terms of effort.
235. Although there are anecdotal accounts of dolphin captures among the recreational sector, these interactions appear to be rare and typically involve live releases.
236. Fisheries New Zealand considers that the potential increase in effort associated with the proposed options would not be substantial enough to significantly exacerbate the risk to

³³ ³³ According to the [Assessment of the risk of commercial fisheries to New Zealand seabirds](#), (Richard, T., Abraham, E.R. (2014) 2006–07 to 2012–13. MPI), species that the southern bluefin tuna surface longline fishery interact with that are considered at high risk from fishing include the black petrel, Gibson's albatross, and northern Buller's albatross.

³⁴ <http://www.doc.govt.nz/nature/native-animals/marine-mammals/seals/nz-fur-seal/>

³⁵ <http://www.doc.govt.nz/nature/native-animals/marine-mammals/seals/nz-fur-seal/>

dolphins and fur seals from the commercial fishery given the low rate of interaction and the prevalence of live releases.

Turtles

237. There have previously been low numbers of observed captures of sea turtles in the southern bluefin tuna surface longline fishery. All observed turtles captured were released alive. Warmer sea surface temperatures observed so far this year may result in an increased chance of interactions with turtles in the surface longline fishery.
238. Fisheries New Zealand will continue to monitor the level of turtle interactions in the coming months, but does not consider that the potential for additional effort in the fishery from the options proposed will significantly increase the risk of interaction. The Department of Conservation Protected Species Liaison Officer Programme developed informal guidelines on turtle handling and release in 2017. These guidelines were included in vessel management plans that were provided to each vessel in the surface longline fleet during visits by liaison officers.

Table 2. Number of observed turtle captures in the southern bluefin tuna surface longline fishery 2010/11 to 2015/16.³⁶

Fishing Year	Number of observed turtle captures in the surface longline fishery
2010/11	3
2011/12	0
2012/13	0
2013/14	0
2014/15	0
2015/16	1

2.4.3 Habitats of particular significance for fisheries management (section 9(c))

239. No habitat of particular significance for fisheries management has been determined for the southern bluefin tuna stock.

2.5 ALLOCATING THE TAC

240. Fisheries New Zealand notes that the framework for determining customary and recreational allowances is set out under sections 20 and 21 of the Fisheries Act, and this is discussed in the Statutory Considerations section (Part 2 of this paper). As noted in that section, the Supreme Court has said that the recreational allowance is simply the best estimate of what recreational fishers will catch while being subject to the controls which you decide to impose upon them (e.g. bag limits, minimum sizes and other restrictions).
241. In Fisheries New Zealand's view, this interpretation would also apply to the customary allowance, albeit that you do not have the same ability to control the customary allowance as you do for the recreational allowance (see discussion of this point, in *Part 3: Key issues raised in submissions, in 1.3 Setting allowances*).

³⁶ Accessible at: <https://psc.dragonfly.co.nz/2017v1/released/turtles/southern-bluefin/all-vessels/eez/2002-03-2015-16/>

2.5.1 Māori customary allowance

242. The information available from customary reports indicates that there has been no take of southern bluefin tuna using that mechanism. Feedback from iwi fisheries forums and submissions have however identified a desire to make greater use of customary fishing provisions when taking southern bluefin. The potential for additional recreational constraints, such as bag or boat limits, in the coming year may further increase the desire to utilise customary mechanisms.
243. It should also be noted that, unlike the TACC and allowances for recreational catch and other sources of fishing related mortality, the customary allowance has not been increased over time, even though the stock status has improved along with the availability of southern bluefin tuna to be caught for customary purposes. Fisheries New Zealand therefore believes that an increase in the customary allowance is justified in order to have regard to Māori customary non-commercial fishing interests.
244. Fisheries New Zealand does not support the view expressed by Te Ohu Kaimoana that the absence of an option suggesting a customary allowance increase in the initial consultation document prevents you from considering such an increase. The consultation document specifically asked for additional information on customary take. Having received feedback indicating that the level of customary take is likely to increase for this species, Fisheries New Zealand believes that you must consider an increase to the customary allowance in order to fulfil your obligations under section 21 of the Fisheries Act. Regulations have been made for customary purposes and are increasingly being utilised by hapu/iwi. Customary fishing can only be conducted under regulation, but allowances need to reflect likely catch. Four tonnes is a modest allowance, representing around 80-100 fish, which recognises likely actual catch.
245. The feedback from stakeholders suggests that an assessment of customary take based on authorisations is likely to underestimate the levels involved, and the current setting of one tonne is unlikely to accurately reflect the true nature of the fishery. This fishery extends across both the North and South Island and the increased abundance presented by the improved stock status will likely translate into greater customary use, in the same way that the catch from other sectors has increased.
246. Fisheries New Zealand therefore recommends that the allowance for Māori customary fishing be increased from one to four tonnes to recognise the increased opportunity for customary utilisation presented by the recovering stock, the potential changes to the recreational framework, and the heightened interest expressed by iwi as part of consultation.

2.5.2 Recreational allowance

247. The level of recreational effort in 2018 is again much higher than all years prior to 2017. There is little doubt that the recreational southern bluefin tuna fishery is now a well-established and targeted fishery that is likely to continue to garner interest from recreational anglers.
248. The variance in catch from 2017 to 2018 illustrates the high variability that is likely to characterise this fishery, given the limited fishing season and the reliance on availability and accessibility. Assuming that high recreational effort persists, the fishery will be exposed to years with high catches. In recognition of this, Fisheries New Zealand is

considering a number of mechanisms which are aimed at limiting the potential for catch in excess of the allowance set for the sector.

249. New Zealand was the main advocate for full accounting of all sources of mortality, both in terms of member allocations and the scientific process at the CCSBT. It is therefore critical that New Zealand honour its broader commitment to that Commission to constrain catch to its agreed country allocation. This commitment can be met using a number of management mechanisms including, the setting of sector allowances. It is equally important, however, that New Zealand demonstrate its commitment to effective management of all sectors going forward.
250. Within CCSBT rules, there is a limited ability to carry forward country allocation under catch from one year to the next to deal with variability in both the commercial and non-commercial fishery. Therefore, the allowance you set for the recreational sector will, of necessity, form the basis of management rules to apply to the recreational sector.
251. Given the demonstrated ongoing interest in this fishery shown by the recreational sector and the catch levels seen in the two most recent years, Fisheries New Zealand recommends that you allow a 25 tonne allocation to the recreational sector. It is Fisheries New Zealand's view that such an allowance is in keeping with the information principles of section 10 under the Fisheries Act in that it would closely reflect the latest estimate of recreational catch. A 25 tonne allocation would also represent a likely average catch level based on increased effort levels and high variability in access and availability from year to year.
252. Although the recreational sector may catch more or less than its full allowance in a given year based largely on environmental factors, Fisheries New Zealand believes that 25 tonnes represents a likely level of catch given the effort now aimed specifically at this fishery. Fisheries New Zealand also believes that a 25 tonne allowance would fulfil your obligations under the Fisheries Act to allow for recreational interests in this fishery.
253. Fisheries New Zealand believes that an 8 tonne recreational allowance (as suggested in Option 2) would be significantly less than the expected recreational catch in a given year and would not properly allow for recreational interests as required by section 21 of the Fisheries Act. Nor does Fisheries New Zealand support the option put forward by Te Ohu Kaimoana that the recreational allowance be dropped to zero. In Fisheries New Zealand's view, an increase in the recreational allowance does not undermine the Deed of Settlement, as argued by Te Ohu Kaimoana.
254. Equally, Fisheries New Zealand does not believe that setting the recreational allowance at 40 tonnes in the absence of evidence to suggest that such catch levels are likely to be reached under the current circumstances is in keeping with your obligations under section 21.
255. Fisheries New Zealand also notes the points made in the New Zealand Sports Fishing Council submission relating to the potential economic benefits associated with a developing sports fishery. Although those benefits are not easily quantified, they do offset some of the foregone export revenues from the commercial sector.

2.5.3 Allowance for other sources of mortality caused by fishing

256. The current allowance for all other fishing-related mortality is set at 20 tonnes. This allowance reflects estimated mortality from live releases, along with any potential under-reporting. Fisheries New Zealand does not have any new information that would suggest that a change of this allowance is necessary, and therefore proposes to maintain the current allowance.

2.4.4 TACC

257. Fisheries New Zealand recommends that the TACC be increased to 1,039 tonnes, an increase of 68 tonnes which could create an additional \$739,000 in export revenues (based on the average value derived from 2017 export statistics). Fisheries New Zealand believes that such an increase in the TACC is appropriate, given that this remains primarily a commercial fishery, and the wider interests of the commercial sector.

2.6 OTHER MANAGEMENT CONTROLS

2.6.1 Recreational controls

258. A number of stakeholders, including Te Ohu Kaimoana and the HMS Committee, strongly advocated for improved management of the recreational southern bluefin tuna fishery. Fisheries New Zealand also supports the need for additional constraints on this fishery in order to meet our international obligations and avoid the potential for waste in a rebuilding stock.

259. As previously mentioned, Fisheries New Zealand has begun consulting with stakeholders on the potential introduction of management constraints in the recreational southern bluefin fishery based on the significant increase in effort witnessed in the past year.

260. Some of the changes being considered include personal bag limits and limits on the number of southern bluefin that may be retained per boat. Fisheries New Zealand considers that such constraints are necessary in the short term given the burgeoning recreational fishery, but also recognises that the international obligations for this species may require measures that more directly constrain catch in the long term.

261. Fisheries New Zealand will be seeking a decision from you on potential recreational measures as part of a separate process and ahead of the next recreational southern bluefin tuna season (i.e. June-July 2019).

3 Conclusion and Recommendation

262. Fisheries New Zealand recommends that you agree to increase the STN 1 TAC to 1088 tonnes with a four tonne customary allowance, a 25 tonne recreational allowance, a 20 tonne allowance for other sources of fishing related mortality, and a 1039 tonne TACC. Fisheries New Zealand considers that this Option best meets New Zealand's international and domestic obligations.
263. Based on the recommendations above, Fisheries New Zealand is including an additional option beyond those that were included within the discussion document that was circulated during consultation (defined below as Option 4).
264. Fisheries New Zealand 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 Fisheries New Zealand.

Option 1 – Current in-season settings (status quo)

Agree to increase the STN 1 TAC from 1000 to 1088 tonnes and within the TAC:

- i. Retain the one tonne allowance for Māori customary non-commercial fishing interests;
- ii. Increase the allowance for recreational fishing interests from 8 to 20 tonnes;
- iii. Retain the allowance of 20 tonnes for other sources of fishing-related mortality;
- iv. Increase the STN 1 TACC from 971 to 1047 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 2

Agree to increase the STN 1 TAC from 1000 to 1088 tonnes and within the TAC:

- i. Retain the allowance of one tonne for Māori customary non-commercial fishing interests;
- ii. Retain the allowance of 8 tonnes for recreational fishing interests;
- iii. Retain the allowance of 20 tonnes for other sources of fishing-related mortality;
- iv. Increase the STN 1 TACC from 971 to 1059 tonnes.

OR

Option 3

Agree to increase the STN 1 TAC from 1000 to 1088 tonnes and within the TAC:

- i. Retain the allowance of one tonne for Māori customary non-commercial fishing interests;
- ii. Increase the allowance for recreational fishing interests from 8 to 40 tonnes;

- iii. Retain the allowance of 20 tonnes for other sources of fishing-related mortality;
- iv. Increase the STN 1 TACC from 971 to 1027 tonnes.

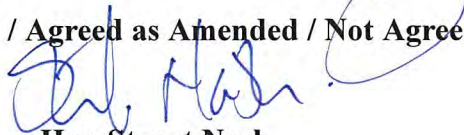
OR

Option 4 (Fisheries New Zealand recommended)

Agree to increase the STN 1 TAC from 1000 to 1088 tonnes and within the TAC:

- i. Increase the allowance for Māori customary non-commercial fishing interests from 1 to four tonnes;
- ii. Increase the allowance for recreational fishing interests from 8 to 25 tonnes;
- iii. Retain the allowance for other sources of fishing-related mortality at 20 tonnes;
- iv. Increase the STN 1 TACC from 971 to 1039 tonnes.

Agreed / Agreed as Amended / Not Agreed



Hon Stuart Nash
Minister of Fisheries

13 / 9 / 2018

Option 5

TAC: 1088 tonnes

Customary allowance: 2 tonnes

TACC: 1046 tonnes

Recreational: 20 tonnes

OSFRM: 20 tonnes

Agreed



PART 5: DEEPWATER STOCKS

Ling (LIN 5)

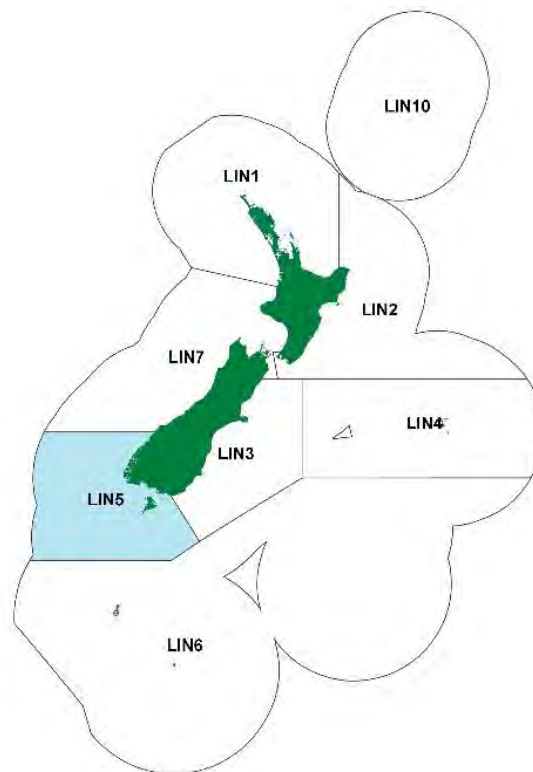


Figure 1: Quota management areas (QMAs) for ling, with LIN 5 highlighted in blue.

1 Summary

265. Fisheries New Zealand consulted on three options for management settings for ling (*Genypterus blacodes*, hoka) in quota management area (QMA) 5 (LIN 5; Figure 1). The options consulted on are set out in Table 1:

Table 1: Proposed management settings in tonnes for LIN 5 from 1 October 2018, with the percentage change relative to the *status quo* in brackets.

Option	Total Allowable Catch (TAC)	Total Allowable Commercial Catch (TACC)	Allowances		
			Customary Māori	Recreational	All other mortality to the stock caused by fishing
Option 1 (<i>Status quo</i>)	4036	3955	1	1	79
Option 2	4431 ↑ (10%)	4340 ↑ (10%)	1	1	89 ↑ (13%)
Option 3	4834 ↑ (20%)	4735 ↑ (20%)	1	1	97 ↑ (23%)

266. Fisheries New Zealand considers the existing deemed value rates for LIN 5 are appropriate; no changes are proposed. The existing deemed value rates are set out in Table 2:

Table 2: Existing deemed value rates (\$/kg) for all ling stocks, including LIN 5

	Interim deemed value rate (\$/kg)	Annual differential rates (\$/kg) for excess catch (% of ACE)		
		≤2%	>2% and ≤20%	>20%
<i>Status quo</i>	1.20	2.38	3.40	6.00

267. Nine submissions commented on the proposed options for LIN 5; three supported maintaining the *status quo* while six supported an increase to the TAC. Of the submitters who favoured increasing the TAC, five stated a preference for Option 3 (20% increase) while one supported Option 2 (10% increase). No alternative options arose from feedback received during consultation.
268. Fisheries New Zealand recommends Option 3; that you agree to increase the TAC/TACC for LIN 5 by 20%. Projections undertaken as part of the 2018 stock assessment indicate the status of the stock is unlikely to change over the next five years if catch of LIN 5 increases by 20%.

1 Need for review

269. Ling found in Southland (LIN 5) and on the Campbell Plateau (part of LIN 6) are considered to be the same biological stock (refer to section 2.1.1 below). The assessment for this stock was updated in 2018, and estimated that the biomass of the stock was at 88% of B_0 . This represents the best available information on the status of the LIN 5 and LIN 6 stocks, and indicates that a utilisation opportunity exists.
270. Catch in LIN 5 is consistently at or above the TACC (refer Figure 2). In contrast, Figure 3 shows that catch of LIN 6 has been less than 50% of the TACC since 2007/08. Fish are more widely dispersed in LIN 6, which, together with factors associated with operating in a remote and challenging environment, means operating costs are higher in LIN 6 than in LIN 5. It is not expected that any significant increase in catch could be taken in LIN 6. For this reason, the only practical option available to take advantage of the utilisation opportunity that exists for the LIN 5 and LIN 6 biological stock is to increase the TAC for LIN 5.

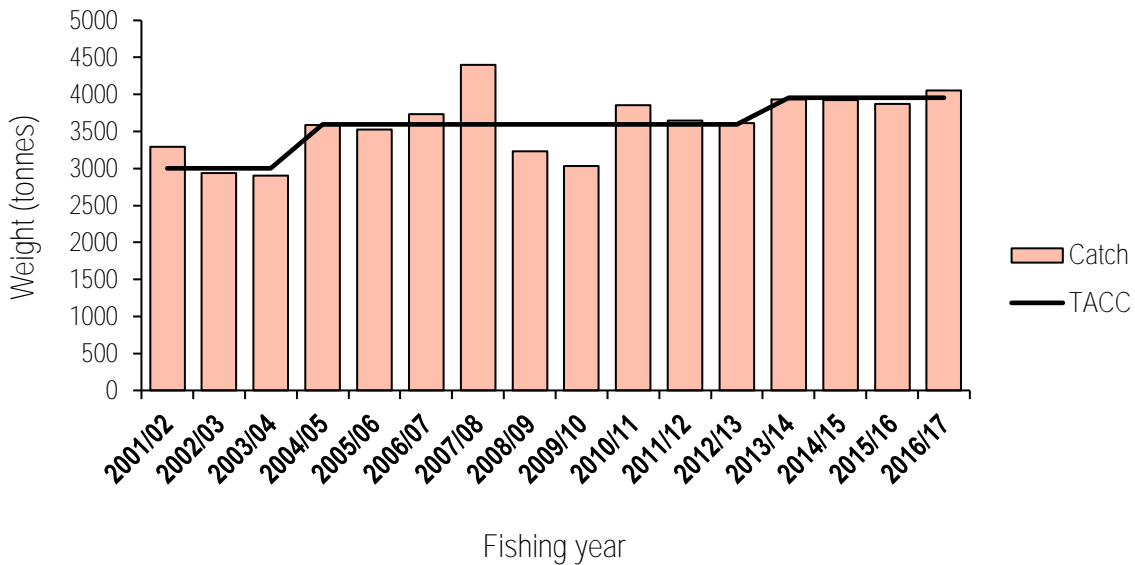


Figure 2: Commercial landings vs Total Allowable Commercial Catch (TACC) in tonnes for LIN 5 from 2001/02 to 2016/17

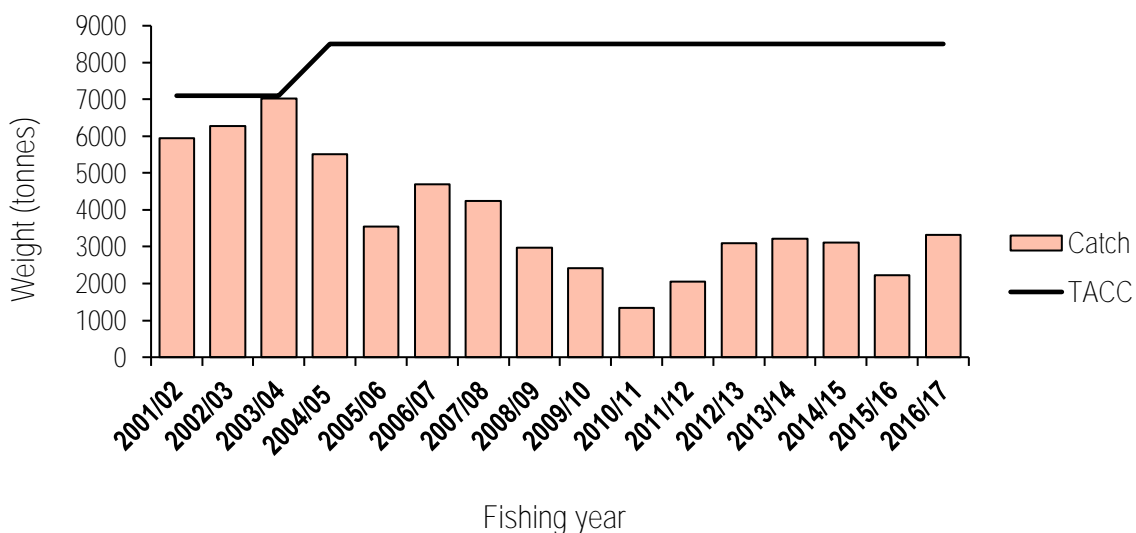


Figure 3: Commercial landings vs TACC in tonnes for LIN 6 from 2001/02 to 2016/17

2.1 CONTEXT

1.1.1 Biological information

271. Ling grow to a reasonably large size (over 20kg in weight and 2m in length). Most fish taken by fishers are between 5 and 15 years old with fish over 30 years of age uncommon. In LIN 5, most fish are taken between 350 and 650m water depth.

272. The south-western (LIN 5) and Sub-Antarctic (LIN 6) fisheries are considered to be the same biological stock (see Figure 4). However, these stocks are administratively managed separately and are considered as two different stocks under the definition of ‘stock’ in section 2 of the Fisheries Act 1996 (the Act). The eastern part of the LIN 6 QMA (Bounty Plateau) is not part of the LIN 5 and LIN 6 stock and is considered to be a separate biological stock.

273. The Bounty Plateau stock is subject to low, but intermittent, fishing pressure; in some years no catch is reported while in other years a few hundred tonnes is taken. Fisheries New Zealand considers that the low level of fishing pressure in the Bounty Plateau portion of LIN 6 will not have any impact on the status of that stock.

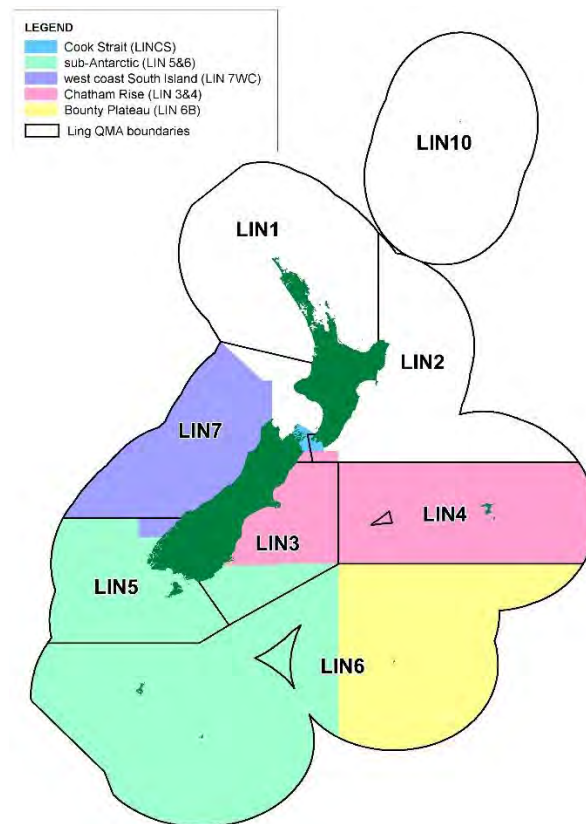


Figure 4: Ling biological stocks (coloured areas) and QMAs

1.1.2 Fishery characterisation

Customary Māori fishery

274. Current information indicates that there is very limited customary catch in LIN 5.

Recreational fishery

275. Current information indicates that there is very limited recreational catch in LIN 5.

Commercial fishery

276. LIN 5 is almost entirely a commercial fishery, with around 80% of catch taken by trawling during the last five fishing years and 20% taken by bottom longlining. Of the catch taken by trawlers, approximately 90% is taken by vessels greater than 28m in length.

277. In the last five fishing years, around 70% of LIN 5 catch was targeted, with the target fishery occurring primarily between September and December when fish gather to spawn on the area of continental shelf south of Stewart Island.¹ Around 90% of reported bycatch

¹ The area is known as the Stewart/Snares Shelf

species are managed under the Quota Management System (QMS). Four QMS species, hoki, white warehou, hake and red cod make up around three-quarters of all reported bycatch.

Māori customary non-commercial and recreational

278. Current information indicates that there is very limited customary or recreational catch in LIN 5.

1.1.3 Environmental principles and sustainability measures

Seabirds

279. The National Plan of Action – 2013 to reduce the incidental catch of seabirds in New Zealand Fisheries, (NPOA Seabirds) which is currently under review, is the driver for all actions to reduce the incidental mortality of seabirds from fishing.² It puts in place a risk-based approach to managing fishing interactions with seabirds, targeting mitigation to those species most at risk but also aiming to reduce overall captures.

280. The most recent seabird risk assessment was published in 2017.³ It is a primary input to the NPOA Seabirds. The risk assessment calculates a species-level risk broken down by fishery group. Fishery groups are assigned on the basis of target species, vessel size and for trawl vessels targeting middle-depth species, whether or not the vessel is a factory vessel. Vessels in the same fishery group are assumed to attract and capture birds in a similar way.

281. Seabird captures in trawl fisheries occur in two main ways. Seabirds either collide with or are struck by the moving trawl warps (usually larger seabirds) or are caught in the net when it is on the surface during deployment and retrieval (usually smaller seabirds). Regulations have been in place since 2005 requiring vessels over 28 metres in length to deploy bird scaring devices.

282. In addition to the mandatory mitigation measures, Fisheries New Zealand and the fishing industry have worked collaboratively for over a decade to ensure all trawlers over 28 metres in length have, and follow, a Vessel Management Plan. Vessel Management Plan's specify the measures that must be followed on board each vessel so as to reduce the risk of incidental seabird captures. Fisheries New Zealand observers monitor each vessel's performance against its Vessel Management Plan. If a vessel is not complying with the guidelines in its Plan, the Director-General has the option of imposing vessel-specific regulations to better control management practices.

283. In bottom longline fisheries, birds are mainly captured during setting of the gear, as seabirds try to take the bait off the hook and accidentally get hooked. The risk of capture is also present during hauling when any remaining baits and hooked fish are near the surface. Most captures that occur during hauling are able to be released alive. In 2008, seabird sustainability measures for bottom longliners were put in place to minimise and mitigate seabird interactions in longline fisheries. The measures require vessel operators to deploy streamer (tori) lines when setting lines and to use line weighting if setting during

² Accessible at: <https://www.mpi.govt.nz/dmsdocument/3962-national-plan-of-action-2013-to-reduce-the-incidental-catch-of-seabirds-in-new-zealand-fisheries>

³ Accessible at: <http://www.mpi.govt.nz/dmsdocument/27531-aebr-191-assessment-of-the-risk-of-commercial-fisheries-to-nz-seabirds-2006-07-to-2014-15>

the day. Operators must also not discharge offal or whole fish during setting and may only discharge offal or whole fish during hauling on the opposite side of the vessel from where the hauling station is located.

284. In addition to the mandatory mitigation measures for bottom longliners, the fishing industry and Fisheries New Zealand developed Bottom Longline Operational Procedures in 2016. The Procedures set out all mandatory and best practice measures to be used by the ling bottom longline fleet.

Marine mammals

285. Fisheries New Zealand works closely with the fishing industry to increase awareness amongst the fleet of the risk of interactions with marine mammals, and emphasises the importance of adherence to Deepwater Group's 'Marine Mammals Operational Procedures'.
286. The Marine Mammals Operational Procedures aims to reduce the risk of interactions with marine mammals by requiring that trawl vessels over 28 metres in length:
- i. minimise the length of time the fishing gear is on the surface;
 - ii. remove all dead fish from the net before shooting the gear;
 - iii. steam away from any congregations of marine mammals before shooting the gear; and
 - iv. appoint a crew member to watch for marine mammal interactions every time the gear is shot or hauled.
287. Performance in relation to these procedures is audited by Fisheries New Zealand observers. Fisheries New Zealand monitors the adherence of trawl vessels >28m in length with marine mammal mitigation measures throughout the year and responds to marine mammal captures as required.

Sharks

288. Management of sharks in New Zealand is driven by the National Plan of Action for Sharks (NPOA Sharks) 2013⁴, with the overarching purpose "To maintain the biodiversity and the long-term viability of all New Zealand shark populations by recognising their role in marine ecosystems, ensuring that any utilisation of sharks is sustainable, and that New Zealand receives positive recognition internationally for its efforts in shark conservation and management."

Benthic environment

289. Management measures to mitigate the effects of deepwater trawl activity on benthic ecosystems have focused on spatial closures. This was achieved through regulations closing areas to bottom trawling; first with seamount closures in 2001⁵ (one of the closures is within the LIN 5 QMA) and then with Benthic Protection Areas⁶ in 2007 (two of the areas are within the LIN 5 QMA). The implementation of Benthic Protection Areas

⁴ Accessible at <http://fs.fish.govt.nz/Page.aspx?pk=165>

⁵ Through section 73 of Fisheries (Commercial Fishing) Regulations 2001, accessible at <http://legislation.govt.nz/regulation/public/2001/0253/46.0/DLM76407.html#DLM78041>

⁶ Accessible at <http://legislation.govt.nz/regulation/public/2007/0308/latest/DLM973968.html?src=qs>

effectively closed approximately 30% of the New Zealand Exclusive Economic Zone to bottom trawling.

290. Adherence to benthic closure regulations is monitored, and the environmental impacts of fishing are summarised annually by Fisheries New Zealand.⁷ Potential adverse effects caused by increased fishing effort can be limited if vessels trawl along previously-trawled towlines. Fisheries New Zealand will continue to monitor the annual bottom trawl footprint of LIN 5 and other deepwater fisheries.

1.1.4 Status of the stock

Current management approach

291. Ling has been managed within the National Fisheries Plan for Deepwater and Middle-depths Fisheries (National Deepwater Plan) as a Tier 1 stock. Tier 1 stocks are high volume and/or high value and are typically targeted. A fisheries-specific ling chapter was finalised in 2011. The chapter sets the operational objectives and performance criteria for all ling fisheries that are managed under the Plan. It also addresses the management of environmental effects caused by fishing for ling.
292. The TAC and TACC for all ling stocks managed under the National Deepwater Plan are set based on the status of the stock in relation to the reference points for ling. These are described in Table 3 and are based on the default reference points set in the Harvest Strategy Standard⁸.

Table 3: Harvest Strategy for ling: reference points and associated management responses

Reference point	Management response
Management target 40% B_0	Stock permitted to fluctuate around this management target. TAC/TACC changes will be employed to keep the stock around the target (with a 50% probability of being at the 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
Rebuild strategy	To be determined
Harvest control rule	Management actions focussed on adjusting fishing mortality determined following consideration of the results of stock assessments and in some cases, forward projections under a range of catch assumptions, guided by biological reference points.

293. The management approach for LIN 5 and LIN 6 is supported by a quantitative stock assessment undertaken every three years to estimate stock status. Key abundance indices that inform the assessment include a wide-area trawl survey series and catch per unit effort (CPUE) indices.
294. The 2012 stock assessment estimated that the stock was at 71% of unfished biomass. The Minister for Primary Industries increased the TAC and TACC for LIN 5 by 10% for the 2013/14 fishing year. Catch limits have remained unchanged since (refer to Figure 2).

⁷ The Annual Review Report for 2016/17 is available here: <http://www.mpi.govt.nz/dmsdocument/29741-annual-review-report-for-deepwater-fisheries-201617>

⁸ Harvest Strategy Standard for New Zealand Fisheries, October 2008, accessible at: <http://fs.fish.govt.nz/Page.aspx?pk=113&dk=16543>

Current stock status

295. For the LIN 5 and LIN 6 stock assessment, model inputs include catch histories, biomass indices and catch-at-age data from trawl surveys and commercial fisheries, and bottom longline CPUE data. It was updated in 2018 and the base model estimated the stock to be at 88% of unfished or virgin biomass (B_0). The Deepwater Fisheries Assessment Working Group concluded that although estimates of absolute current and virgin stock size are very imprecise, it was unlikely that B_0 was lower than 200,000 tonnes for this stock.
296. Projections derived from the 2018 stock assessment base model were undertaken using two catch scenarios: a low catch scenario based on the mean of recent catch history between 2013 and 2017 (6650 tonnes), and a high catch scenario based on the current combined LIN 5 and LIN 6 TACCs being fully caught (12,100 tonnes). Under both catch scenarios, the stock status is unlikely to change over the next five years.

1.2 OPTIONS CONSULTED ON

297. The options presented in the consultation document are set out in Table 4; no additional options are presented as a result of submissions received.

Table 4: Proposed management settings in tonnes for LIN 5 from 1 October 2018, with the percentage change relative to the *status quo* in brackets.

Option	Total Allowable Catch (TAC)	Total Allowable Commercial Catch (TACC)	Allowances		
			Customary Māori	Recreational	All other mortality to the stock caused by fishing
Option 1 (<i>Status quo</i>)	4036	3955	1	1	79
Option 2	4431 ↑ (10%)	4340 ↑ (10%)	1	1	89 ↑ (13%)
Option 3	4834 ↑ (20%)	4735 ↑ (20%)	1	1	97 ↑ (23%)

1.3 VIEWS OF SUBMITTERS

298. Section 11 of the Act requires Fisheries New Zealand to consult on any proposed management changes. Fisheries New Zealand has consulted on your behalf and this section outlines the views of submitters and issues they raised.

1.3.1 Submissions received

299. Seven submissions were received on the LIN 5 proposals from the following six individuals and organisations:
- Deepwater Group Ltd (Deepwater Group)
 - Environment and Conservation Organisations of NZ Inc. (ECO)
 - The Royal Forest and Bird Protection Society of New Zealand Ltd (Forest & Bird)
 - Iwi Collective Partnership
 - Kahungunu Asset Holding Company
 - Ngati Whatua Fisheries Ltd
 - Pat Nyhon
 - Sealord Group Ltd (Sealord)
 - Te Ohu Kaimoana

300. Deepwater Group supports Option 3 (20% increase) on the basis that the scientific information indicates the stock will be maintained at or above sustainable limits.
301. ECO do not support an increase in the LIN 5 TACC and therefore prefer the *status quo*. They are concerned that increased effort will increase benthic impacts of bottom trawling when there is no strategy to avoid, remedy or mitigate these impacts, and claim that Benthic Protection Areas should not be considered in management decisions, as they afford inadequate protection to benthic ecosystems because the areas they encompass are not fished, or are too deep to fish.
302. Forest & Bird's submission encompassed the four deepwater stocks for which management options were consulted upon in this sustainability review (orange roughy, ling, oreo and scampi). Forest & Bird considers the environmental impacts of trawl fisheries to be inadequately managed at present. They do not support a TAC increase for any of these stocks, on the basis of irreversible damage caused to vulnerable marine ecosystems by bottom trawling, and due to bycatch levels that they consider to be unacceptable.
303. Forest & Bird recommends that the *status quo* is retained for these stocks and that you address the environmental impacts of these fisheries before any consideration to increase TACs are progressed.
304. The Iwi Collective Partnership supports Deepwater Group's position and favours Option 3 (20% increase).
305. The Kahungunu Asset Holding Company supports Option 2 (10% increase) suggesting that this option best supports the aspirations of the Kahungunu ki Uta, Kahungunu te Kai, Marine and Freshwater Fisheries Strategic Plan of a healthy fisheries environment, and abundant fishery and thriving people, and a sustainable and stable commercial fishery.
306. Ngati Whatua Fisheries Ltd supports the *status quo* but did not provide rationale.
307. Pat Nyhon is a commercial fisher who supports Option 3 (20% increase), but suggests the increase should be done on a trial basis for two years.
308. Sealord supports Deepwater Group's submission, that is, Option 3, but did not provide further rationale.
309. Te Ohu Kaimoana supports Deepwater Group's submission and recommends that Fisheries New Zealand adopt Option 3 (20% increase).

1.3.2 Input and participation of tangata whenua

310. 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.
311. The proposal to consult on LIN 5 was presented to the Te Waka a Māui me Ōna Toka Iwi Forum (Te Waka a Māui) in March 2018. This Forum represents the nine iwi of the South Island, each holding mana moana and significant interests (both commercial and non-commercial) in South Island fisheries, and supported a review of the LIN 5 fishery.

312. Te Waka a Māui did not provide specific views on LIN 5. However, general comments regarding the position of the Forum on the Māori customary allowance and stocks such as LIN 5, where substantial changes to the TAC are proposed, were noted. The Forum's comments are addressed in sections 2.5.1 and 2.4 respectively.
313. The options consulted on for LIN 5 were also discussed at a Ngai Tahu Murihiku Mahinga Kai hui in Bluff in July 2018. No specific concerns were noted with the proposals.

2.2.2 Kaitiakitanga

314. Relevant Iwi or Forum Fish Plans provide a view of the objectives and outcomes iwi seek from the management of the fishery and can provide an indication of how iwi exercise kaitiakitanga over fisheries resources. Iwi views from Forum meetings and submissions received from iwi can also provide an indication.
315. Ling (hoka) is not listed as a taonga species in the Te Waipounamu Iwi Fisheries Plan, but the Te Waka a Māui me Ōna Toka Iwi Forum consider the species taonga. The Plan contains objectives to support and provide for the interests of South Island iwi. Three objectives in the Plan that are relevant to the management options proposed for LIN 5:
- a) Management objective 1: to create thriving customary non-commercial fisheries that support the cultural wellbeing of South Island iwi and our whānau;
 - b) Management objective 3: 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; and
 - c) Management objective 5: to restore, maintain and enhance the mauri and wairua of fisheries throughout the South Island.
316. Fisheries New Zealand considers that the management options presented in this advice paper will contribute towards the achievement of these three management objectives in ensuring that appropriate allowances are made for customary Māori non-commercial fishing, the fishery remains sustainable, and that environmental impacts are minimised.

1.4 SETTING THE TAC

317. The TAC for LIN 5 is currently set under section 13(2)(c) of the Act. This section requires you to set a TAC that enables any stock whose current level is above that which can produce the maximum sustainable yield to be altered in a way and at a rate that will result in the stock moving towards or above a level that can produce the maximum sustainable yield, having regard to the interdependence of stocks. Fisheries New Zealand considers it is appropriate that the TAC continues to be set under this section.
318. The increases proposed under Options 2 and 3 reflect the fact that current catches are not having a measureable impact on biomass. Both options are consistent with previous decisions to increase the TAC⁹ and reflect the ongoing low fishing pressure and high biomass estimate for the stock.

⁹ The TAC was increased by 20% in 2004 and 10% in 2013.

319. There is no information to suggest that the interdependence of any stocks would limit the LIN 5 TAC options that are proposed. The fishery primarily targets aggregations of ling and most bycatch comprises species managed under the QMS. For the four species most commonly taken as bycatch (hoki, white warehou, hake and red cod), only catch of red cod in the corresponding RCO 3 stock has been at the level of the TACC in recent years.
320. Section 9 of the Act prescribes three environmental principles that you must take into account when exercising powers in relation to the utilisation of fisheries resources or ensuring sustainability (refer to section 1.4 of the *Part 2: Statutory Considerations* section for a full description of these principles).
321. Options 2 and 3 will likely result in some increase in fishing effort targeting ling in LIN 5. This may increase the risk of adverse effects on associated or dependant species, biological diversity of the aquatic environment, or habitat of particular significance for fisheries management. However, as outlined below, Fisheries New Zealand considers that both the increase in fishing effort and increased risk of adverse effects will be marginal.
322. The seabird risk assessment (refer paragraph 266) identified the middle-depth trawl fishery, which includes ling, as contributing >10% of the proportion of risk to one seabird species (Salvin's albatross) in the very high risk or high risk categories. The small-vessel ling bottom longline fishery contributed >50% of the proportion of risk to one species (Chatham Island albatross) in these two risk categories.
323. The estimates in the previous paragraph are for all middle-depth trawl and small-vessel ling bottom longline fisheries nationwide, of which LIN 5 represents only a small proportion. Based on fishing effort during the 2015/16 fishing year, LIN 5 target tows comprised 4% of all middle depth trawl tows while small-vessel ling bottom longline vessels in LIN 5 contributed 7% of total effort. Any increase in effort resulting from an increase to the LIN 5 TAC under Options 2 or 3 will likely result in only a marginal increase in total effort by vessels in the respective fishery groups.
324. Fisheries New Zealand observers have not reported any incidences of New Zealand fur seal captures, or any other marine mammal species, occurring in LIN 5.¹⁰ Any increase in fishing effort in LIN 5 will likely result in only a marginal increase to the risk of marine mammal captures occurring in this area.
325. An increase in the LIN 5 TAC is likely to lead to increased catch of associated fish species. Shark species taken as bycatch in the ling fishery that are managed under the QMS include spiny dogfish, school shark, and dark ghost shark. In recent years the catch of school shark in the area encompassed by LIN 5 has been close to the TACC. Catch of spiny dogfish and dark ghost shark has been well below the TACC of the respective stocks.
326. Non-QMS shark species that are taken include shovel-nosed dogfish, leafscale gulper shark and seal shark. Based on data recorded by observers, non-QMS shark species comprise between 1 and 2% of the catch in the LIN 5 target fishery. When fisher-reported data from the last three years is analysed, Fisheries New Zealand estimates that this equates to around 3-5% of nationwide catch of shovel-nosed dogfish and seal shark, and around 15% of nationwide catch of leafscale gulper shark.

¹⁰ During the last five fishing years, between 10 and 20% of effort in the LIN 5 trawl fishery has been observed.

327. Fisheries New Zealand will continue to monitor interactions with deepwater sharks in ling fisheries and will consider management action if impacts are found to pose a sustainability risk to any deepwater shark species.
328. Fisheries New Zealand notes that under the proposed TAC increases, the area of the benthos impacted by bottom trawling in LIN 5 is unlikely to change. Fishers are more likely to continue to fish known areas rather than risk losing or damaging gear by fishing in areas they are not familiar with.
329. The trawl footprint of all deepwater fisheries will continue to be mapped and monitored annually and any undue expansion will give rise to a review of management arrangements.
330. No habitat of particular significance for fisheries management, as per section 9(c) of the Act, has been determined for the LIN 5 stock.
331. Section 11 of the Act sets out various matters that you must take into account or have regard to when setting or varying any sustainability measures (such as a TAC). These include any effects of fishing on the stock and the aquatic environment. See section 1.6 of the *Part 2: Statutory Considerations* section for a full description.

2.4.1 Option 1 (*Status quo*)

332. Option 1 would result in no change to the *status quo*. It represents a cautious approach to the management of the stock given the high stock status, and would result in foregoing the utilisation opportunity that currently exists. Under the *status quo*, catch of LIN 5 would be expected to remain around the level of the current TACC.
333. This Option was favoured by three submitters. ECO do not support any increase in the catch limit for LIN 5 on the basis of concern over potential environmental impacts. ECO noted specific concerns at the impact of any TAC increase on benthic impacts of trawl fishing, and seabird bycatch in an area where bycatch is particularly high. ECO claim that Benthic Protection Areas should not be considered in management decisions, as they afford inadequate protection to benthic ecosystems because the areas they encompass are not fished, or are too deep to fish.
334. Forest & Bird did not support increasing the TAC for LIN 5 or any of the deepwater stocks. Their rationale is that the fishery has unacceptable bycatch and environmental impacts that are not being mitigated or reduced or meaningfully managed.
335. Forest & Bird and ECO assert that environmental impacts are not being mitigated, reduced or meaningfully managed. As described in Section 2.1.3, there is a range of initiatives in place to avoid and mitigate the environmental impacts of fishing. Fisheries New Zealand considers that Benthic Protection Areas, by protecting pristine environments, do provide a contribution to the protection of deepwater habitat.
336. Other regulatory measures include seamount closures, where all trawling is prohibited, and mandatory use of seabird scaring devices by trawlers over 28m in length and bottom longliners. Additionally, non-regulatory measures that improve environmental performance, such as the NPOA Seabirds, NPOA Sharks, Vessel Management Plans, and the Marine Mammals Operational Procedures, are all effective management tools.

2.4.2 Option 2

337. This Option is an increase to the TAC from 4036 tonnes to 4431 tonnes. This equates to around a 10% increase. Projections based on the 2018 stock assessment indicated that the stock status would be unlikely to change with an increase in catch of this magnitude.
338. This Option was favoured by one submitter, Kahungunu Asset Holding Company, who did not provide further details on why it was their preferred option.

2.4.3 Option 3 (Fisheries New Zealand Recommended)

339. This Option is an increase to the TAC from 4036 tonnes to 4834 tonnes. This equates to around a 20% increase. As with Option 2, projections based on the 2018 stock assessment indicated that the stock status would be unlikely to change with an increase in catch of this magnitude.
340. Option 3 was preferred by five submitters. Deepwater Group, the organisation that represents 91% of deepwater fishing quota owners, noted the favourable stock assessment information underpinning the proposal. Deepwater Group also noted support for Fisheries New Zealand's assessment of environmental considerations and reiterated shareholders' commitment to, and support of, continued management and monitoring of these interactions.
341. The Iwi Collective Partnership noted its support Deepwater Group's views.
342. Pat Nyhon is a commercial fisher who commented that the fishery has improved each year with less effort and more catch with better quality fish. He also expressed a preference for Option 3, but suggested the increase should be done on a trial basis for two years. Fisheries New Zealand notes that the stock assessment for LIN 5 and LIN 6 is updated every three years and that the TAC may be reviewed again in 2021.
343. Sealord expressed support for Option 3 but did not elaborate on why it was their preferred option.
344. Te Ohu Kaimoana expressed support for Option 3 and noted that increased catch would not affect the fishery's ability to produce the maximum sustainable yield.
345. Although not specific to LIN 5, Te Waka a Māui considers that substantial changes to the TAC (e.g. 20% or more) need to be accompanied by scientific recommendations that the changes proposed are sustainable for at least the next five years to ensure the long-term sustainability of the stock. Fisheries New Zealand notes that projections derived from the 2018 stock assessment base model were undertaken and indicate the stock status is unlikely to change over the next five years even under the higher catch scenario used (refer paragraph 282).

1.5 ALLOCATING THE TAC

346. Having set the TAC, you must set the TACC and in setting or varying the TACC, must make allowances for Māori customary non-commercial fishing interests, recreational fishing interests, and all other mortality to the stock caused by fishing (s 20 & 21).

347. Te Ohu Kaimoana’s submission included a suggested framework for setting allowances within the TAC. The framework for determining customary and recreational allowances is set out under sections 20 and 21 of the Act and this is discussed in the *Part 2: Statutory Considerations* section of this paper. As noted in that section, the Supreme Court has said that the recreational allowance is simply the best estimate of what recreational fishers will catch while being subject to the controls which you decided to impose upon them (e.g. bag limits, minimum sizes and other restrictions). In Fisheries New Zealand’s view this would also apply to the customary allowance, albeit that you do not have the same ability to control the customary allowance as you do for the recreational allowance—see discussion of this point in *1.3 Setting allowances* (in *Part 3: Key issues raised in submissions*).

1.5.1 Māori customary allowance

348. The allowance for Māori customary non-commercial fishing interests in LIN 5 is currently one tonne. This allowance remained unchanged under all options that were consulted on. The position of Te Waka a Māui, although not specific to LIN 5, is that customary take is regulated by iwi and is based on need.

349. Despite Te Waka a Māui’s position, no information was received as a result of the consultation process indicating that provision should be made for additional customary catch. Consequently, Fisheries New Zealand recommends retaining the current Māori customary allowance under all options.

1.5.2 Recreational allowance

350. For LIN 5, the current allowance for recreational fishing interests is one tonne. This allowance remained unchanged under all options that were consulted on. No information was received as a result of the consultation process indicating that provision should be made for additional recreational catch. Consequently, Fisheries New Zealand recommends retaining the current recreational allowance under all options.

1.5.3 Allowance for other sources of mortality caused by fishing

351. Other sources of mortality caused by fishing is an allowance intended to provide for unrecorded mortality of fish associated with fishing activity. This includes fish that escape through trawl net mesh and subsequently die from injuries, accidental loss from lost or ripped trawl net codends, predation, loss of fish taken on bottom longlines, and illegal take.

352. For LIN 5, this allowance is currently set at 2% of the TACC. This basis of this allowance remained unchanged under all options that were consulted on. In the absence of further information on this subject, Fisheries New Zealand recommends this allowance continue be set at around 2% of the TACC.

1.5.4 TACC

353. Increasing the TACC for LIN 5 by around 10% (Option 2) or 20% (Option 3) will enable commercial fishers to take advantage of the utilisation opportunity that exists for this stock. Retaining the *status quo* would result in foregoing that opportunity.

354. Increasing the TACC would result in economic benefits to fishers. On the basis of the export value of frozen ling fillets during the 2017 calendar year, the increase in catch

under Option 2 (385 tonnes) could be worth approximately \$1.3M in additional export revenue.¹¹ The increase under Option 3 (780 tonnes additional catch) could be worth up to \$2.7M in additional export revenue.

1.6 OTHER MANAGEMENT CONTROLS

1.6.1 Deemed value rates

355. The interim deemed value rate for all ling stocks (except LIN 7) is currently set at 50% of the annual deemed value rate. While the Deemed Value Guidelines¹² suggest that the interim deemed value rate should generally be set at 90% of the annual deemed value rate, given that LIN 5 landings have not exceeded the available Annual Catch Entitlement during the last five years, Fisheries New Zealand considers that the current deemed value rates are appropriate. To maintain consistency with the deemed value rates of other ling stocks,¹³ no changes are proposed to the deemed value rates for LIN 5 (as outlined in Table 2).

2 Conclusion and Recommendation

356. Fisheries New Zealand consulted on increasing the TAC, TACC, and allowances for the LIN 5 stock on the basis of the 2018 stock assessment indicating that fishing pressure for this stock had been low and that, consequently, a utilisation opportunity existed.

357. Of the nine submissions received, six stated a preference for increasing the TAC; five preferred a 20% increase (Option 3), while one preferred a 10% increase (Option 2). Three submissions stated a preference for retaining the *status quo*.

358. The 2018 stock assessment and associated projections represent the best available information for LIN 5. Fisheries New Zealand recommends that you agree to Option 3, an increase of around 20% to the TAC and TACC for this stock. This Option is consistent with your obligations under the Fisheries Act 1996 and will provide a direct economic benefit to the fishing industry.

359. The next assessment for this stock is scheduled for 2021. This will indicate whether or not the recommended increase in catch of LIN 5 has had any measurable effect on the status of the stock.

360. Fisheries New Zealand recommends you agree to retain the existing deemed value rates for LIN 5.

¹¹ This is based on an average unit value for frozen ling fillets of \$10.24 during the 2017 calendar year and a conversion factor for skin-off trimmed fillets of 2.95.

¹² Available at www.mpi.govt.nz/document-vault/3663

¹³ All ling stocks currently have the same annual deemed value rates.

Option 1 (status quo)

Agree to retain the LIN 5 TAC at 4036 tonnes and within the TAC:

- i. Retain the 1 tonne allowance for Māori customary non-commercial fishing interests;
- ii. Retain the 1 tonne allowance for recreational fishing interests;
- iii. Retain the 79 tonne allowance for other sources of fishing-related mortality;
- iv. Retain the LIN 5 TACC at 3955 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 2

Agree to increase the LIN 5 TAC from 4036 to 4431 tonnes and within the TAC:

- i. Retain the 1 tonne allowance for Māori customary non-commercial fishing interests;
- ii. Retain the 1 tonne allowance for recreational fishing interests;
- iii. Increase the allowance for other sources of fishing-related mortality from 79 to 89 tonnes;
- iv. Increase the LIN 5 TACC from 3955 to 4340 tonnes.

Agreed / Agreed as Amended / Not Agreed

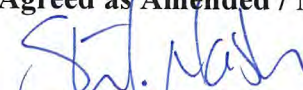
OR

Option 3 (Fisheries New Zealand preferred)

Agree to increase the LIN 5 TAC from 4036 to 4834 tonnes and within the TAC:

- i. Retain the 1 tonne allowance for Māori customary non-commercial fishing interests;
- ii. Retain the 1 tonne allowance for recreational fishing interests;
- iii. Increase the allowance for other sources of fishing-related mortality from 79 to 97 tonnes;
- iv. Increase the LIN 5 TACC from 3955 to 4735 tonnes.

Agreed / Agreed as Amended / Not Agreed


Hon Stuart Nash
Minister of Fisheries

13 / 9 / 2018

Oreo (OEO 4)

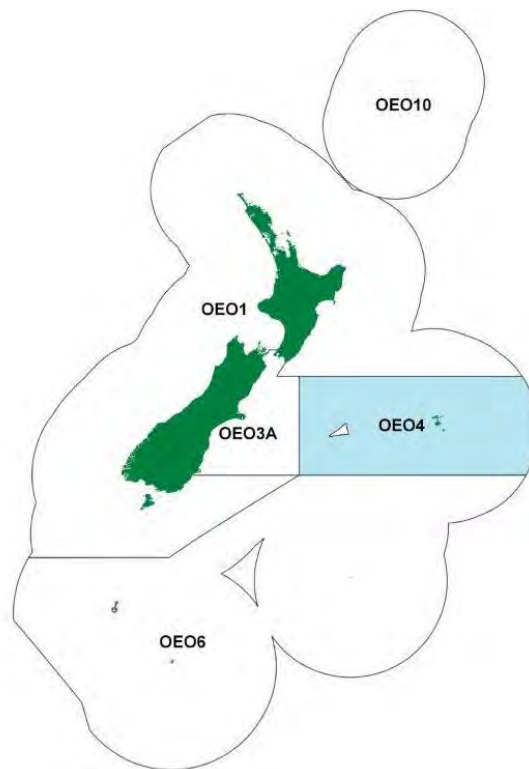


Figure 1: Quota management areas (QMAs) for oreo, with OEO 4 highlighted in blue.

1 Summary

361. Fisheries New Zealand consulted on three options for management settings for oreos (smooth oreo (*Pseudocythus maculatus*), black oreo (*Allocyttus niger*), spiky oreo (*Neocyttus rhomboidalis*), and warty oreo (*Allocyttus verrucosus*)) in quota management area (QMA) 4 (OEO 4, Figure 1). Fisheries New Zealand also proposed that as part of this sustainability review, a non-regulatory species-specific catch limit for smooth oreo be implemented in OEO 4. These options are set out in Table 1:

Table 1. Proposed management settings in tonnes for OEO 4 from 1 October 2018, with the percentage change relative to the *status quo* in brackets.

Option	Total Allowable Catch (TAC)	Total Allowable Commercial Catch (TACC)	Smooth oreo non-regulatory limit (t)	Allowances		
				Customary Māori	Recreational	All other mortality to the stock caused by fishing
<i>Current settings</i>	3150	3000	-	0	0	150
Option 1	3465 ↑ (10%)	3300 ↑ (10%)	2300	0	0	165 ↑ (10%)
Option 2	4095 ↑ (30%)	3900 ↑ (30%)	2900	0	0	195 ↑ (30%)
Option 3	4515 ↑ (43%)	4300 ↑ (43%)	3300	0	0	215 ↑ (43%)

362. No changes are proposed to the deemed value rates for OEO 4, as outlined in Table 2.

Table 2: Deemed value rates (\$/kg) for OEO 4

	Interim Rate (\$/kg)	Annual Differential Rates (\$/kg) for excess catch (% of ACE)					
		100-120%	120-140%	140-160%	160-180%	180-200%	200%+
<i>Status quo</i>	0.81	0.90	1.08	1.26	1.44	1.62	1.80

363. Seven submissions commented on the proposed options for OEO 4; two supported maintaining the *status quo*, four supported Option 2, and one supported Option 3. No alternative options arose from feedback received during consultation.
364. Fisheries New Zealand recommends Option 2; that you agree to increase the TAC for OEO 4 from 3150 to 4095 tonnes. Projections undertaken as part of the 2018 stock assessment indicate that the status of the stock is unlikely to change considerably over the next five years at catch levels expected under Option 2.

2 Need for review

365. The best available information suggests that the current biomass for OEO 4 is at the management target and can sustain increased catch levels. Fisheries New Zealand considers that there is an opportunity to increase utilisation whilst ensuring the sustainability of smooth oreo within OEO 4.

2.1 CONTEXT

2.1.1 Biological information

366. OEO 4 is managed as a complex of four species, the two most abundant being smooth oreo (SSO) and black oreo (BOE). Smooth oreo are thought to be slow-growing and long lived (up to 86 years) and mature at around 31 years old. Black oreo are also thought to be slow growing and long lived (up to 153 years) and mature at around 27 years old.
367. In OEO 4, both species are abundant on the south Chatham Rise, in depths of 600 to 1300 metres (BOE), or 650 to 1500 metres (SSO), where they are thought to spawn between late October and December.

2.1.2 Fishery characterisation

368. Previously, oreos were only taken as bycatch in more valuable orange roughy fisheries, but smooth and black oreo are now fished commercially by bottom trawling. In OEO 4, the south Chatham Rise is the main fishing area, where smooth and black oreo are taken as bycatch in fisheries targeting each species, and as bycatch in overlapping orange roughy and hoki fisheries.
369. The current TACC is generally fully caught, with most of the catch comprised of smooth oreo (around 2300 tonnes). The remainder of the catch is predominantly black oreo (average annual catch around 800 tonnes), with a nominal amount of spiky and warty oreo (<1% of the TACC).
370. The best available information indicates that there is no customary or recreational catch of oreo in OEO 4.

2.1.3 Environmental interactions

Seabirds

357. The National Plan of Action to reduce the incidental catch of seabirds in New Zealand Fisheries (NPOA Seabirds 2013), which is currently under review, is the driver for all actions to reduce the incidental mortality of seabirds from fishing.¹ It puts in place a risk-based approach to managing fishing interactions with seabirds, targeting mitigation to those species most at risk but also aiming to reduce overall captures.
358. The most recent seabird risk assessment was published in 2017.² The risk assessment calculates a species-level risk broken down by fishery group. Fishery groups are assigned on the basis of target species, vessel size and for trawl vessels targeting middle-depth species, and whether or not the vessel is a factory vessel. Vessels in the same fishery group are assumed to attract and capture birds in a similar way.
359. Seabird captures in trawl fisheries occur in two main ways. Seabirds either collide with or are struck by the moving trawl warps (usually larger seabirds), or are caught in the net when it is on the surface during deployment and retrieval (usually smaller seabirds). Regulations have been in place since 2005 requiring vessels >28m to deploy bird scaring devices.
360. In addition to this mandatory mitigation measure, Fisheries New Zealand and the fishing industry have worked collaboratively for over a decade to ensure all trawlers over 28 m in length have, and follow, a Vessel Management Plan (VMP). VMPs specify the measures that must be followed on board each vessel to reduce the risk of incidental seabird captures. Fisheries New Zealand observers monitor each vessel's performance against its VMP. If a vessel is not complying with the guidelines in its VMP, the Director-General has the option of imposing vessel-specific regulations to better control management practices.

Marine mammals

361. Fisheries New Zealand works closely with the fishing industry to increase awareness amongst the fleet of the risk of interactions with marine mammals, and emphasises the importance of adherence to the Deepwater Group 'Marine Mammals Operational Procedures' (MMOPs).
362. The MMOPs aim to reduce the risk of interactions with marine mammals by requiring that trawl vessels over 28m in length:
- i. minimise the length of time the fishing gear is on the surface;
 - ii. remove all dead fish from the net before shooting the gear;
 - iii. steam away from any congregations of marine mammals before shooting the gear; and
 - iv. appoint a crew member to watch for marine mammal interactions every time the gear; is shot or hauled.

¹ Accessible at: <https://www.mpi.govt.nz/dmsdocument/3962-national-plan-of-action-2013-to-reduce-the-incidental-catch-of-seabirds-in-new-zealand-fisheries>. The NPOA Seabirds is currently under review

² Accessible at: <http://www.mpi.govt.nz/dmsdocument/27531-aebr-191-assessment-of-the-risk-of-commercial-fisheries-to-nz-seabirds-2006-07-to-2014-15>

363. Performance in relation to these procedures is audited by Fisheries New Zealand observers. Fisheries New Zealand monitors the adherence of vessels with marine mammal mitigation measures throughout the year and responds to marine mammal captures as required.

Sharks

364. Management of sharks in New Zealand is driven by the National Plan of Action for Sharks (NPOA Sharks) 2013³, with the overarching purpose “To maintain the biodiversity and the long-term viability of all New Zealand shark populations by recognising their role in marine ecosystems, ensuring that any utilisation of sharks is sustainable, and that New Zealand receives positive recognition internationally for its efforts in shark conservation and management”.
365. Fisheries New Zealand will continue to monitor interactions of deepwater fisheries with sharks and will consider management action if impacts are found to pose a sustainability risk to any shark species.

Benthic environment

366. Management measures to mitigate the effects of deepwater trawl activity on benthic ecosystems have focused on spatial closures. This has been achieved through regulations closing areas to bottom trawling; first with seamount closures in 2001⁴ and then with Benthic Protection Areas⁵ in 2007. The implementation of Benthic Protection Areas effectively closed approximately 30% of the New Zealand Exclusive Economic Zone to bottom trawling.
367. Currently, a monitoring regime is followed to ensure that benthic closures are adhered to, and the environmental impacts of fishing are summarised annually by Fisheries New Zealand.⁶ Potential adverse effects caused by increased fishing effort can be limited if vessels trawl along previously-trawled towlines. Fisheries New Zealand monitors the annual bottom trawl footprint and catch of benthic organisms of deepwater trawl fisheries.

2.1.4 Current management approach

368. Oreo have been managed within the National Fisheries Plan for Deepwater and Middle-depths Fisheries (National Deepwater Plan⁷) as a Tier 1 stock. Tier 1 stocks are high volume and/or high value and are typically targeted. A fisheries-specific oreo chapter of the National Deepwater Plan was finalised in October 2013. The chapter sets the operational objectives and performance criteria for all oreo fisheries. It also addresses the management of environmental effects caused by fishing for oreo.
369. The TAC and TACC for OEO 4 are set based upon the status of the smooth oreo stock in relation to the default reference points from the Harvest Strategy Standard (Table 3). The TAC and TACC are set for all oreo species combined, although fishers report by species on landing returns. In OEO 4, the current management target is 40% of the unfished

³ Accessible at <http://fs.fish.govt.nz/Page.aspx?pk=165>

⁴ Through section 73 of Fisheries (Commercial Fishing) Regulations 2001, accessible at <http://legislation.govt.nz/regulation/public/2001/0253/46.0/DLM76407.html#DLM78041>

⁵ Accessible at <http://legislation.govt.nz/regulation/public/2007/0308/latest/DLM973968.html?src=qs>

⁶ Annual Review Report for Deepwater Fisheries 2016/17 <http://www.mpi.govt.nz/growing-and-harvesting/fisheries/fisheries-management/deepwater-fisheries/>

⁷ <https://www.mpi.govt.nz/dmsdocument/18779/loggedIn>

biomass (B_0), around which fisheries should be permitted to fluctuate with at least a 50% probability of achieving the target.

Table 3: Harvest Strategy for oreo: reference points and associated management responses

Reference point	Management response
Management target 40% B_0	Stock permitted to fluctuate around this management target. TAC/TACC changes will be employed to keep the stock around the target (with a 50% probability of being at the 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
Rebuild strategy	To be determined

370. The management of OEO 4 is supported by a quantitative stock assessment for smooth oreo undertaken every four years. The most recent assessment, in 2018, has been accepted by the Stock Assessment Plenary and the Deepwater Working Group (DWWG).

371. The most recent change to the OEO 4 TACC was in 2015/16, when it was reduced from 7000 tonnes to 3000 tonnes. The reduction followed the 2014 smooth oreo stock assessment, which indicated that the spawning stock biomass was below the management target of 40% B_0 (at 27% B_0) and declining, although this estimate is now considered to have been overly pessimistic.

372. Little is known about the stock status of black oreo, although catches are relatively stable at around 800 tonnes per year. The last stock assessment for black oreo, in 2009, was inconclusive and is therefore considered unreliable.

2.1.5 Current stock status

373. The 2018 smooth oreo stock assessment base model estimated that the current spawning stock biomass is at 40% B_0 and can support increased utilisation. An additional model run (using different values representing catchability and the natural mortality of smooth oreo) was considered to test the robustness of the base model to variations in input parameters (a sensitivity run). The result of the sensitivity run indicated that the stock could be as low as 33% B_0 and some uncertainty in stock status therefore remains⁸.

374. Probabilities of smooth oreo stock status relative to reference points, based upon five-year projections for various catch scenarios, are shown in Table 4. Projections using the base model indicate the stock is As Likely As Not⁹ to be at or above the management target of 40% B_0 in 2023 under all three options.

⁸ Further details (and uncertainties) of the model can be found here: <https://fs.fish.govt.nz/Doc/24613/May%20Plenary%202018%20-%20Volume%202.pdf.aspx>

⁹ Probabilities used to qualify statements regarding stock status in relation to management targets are based upon the IPCC 2007 verbal descriptors as outlined in the 2017 Plenary (>99% = Virtually Certain, >90% = Very Likely, >60% = Likely, 40-60% = About As Likely As Not, <40% = Unlikely, <10% = Very Unlikely, <1% = Exceptionally Unlikely). <https://fs.fish.govt.nz/Page.aspx?pk=113&dk=24474>

Table 4: Probabilities of smooth oreo stock status in relation to reference points based upon five-year projections from the 2018 stock assessment base case model and a sensitivity model for various smooth oreo catch scenarios.

Model	Catch (t)	Estimated smooth oreo stock status in 2023 (% B_0)	Probability of stock being at or below management target in 2023 (40% B_0)	Probability of stock being below the soft limit in 2023 (20% B_0)	Probability of stock being below the hard limit in 2023 (10% B_0)
Base	2300	42	0.44	0.01	0
	2900	40	0.50	0.01	0
	3300	39	0.54	0.02	0
Sensitivity	2300	35	0.72	0.02	0
	3000	34	0.79	0.04	0
	3300	33	0.81	0.05	0

2.1 OPTIONS CONSULTED ON

375. Fisheries New Zealand consulted on the *status quo* and three options for management settings for oreos in OEO 4. Options 1 to 3 included a non-regulatory species-specific catch limit for smooth oreo (Table 5).

Table 5. Proposed management settings in tonnes for OEO 4 from 1 October 2018, with the percentage change relative to the *status quo* in brackets.

Option	Total Allowable Catch (TAC)	Total Allowable Commercial Catch (TACC)	Smooth oreo non-regulatory limit (t)	Allowances		
				Customary Māori	Recreational	All other mortality to the stock caused by fishing
<i>Current settings</i>	3150	3000	-	0	0	150
Option 1	3465 ↑ (10%)	3300 ↑ (10%)	2300	0	0	165 ↑ (10%)
Option 2	4095 ↑ (30%)	3900 ↑ (30%)	2900	0	0	195 ↑ (30%)
Option 3	4515 ↑ (43%)	4300 ↑ (43%)	3300	0	0	215 ↑ (43%)

2.2 VIEWS OF SUBMITTERS

376. Seven submissions were received on the proposals for OEO 4 (listed alphabetically):

- a) Deepwater Group Ltd.
- b) Environment and Conservation Organisations of NZ, Inc. (ECO)
- c) Forest & Bird
- d) Kahungunu Asset Holding Company (Ngāti Kahungunu)
- e) Ngati Whatua Fisheries Ltd
- f) Sealord Ltd
- g) Te Ohu Kaimoana

377. In addition, Te Waka a Māui me Ōna Toka Iwi Forum (Te Waka a Māui) provided feedback.

2.3.1 Submissions received

378. Deepwater Group support Option 2 and agree to the proposed non-regulatory catch limit of 2900 tonnes for smooth oreo, on the basis that this scientifically informed increase will maintain the stock at or above sustainable limits. Deepwater Group did not indicate whether they would agree to a species-specific catch limit if another Option was selected.

379. ECO do not support an increase in the OEO 4 TACC and therefore prefer the *status quo*. They are concerned that increased effort in OEO 4 will increase benthic impacts of bottom trawling when there is no strategy to avoid, remedy or mitigate these impacts. They do claim that Benthic Protected Areas (BPAs) should not be considered in management decisions, as they afford inadequate protection to benthic ecosystems because the areas they encompass are not fished, or are too deep to fish.

380. Forest & Bird's submission encompasses the four deepwater stocks for which management options were consulted upon in this sustainability review (orange roughy, ling, oreo and scampi). Forest & Bird consider the environmental impacts of trawl fisheries to be inadequately managed at present. They do not support a TAC increase for any of these stocks, on the basis of irreversible damage caused to vulnerable marine ecosystems by bottom trawling, and due to bycatch levels that they consider to be unacceptable.

381. Forest & Bird recommend that the *status quo* is retained for these stocks, and that you address the environmental impacts of these fisheries before any consideration to increase TACs are progressed.

382. Ngati Whatua Fisheries support Option 3, but did not provide rationale to support their decision. As part of their submission, Ngati Whatua Fisheries Ltd expressed support for a realigned customary allowance but did not detail what a realigned customary allowance entailed.

383. Kahungunu Asset Holding Company supported Option 2, but did not provide rationale to support their decision.

384. Sealord support Option 2 and agree to the proposed non-regulatory catch limit of 2900 tonnes for smooth oreo, but did not provide rationale to support their decision.

385. Te Ohu Kaimoana support Option 2 and support the proposed non-regulatory catch limit of 2900 tonnes for smooth oreo. Their decision is based upon the utilisation opportunity identified by the 2018 stock assessment, which shows that current unfished biomass is at management targets and that this level of catch has only a 4% chance of the stock declining below the soft limit in five years.

2.3.2 Input and participation of tangata whenua

386. 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.
387. Options for OEO 4 were presented to the Te Waka a Māui me Ōna Toka Iwi Forum (Te Waka a Māui) on 17 July 2018. Te Waka a Māui represents the nine iwi of the South Island, each holding mana moana and significant interests (both commercial and non-commercial) in South Island fisheries. Te Waka a Māui supported a review of the OEO 4 fishery, and its input and views have been incorporated into this advice to you.
388. In general, Te Waka a Māui considers that substantial changes to the TAC and/or TACC (e.g. 20% or more) need to be accompanied by scientific recommendations that the changes proposed are sustainable for at least the next five years to ensure the long-term sustainability of the stock. Te Waka a Māui supports Option 2, on the condition that these scientific recommendations are met.
389. With respect to customary allowances, Te Waka a Māui states that (a) the data on the customary allowance is inaccurate and (b) that customary take is regulated by iwi and is based on need. They support a customary allowance of five tonnes, but did not provide information suggesting that there is currently customary take in OEO 4.

2.3.3 Kaitiakitanga

390. Relevant Iwi or Forum Fish Plans provide a view of the objectives and outcomes iwi seek from the management of fisheries and can provide an indication of how iwi exercise kaitiakitanga over fisheries resources. Iwi views from Forum meetings and submissions received from iwi can also provide an indication of kaitiakitanga.
391. The Chatham Island Fisheries Forum Plan considers all fish species taonga. In addition, oreos are identified as taonga species in the Te Waka a Māui Forum Fisheries Plan, which contains objectives to support and provide for the fisheries interests of South Island iwi and contains two objectives which are relevant to the management options proposed for OEO 4.
- a) Management objective 3: 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; and
 - b) Management objective 5: to restore, maintain and enhance the mauri and wairua of fisheries throughout the South Island.
392. Fisheries New Zealand considers that the management options presented in this advice paper will contribute towards the achievement of these management objectives in ensuring that appropriate the fishery remains sustainable, and that environmental impacts are minimised.

2.3 SETTING THE TAC

393. Fisheries New Zealand proposes that you review the TAC under section 13(2)(a) of the Act to maintain OEO 4 at or above a level that can produce the maximum sustainable yield, having regard to the interdependence of stocks. See “Statutory Considerations” Part 1.8 for a full description of these principles.
394. Under section 13(3) of the Act, you shall have regard to such social, cultural and economic factors you consider to be relevant when determining the way in which and rate at which a stock is moved towards or above a level that can produce the maximum sustainable yield.
395. Under all options, the TAC provides 1000 tonnes for the combined catch of black, warty and spiky oreos, in line with the previous sustainability review for OEO 4 in 2015.
396. Section 9 of the Act prescribes three environmental principles that you must take into account when exercising powers in relation to the utilisation of fisheries resources or ensuring sustainability. See “Statutory Considerations” Part 1.4 for a full description of these environmental principles.
397. All three Options will result in some increase in fishing effort targeting oreo in OEO 4. This may increase the risk of adverse effects on associated or dependant species, biological diversity of the aquatic environment, or habitat of particular significance for fisheries management.
398. The three options proposed will increase fishing effort targeting oreo in OEO 4. Fisheries New Zealand considers that the proposed options adequately take into account the Management Objectives and considerations in sections 9 and 11 of the Act. However, there is the possibility that a higher TAC may increase adverse effects on the associated or dependent species, the biological diversity of the aquatic environment or any habitat of particular significance. Mitigation of environmental impacts of fishing are outlined in section 2.1.3 above.
399. Oreo target fishing is considered to pose low risk to seabirds and marine mammals. Between 2003/03 and 2015/16, 1.2% of observed seabird captures and less than 1% of observed tows where New Zealand fur seals were captured were attributed to orange roughy and oreo trawl fisheries¹⁰.
400. Increased fishing effort in OEO 4 could increase impacts upon benthic invertebrate communities caused by bottom trawling, if the trawl footprint is expanded. However, oreo target fishing is unlikely to occur in areas beyond those previously trawled when the TACC was substantially higher prior to 2015/16, limiting novel adverse impacts. Forest & Bird and ECO have submitted that Benthic Protection Areas are ineffective because they don't protect areas impacted by fishing. Moreover, Fisheries New Zealand considers that the Benthic Protection Areas do contribute to protection of deepwater habitat.
401. An increase in the OEO 4 TAC is likely to increase catch of associated fish species. The main bycatch species associated with oreo fishing includes orange roughy, hoki, seal sharks and other deepwater sharks. Fisheries New Zealand will continue to monitor

¹⁰ Aquatic Environment and Biodiversity Annual Review 2017, Table 8.19, available here: <https://www.mpi.govt.nz/news-and-resources/open-data-and-forecasting/fisheries/>

interactions with deepwater sharks in oreo fisheries and consider management action if impacts are found to pose a sustainability risk to any deepwater shark species.

402. No habitat of particular significance for fisheries management, as per section 9(c) of the Act, has been determined for the OEO 4 stock.

403. Section 11 of the Act sets out various matters that you must take into account or have regard to when setting or varying any sustainability measure (such as a TAC), including any effects of fishing on the stock and the aquatic environment as well as any relevant fisheries plan. See section 1.6 in *Part 2: Statutory Considerations* for a full description.

2.4.1 Current settings

404. Maintaining the current settings would result in no change to catch limits or allowances, and fishing-related impacts on the environment would remain unchanged. While maintaining the current settings would not introduce a species-specific catch limit for smooth oreo within the OEO 4 TAC, average catches within the current TAC have been around 2,300 tonnes, which is similar to the species-specific limit proposed in Option 1.

405. This Option was favoured by two environmental non-governmental organisations, which expressed concern about environmental impacts associated with an increase in effort.

2.4.2 Option 1

406. Option 1 is a proposal to increase the TAC from 3150 to 3465 tonnes, based on recent catch of smooth oreo and the outcome of five-year stock projections. Option 1 contains a proposal that the catch of smooth oreo is limited by implementing a non-regulatory species-specific catch limit of 2300 tonnes within the TACC.

407. Projections based on the 2018 stock assessment base model indicate that smooth oreo catch of 2300 tonnes results in a 44% probability of the stock being below the management target in 2023, with an estimated 2023 spawning stock biomass of 42% B_0 . Under this scenario, it is Exceptionally Unlikely (<1%) that the stock would approach either the soft or hard limit (Table 4).

408. Projections using a more pessimistic sensitivity model suggest that the current annual smooth oreo catch of 2300 tonnes may result in a 72% probability of the stock being below the management target in 2023. However, these projections do indicate that the stock would continue to increase under these catch levels (to 35% B_0 in 2023), and have a Very Unlikely probability (2%) of being below the soft limit in 2023.

409. A 315 tonne TAC increase as proposed under Option 1 would effectively increase fishing effort taking species other than smooth oreo as target or bycatch in OEO 4. Fisheries New Zealand will continue to manage the environmental impacts of fishing as outlined in section 2.1.3 above. Fisheries New Zealand does not consider that the risk to seabirds and marine mammals will change under Option 1, given the overall low risk posed by oreo fishing to these species as outlined in paragraph 399 above.

410. A TAC increase may increase adverse environmental effects as outlined in section 2.4, the most likely being an increase in benthic impacts. However, under Option 1, oreo target fishing is unlikely to occur in areas beyond those currently trawled if the smooth oreo catch limit of 2300 tonnes is adhered to, which reflects current catch.

411. Option 1 has the most conservative TAC increase of the proposed options (and would not realise the full utilisation opportunity) in OEO 4, but does provide for a potential revenue increase of around NZD \$978,000, relative to a non-regulatory catch limit of 2000 tonnes for smooth oreo as proposed during the 2015/16 sustainability round and based upon the current average export value for smooth oreo.
412. Option 1 was not favoured by any submitters.
- 2.4.3 Option 2 (Fisheries New Zealand recommended)
413. Option 2 is a proposal to increase the TAC from 3150 to 4095 tonnes, with a species-specific smooth oreo catch limit of 2900 tonnes within the TACC that you may set. Projections based on the 2018 stock assessment base model indicate that annual smooth oreo catch of 2900 tonnes would result in a 50% probability of the stock being below the management target in 2023, with an estimated 2023 spawning stock biomass of 40% B_0 . Under this scenario, it is Very Unlikely that stocks would approach soft or hard limits.
414. Projections using a sensitivity model that was more pessimistic suggest that annual smooth oreo catch of 2900 tonnes could result in a 79% probability of the stock being below the management target in 2023. However, these projections do indicate the stock would continue to increase under these catch levels (to 34% B_0 in 2023), and have only a 4% probability of being below the soft limit in 2023.
415. Option 2 will result in increased fishing effort targeting oreo in OEO 4, which may result in increased risk of adverse environmental effects as outlined in section 2.4 above.
416. Oreo target fishing is considered to pose low risk to seabirds and marine mammals, as outlined in paragraph 399 above. Fisheries New Zealand does not consider that this risk will change with the 900 tonne TACC increase proposed under Option 2, given the very low numbers of observed seabird and fur seal captures attributed to orange roughy and oreo trawl fisheries between 2003/03 and 2015/16¹¹, when the OEO 4 TACC was substantially higher. Observer coverage of deepwater trawling in OEO 4 was 24% in 2017/18.
417. Increased fishing effort in OEO 4 could increase impacts upon benthic invertebrate communities caused by bottom trawling if the trawl footprint is expanded. However, oreo target fishing is unlikely to occur in areas beyond those previously trawled prior to 2015/16 when the TACC was much higher, limiting novel adverse impacts.
418. An increase in the OEO 4 TAC to the level proposed in Option 2 is likely to increase catch of associated fish species. The main bycatch species associated with oreo fishing includes orange roughy, hoki, seal sharks and other deepwater sharks. Fisheries New Zealand will continue to monitor interactions with deepwater sharks in oreo fisheries and consider management action if impacts are found to pose a sustainability risk to any deepwater shark species.
419. Adopting Option 2 would provide a potential revenue increase of around NZD \$2.9 million, relative to a non-regulatory catch limit of 2000 tonnes for smooth oreo proposed

¹¹ Aquatic Environment and Biodiversity Annual Review 2017, Table 8.19, available here: <https://www.mpi.govt.nz/news-and-resources/open-data-and-forecasting/fisheries/>

during the 2015/16 sustainability round and based upon the current average export value for smooth oreo.

420. This Option was favoured by four submitters, including the commercial sector. Deepwater Group Ltd (which represents 91% of deepwater fishing quota owners) and Te Ohu Kaimoana preferred this Option on the basis of favourable 2018 smooth oreo stock assessment information underpinning the proposal. The other submitters did not provide rationale.
421. Under Option 2, Fisheries New Zealand notes that you would expect that a non-regulatory agreement to limit the catch of smooth oreo within the TACC to 2900 tonnes would be implemented by industry. Increasing the TAC whilst restricting smooth oreo catch to levels amenable to maintaining management targets would be achieved through such an agreement. The two submissions received from the commercial sector support a non-regulatory smooth oreo catch limit of 2900 tonnes.

2.4.4 Option 3

422. Option 3 is a proposal to increase the TAC from 3150 to 4515 tonnes, with a species-specific smooth oreo catch limit of 3300 tonnes applying within the TACC that you decide. This option would maximise the utilisation opportunity indicated by the current assessment, while ensuring the probability of the stock declining below soft and hard limits remains Very Unlikely.
423. Projections based on the 2018 stock assessment base model indicate that annual smooth oreo catch of 3300 tonnes would result in a 54% probability of the stock being below the management target in 2023, with an estimated 2023 spawning stock biomass of 39% B_0 . Under this scenario, it is Very Unlikely that stocks would approach soft or hard limits.
424. Projections using a more pessimistic sensitivity model suggest that an annual smooth oreo catch of 3300 tonnes would result in an 81% probability of the stock being below the management target in 2023, with an estimated stock status of 33% B_0 in 2023. However, the probability of the stock declining below the soft limit is only 5%.
425. Like Options 1 and 2, Option 3 will increase fishing effort targeting oreo in OEO 4, which may result in adverse environmental effects, but this risk is mitigated as outlined in section 2.4 above.
426. As outlined in paragraph 399, oreo target fishing is considered to pose low risk to seabirds and marine mammals. For all three Options, Fisheries New Zealand does not consider that this risk will change, given the very low numbers of observed seabird and fur seal captures attributed to orange roughy and oreo trawl fisheries between 2003/03 and 2015/16¹², when the OEO 4 TACC was substantially higher.
427. Increased fishing effort in OEO 4 could increase impacts upon benthic invertebrate communities caused by bottom trawling if the trawl footprint is expanded. However, oreo target fishing is unlikely to occur in areas beyond those previously trawled prior to 2015/16 when the TACC was much higher, limiting novel adverse impacts.

¹² Aquatic Environment and Biodiversity Annual Review 2017, Table 8.19, available here: <https://www.mpi.govt.nz/news-and-resources/open-data-and-forecasting/fisheries/>

428. An increase in the OEO 4 TAC is likely to increase catch of associated fish species. The main QMS bycatch species associated with oreo fishing includes orange roughy and hoki which are catch limited. Non-QMS species include seal sharks and other deepwater sharks. Fisheries New Zealand will continue to monitor interactions with deepwater sharks in oreo fisheries and consider management action if impacts are found to pose a sustainability risk to any deepwater shark species.
429. Option 3 maximises the opportunity for additional utilisation, including a potential revenue increase of around NZD \$4.2 million (relative to a non-regulatory catch limit of 2000 tonnes for SSO proposed during the 2015/16 sustainability round, and based upon the current average export value for smooth oreo).
430. One submitter, Ngati Whatua Fisheries, Ltd. favoured this Option, but did not provide rationale.
431. Fisheries New Zealand does not recommend that you choose Option 3 because of the increased probability of the stock being below the management target in 5 years, and the outputs of the sensitivity run which indicates the stock could potentially decline under this option and remain below the management target.

2.4 ALLOCATING THE TAC

432. Having set the TAC, you must set the TACC, and in setting or varying the TACC, you must make allowances for Māori customary non-commercial fishing interests, recreational fishing interests, and all other mortality to the stock caused by fishing (s 20 & 21 of the Act).

2.4.1 Māori customary allowance

433. There is currently no allowance for Māori customary non-commercial catch in OEO 4. Fisheries New Zealand proposes to retain the current allowance of zero for customary Māori fishing, as best available information suggests that the current allowance reflects customary catch, and no information to the contrary was received as a result of the consultation process.
434. Te Waka a Māui support a customary allowance of five tonnes, but did not provide information suggesting that there is currently customary take in OEO 4.

2.4.2 Recreational allowance

435. There is currently no known recreational catch of oreo in OEO 4. No recreational allowance is proposed under any of the options presented, noting this does not preclude any recreational take.

2.5.3 Allowance for other sources of mortality caused by fishing

436. Other sources of fishing-related mortality is an allowance to account for unreported oreo mortality, such as loss due to burst nets and illegal take.
437. For OEO 4, the current allowance for other sources of fishing-related mortality is set at 5% of the TACC. In the absence of further information on this subject, Fisheries New

Zealand proposes in all options to retain the current proportional allowance at 5% of the TACC.

2.5.4 TACC

438. Increasing the TACC for OEO 4 would enable commercial fishers to take advantage of the utilisation opportunity that exists for this stock. Retaining the *status quo* would result in foregoing that opportunity.
439. Increasing the TACC would result in economic benefits to fishers, as discussed under each of the proposed Options above.
440. Fisheries New Zealand's preferred option is for a TACC of 3900 tonnes, within which a species specific catch limit of 2900 tonnes would apply for smooth oreos.

2.6 OTHER MANAGEMENT CONTROLS

2.6.1 Non-regulatory smooth oreo catch limit

441. It is proposed that a non-regulatory mechanism is introduced in OEO 4 for the first time to implement a species-specific catch limit arrangement to constrain the smooth oreo catch within the TACC. This would require the cooperation of OEO 4 quota owners. It would be formally administered through FishServe¹³, and audited and reported on annually by Fisheries New Zealand.
442. The two submissions received from the commercial sector support a non-regulatory smooth oreo catch limit of 2900 tonnes, as proposed under Option 2. If your preference was for an alternative Option apart from the *status quo*, Fisheries New Zealand would expect a non-regulatory agreement with the fishing industry for the corresponding smooth oreo limit suggested in Table 1.
443. Non-regulatory agreements are successfully implemented in other deepwater fisheries. If implemented, non-adherence to any agreed limit could result in the consideration of regulatory measures.

2.6.2 Deemed value rates

444. No deemed value payments have been required for this fishery since 2014/15, and Fisheries New Zealand considers that the current deemed value rates are appropriate. No changes are proposed to the deemed value rates for OEO 4.

¹³FishServe is a wholly-owned subsidiary of Seafood New Zealand and is responsible for the administration of catch reporting requirements.

3 Conclusion and Recommendation

445. Fisheries New Zealand consulted on increasing the TAC, TACC, and allowances for the OEO 4 stock on the basis of the 2018 stock assessment indicating that a utilisation opportunity exists.
446. Of the seven submissions received on the consultation document, two submissions stated a preference for retaining the *status quo*, four stated a preference for increasing the TAC from 3150 to 4095 tonnes (Option 2), while one stated a preference for increasing the TAC from 3150 to 4515 (Option 3).
447. The 2018 stock assessment and associated projections represent the best available information for smooth oreo in OEO 4. Fisheries New Zealand recommends that you agree to Option 2, a 30% increase to the TAC and TACC for this stock. This Option is consistent with your obligations under the Fisheries Act 1996 and will provide a direct economic benefit to the fishing industry.
448. The next assessment for this stock is scheduled for 2021. This will indicate whether or not the increase in catch in OEO 4 has had any measurable effect on the status of the stock.

Option 1

Agree to increase the OEO 4 TAC from 3150 to 3465 tonnes and within the TAC:

- i. Retain the nil allowance for Māori customary non-commercial fishing interests;
- ii. Retain the nil allowance for recreational fishing interests;
- iii. Increase the allowance for other sources of fishing related mortality from 150 to 165 tonnes;
- iv. Increase the OEO 4 TACC from 3000 to 3300 tonnes

Agreed / Agreed as Amended / Not Agreed

AND

Note that as part of managing the OEO 4 fishery, by way of other non-statutory management measures, Fisheries New Zealand expects that Industry will implement and adhere to the following sub-stock catch limits within the TACC and will monitor the fishery to this effect:

- v. a non-regulatory smooth oreo catch limit within the TACC of 2300 tonnes.

Noted

OR

Option 2 (Fisheries New Zealand recommended)

Agree to increase the OEO 4 TAC from 3150 to 4095 tonnes and within the TAC:

- i. Retain the nil allowance for Māori customary non-commercial fishing interests;

- ii. Retain the nil allowance for recreational fishing interests;
- iii. Increase the allowance for other sources of fishing related mortality from 150 to 195 tonnes;
- iv. Increase the OEO 4 TACC from 3000 to 3900 tonnes

Agreed / Agreed as Amended / Not Agreed

AND

Note that as part of managing the OEO 4 fishery, by way of other non-statutory management measures, Fisheries New Zealand expects that Industry will implement and adhere to the following sub-stock catch limits within the TACC and will monitor the fishery to this effect:

- v. a non-regulatory smooth oreo catch limit within the TACC of 2900 tonnes.

Noted

OR

Option 3

Agree to increase the OEO 4 TAC from 3150 to 4515 tonnes and within the TAC:

- i. Retain the nil allowance for Māori customary non-commercial fishing interests;
- ii. Retain the nil allowance for recreational fishing interests;
- iii. Increase the allowance for other sources of fishing related mortality from 150 to 215 tonnes;
- iv. Increase the OEO 4 TACC from 3000 to 4300 tonnes

Agreed / Agreed as Amended / Not Agreed

AND

Note that as part of managing the OEO 4 fishery, by way of other non-statutory management measures, Fisheries New Zealand expects that Industry will implement and adhere to the following sub-stock catch limits within the TACC and will monitor the fishery to this effect:

- v. a non-regulatory smooth oreo catch limit within the TACC of 3300 tonnes.

Noted

Hon Stuart Nash
Minister of Fisheries
/ /2018

3 Conclusion and Recommendation

445. Fisheries New Zealand consulted on increasing the TAC, TACC, and allowances for the OEO 4 stock on the basis of the 2018 stock assessment indicating that a utilisation opportunity exists.
446. Of the seven submissions received on the consultation document, two submissions stated a preference for retaining the *status quo*, four stated a preference for increasing the TAC from 3150 to 4095 tonnes (Option 2), while one stated a preference for increasing the TAC from 3150 to 4515 (Option 3).
447. The 2018 stock assessment and associated projections represent the best available information for smooth oreo in OEO 4. Fisheries New Zealand recommends that you agree to Option 2, a 30% increase to the TAC and TACC for this stock. This Option is consistent with your obligations under the Fisheries Act 1996 and will provide a direct economic benefit to the fishing industry.
448. The next assessment for this stock is scheduled for 2021. This will indicate whether or not the increase in catch in OEO 4 has had any measurable effect on the status of the stock.

Option 1

Agree to increase the OEO 4 TAC from 3150 to 3465 tonnes and within the TAC:

- i. Retain the nil allowance for Māori customary non-commercial fishing interests;
- ii. Retain the nil allowance for recreational fishing interests;
- iii. Increase the allowance for other sources of fishing related mortality from 150 to 165 tonnes;
- iv. Increase the OEO 4 TACC from 3000 to 3300 tonnes

Agreed / Agreed as Amended / Not Agreed

AND

Note that as part of managing the OEO 4 fishery, by way of other non-statutory management measures, Fisheries New Zealand expects that Industry will implement and adhere to the following sub-stock catch limits within the TACC and will monitor the fishery to this effect:

- v. a non-regulatory smooth oreo catch limit within the TACC of 2300 tonnes.

Noted

OR

Option 2 (Fisheries New Zealand recommended)

Agree to increase the OEO 4 TAC from 3150 to 4095 tonnes and within the TAC:

- i. Retain the nil allowance for Māori customary non-commercial fishing interests;

- ii. Retain the nil allowance for recreational fishing interests;
- iii. Increase the allowance for other sources of fishing related mortality from 150 to 195 tonnes;
- iv. Increase the OEO 4 TACC from 3000 to 3900 tonnes

Agreed / Agreed as Amended / Not Agreed

AND

Note that as part of managing the OEO 4 fishery, by way of other non-statutory management measures, Fisheries New Zealand expects that Industry will implement and adhere to the following sub-stock catch limits within the TACC and will monitor the fishery to this effect:

- v. a non-regulatory smooth oreo catch limit within the TACC of 2900 tonnes.

Noted

OR

Option 3

Agree to increase the OEO 4 TAC from 3150 to 4515 tonnes and within the TAC:

- i. Retain the nil allowance for Māori customary non-commercial fishing interests;
- ii. Retain the nil allowance for recreational fishing interests;
- iii. Increase the allowance for other sources of fishing related mortality from 150 to 215 tonnes;
- iv. Increase the OEO 4 TACC from 3000 to 4300 tonnes

Agreed / Agreed as Amended / Not Agreed

AND

Note that as part of managing the OEO 4 fishery, by way of other non-statutory management measures, Fisheries New Zealand expects that Industry will implement and adhere to the following sub-stock catch limits within the TACC and will monitor the fishery to this effect:

- v. a non-regulatory smooth oreo catch limit within the TACC of 3300 tonnes.

Noted

Option 4:
 TAC: 3780 tonnes
 TACC: 3600 tonnes
 Smooth oreo non-regulatory catch limit = 2600 tonnes
 Māori = 0 tonnes
 Recreational = 0 tonnes

Stuart Nash
Hon Stuart Nash
 Minister of Fisheries
 13 / 9 / 2018

Agreed

Orange roughy (ORH 3B)

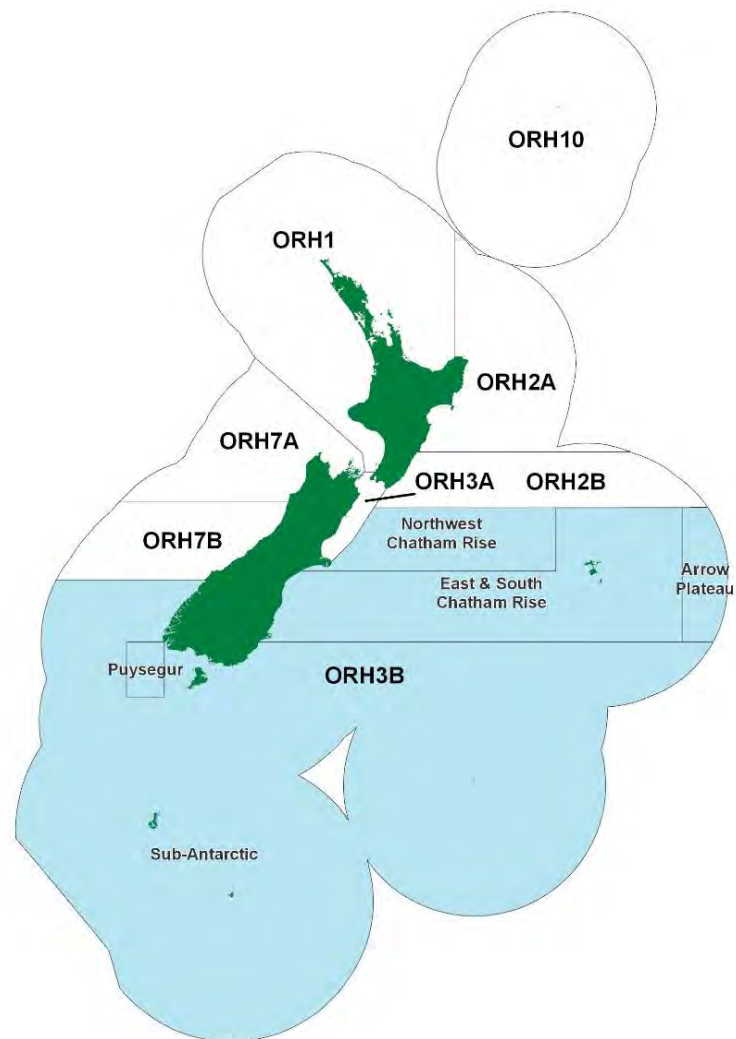


Figure 1: Quota management areas for orange roughy (ORH), with ORH 3B and its sub-areas highlighted in blue.

1 Summary

449. Fisheries New Zealand consulted on management settings for orange roughy (*Hoplostethus atlanticus*; nihorota) in quota management area (QMA) 3B (ORH 3B, Figure 1) which covers the Chatham Rise, the southern west coast of the South Island, and the Sub-Antarctic.

450. Three options were proposed in the consultation paper (Table 1):

Table 1. Proposed management settings in tonnes for ORH 3B from 1 October 2018, with the percentage change relative to the *status quo* in brackets

Option	Total Allowable Catch (TAC)	Total Allowable Commercial Catch (TACC)	Allowances		
			Customary Māori	Recreational	All other mortality to the stock caused by fishing
Option 1 (<i>Status quo</i>)	5470	5197	5	0	268
Option 2	8055 ↑ (47%)	7667 ↑ (47%)	5	0	383 ↑ (43%)
Option 3 (year 1)	6413 ↑ (17%)	6091 ↑ (17%)	5	0	317 ↑ (18%)
(year 2)	7116 ↑ (30%)	6772 ↑ (30%)	5	0	339 ↑ (26%)
(year 3)	8055 ↑ (47%)	7667 ↑ (47%)	5	0	383 ↑ (43%)

451. No change is proposed to deemed value rates for ORH 3B (Table 2):

Table 2: Special deemed value rates (\$/kg) for ORH 3B

	Interim Rate (\$/kg)	Annual Differential Rates (\$/kg) for excess catch (% of ACE)	
		100-110%	>110%
<i>Status quo</i>	2.50	5.00	6.25

452. Seven submissions were received on the proposal. Two submissions expressed support for Option 1 (*status quo*); three submissions expressed support for Option 2, and two submissions expressed support for Option 3.

453. Fisheries New Zealand recommends that you agree to approve Option 3, because despite the apparent large increase in orange roughy biomass in the East and South Chatham Rise area of ORH 3B, the history of orange roughy fisheries suggest a cautious response to this increase is required. A staged approach provides the opportunity for further rebuilding of the stock within the target range and monitoring the response of the fishery to staged increases.

2 Need for review

454. A utilisation opportunity exists for ORH 3B. The best available information from 2018 ORH 3B stock assessments suggests that sub-area catch limits for Northwest Chatham Rise and East & South Chatham Rise could be changed; specifically, a small decrease to the Northwest Chatham Rise sub-area catch limit offset by the potential for a significant increase to the East & South Chatham Rise sub-area catch limit.

2.1 CONTEXT

2.1.1 Biological characteristics of orange roughy

455. Orange roughy is a slow growing species that lives up to 120-130 years. Spawning occurs once a year between June and early August in several areas within the New Zealand Exclusive Economic Zone (EEZ), from the Bay of Plenty in the north to the Auckland

Islands in the south. Spawning occurs in dense aggregations at depths of 700 to 1000m, and is often associated with bottom features such as pinnacles and canyons.

456. Genetics, geographical separation and distribution of orange roughy indicate that there are at least four biological stocks within ORH 3B – Northwest Chatham Rise, South East Chatham Rise, Sub-Antarctic and Puysegur. The Chatham Rise is managed as two separate stocks – Northwest Chatham Rise and East and South Chatham Rise. The rest of ORH 3B is managed as a separate stock.

2.1.2 Fishery characterisation

Customary Māori fishery

457. Orange roughy (nīhorota) is not caught by Māori customary fishers due to the depths that the species is found, however there is an existing customary allowance of 5 tonnes for ORH 3B.

Recreational fishery

458. Orange roughy is not caught by recreational fishers for the same reason as customary fishers. There is no allowance for recreational fishing.

Commercial fishery

459. All landed orange roughy is caught by the commercial fishing sector. Commercial orange roughy fishing uses the bottom trawling method, targeting aggregations. The main fishing grounds in ORH 3B are on the Chatham Rise, with smaller fisheries occurring to the south at Puysegur and the sub-Antarctic (Figure 1).

460. Annual orange roughy landings from ORH 3B have been less than the TACC over the last ten years, with undercatch ranging between 2% and 30% of the TACC (Figure 2); the annual average undercatch over ten years was 13%.

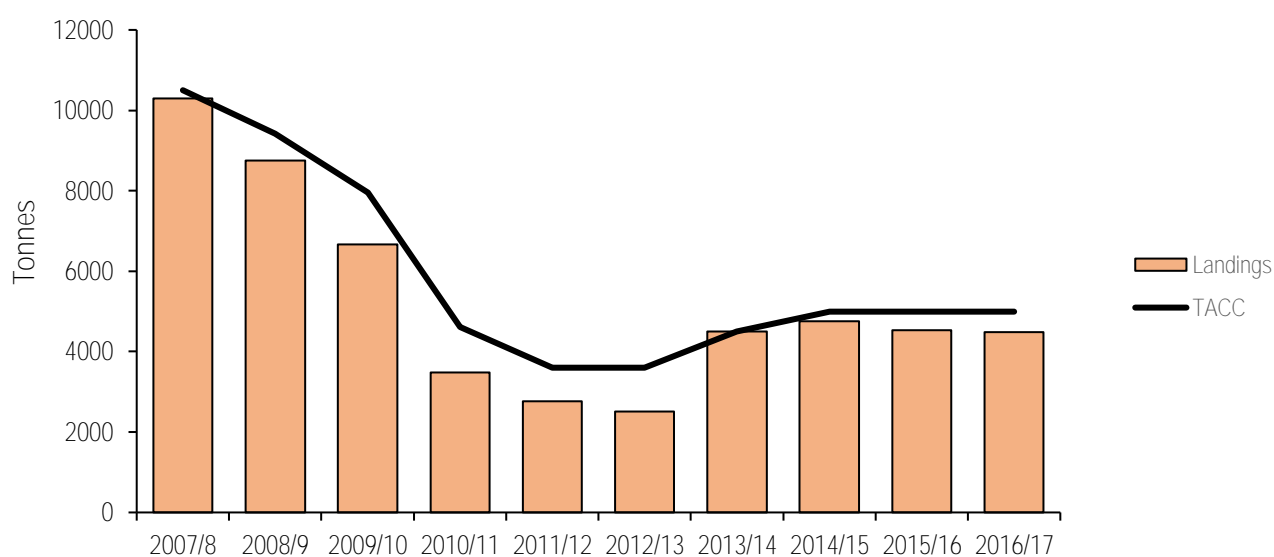


Figure 2: Commercial landings and Total Allowable Commercial Catch (TACC) for ORH 3B from 2007/08 to 2016/17

2.1.3 Environmental Impacts

Seabirds

461. The National Plan of Action – 2013 to reduce the incidental catch of seabirds in New Zealand Fisheries (NPOA Seabirds), which is currently under review, is the driver for all actions to reduce the incidental mortality of seabirds from fishing.¹ It puts in place a risk-based approach to managing fishing interactions with seabirds, targeting mitigation on those species most at risk but also aiming to reduce captures overall.
462. The most recent seabird risk assessment was published in 2017.² The risk assessment calculates a species-level risk broken down by fishery group. Fishery groups were assigned on the basis of target species, vessel size and for trawl vessels targeting middle-depth species, whether or not the vessel was a factory vessel. Vessels in the same fishery group are assumed to attract and capture birds in a similar way.
463. Seabird captures in trawl fisheries occur in two main ways. Seabirds either collide with or are struck by the moving trawl warps (usually larger seabirds), or are caught in the net when it is on the surface during deployment and retrieval (usually smaller seabirds). Regulations have been in place since 2005 requiring vessels over 28m to deploy bird scaring devices.
464. In addition to the mandatory mitigation measures, Fisheries New Zealand and the fishing industry have worked collaboratively for over a decade to ensure all trawlers over 28m in length have, and follow, a Vessel Management Plan. Vessel Management Plans specify the measures that must be followed on board each vessel so as to reduce the risk of incidental seabird captures. Fisheries New Zealand observers monitor each vessel's performance against its Vessel Management Plan, and if a vessel is not complying with the guidelines in its Vessel Management Plan, the Director-General has the option of imposing vessel-specific regulations to better control management practices under the provisions of Regulation 58A of the Fisheries (Commercial Fishing) Regulations 2001

Marine mammals

465. Fisheries New Zealand works closely with the fishing industry to increase awareness amongst the fleet of the risk of interactions with marine mammals, and emphasises the importance of adherence to the Deepwater Group 'Marine Mammals Operational Procedures' (MMOP).
466. The MMOP aims to reduce the risk of interactions with marine mammals by requiring that trawl vessels over 28m in length:
- a) minimise the length of time the fishing gear is on the surface;
 - b) remove all dead fish from the net before shooting the gear;
 - c) steam away from any congregations of marine mammals before shooting the gear; and
 - d) appoint a crew member to watch for marine mammal interactions every time the gear is shot or hauled.

¹ Accessible at: <https://www.mpi.govt.nz/dmsdocument/3962-national-plan-of-action-2013-to-reduce-the-incidental-catch-of-seabirds-in-new-zealand-fisheries>

² Accessible at: <http://www.mpi.govt.nz/dmsdocument/27531-aebr-191-assessment-of-the-risk-of-commercial-fisheries-to-nz-seabirds-2006-07-to-2014-15>

467. Performance in relation to these procedures is audited by Fisheries New Zealand observers. Fisheries New Zealand monitors the adherence of vessels with marine mammal mitigation measures throughout the year and responds to marine mammal captures as required.

Sharks

468. Management of sharks in New Zealand is driven by the National Plan of Action for Sharks (NPOA Sharks) 2013³, with the overarching purpose “To maintain the biodiversity and the long-term viability of all New Zealand shark populations by recognising their role in marine ecosystems, ensuring that any utilisation of sharks is sustainable, and that New Zealand receives positive recognition internationally for its efforts in shark conservation and management.”
469. An increase in the ORH 3B TACC at the level proposed will increase catch of associated fish species. The main QMS bycatch species associated with orange roughy fishing are oreo and hoki which are catch limited. Non-QMS species include seal sharks and other deepwater sharks including shovel-nosed dogfish, Lucifer’s dogfish, and Baxter’s dogfish.
470. Fisheries New Zealand will continue to monitor interactions with deepwater sharks in the orange roughy fisheries and will consider management action if impacts are found to pose a sustainability risk to any deepwater shark species.

Benthic environment

471. Management measures to mitigate the effects of deepwater trawl activity on benthic ecosystems have focused on spatial closures. This has been achieved through regulations closing areas to bottom trawling; first with seamount closures in 2001⁴ (three of the closures are within the ORH 3B QMA) and then with Benthic Protection Areas⁵ in 2007 (three of the Benthic Protection Areas are within the ORH 3B QMA). The implementation of Benthic Protection Areas effectively closed approximately 30% of the New Zealand EEZ to bottom trawling.
472. Currently, a monitoring regime is followed to ensure that benthic closures are adhered to, and the environmental impacts of fishing are summarised annually by Fisheries New Zealand.⁶ Potential adverse effects caused by increased fishing effort can be limited if vessels trawl along previously-trawled tows. Fisheries New Zealand will continue to monitor the annual bottom trawl footprint of orange roughy and other deepwater fisheries.

2.1.4 Status of the stock

Management approach

473. Orange roughy has been managed within the National Fisheries Plan for Deepwater and Middle-depths Fisheries (National Deepwater Plan) as a Tier 1 stock. Tier 1 stocks are high volume and/or high value and are typically targeted. A fisheries-specific orange roughy chapter of the National Deepwater Plan was finalised in February 2010.

³ Accessible at <http://fs.fish.govt.nz/Page.aspx?pk=165>

⁴ Through section 73 of Fisheries (Commercial Fishing) Regulations 2001, accessible at <http://legislation.govt.nz/regulation/public/2001/0253/46.0/DLM76407.html#DLM78041>

⁵ Accessible at <http://legislation.govt.nz/regulation/public/2007/0308/latest/DLM973968.html?src=qs>

⁶ Annual Review Report for Deepwater Fisheries 2016/17 <http://www.mpi.govt.nz/growing-and-harvesting/fisheries/fisheries-management/deepwater-fisheries/>

The chapter set the operational objectives and performance criteria for all orange roughy fisheries. It also addresses the management of environmental effects caused by fishing for orange roughy.

474. The ORH 3B QMA is a large and spatially complex area that comprises four individual sub-stocks (Figure 1). You set the total allowable catch (TAC) for the ORH 3B stock as a whole. The Deepwater Group Ltd (DWG), which represents approximately 98% of the ORH 3B quota owners, agrees each year to adhere to catch limits at a sub-Quota Management Area (QMA) level for the individual sub-stocks. These are non-regulatory catch limits, but are monitored by Fisheries New Zealand.
475. The harvest strategy for ORH 3B is based on a Management Strategy Evaluation⁷, which has been reviewed and accepted by the Fisheries New Zealand stock assessment working group. The Management Strategy Evaluation provides a management target range of 30-50% B_0 to ensure the stock is resilient to periodic recruitment pulses and long-term fluctuations in biomass (Table 3), and to provide a high level of confidence that the stock will remain above the soft limit of 20% B_0 . The management target range is set above the deterministic⁸ estimate of B_{MSY} of 26% B_0 (assuming a Beverton-Holt stock-recruitment relationship⁹).

Table 3: Harvest Strategy for ORH 3B, with reference points and associated management responses

Reference point	Management response
Management target 30-50% B_0	Stock permitted to fluctuate around this management target. TAC/TACC changes will be employed to keep the stock around the target (with a 50% probability of being at the 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

476. Abundance of orange roughy stocks is monitored using acoustic surveys and stock assessments that are completed every four years, as outlined by the Management Strategy Evaluation.
477. The Management Strategy Evaluation underpinned the development of a Harvest Control Rule. This involved testing the performance of a number of potential harvest control rules against simulated stock trajectories over long periods of time to allow for uncertainty in the inputs into the Harvest Control Rule. The agreed Harvest Control Rule is estimated to have a greater than 97% probability of maintaining the stock above the lower bound of the management target range (30% B_0) under a range of assumptions about stock-recruit relationships and estimates of natural mortality.
478. The Harvest Control Rule was defined to keep the biomass within the target range (30% - 50% of B_0), with a high probability (> 97% certainty).

⁷ Accessible at: <http://deepwatergroup.org/wp-content/uploads/2014/08/Cordue-2014-A-Management-Strategy-Evaluation-for-Orange-Roughy-ISL-Re...pdf>

⁸ That is, no allowance for random fluctuation is built into the model used in deriving the estimate.

⁹ The Beverton-Holt model says that at low stock sizes, recruitment is primarily driven by density-independent factors and therefore recruitment always increases with stock size. However, at large stock sizes, density-dependent effects (for example, crowding and competition for food) are more influential on the survivorship of young. In other words, above a certain level of spawning stock there is no relationship between parent stock and recruitment.

479. The Harvest Control Rule is used to suggest catch limits based on the estimated stock status in relation to the management target range (Figure 3). Where a stock is estimated to be below the midpoint of the target range ($F_{mid} = 0.045$), recommended catch limits are lower than for a stock near the top of the target range (125% F_{mid}). Likewise, the Harvest Control Rule allows for a higher catch limit for stocks that are above the mid-point of the target range.

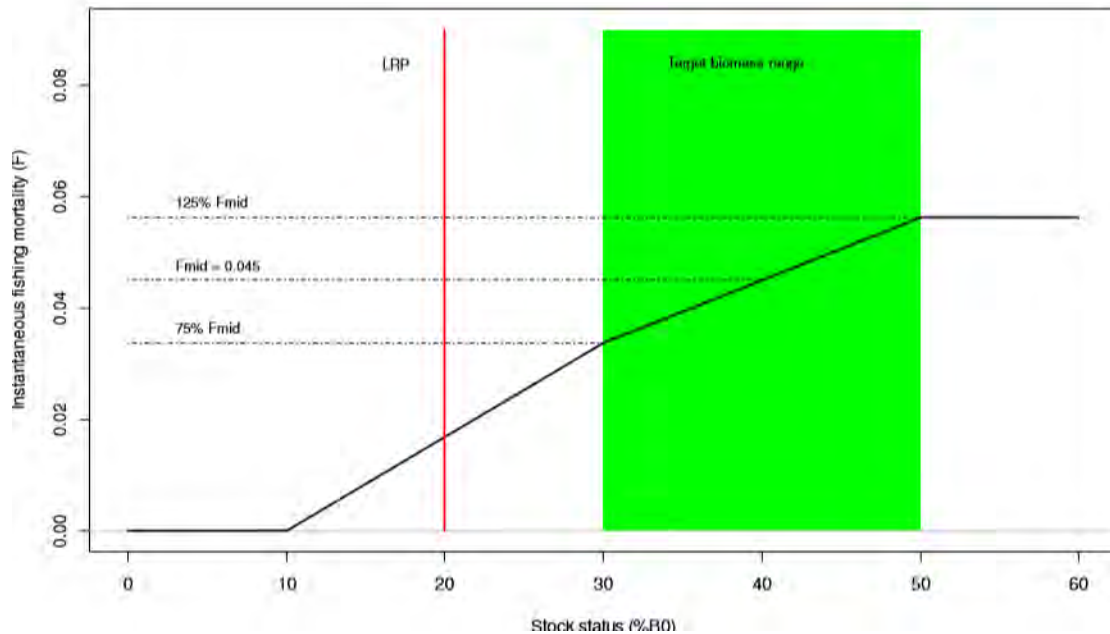


Figure 3: Harvest control rule for ORH 3B

Current stock status

480. Acoustic surveys in 2016 underpinned stock assessments in 2018 for key sub-stocks in ORH 3B: Northwest Chatham Rise, and East & South Chatham Rise. These stock assessments were accepted by the Deepwater Working Group. The 2018 assessments used revised acoustic biomass estimates for 2013 (both areas), new acoustic biomass estimates for 2014 (East & South Chatham Rise), and 2016 (both areas), and a new age composition for 2016 (both areas).
481. The main uncertainties in the stock assessment models for both Northwest Chatham Rise and East & South Chatham Rise are the proportion of the catch that is indexed by acoustic surveys on spawning plumes. For Northwest Chatham Rise, other sources of uncertainty arise because patterns in year class strengths are based on only one year of age composition data. There is uncertainty in estimates of biological parameters such as natural mortality; and the time series of abundance indices is short and restricted to the period of a low stock status. For East & South Chatham Rise, other sources of uncertainty occur because the stock status is dependent on the timing of the Rekohu spawning plume, which is unknown. In addition, patterns in year class strengths are based on only three years of age composition data.
482. Orange roughly abundance in both Northwest Chatham Rise and East & South Chatham Rise was estimated to be increasing in 2018. The Northwest Chatham Rise stock assessment estimated that the stock was at 38% B_0 and there was a 98% probability that the stock was above the lower bound of the management target range of 30% of B_0 in 2018 (Figure 4).

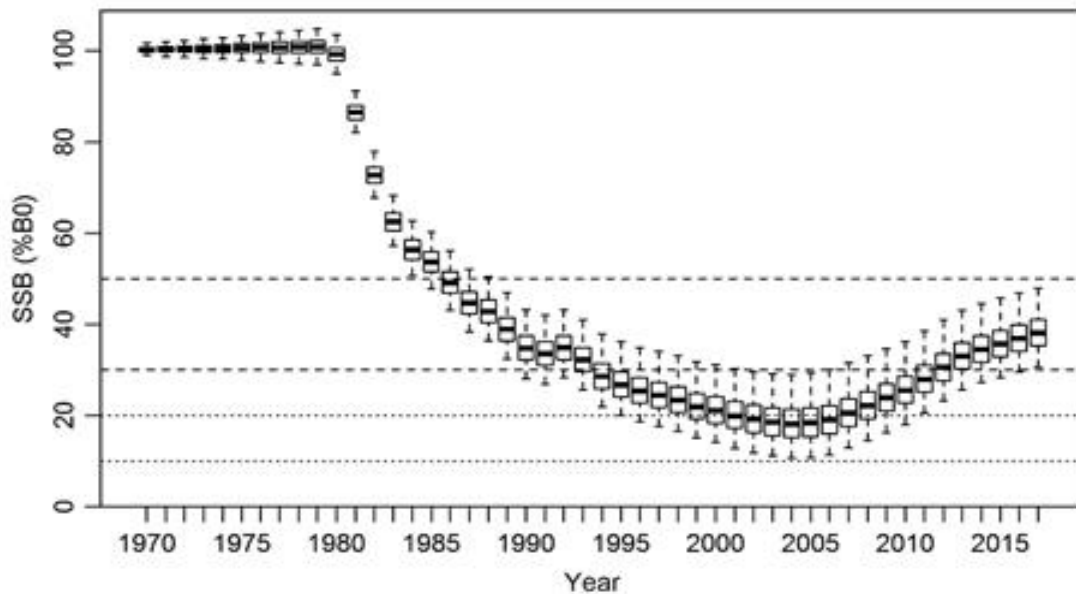


Figure 4: Northwest Chatham Rise estimated spawning stock biomass trajectory. Dotted lines show hard limit (10% B_0) and the soft limit (20% B_0). Dashed lines show biomass target range (30-50% B_0).

483. For East & South Chatham Rise, the stock assessment estimated that the stock was at 33% B_0 and there was an 86% probability that the stock was above the lower bound of the management target range of 30% of B_0 in 2018 (Figure 5).

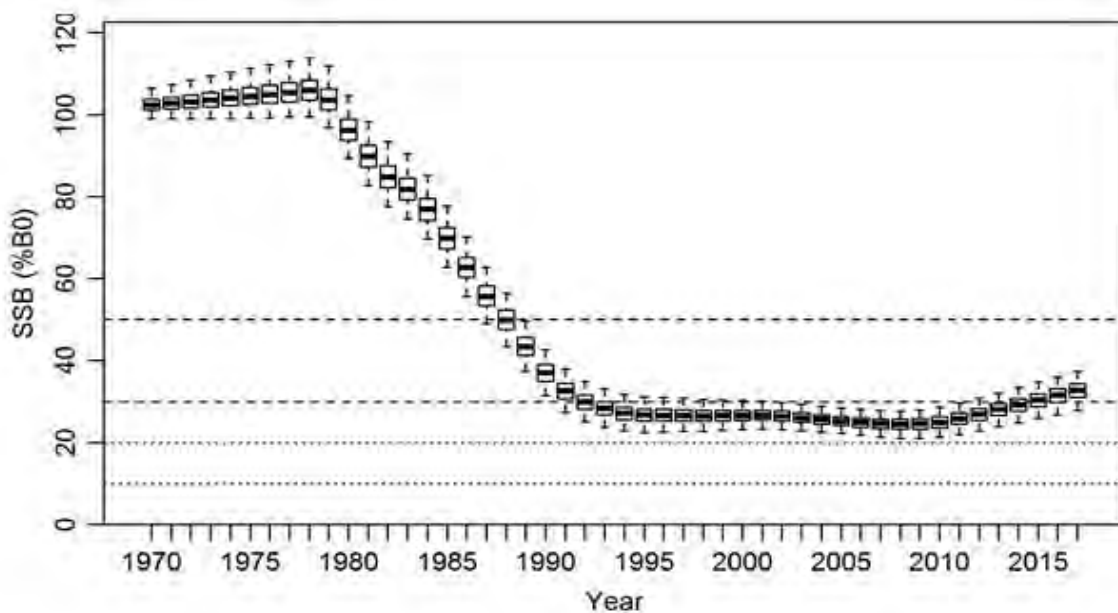


Figure 5: East & South Chatham Rise estimated spawning stock biomass trajectory. Dotted lines show hard limit (10% B_0) and the soft limit (20% B_0). Dashed lines show biomass target range (30-50% B_0).

484. The current catch limit for Northwest Chatham Rise is 1250 tonnes; this limit was established before the Harvest Control Rule was developed for this fishery. ORH 3B quota owners subsequently agreed to voluntarily limit the fishery to the level based on the application of the Harvest Control Rule, 1043 tonnes. The current catch limit of 1250 tonnes satisfied the Minister's obligations under the Act, however industry chose a more conservative approach. Applying the Harvest Control Rule to the new stock assessment

outputs results in a suggested catch limit of 1150 tonnes, which represents a small increase in actual catch.

485. The application of the Harvest Control Rule to stock assessment outputs for East & South Chatham Rise in 2018 suggests that the current catch limit could be increased from 3100 tonnes to 5670 tonnes.
486. The current catch limit for East & South Chatham Rise was set before the Harvest Control Rule-recommended yield estimate was calculated in 2014/15. Retrospectively, the Harvest Control Rule indicates that the catch limit could have been set 672 tonnes higher, at 3772 tonnes, for the 2014/15 fishing year.
487. When the 2014/15 TAC and TACC were set, industry elected to support a faster rebuild by maintaining the catch limit at the lower level of 3100 tonnes instead of increasing the catch limit to the level of the yield estimate.

2.2 OPTIONS CONSULTED ON

488. Fisheries New Zealand proposes that the TAC is varied under section 13(2)(a) of the Act to maintain ORH 3B at or above a level that can produce the maximum sustainable yield, having regard to the interdependence of stocks.
489. The options provided in the consultation document are set out in Table 4. The options in this decision document are the same as those in the consultation document; no additional options are presented as a result of submissions received.

Table 4. Proposed management settings in tonnes for ORH 3B from 1 October 2018 (percentage change relative to the *status quo* in brackets).

Option	Total Allowable Catch (TAC)	Total Allowable Commercial Catch (TACC)	Allowances		
			Customary Māori	Recreational	All other mortality to the stock caused by fishing
Option 1 (<i>Status quo</i>)	5470	5197	5	0	268
Option 2	8055 ↑ (47%)	7667 ↑ (47%)	5	0	383 ↑ (43%)
Option 3 (year 1)	6413 ↑ (17%)	6091 ↑ (17%)	5	0	317 ↑ (18%)
(year 2)	7116 ↑ (30%)	6772 ↑ (30%)	5	0	339 ↑ (26%)
(year 3)	8055 ↑ (47%)	7667 ↑ (47%)	5	0	383 ↑ (43%)

490. The three options give rise to different catch limits at the sub-area level (Table 5):

Table 5: Proposed ORH 3B Sub-QMA catch limits, TACCs, TACs and allowances under each option in tonnes from 1 October 2018.

	Option1 (<i>Status quo</i>)	Option 2	Option 3		
			Year 1	Year 2	Year 3
Northwest Chatham Rise	1250*	1150 ↓	1150 ↓	1150	1150
East & South Chatham Rise	3100	5670 ↑	4095 ↑	4775 ↑	5670 ↑
Puysegur	347	347	347	347	347
Arrow Plateau	0	0	0	0	0
Sub-Antarctic	500	500	500	500	500
TACC	5197	7667 ↑	6091 ↑	6772 ↑	7667 ↑
Allowance for other mortality to the stock caused by fishing	268	383 ↑	317 ↑	339 ↑	383 ↑
Customary Māori allowance	5	5	5	5	5
TAC	5470	8055 ↑	6413 ↑	7116 ↑	8055 ↑

* Note: the current catch limit is 1250 tonnes; 207 tonnes is foregone, giving an effective catch limit of 1043 tonnes.

491. Note that under Option 3, the existing TAC applies at each stage until it is varied under the Act. Each subsequent increase must go through the normal TAC setting process, including consultation and assessment against the criteria in the Act.

2.3 VIEWS OF SUBMITTERS

492. Section 12 of the Act requires you to consult on any proposed management changes. Fisheries New Zealand has consulted on your behalf, and this section outlines the views of submitters and issues they raised.

2.3.1 Submissions received

493. Six written submissions were received by the following iwi and stakeholder groups:

- a) Deepwater Group Ltd;
- b) Environment and Conservation Organisations of New Zealand (ECO);
- c) The Royal Forest and Bird Protection Society of New Zealand Ltd (Forest & Bird);
- d) Kahungunu Asset Holding Company (Ngāti Kahungunu);
- e) Ngāti Whātua Fisheries (Ngāti Whātua); and
- f) Sealord Group Ltd (Sealord)

494. In addition, Ngai Tahu and Te Waka a Māui me Ōna Toka Iwi Forum (Te Waka a Māui) provided verbal feedback.

495. Deepwater Group Ltd supports Option 2, on the basis that the science supports that these catch limits will maintain the stocks at or above sustainable limits.

496. Deepwater Group Ltd notes that the proposed increases under Option 2 for East & South Chatham Rise may seem high relative to the current 3100 tonne catch limit. However, they consider it is important to note that the limit was deliberately set below the

sustainable yield estimate of 3772 tonnes, as determined from the Harvest Control Rule in 2014, to promote more rapid stock rebuilding.

497. Deepwater Group Ltd notes that the Northwest Chatham Rise catch limit of 1043 tonnes has been undercaught in recent years because much of the Northwest Chatham Rise orange roughy biomass resides within an area closed to fishing.
 498. ECO state they do not support an increase in the orange roughy stocks in ORH 3B, because they are concerned at the impact of any TAC increase on the benthic impacts from bottom trawling in ORH 3B. Fisheries New Zealand infers from this ECO supports the only option consulted on that does not propose an increase; that is, the *status quo* option, Option 1.
 499. Forest & Bird states that they do not support a TACC increase for orange roughy due to unacceptable bycatch and environmental impacts that are not being mitigated, reduced or meaningfully managed. Fisheries New Zealand infers from this Forest & Bird supports the only option consulted on that does not propose an increase; that is, the *status quo* option, Option 1.
 500. Ngāti Kahungunu support Option 3, suggesting that this option best supports the aspirations of the Kahungunu ki Uta, Kahungunu te Kai, Marine and Freshwater Fisheries Strategic Plan of a healthy fisheries environment, abundant fishery, thriving people, and a sustainable, stable commercial fishery.
 501. Ngāti Whātua support Option 2 (no reason provided).
 502. Sealord support the Deepwater Group submission, that is, Option 2 (no further reason given).
- 2.3.1 Input and participation of tangata whenua
503. 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.
 504. The consultation on ORH 3B was presented to the Te Waka a Māui me Ōna Toka Iwi Forum (Te Waka a Māui) on 17 July 2018. Te Waka a Māui represents the nine iwi of the South Island, each holding mana moana and significant interests (both commercial and non-commercial) in South Island fisheries. Te Waka a Māui supported a review of the ORH 3B fishery, and its input and views have been incorporated into this advice to you. Ngai Tahu representatives were not present at the hui, but Ngai Tahu have verbally indicated they do not have a view on ORH 3B.
 505. In general, Te Waka a Māui considers that substantial changes to the TAC and/or TACC (e.g. 20% or more) need to be accompanied by scientific recommendations that the changes proposed are sustainable for at least the next five years to ensure the long-term sustainability of the stock.
 506. Te Waka a Māui support Option 3 (staggered increase) with the understanding that it will be monitored every year; that you will approve the increase each year; and a stock assessment is expected in approximately three years. Te Waka a Māui noted that a

staggered increase is more sustainable and incorporates two orange roughly breeding seasons (and chance for the fish to reproduce) until the full TACC increase is reached.

507. With respect to customary allowances, Te Waka a Māui states that the data on the customary allowance is inaccurate and that customary take is regulated by iwi and is based on need.

2.3.2 Kaitiakitanga

508. The Te Waipounamu Iwi Fisheries Plan contains objectives to support and provide for the interests of South Island iwi. The Forum Fisheries Plan contains three objectives that are relevant to the management options proposed for ORH 3B:

- a) Management objective 1: to create thriving customary non-commercial fisheries that support the cultural wellbeing of South Island iwi and our whānau;
- b) Management objective 3: 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; and
- c) Management objective 5: to restore, maintain and enhance the mauri and wairua of fisheries throughout the South Island.

509. Fisheries New Zealand considers that the management options presented in this advice paper will contribute towards the achievement of these three management objectives in ensuring that appropriate allowances are made for customary non-commercial fishing, the fishery remains sustainable, and that environmental impacts are minimised.

2.4 SETTING THE TAC

510. The TAC for ORH 3B is currently set under section 13(2)(a) of the Act. This section requires you to set a TAC that maintains the stock at or above a level that can produce the maximum sustainable yield (B_{MSY}), having regard to the interdependence of stocks. Fisheries New Zealand considers it is appropriate that the TAC continues to be set under this section.

511. Application of the Harvest Control Rule to the 2018 stock assessment using the best available information gives a reliable estimate of B_{MSY} , therefore s 13(2)(a) is the appropriate section. The Statutory Considerations section of this document contains more information on s13.

512. Under section 13(3) of the Act, you shall have regard to such social, cultural and economic factors as you consider relevant when determining the way in which and rate at which a stock is moved towards or above a level that can produce B_{MSY} .

513. Section 9 of the Act prescribes three environmental principles that you must take into account when exercising powers in relation to the utilising of fisheries resources or ensuring sustainability. See “Statutory Considerations” Part 1.4 for a full description of these environmental principles.

514. Options 2 and 3 will result in an increase in fishing effort targeting orange roughy in ORH 3B. This will increase the risk of adverse effects on associated or dependant species, biological diversity of the aquatic environment, or habitat of particular significance for fisheries management but not beyond the historical levels of the fishery.
515. However, orange roughy target fishing is considered to pose low risk to seabirds and marine mammals. Between 2002/03 and 2015/16, only 1.2% of observed seabird captures and less than 1% of observed tows where New Zealand fur seals were captured were attributed to orange roughy trawl fisheries for all of New Zealand¹⁰ (44% of all orange roughy tows were observed in 2015/16).
516. Fisheries New Zealand considers that an increase in fishing effort in ORH 3B will likely result in only a negligible increase to the risk of marine mammal and seabird captures occurring in ORH 3B.
517. An increase in the ORH 3B TAC is likely to increase catch of associated fish species. The main QMS bycatch species associated with orange roughy fishing include oreo and hoki, which are catch limited. Non-QMS species include seal shark and other deepwater sharks. Fisheries New Zealand will continue to monitor catch of deepwater sharks in orange roughy fisheries, and consider management action if impacts are found to pose a sustainability risk to any deepwater shark species
518. Increased fishing effort in ORH 3B could increase impacts upon the benthic environment caused by bottom trawling, if the trawl footprint is expanded. However, orange roughy target fishing is unlikely to occur in areas beyond those previously trawled, and fishing activity has been significantly greater in the past.
519. The trawl footprint of all orange roughy fisheries taking ORH 3B will continue to be mapped and monitored annually, and any significant expansion beyond known areas will trigger a review of current management arrangements.
520. Section 11 of the Act sets out various matters that you must take into account or have regard to when setting or varying any sustainability measure (such as a TAC), including any effects of fishing on the stock and the aquatic environment. See “Statutory Considerations” Part 1.6 for a full description.

2.4.1 Option 1 (*Status quo*)

521. Maintaining the *status quo* would result in continued rebuilding of the stock, and fishing-related impacts on the environment would remain the same. However, retaining the *status quo* would result in foregoing utilisation opportunities.
522. Both submissions from environmental groups (ECO and Forest & Bird) opposed any increase to the ORH 3B TAC/TACC. Fisheries New Zealand infers from this that the two groups support the only option consulted on that does not propose an increase; that is, the *status quo* option, Option 1.
523. Forest & Bird and ECO assert that environmental impacts are not being mitigated, reduced or meaningfully managed. As described in Section 2.1.3, there is a range of initiatives in place to avoid and mitigate the environmental impacts of fishing. Regulatory

¹⁰ Aquatic Environment and Biodiversity Annual Review 2017, Table 8.19, available here: <https://www.mpi.govt.nz/news-and-resources/open-data-and-forecasting/fisheries/>

measures include benthic protection areas where bottom trawling is prohibited, and mandatory use of seabird scaring devices by trawlers over 28m in length. Additionally, non-regulatory measures that improve environmental performance, such as the NPOA-Seabirds, NPOA-Sharks, Vessel Management Plans and Marine Mammals Operational Procedures, are all effective management tools.

2.4.2 Option 2

524. Application of the Harvest Control Rule indicated that the Northwest Chatham Rise catch limit should be decreased by 100 tonnes to 1,150 tonnes. Decreasing the catch limit for Northwest Chatham Rise by this amount sets a catch limit consistent with the Harvest Control Rule and allows the objectives of the Harvest Control Rule to be met, noting that this will result in a small increase in actual catch – this is because 207 tonnes of the current catch limit is foregone, giving an effective catch limit of 1043 tonnes.
525. Application of the Harvest Control Rule indicates there is a clear opportunity to increase utilisation on East & South Chatham Rise, whilst maintaining the stock within target biomass levels. Both the options 2 and 3 would achieve this outcome, albeit over different time frames.
526. The proposed increase in the TAC is significant, and fishing at this level could impact on the orange roughy stock should the biomass estimate be overly optimistic. While the outputs of the 2018 stock assessment and the use of the agreed Harvest Control Rule to calculate a proposed catch limit for East & South Chatham Rise provides a level of confidence that the stock can sustain an increase as proposed and remain within the management target range, uncertainty remains.
527. Under Option 2, fishing effort targeting orange roughy in ORH 3B will increase. Fisheries New Zealand considers that the proposed option can be considered taking into account the considerations in sections 9 and 11 of the Act. However, there is the possibility that a higher TAC may result in adverse effects on the associated or dependent species, and the biological diversity of the aquatic environment. There are no specific habitats of particular significance that would be impacted within the area of the East & South Chatham Rise fishery. The primary means through which the environmental impacts of fishing are managed are outlined in section 2.1.3 above.
528. The impacts of increased orange roughy fishing in ORH 3B upon seabirds, marine mammals, benthic communities and associated fish species are discussed in section 2.5. Fisheries New Zealand considers any risks of increase to be negligible or appropriately mitigated and monitored.
529. Option 2 was supported by Deepwater Group Ltd, Sealord and Ngāti Whātua Fisheries. Deepwater Group Ltd in particular, considers that the TAC/TACC increase is justified by the best available scientific information and application of the Harvest Control Rule.

2.4.3 Option 3 (Fisheries New Zealand Recommended)

530. Option 3 is also based upon application of the agreed Harvest Control Rule like Option 2, but takes a more cautious approach to the increase. Option 3 contains a proposal to increase the ORH 3B TAC, but staged over three years (Table 4). This option is for incremental increases in the TAC, TACC for East & South Chatham Rise and fishing

related mortality over the next three fishing years, noting that after the first year, there would be new consultations for each subsequent increase.

531. By year three (2020/21) the TAC, TACC and all other mortality to the stock caused by fishing would be the same as for Option 2.
532. Staging the TAC/TACC increase over three years, as proposed in Option 3, is a prudent approach in light of the large proposed increase in the TACC, and allows Fisheries New Zealand to make subsequent adjustments should biomass estimates be too optimistic, and if signs that the orange roughy stock is being adversely impacted are detected. Option 3 would require you to make a decision on TAC/TACC changes for ORH 3B for each of the two subsequent fishing years.
533. As noted in 2.1.4 *Status of the stock*, the stock assessment estimated the East & South Chatham Rise stock was at 33% B_0 . The stock has been increasing from below the management target range, and a staged increase will provide more time for the stock to increase further towards the midpoint of the management target range (30-50% B_0).
534. The risk of increased orange roughy fishing in ORH 3B under Option 3 upon seabirds, marine mammals, benthic communities and associated fish species are discussed above in section 2.1.3. Again, staging the increase in TAC will allow monitoring of any fishing impacts associated with increasing fishing effort to determine if any impacts are adverse and additional management action is required.
535. Option 3 was supported by Te Waka a Māui and Ngāti Kahungunu. Te Waka a Māui in particular suggests that a staged increase and ongoing monitoring will provide more certainty that the proposed increases are sustainable.

2.5 ALLOCATING THE TAC

536. Having set the TAC, you must set the TACC and make allowances for Māori customary non-commercial fishing interests, recreational fishing interests, and all other mortality to the stock caused by fishing (s 20 & 21).
537. Te Ohu Kaimoana's submission included a suggested framework for setting allowances within the TAC. The framework for determining customary and recreational allowances is set out under sections 20 and 21 of the Act and this is discussed in the Statutory Considerations section of this paper. As noted in that section, the Supreme Court has said that the recreational allowance is simply the best estimate of what recreational fishers will catch while being subject to the controls which you decided to impose upon them (e.g. bag limits, minimum sizes and other restrictions). In Fisheries New Zealand's view this would also apply to the customary allowance, albeit that you do not have the same ability to control the customary allowance as you do for the recreational allowance.

2.5.1 Māori customary allowance

538. For ORH 3B, the current allowance for Māori customary non-commercial fishing interests is five tonnes. All options consulted on proposed that this allowance remain unchanged. No information from Te Waka a Māui or other hui was received indicating that provision is required for additional customary catch. Consequently, Fisheries New Zealand recommends retaining the current Māori customary allowance under all options.

2.5.2 Recreational allowance

539. There is no known recreational catch of orange roughy in ORH 3B. No recreational allowance is proposed, however this does not preclude any recreational take in future years.

2.5.3 Allowance for other sources of mortality to the stock caused by fishing

540. Fisheries New Zealand proposes to retain the current allowance for other sources of mortality to the stock caused by fishing, set at 5% of the TACC, since there is no new information available to suggest that the allowance should be changed.

541. Other sources of mortality to the stock caused by fishing is an allowance to account for unreported orange roughy mortality, such as loss due to burst nets or losses due to fish passing through the trawl mesh that are not landed.

2.5.4 TACC

542. Increasing the TACC for ORH 3B as proposed under Options 2 and 3 will enable commercial fishers to take advantage of the utilisation opportunity that exists for this stock. Retaining the *status quo* would result in forgoing that opportunity.

543. Based upon export data for the 2017 calendar year, the estimated economic impact of Option 2 is an increase in free on board (FOB)¹¹ exports of \$NZ 16.2 million per annum.

544. For Option 3, the estimated economic impact is an increase in FOB exports of \$NZ 5.4 million in the first year, an additional \$NZ 5.4 million in the second year, and a further \$NZ 5.4 million (\$NZ 16.2 million total) in the third year and each year thereafter. Option 3 therefore results in \$NZ 16.2 million in foregone export revenue over the three year period, compared with Option 2.

545. Should you agree to Option 2 or 3, we note that ORH 3B quota owners will be required to agree that the TACC increase be allocated to sub-stocks as per Table 4.

2.6 OTHER MANAGEMENT CONTROLS

2.6.1 Deemed value rates

546. The interim deemed value rate for ORH 3B is currently set at 50% of the annual deemed value rate. While the Deemed Value Guidelines¹² suggest that the interim deemed value rate should generally be set at 90% of the annual deemed value rate, given that ORH 3B landings have not exceeded the available Annual Catch Entitlement (ACE) during the last ten years, Fisheries New Zealand considers that the current deemed value rates are appropriate and remain consistent with other orange roughy stocks. Therefore, no changes are proposed to the deemed value rates for ORH 3B (as outlined in Table 2).

¹¹ FOB - Free on board. The value of export goods, including raw material, processing, packaging, storage and transportation up to the point where the goods are about to leave the country as exports. FOB does not include storage, export transport or insurance cost to get the goods to the export market.

¹² Available at www.mpi.govt.nz/document-vault/3663

3 Conclusion and Recommendation

547. Fisheries New Zealand consulted on increasing the TAC, TACC, and allowances for the ORH 3B stock on the basis of the 2018 stock assessment which indicated that a utilisation opportunity exists. Option 1 (*status quo*) would continue to grow the stock, but would not allow fishers to better utilise the increased abundance of the orange roughy stock as proposed under Option 2 or 3.
548. Of the seven submissions received, two stated a preference for Option 1 (*status quo*), three stated a preference for Option 2, and two stated a preference for Option 3.
549. The 2018 stock assessments and associated projections represent the best available information for ORH 3B.
550. Fisheries New Zealand recommends that you agree to Option 3, that is, implement an increase in the TAC/TACC, staged over three years. Option 3 is more likely to allow the East & South Chatham Rise stock to increase to the mid-point of the management target biomass range than Option 2. Option 3 takes into account uncertainties in the stock assessment model, and also allows Fisheries New Zealand to continue to monitor the orange roughy stock and any impacts of increased fishing effort so that if any unforeseen adverse effects occur, increases in the second and third year can be deferred.
551. Note that under Option 3 you will need to consult with stakeholders and make separate TAC and TACC decisions for each of the next three fishing years, prior to the start of those respective fishing years.
552. This Option is consistent with your obligations under the Fisheries Act 1996, and will provide a direct economic benefit to the fishing industry.
553. Fisheries New Zealand recommends you agree to retain the existing deemed value rates for ORH 3B.

Option 1 (Status quo)

Agree to retain the ORH 3B TAC at 5470 tonnes and within the TAC:

- i. Retain the allowance of 5 tonnes for Māori customary non-commercial fishing interests;
- ii. Retain the nil allowance for recreational fishing interests;
- iii. Retain the allowance of 268 tonnes for other sources of mortality to the stock caused by fishing;
- iv. Retain the ORH 3B TACC at 5197 tonnes;

Agreed / Agreed as Amended / Not Agreed

AND

Note Fisheries New Zealand expects that quota owners will implement the following sub-stock catch limits within the TACC of 5197 tonnes and will monitor to ensure this is the case:

- a. Northwest Chatham Rise sub-area catch limit of 1250 tonnes;

- b. East & South Chatham Rise sub-area catch limit of 3100 tonnes;
- c. Puysegur sub-area catch limit of 347 tonnes;
- d. Arrow Plateau sub-area catch limit of 0 tonnes;
- e. Sub-Antarctic sub-area catch limit of 500 tonnes.

Noted

OR

Option 2

Agree to increase ORH3B TAC from 5470 to 8055 tonnes and within the TAC:

- i. Retain the allowance of 5 tonnes for Māori customary non-commercial fishing interests;
- ii. Retain the nil allowance for recreational fishing interests;
- iii. Increase the allowance for other sources of mortality to the stock caused by fishing from 268 to 383 tonnes;
- iv. Increase the ORH3B TACC from 5197 to 7667 tonnes;

Agreed / Agreed as Amended / Not Agreed

AND

Note Fisheries New Zealand expects that quota owners will implement the following sub-stock catch limits within the TACC of 7667 tonnes and will monitor to ensure this is the case:

- a. Northwest Chatham Rise sub-area catch limit of 1150 tonnes;
- b. East & South Chatham Rise sub-area catch limit of 5670 tonnes;
- c. Puysegur sub-area catch limit of 347 tonnes;
- d. Arrow Plateau sub-area catch limit of 0 tonnes;
- e. Sub-Antarctic 500 tonnes.

Noted

OR

Option 3 (Fisheries New Zealand recommended)

Note that under Option 3 you would need to make separate TAC and TACC decisions for each of the next three fishing years, prior to the start of those respective fishing years. The proposed changes for the 2019/20 and 2020/21 fishing years are given below but note that these would need to be consulted on and assessed under the Act prior to implementation.

Noted

AND

Agree to increase the ORH3B TAC from 5470 to 6413 tonnes for the 2018/19 fishing year and within the TAC:

- i. Retain the allowance of 5 tonnes for Māori customary non-commercial fishing interests;
- ii. Retain the nil allowance for recreational fishing interests;
- iii. Increase the allowance for other sources of mortality to the stock caused by fishing from 268 to 317 tonnes; and
- iv. increase the ORH3B TACC from 5197 to 6091 tonnes;

Agreed / Agreed as Amended / Not Agreed

Stuart Nash
Hon Stuart Nash
Minister of Fisheries

13 / 9 / 2018

Scampi (SCI 3)

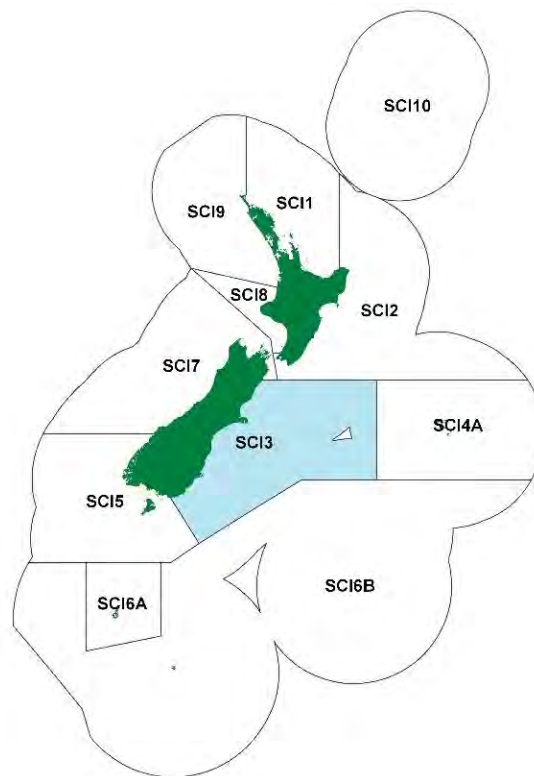


Figure 1: Quota management areas (QMAs) for scampi (SCI), with SCI 3 highlighted in blue.

1 Summary

554. Fisheries New Zealand consulted on three options for the management settings of scampi (*Metanephrops challengeri*) in quota management area (QMA) 3 (SCI 3; Figure 1). These options are set out in Table 1:

Table 1: Proposed management settings in tonnes for SCI 3 from 1 October 2018, with the percentage change relative to the *status quo* in brackets.

Option	Total Allowable Catch (TAC)	Total Allowable Commercial Catch (TACC)	Allowances		
			Customary Māori	Recreational	All other mortality to the stock caused by fishing
Option 1 (<i>Status quo</i>)	357	340	0	0	17
Option 2	394 ↑ (10%)	375 ↑ (10%)	0	0	19 ↑ (10%)
Option 3	428 ↑ (20%)	408 ↑ (20%)	0	0	20 ↑ (20%)

555. No changes are proposed to the deemed value rates of SCI 3, as set out in Table 2.

Table 2: Deemed value rates (\$/kg) for SCI 3.

	Interim Rate (\$/kg)	Annual Differential Rates (\$/kg) for excess catch (% of ACE)					
		100-120%	120-140%	140-160%	160-180%	180-200%	200%+
<i>Status quo</i>	25.65	51.30	61.56	71.82	82.08	92.34	102.60

556. Seven submissions were received regarding the management settings for SCI 3. Two submissions expressed support for Option 1 (*status quo*), two submissions expressed support for Option 2 and three submissions expressed support for Option 3. No additional options were raised by submitters during consultation.
557. Fisheries New Zealand recommends Option 3; that you agree to increase the TAC of SCI 3 from 357 tonnes to 428 tonnes.

1 Need for review

558. The 2018 SCI 3 stock assessment, accepted by both the Shellfish Working Group and Stock Assessment Plenary, estimates that the biomass of scampi in SCI 3 is Very Likely¹ above the management target of 40% unfished biomass (B_0). Therefore, Fisheries New Zealand considers that there is an opportunity to increase utilisation of SCI 3 whilst maintaining the status of the stock above the management target.

2.1 CONTEXT

2.1.1 Biological information

559. Scampi are mobile crustaceans widely distributed around the New Zealand coast on mud or sandy mud substrates between 200 and 500 metres in depth. Scampi build and maintain burrows in the sediment, in which they may spend a considerable proportion of time. Emergence from burrows may be governed by seasonal or daily cycles. The maximum age of scampi in New Zealand is not known. However, analysis of tag return data and aquarium trials coupled with studies of similar species overseas, suggests that scampi may achieve a maximum age of 15-20 years.

2.1.2 Fishery characterisation

Customary Māori fishery

560. Best available information indicates that there is currently no customary non-commercial take of scampi in SCI 3.

Recreational fishery

561. Best available information indicates that there is currently no recreational take of scampi in SCI 3.

Commercial fishery

562. Scampi in SCI 3 are almost entirely taken as part of a target bottom trawl fishery with less than 1% of scampi in SCI 3 taken during fishing events targeting other species. Over the last five years, annual fishing effort targeting SCI 3 has averaged 1630 tows. Vessels operating within the scampi target fishery are typically dedicated scampi targeting vessels between 20 and 33 metres in length that deploy light, low headline gear with a double or

¹Probabilities used to qualify statements regarding stock status in relation to management targets are based upon the IPCC 2007 verbal descriptors as outlined in the 2017 Plenary (>99% = Virtually Certain, >90% = Very Likely, >60% = Likely, 40-60% = About As Likely As Not, <40% = Unlikely, <10% = Very Unlikely, <1% = Exceptionally Unlikely). <https://fs.fish.govt.nz/Page.aspx?pk=113&dk=24474>

triple cod-end configuration. Eleven vessels have been used to target scampi in SCI 3 during the last five years.

563. Within SCI 3, targeted scampi fishing is spatially concentrated on the Mernoo Bank (a submarine plateau approximately 100 km northeast of Banks Peninsula) with the vast majority of effort (>99%) occurring in two statistical areas (401 and 402).
564. Landings of scampi from SCI 3 have approached or exceeded the TACC in recent years (Figure 2). Landings in excess of the TACC during the 2014/15 and 2016/17 fishing years were balanced using under caught Annual Catch Entitlement (ACE) from the previous year under section 67A of the Fisheries Act 1996 (the Act).

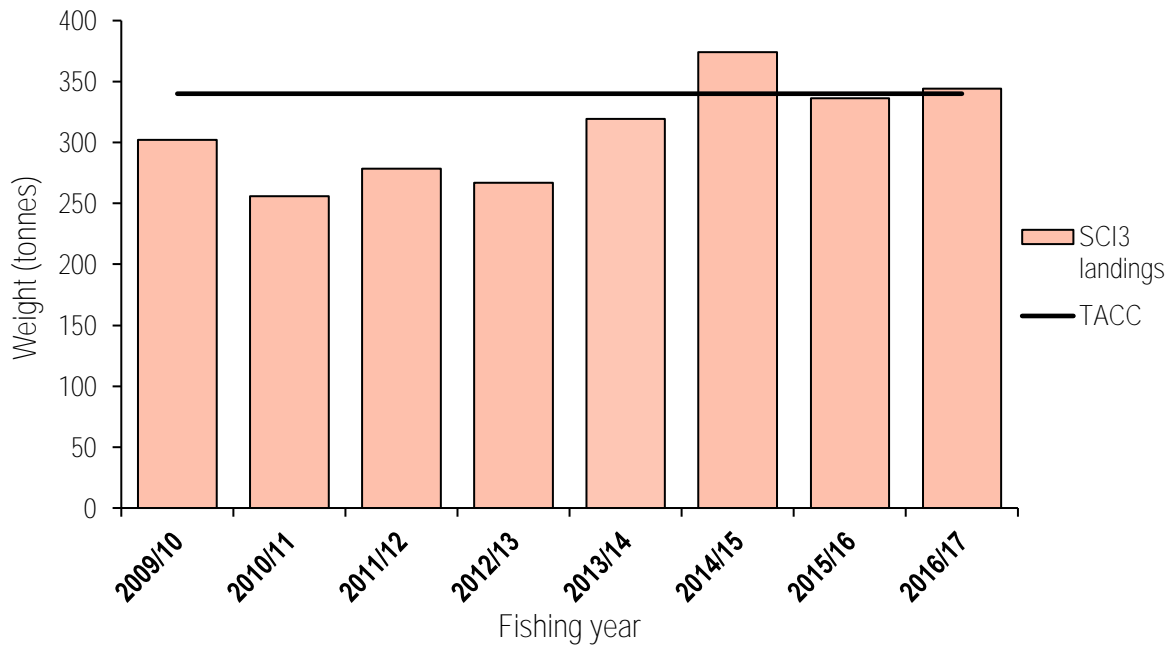


Figure 2: Landings vs Total Allowable Commercial Catch (TACC) in tonnes for SCI 3 from 2009/10 to 2016/17.

565. As a proportion of the total catch, levels of non-target bycatch within the SCI 3 target fishery are relatively high compared to other deepwater and middle-depth fisheries. Scampi comprised approximately 17% by volume of the total catch from SCI 3 target tows monitored by Fisheries New Zealand observers during the last five years. The major bycatch species recorded during this time were; javelinfish (18% of total catch), other rattails (15%), sea perch (14%), ghost shark (8%) and hoki (4%).
566. Although bycatch rates within the SCI 3 fishery are relatively high, given the size of the vessels and the gear used, the total volume of non-target bycatch per SCI 3 target tow is low compared to other trawl fisheries operating within the same area (Figure 3).

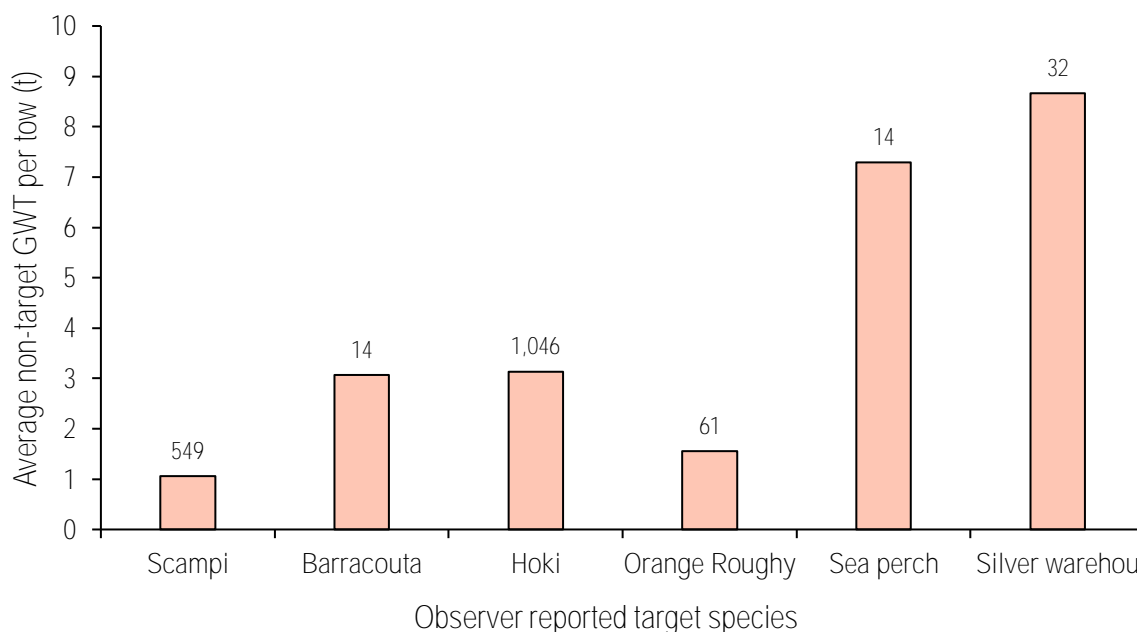


Figure 3: Mean greenweight (in tonnes) of non-target bycatch species caught per observed tow for target trawl fisheries recorded as starting inside statistical areas 401 or 402 between the 2012/13 and 2016/17 fishing years. Data labels indicate the number of tows observed.

2.1.3 Environmental interactions

Seabirds

567. The National Plan of Action – 2013 to reduce the incidental catch of seabirds in New Zealand Fisheries (NPOA-Seabirds)², is the driver for all actions to reduce the incidental mortality of seabirds from fishing. The NPOA-Seabirds puts in place a risk-based approach to managing fishing interactions with seabirds, targeting mitigation to those species most at risk but also aiming to reduce overall captures.
568. The most recent seabird risk assessment was published in 2017³. It is a primary input to the NPOA-Seabirds. The risk assessment calculates a species-level risk broken down by fishery group. Fishery groups are assigned on the basis of target species, vessel size and for trawl vessels targeting middle-depth species, whether or not the vessel is a factory vessel. Vessels in the same fishery group are assumed to attract and capture birds in a similar way.
569. Seabird captures in trawl fisheries occur in two main ways. Seabirds either collide with or are struck by the moving trawl warps (usually larger seabirds) or are caught in the net when it is on the surface during deployment and retrieval (usually smaller seabirds). Regulations have been in place since 2005 requiring trawl vessels greater than 28 m in length to deploy bird scaring devices.
570. In addition to mandatory mitigation measures, Fisheries New Zealand and the fishing industry (represented by the Deepwater Group Ltd) have worked collaboratively for over a decade to ensure all trawlers over 28 m in length or used to target scampi (regardless of size) have, and follow, a Vessel Management Plan. Vessel Management Plans specify the measures that must be followed on board each vessel so as to reduce the risk of incidental seabird captures. Such measures relevant to the scampi fishery

² The NPOA-Seabirds 2013 is currently under review

³ Accessible at: <http://www.mpi.govt.nz/dmsdocument/27531-aebr-191-assessment-of-the-risk-of-commercial-fisheries-to-nz-seabirds-2006-07-to-2014-15>

include offal management practices, the deployment of bird scaring devices (e.g. tori lines) for vessels under 28 m and the use of specialist devices during times of high risk (i.e. net restrictors used to limit the opening of the centre net whilst hauling).

571. Fisheries New Zealand observers monitor each vessel's performance against its Vessel Management Plan. If a vessel is not complying with the guidelines in its Vessel Management Plan, the Director-General has the option of imposing vessel-specific regulations to better control management practices.

Marine mammals

572. Fisheries New Zealand works closely with the fishing industry to increase awareness amongst the deepwater fleet of the risk of interactions with marine mammals, and emphasises the importance of adherence to the Deepwater Group 'Marine Mammal Operational Procedures'.
573. Marine Mammal Operational Procedures aim to reduce the risk of interactions with marine mammals by requiring that trawl vessels over 28 m in length:
- i. Minimise the length of time the fishing gear is on the surface;
 - ii. Remove all dead fish from the net before shooting the gear;
 - iii. Steam away from any congregations of marine mammals before shooting the gear; and
 - iv. Appoint a crew member to watch for marine mammal interactions every time the gear is shot or hauled.
574. Performance in relation to these procedures is audited by Fisheries New Zealand observers. Fisheries New Zealand monitors the adherence of vessels with marine mammal mitigation measures throughout the year and responds to marine mammal captures as required.

Sharks

575. Management of sharks in New Zealand is driven by the National Plan of Action for Sharks (NPOA Sharks) 2013, with the overarching purpose "To maintain the biodiversity and the long-term viability of all New Zealand shark populations by recognising their role in marine ecosystems, ensuring that any utilisation of sharks is sustainable, and that New Zealand receives positive recognition internationally for its efforts in shark conservation and management".
576. Fisheries New Zealand will continue to monitor interactions with deepwater sharks in scampi target fisheries and will consider management action if impacts are found to pose a sustainability risk to any deepwater shark species.

Benthic environment

577. Management measures to mitigate the effects of deepwater trawl activity on benthic ecosystems have focused on spatial closures. This has been achieved through regulations closing areas to bottom trawling; first with seamount closures in 2001 and then with Benthic Protection Areas in 2007. The implementation of Benthic Protection Areas effectively closed approximately 30% of the New Zealand Exclusive Economic Zone to bottom trawling.

578. Currently, a monitoring regime is followed to ensure that benthic closures are adhered to, and the environmental impacts of fishing are summarised annually by Fisheries New Zealand⁴. Potential adverse effects caused by increased fishing effort can be limited if vessels trawl along previously-trawled tows. Fisheries New Zealand will continue to monitor the bottom trawl footprint of scampi and other deepwater fisheries annually

2.1.4 Status of the stock

Current management approach

579. Scampi has been managed within the National Fisheries Plan for Deepwater and Middle-depth Fisheries (National Deepwater Plan) as a Tier 1 stock. Tier 1 stocks are high volume and/or high value and are typically targeted.

580. As part of the National Deepwater Plan, a specific chapter for the scampi fishery is under development and the necessity for a species-specific harvest strategy will be assessed. In the absence of species-specific harvest strategy measures, the TAC and TACC for scampi stocks are set based upon the status of the stock in relation to the default reference points set out in the Harvest Strategy Standard (Table 3).

Table 3: Scampi default reference points, and the associated management response.

Reference point	Management response
Management target 40% B_0	Stock permitted to fluctuate around this management target. TAC/TACC changes will be employed to keep the stock around the target (with a 50% probability of being at the 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
Rebuild strategy	To be determined
Harvest control rule	Management actions focussed on adjusting fishing mortality determined following consideration of the results of stock assessments and in some cases, forward projections under a range of catch assumptions, guided by biological reference points.

581. The management of scampi in SCI 3 is supported by a fully quantitative stock assessment undertaken every three years, with each stock assessment preceded by a dedicated trawl and photographic research survey. The stock assessment methods and results are evaluated and reviewed by the Shellfish Working Group with management further informed by forward projections based upon the stock assessment model.

Status of the stock

582. The only previously accepted stock assessment for SCI 3 (conducted in 2015) estimated the 2014 SCI 3 biomass (B_{2014}) to be between 54% and 60% of the unfished biomass (B_0).

583. The TAC, TACC and allowances for SCI 3 have remained unchanged since the species was introduced to the quota management system (QMS) in 2004.

584. An update of the SCI 3 stock assessment was presented to, and accepted by, the Shellfish Working Group and Stock Assessment Plenary in 2018. The 2018 model structure was similar to that accepted in 2015 and incorporated photographic and trawl survey indices

⁴ The Annual Review Report for 2016/17 is available here: <http://www.mpi.govt.nz/dmsdocument/29741-annual-review-report-for-deepwater-fisheries-201617>

from the 2016 trawl survey alongside updated catch history and standardised catch per unit effort (CPUE) indices.

585. The 2018 base case model estimated the 2017 spawning stock biomass (*SSB*) of scampi in SCI 3 is Very Likely (> 90%) at, or above, the management target, with *SSB*₂₀₁₇ estimated to be 76% of *SSB*₀ (95% confidence intervals: 69-83%). Three additional model runs (using different values representing catchability and the natural mortality of scampi) were considered to test the robustness of the model to variations in input parameters (sensitivity runs). The results of the sensitivity runs were consistent with those of the base case (sensitivity model estimates of *SSB*₂₀₁₇ varied between 75% and 81% *SSB*₀).
586. To inform the current review, the 2018 SCI 3 stock assessment model was used to project biomass forward three years based upon a range of annual catch scenarios (up to a 20% TACC increase). Base case model projections estimate that, under all catch scenarios examined, the probability of *SSB* remaining above the management target of 40% *B*₀ remains very high until at least 2021. On the basis of projection outputs for the base case model, estimates of *B*₂₀₂₁ show little variation across the range of annual catches examined (Table 4).

Table 4: Base case model projection outputs showing the probability of spawning stock biomass being above reference points and the management target under a range of projected catch scenarios. Also shown are median estimates of *B*₂₀₂₁ (in relation to *B*₀) and the probability of *B*₂₀₂₁ exceeding *B*₂₀₁₇ under projected catch scenarios.

2021	Current catch (-340 t)	10% TACC increase (375 t)	20% TACC increase (408 t)
<i>Prob > Hard Limit (10% B₀)</i>	100%	100%	100%
<i>Prob > Soft Limit (20% B₀)</i>	100%	100%	100%
<i>Prob > Target (40% B₀)</i>	100%	100%	100%
<i>B</i> ₂₀₂₁ stock status	81%	80%	79%
<i>Prob B</i> ₂₀₂₁ > <i>B</i> ₂₀₁₇	82%	78%	74%

587. The major uncertainty associated with the 2018 SCI stock assessment concerns the estimate of unfished biomass. As projection outputs (discussed above) are dependent upon the proportion of unfished biomass taken under a range of future catch scenarios, projection estimates should be interpreted with some caution.
588. The next dedicated SCI 3 trawl survey is scheduled for 2020 with a full, quantitative stock assessment due to be completed in 2021.

2.2 OPTIONS CONSULTED ON

589. Fisheries New Zealand consulted on three options regarding the management settings of SCI 3 (Table 5). No additional options were raised by submitters during consultation.

Table 5. Proposed management settings in tonnes for SCI 3 from 1 October 2018, with the percentage change relative to the *status quo* in brackets.

Option	TAC	TACC	Allowances		
			Customary Māori	Recreational	All other mortality to the stock caused by fishing
Option 1 (<i>Status quo</i>)	357	340	0	0	17
Option 2	394 ↑ (10%)	375 ↑ (10%)	0	0	19 ↑ (10%)
Option 3	428 ↑ (20%)	408 ↑ (20%)	0	0	20 ↑ (20%)

590. No changes to the catch limits or allowances of SCI 3 are proposed under Option 1.
591. Both Options 2 and 3 would result in increasing the TAC, TACC and allowance for other sources of mortality caused by fishing for SCI 3, whilst retaining a nil allowance for recreational and Māori customary fishing interests.

1.3 VIEWS OF SUBMITTERS

592. Section 12 of the Act requires Fisheries New Zealand to consult on any proposed management changes. Fisheries New Zealand has consulted on your behalf and this section outlines the views of submitters and issues they raised.

1.3.1 Submissions received

593. Seven submissions were received regarding the proposed management settings of SCI 3 from the following seven organisations (listed alphabetically):
- Deepwater Group Ltd.
 - Environment and Conservation Organisations of New Zealand Inc. (ECO)
 - The Royal Forest and Bird Protection Society of New Zealand Ltd. (Forest & Bird)
 - Iwi Collective Partnership
 - Kahungunu Asset Holding Company
 - Ngati Whatua Fisheries Ltd.
 - Te Ohu Kaimoana
594. Deepwater Group Ltd. (the organisation that represents 91% of deepwater fishing quota owners) expressed support for Option 3 given that the 2017 SCI 3 stock assessment estimated that a 20% TACC increase would maintain the stock at, or above, sustainable limits. Deepwater group support Fisheries New Zealand's assessment of the environmental considerations arising from the increase in SCI 3 effort and advised that Deepwater Group's stakeholders remain committed to, and supportive of, the continued management and monitoring of these interactions. Deepwater group also sought Fisheries New Zealand's agreement that the Crown tender their SCI 3 ACE prior to 1 October 2018.
595. ECO, a national alliance of 48 groups with a concern for the environment, do not support an increase in the East Coast South Island scampi fishery (SCI 3). ECO state that they are concerned at the impact of any TAC increase on the benthic impacts of bottom trawling in SCI 3. Fisheries New Zealand infers that ECO therefore support Option 1.
596. Forest & Bird (New Zealand's largest independent conservation organisation) submission encompasses the four deepwater stocks for which management options were consulted

upon in this sustainability review (orange roughy, ling, oreo and scampi). Forest & Bird consider the environmental impacts of trawl fisheries to be inadequately managed at present. They do not support a TAC increase for any of these stocks, on the basis of irreversible damage caused to vulnerable marine ecosystems by bottom trawling, and due to bycatch levels that they consider to be unacceptable.

597. Forest & Bird recommend that the *status quo* is retained for these stocks and that you address the environmental impacts of these fisheries before any consideration to increase TACs are progressed.
598. Iwi Collective Partnership, a fisheries seafood collective of 15 North Island Iwi members representing owners of settlement quota support Option 2 but did not provide rationale.
599. Kahungunu Asset Holding Company, wholly owned by Ngāti Kahungunu Iwi Incorporated (a mandated iwi organisation), support Option 2. Kahungunu Asset Holding Company suggest that this option best supports the aspirations of Kahungunu ki Uta, Kahungunu te Kai, Marine and Freshwater Fisheries Strategic Plan of a healthy fisheries environment, an abundant fishery and thriving people and a sustainable and stable commercial fishery.
600. Ngati Whatua Fisheries Ltd, a mandated iwi organisation, support Option 3 but did not provide rationale. As part of their submission Ngati Whatua Fisheries Ltd expressed support for a realigned customary allowance, but did not detail what a realigned customary allowance constituted.
601. Te Ohu Kaimoana, an organisation which works on behalf of 58 Mandated Iwi Organisations to implement and protect the Fisheries Settlement, supports the submission of Deepwater Group and therefore support Option 3.

1.3.2 Input and participation of tangata whenua

602. 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.
603. The consultation on SCI 3 was presented to the Te Waka a Māui me Ōna Toka Iwi Forum (Te Waka a Māui). This forum represents the nine iwi of the South Island, each holding mana moana and significant interests (both commercial and non-commercial) in South Island fisheries. The forum supported a review of the management settings and allowances for SCI 3.
604. Te Waka a Māui considers that substantial changes to the TAC and/or TACC (e.g. 20% of more) need to be accompanied by scientific recommendations that the changes proposed are sustainable for at least the next five years to ensure the long-term sustainability of the stock. Fisheries New Zealand notes that this TAC review is underpinned by the 2017 SCI 3 stock assessment, which estimates that the biomass of scampi SCI 3 will remain above the management target under all proposed options until the next stock assessment is due to be completed.

1.3.3 Kaitiakitanga

605. Relevant Iwi or Forum Fish Plans provide a view of the objectives and outcomes iwi seek from the management of the fishery and can provide an indication of how iwi exercise kaitiakitanga over fisheries resources. Iwi views from Forum meetings and submissions received from iwi can also provide an indication.
606. Scampi is not listed as a taonga species in the Te Waipounamu Iwi Fisheries Plan, however Te Waka a Māui consider the species taonga. This plan contains objectives to support and provide for the interests of South Island iwi. That Forum Fisheries Plan contains two objectives which are relevant to the management options proposed for SCI 3:
- a) Management objective 3: 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; and
 - b) Management objective 5: to restore, maintain and enhance the mauri and wairua of fisheries throughout the South Island.
607. Fisheries New Zealand considers that the management options presented in this advice paper will contribute towards the achievement of these management objectives in ensuring that the fishery remains sustainable, and that environmental impacts are minimised.

1.4 SETTING THE TAC

608. Section 13(2)(c)(i) of the Act requires you to set a TAC that enables the level of any stock whose current level is above that which can produce the maximum sustainable yield to be altered in a way, and at a rate, that will result in the stock moving towards or above a level that can produce the maximum sustainable yield, having regard to the interdependence of stocks.
609. With an average catch of 190 kg per SCI 3 target tow, sea perch (SPE 3 and SPE 4) is the QMS species most frequently caught as non-target bycatch within the SCI 3 fishery. During the last five years, the TACCs of both SPE 3 and SPE 4 have been under caught by an average of 382 tonnes (38%) and 484 tonnes (53%) respectively.
610. With an average catch of 103 kg per SCI 3 target tow, ghost shark (GSH 3 and GSH 4) is the second most frequent QMS species caught as non-target bycatch within the SCI 3 fishery. During the last five years, the TACCs of both GSH 3 and GSH 4 have been under caught by an average of 678 tonnes (57%) and 156 tonnes (42%) respectively.
611. Planned research monitoring and quantifying fish and invertebrate bycatch and discards within the scampi fishery is conducted every five years. The most recent assessment was conducted in 2016/17⁵ and the next assessment is scheduled for 2021/22. If any non-QMS bycatch species are identified through the regular monitoring process as requiring

⁵ Accessible at: <https://www.mpi.govt.nz/dmsdocument/29351/loggedIn>

additional management, the species may be considered for QMS introduction or managed through alternative sustainability measures under section 11 of the Act.

612. When exercising powers in relation to the utilisation of fisheries resources or ensuring sustainability, Section 9 of the Act requires you to take into account three environmental principles as detailed within the 'Statutory Considerations' chapter of this document. The likely impacts of all proposed options pertaining to associated or dependant species, the biological diversity of the aquatic environment and habitats of particular significance for fisheries management are summarised below.
613. The 2017 risk assessment that underpins the NPOA Seabirds identified that scampi trawl fisheries contribute 10% of the total risk score for Salvin's albatross and 5% of the total risk score for flesh-footed shearwaters. Both species have been identified as being at '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 risk for these birds.
614. The capture rate of marine mammals in tows targeting scampi in SCI 3 is low with New Zealand fur seals being the only marine mammal to have been observed caught within the SCI 3 target fishery. Four New Zealand fur seals were estimated to have been caught by vessels used to target all scampi stocks in 2015/16 (tows targeting scampi in SCI 3 are responsible for approximately 36% of total scampi effort).
615. The three shark, ray or chimaera species caught most frequently as non-target bycatch within the SCI 3 target fishery (ghost shark, smooth skate and rough skate) are managed through the QMS. The likely impacts of options to increase the TAC of SCI 3 upon ghost shark stocks are detailed above. As the relevant smooth and rough skate fish stocks (SSK 3 and RSK 3) have been under caught by an average of 98 tonnes and 126 tonnes respectively during the last three years, the proposed options are very unlikely to affect the sustainability of smooth or rough skate fish stocks.
616. Non-QMS sharks, rays or chimaeras are infrequently caught within the SCI 3 target fishery. Data recorded by Fisheries New Zealand observers shows that carpet sharks are the most frequently caught non-QMS shark species in SCI 3 target tows. Analysis of observer derived data suggests that catches of carpet shark are likely to increase by less than 1 tonne under both options to increase the TAC of SCI 3. Carpet shark catches in deepwater fisheries have averaged 51 tonnes over the last three fishing years, therefore the proposed options are unlikely to significantly increase total carpet shark catches.
617. With an estimated annual trawl footprint of approximately 1% of the 'fishable area' of New Zealand's Exclusive Economic Zone, bottom trawling for scampi is known to have an impact upon the benthic environment. However, the impact scampi target tows have on the benthic environment is mitigated by the light bottom gear utilised to target scampi. Additionally, as the SCI 3 fishery is concentrated in areas where soft sediment/mud substrate predominates, tows targeting scampi in SCI 3 are unlikely to impact upon fragile benthic invertebrate communities which are found primarily in areas of hard benthic substrate.
618. Given that the SCI 3 fishery is constrained to a specific depth band and substrate, an increase in fishing effort targeting scampi in SCI 3 will likely result in an increase in the

density of fishing effort within currently or historically fished areas, rather than the spreading of scampi fishing into other benthic habitats.

619. No habitats of particular significance for fisheries management, as per section 9(c) of the Act, have been determined for the SCI 3 stock.
620. Section 11 of the Act sets out various matters that you must take into account or have regard to when setting or varying any sustainability measures (such as a TAC). These include any effects of fishing on the stock and the aquatic environment as well as any relevant fisheries plan (refer to section 1.6 of the Statutory Considerations section for a full description).

2.4.1 Option 1 (*Status quo*)

621. Maintaining the current TAC, TACC and allowances of scampi in SCI 3 (Option 1) would result in no changes to the sustainability of the stock. However, as the biomass of scampi in SCI 3 is currently estimated to be above the management target and estimates of future biomass (up to 2021) are similar under all proposed options, Option 1 would not maximise utilisation of scampi in SCI 3. The environmental impacts of fishing would remain the same under Option 1.
622. Forest & Bird and ECO assert that environmental impacts are not being mitigated, reduced or meaningfully managed. As described in Section 2.1.3, there are a range of initiatives in place to avoid and mitigate the environmental impacts of fishing. Despite the views of Forest & Bird and ECO that Benthic Protection Areas are not effective because they don't protect areas impacted by fishing, Fisheries New Zealand considers that Benthic Protection Areas and protection of pristine environments do contribute to the protection of deepwater habitat.
623. Other regulatory measures include mandatory use of seabird scaring devices by trawlers over 28 m in length. Additionally, non-regulatory measures that improve environmental performance, such as the NPOA Seabirds, NPOA Sharks, Vessel Management Plans and Marine Mammal Operational Procedures, are all effective management tools.

2.4.2 Option 2

624. Under Option 2, the TAC of SCI 3 would increase from 357 tonnes to 394 tonnes (10% increase). On the basis of projection outputs, it is estimated that the likelihood of future biomass (up to 2021) falling below the management target is very low under Option 2. Therefore, Option 2 would provide for increased SCI 3 utilisation whilst maintaining the biomass of scampi in SCI 3 above the management target with a very high degree of likelihood.
625. Based on an observer-derived average scampi catch of 222 kg per SCI 3 target tow⁶, it is estimated that Option 2 would result in an increase in annual fishing effort of approximately 158 tows. Fisheries New Zealand acknowledges that the quantity of non-target bycatch taken will increase under Option 2. However based on information presented above, Option 2 is considered unlikely to impact upon the sustainability of, or availability of ACE for sea perch or ghost shark fish stocks. As described in section 2.4, processes are in place to monitor and manage any risks associated with the increase in bycatch.

⁶ Calculated from 551 tows observed between the 2012/13 and 2016/17 fishing years. This equates to approximately 7% of effort.

626. Fisheries New Zealand acknowledges that under Option 2 more seabirds may be incidentally captured by the scampi fleet targeting scampi in SCI 3. As described in section 2.1.3, processes are in place to minimise interactions between seabirds and the scampi trawl fleet. Fisheries New Zealand will continue to monitor seabird interaction rates to determine whether increased fishing effort is having an undue negative impact on seabird populations.
627. Given the relatively modest increase in fishing effort likely under Option 2, coupled with the low capture rate of New Zealand fur seals in scampi target tows, Fisheries New Zealand is satisfied that the additional risk to marine mammals is low.
628. Fisheries New Zealand acknowledges that Option 2 will result in increased catches of some shark species, however given the low volume nature of the scampi fishery, Fisheries New Zealand is satisfied that the additional risk to sharks is low.
629. Whilst Fisheries New Zealand acknowledges that Option 2 will result in increased contact with the benthos, Fisheries New Zealand is satisfied that the additional risk to the benthic habitat is low.
630. Two submissions expressed support for Option 2, however, neither the Iwi Collective Partnership nor Kahungunu Asset Holding Company provided further details on why it was their preferred option.

2.4.3 Option 3 (Fisheries New Zealand Recommended)

631. Under Option 3, the TAC of SCI 3 would increase from 357 tonnes to 428 tonnes (20% increase). On the basis of projection outputs, it is estimated that the likelihood of future biomass (up to 2021) falling below the management target is very low under Option 3. Therefore, Option 3 would provide for increased SCI 3 utilisation whilst maintaining the biomass of scampi in SCI 3 above the management target with a very high degree of likelihood.
632. Based on an observer-derived average scampi catch of 222 kg per SCI 3 target tow, it is estimated that Option 3 will result in an increase in annual fishing effort of approximately 307 tows. Fisheries New Zealand acknowledges that the quantity of non-target bycatch taken will increase under Option 3. However based on information presented above, Option 3 is considered unlikely to impact upon the sustainability of, or availability of ACE for sea perch or ghost shark fish stocks. As described in section 2.4, processes are in place to monitor and manage any risks associated with the increase in bycatch.
633. Fisheries New Zealand acknowledges that under Option 3 more seabirds may be incidentally captured by the scampi fleet targeting scampi in SCI 3. As described in section 2.1.3, processes are in place to minimise interactions between seabirds and the scampi trawl fleet (described above). Fisheries New Zealand will continue to monitor seabird interaction rates to determine whether increased fishing effort is having an undue negative impact on seabird populations.

634. Given the relatively modest increase in fishing effort likely under Options 3, coupled with the low capture rate of New Zealand fur seals in scampi target tows, Fisheries New Zealand is satisfied that the additional risk to marine mammals is low.
635. Fisheries New Zealand acknowledges that Option 3 will result in increased catches of some shark species, however given the low volume nature of the scampi fishery, Fisheries New Zealand is satisfied that the additional risk to sharks is low.
636. Whilst Fisheries New Zealand acknowledges that Option 3 will result in increased contact with the benthos, Fisheries New Zealand is satisfied that the additional risk to the benthic habitat is low.
637. Option 3 was favoured by three submitters. Ngati Whatua Fisheries Ltd. support Option 3, however no rationale was provided to support their decision. Deepwater Group support Option 3 on the basis that scientific information indicates the stock will be maintained at, or above, sustainable limits. Te Ohu Kaimoana support the submission of Deepwater Group and therefore support Option 3.

2.5 ALLOCATING THE TAC

638. Under section 21 of the Act, when setting or varying the TACC of any stock, you are required to take into account the TAC and you must have regard to Māori customary fishing interests, recreational fishing interests and all other sources of fishing related mortality.
639. Te Ohu Kaimoana's submission included a suggested framework for setting allowances within the TAC. The framework for determining customary and recreational allowances is set out under sections 20 and 21 of the Act and this is discussed in the Statutory Considerations section of this paper (Part 2). As noted in that section, the Supreme Court has said that the recreational allowance is simply the best estimate of what recreational fishers will catch while being subject to the controls which you decided to impose upon them (e.g. bag limits, minimum sizes and other restrictions). In Fisheries New Zealand's view this would also apply to the customary allowance, albeit that you do not have the same ability to control the customary allowance as you do for the recreational allowance—see discussion of this point in *1.3 Setting allowances (in Part 3: Key issues raised in submissions)*.

2.5.1 Māori customary allowance

640. The position of Te Waka a Māui, although not specific to SCI 3, is that: a) the data on the customary allowance is inaccurate and b) customary take is regulated by iwi and is based on need.
641. Despite Te Waka a Māui's position, no information was received during consultation regarding the customary take of scampi in SCI 3. Consequently, Fisheries New Zealand proposes the retention of a zero tonne allowance for this sector under all options, noting that this does not preclude any customary take.

2.5.2 Recreational allowance

642. There is no known recreational take of scampi in SCI 3. Under all options, Fisheries New Zealand proposes the retention of a zero tonne allowance for this sector, noting that this does not preclude any recreational take.

2.5.3 Allowance for other sources of mortality caused by fishing

643. Other sources of mortality caused by fishing is an allowance to account for all unreported mortality associated with fishing activity. This includes estimates for mortality of fish that encounter fishing gear but are not captured, such as fish that pass through the trawl net mesh and die as a result.

644. For SCI 3, the current allowance for other sources of mortality caused by fishing is set at 5% of the TACC. Fisheries New Zealand has no information to suggest this proportion should be changed. Therefore, under all options, Fisheries New Zealand proposes to retain the allowance for other sources of mortality caused by fishing at 5% of the TACC.

2.5.4 TACC

645. Given the results of the 2018 SCI 3 stock assessment (described above), increases to the TACC, as proposed, are very unlikely to result in the biomass of scampi in SCI 3 falling below management targets.

646. Increasing the TACC of SCI 3 would result in direct economic benefit to fishers. Given an estimated export price for scampi of \$40.60/kg free on board (FOB)⁷, Options 2 and 3 are likely to result in an increase in annual revenue of \$1.4M and \$2.8M respectively.

1.6 OTHER MANAGEMENT CONTROLS

2.6.1 Deemed value rates

647. Given that SCI 3 landings have not exceeded the available ACE during the last five years, Fisheries New Zealand considers that the current deemed value rates are appropriate. Therefore, to ensure consistency with the deemed value rates of other scampi stocks, no changes are proposed to the deemed value rates of SCI 3.

2.6.2 Crown-held quota

648. Due to a longstanding legal dispute regarding the allocation of SCI 3 quota shares, approximately 30% of SCI 3 quota shares are held by the Crown. The resultant ACE is annually transferred to commercial fishers through public tender. For the 2017/18 fishing year, 104 tonnes of Crown held ACE was transferred to commercial fishers. Under Options 2 and 3, the Crown's ACE holdings will be 114 tonnes and 124 tonnes respectively.

649. Crown ACE tenders are held early in the fishing year, typically in November. As part of their submission, Deepwater Group requested that the Crown tender its SCI 3 ACE prior

⁷ FOB - Free on board. The value of export goods, including raw material, processing, packaging, storage and transportation up to the point where the goods are about to leave the country as exports. FOB does not include storage, export transport or insurance cost to get the goods to the export market.

to the start of the fishing year (1 October). Fisheries New Zealand met with SCI 3 quota holders in August and received a similar request. Fisheries New Zealand will investigate the feasibility of moving the ACE tender process forward to early October, noting that this would require development of a separate administrative process and, given the timing, it may not be possible for the coming fishing year and/or cost effective to do so.

2 Conclusion and Recommendation

650. Fisheries New Zealand consulted on three options for the management settings of scampi in SCI 3 based on the 2018 SCI 3 stock assessment.
651. Of the seven submissions received: two submissions support Option 1 (*status quo*): two submissions support Option 2 (increasing the TAC from 357 tonnes to 394 tonnes): and three submissions support Option 3 (increasing the TAC from 357 tonnes to 428 tonnes).
652. The 2018 SCI 3 stock assessment estimated the biomass of scampi in SCI 3 as Very Likely above management targets. Forward projections of the 2018 stock assessment estimated that biomass of scampi in SCI 3 will remain above the management target until 2021 under all proposed options.
653. Fisheries New Zealand recommends that you agree to Option 3, increasing the TAC from 357 tonnes to 428 tonnes (and the TACC from 340 tonnes to 408 tonnes). This Option is consistent with your obligations under the Act and will provide for increased utilisation within limits.
654. The next SCI 3 stock assessment is scheduled for 2021. This will indicate whether the increase in the TAC of SCI 3 has had any measurable effect on the status of the stock.
655. Fisheries New Zealand recommends that you retain the existing deemed value rates for SCI 3.

Option 1

Agree to retain the SCI 3 TAC at 357 tonnes and within the TAC:

- i. Retain the allowance of 0 tonnes for Māori customary non-commercial fishing interests;
- ii. Retain the allowance of 0 tonnes for recreational fishing interests;
- iii. Retain the allowance of 17 tonnes for other sources of fishing-related mortality;
- iv. Retain the SCI 3 TACC at 340 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 2

Agree to increase the SCI 3 TAC from 357 to 394 tonnes and within the TAC:

- i. Retain the allowance of 0 tonnes for Māori customary non-commercial fishing interests;
- ii. Retain the allowance of 0 tonnes for recreational fishing interests;
- iii. Increase the allowance for other sources of fishing-related mortality from 17 to 19 tonnes;
- iv. Increase the SCI 3 TACC from 340 to 375 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 3 (Fisheries New Zealand recommended)

Agree to increase the SCI 3 TAC from 357 to 428 tonnes and within the TAC:

- i. Retain the allowance of 0 tonnes for Māori customary non-commercial fishing interests;
- ii. Retain the allowance of 0 tonnes for recreational fishing interests;
- iii. Increase the allowance for other sources of fishing-related mortality from 17 to 20 tonnes;
- iv. Increase the SCI 3 TACC from 340 to 408 tonnes.

Agreed / Agreed as Amended / Not Agreed

Stuart Nash
Hon Stuart Nash
Minister of Fisheries

13 / 9 / 2018

Option 1

Agree to retain the SCI 3 TAC at 357 tonnes and within the TAC:

- i. Retain the allowance of 0 tonnes for Māori customary non-commercial fishing interests;
- ii. Retain the allowance of 0 tonnes for recreational fishing interests;
- iii. Retain the allowance of 17 tonnes for other sources of fishing-related mortality;
- iv. Retain the SCI 3 TACC at 340 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 2

Agree to increase the SCI 3 TAC from 357 to 394 tonnes and within the TAC:

- i. Retain the allowance of 0 tonnes for Māori customary non-commercial fishing interests;
- ii. Retain the allowance of 0 tonnes for recreational fishing interests;
- iii. Increase the allowance for other sources of fishing-related mortality from 17 to 19 tonnes;
- iv. Increase the SCI 3 TACC from 340 to 375 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 3 (Fisheries New Zealand recommended)

Agree to increase the SCI 3 TAC from 357 to 428 tonnes and within the TAC:

- i. Retain the allowance of 0 tonnes for Māori customary non-commercial fishing interests;
- ii. Retain the allowance of 0 tonnes for recreational fishing interests;
- iii. Increase the allowance for other sources of fishing-related mortality from 17 to 20 tonnes;
- iv. Increase the SCI 3 TACC from 340 to 408 tonnes.

Agreed / Agreed as Amended / Not Agreed

Stuart Nash
Hon Stuart Nash
Minister of Fisheries

13 / 9 / 2018

PART 6: CLOSURE OF THE KAIPARA HARBOUR SCALLOP FISHERY

Proposal to close the Kaipara Harbour to the taking of scallops

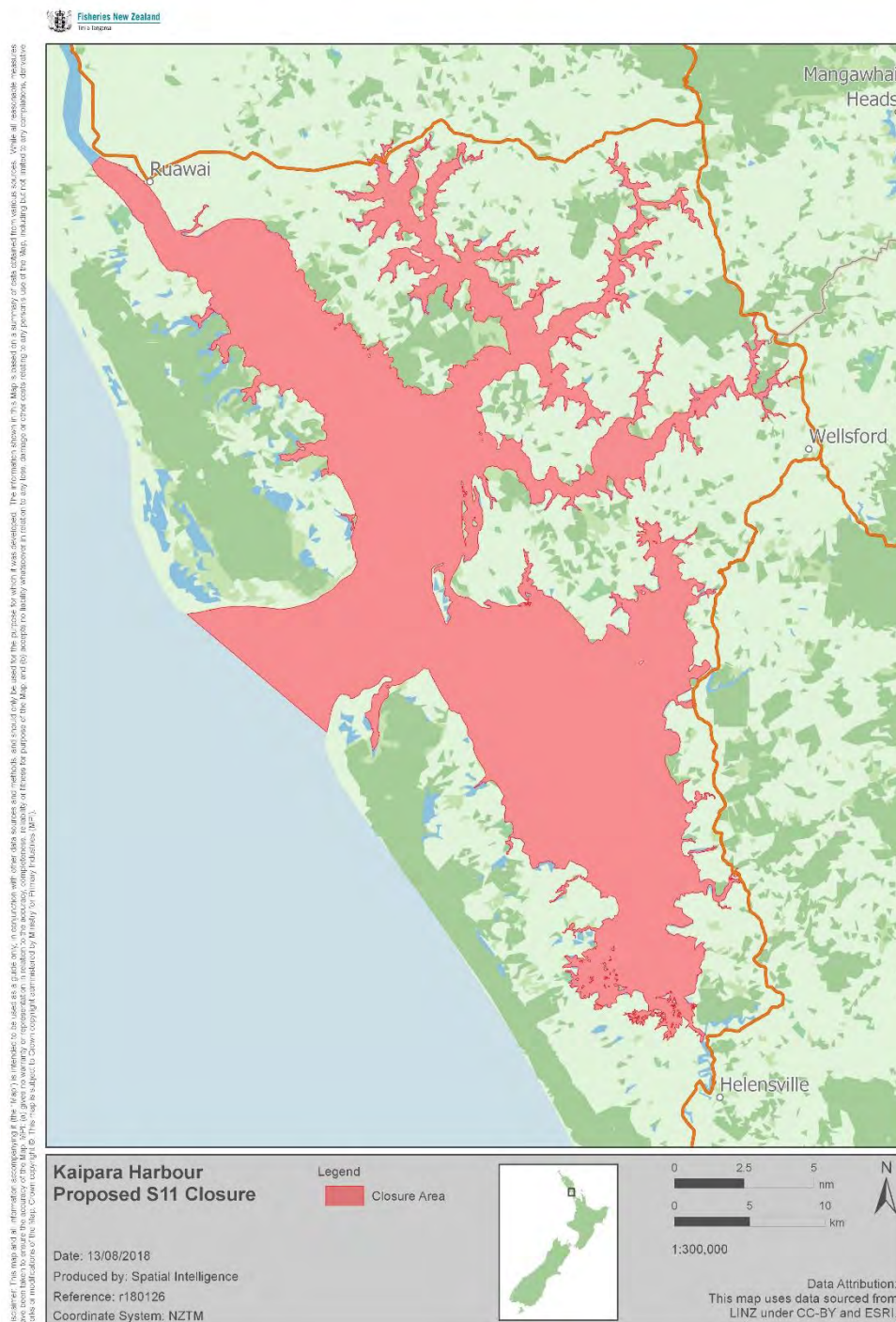


Figure 1: The proposed area for the closure of the Kaipara Harbour to the taking of scallops, as a sustainability measure under section 11 of the Fisheries Act 1996.

1 Summary

656. Fisheries New Zealand consulted on two options for management settings for scallops (*Pecten novaezelandiae*; kuakua, tipa, tupa) in the Kaipara Harbour (Figure 1). These options are set out in Table 1:

Table 1. Proposed options for managing the taking of scallops in the Kaipara Harbour

	Management action
Option 1 (<i>Status quo</i>)	No changes made to current management.
Option 2	Close the Kaipara Harbour to the taking of scallops as a sustainability measure under section 11 of the Fisheries Act 1996.

657. The 2017 survey of the harbour showed that scallop abundance has declined and distribution has reduced to the extent that a sustainability risk is indicated. The available information also suggests that increased sedimentation in the harbour is likely to have made the environment less suitable for scallop recruitment.
658. Although there are existing management measures in place, including a daily bag limit of 20 scallops and a minimum legal size of 100 mm, a closure of the harbour to scallop harvesting was proposed to provide the best opportunity for scallops in the harbour to recover. Fisheries New Zealand will continue to engage with communities and local authorities to support work to improve the harbour environment.
659. Following the analysis of submissions and additional discussions with tangata whenua, Fisheries New Zealand recommends Option 2: closing the Kaipara Harbour to the taking of scallops under section 11 of the Fisheries Act 1986 (The Act).

2 Need for review

660. The best available information suggests that there is a sustainability risk to the scallop population within the Kaipara Harbour. The most recent scientific survey (2017) indicates that scallop abundance in the harbour is the lowest on record and the distribution of scallops in the harbour is increasingly limited, with very few scallop beds having scallops of harvestable size. Survey results also show very low juvenile scallop abundance, with sampled scallops in the harbour also identified to be in poor condition, with several diseases detected.¹

2.1 CONTEXT

2.1.1 Fishery characterisation

661. The Kaipara Harbour is the largest inland coastal harbour in the southern hemisphere and an important area for fish stocks and fishing.² Scallops are traditionally important in this area for recreational and customary fishers. Commercial fishing for scallops in the harbour has been prohibited since 1986.
662. Recreational harvesting of scallops has been a popular activity in the Kaipara Harbour. Due to the strong tidal movements, scallops are primarily taken by dredging within the harbour. In the 2011-2012 National Panel Survey, 67 044 scallops were harvested in FMA 9 (the North West region – from north Taranaki to North Cape) by recreational fishers. While data are not available for the harvesting of scallops in the Kaipara Harbour

¹ Williams, J.R.; Bian, R.; Roberts, C.L. (2018). Survey of scallops in Kaipara Harbour, 2017. New Zealand Fisheries Assessment Report 2018/20.

² Morrison, M.A.; Lowe, M.L.; Jones, E.G.; Makey, L.; Shankar, U.; Usmar, N.; Miller, A.; Smith, M.; Middleton, C. (2014). Habitats of particular significance for fisheries management: the Kaipara Harbour. New Zealand Aquatic Environment and Biodiversity Report No. 129. 169 p. <https://www.mpi.govt.nz/dmsdocument/4367/send>

specifically, it is likely that the greatest proportion of the scallop harvest from the FMA 9 data is from the Kaipara and Manukau Harbours.

663. The northern half of the Kaipara Harbour is under the Kaimoana regulations. Aside from this, there is limited quantitative information on the customary take of scallops in the Kaipara Harbour. The best available data from permit reports suggest that no more than 435 kgs of scallops were collected in any one year. However, scallops are a part of traditional harvest by Māori, and the health of the scallop population as well as the ability to have customary take from the harbour is important to iwi and hapū of the region, who view scallops as a taonga species.
664. Scallop abundance is known to vary greatly from year to year due to the species' relatively short lifespan and sensitivity to environmental conditions. However, an overall decline in scallop abundance and distribution in the Kaipara Harbour has been seen over the last sixty years.
665. Since the early 2000s, in particular, there has been increasing concern about environmental and fishing pressure on the scallop beds in the harbour. Previous closures to the taking of scallops in the Kaipara Harbour occurred for three fixed periods (15 July 2005 to 14 July 2007, 14 September 2007 to 13 September 2008, and 28 November 2008 to 27 November 2009) under section 186A of the Act, in response to requests from tangata whenua and key stakeholders.
666. Consultations on the first two temporary closures received widespread support from all sectors, while consultation on the third temporary closure received a significant number of submissions in opposition. Reasons for opposition included concern over the reliability of scientific information, observations that the scallop population abundance and size will vary regardless of recreational harvesting, and anecdotal evidence that there remained an abundance of scallops in the Kaipara Harbour.
667. The distribution and abundance of scallops in the Kaipara Harbour was previously surveyed in August 2007 and November 2009. We have not had a regular programme of monitoring, and the next survey was in 2017. The 2017 survey was the most comprehensive survey to date, and will be used to develop a monitoring programme for the future.

2.1.2 Current management approach

668. The controls on fishing for scallops in the Kaipara Harbour include a seasonal closure between 1 April and 31 August each year³, a minimum legal size of 100 mm⁴, and a recreational daily bag limit of 20 scallops per person⁵.
669. In the past, temporary closures have been implemented in response to concerns about scallop abundance. Closing all or significant parts of a scallop fishery has been used both in New Zealand (for example, the Southern Scallop fishery) and overseas as a means to help rebuild scallop numbers.

³ Fisheries (Amateur Fishing) Regulations 2013. Season dates were changed in 2008 (Regulation 8: substituted, on 1 April 2008, by regulation 4 of the Fisheries (Auckland and Kermadec Areas Amateur Fishing) Amendment Regulations 2008).

⁴ Fisheries (Amateur Fishing) Regulations 2013 (Schedule 2, Part 2)

⁵ Fisheries (Amateur Fishing) Regulations 2013. <http://www.legislation.govt.nz/regulation/public/2013/0482/latest/DLM3629901.html>

2.1.3 Current stock status

670. The 2017 survey indicated a decrease in legal-sized scallops from 680 000 scallops surveyed in 2009, to 400 000 scallops in the same areas surveyed in 2017. The 2017 survey results also indicated that the spatial distribution of scallops has become more limited, and scallops are now primarily found only in the southern areas of the harbour (Figure 2). Legal-sized scallops were also only shown to be caught in the south of the harbour (Figure 3), with numbers of small scallops (under 70mm) being almost absent in the 2017 population compared to previous surveys, indicating additional concerns about reduced recruitment (Figure 4).⁶

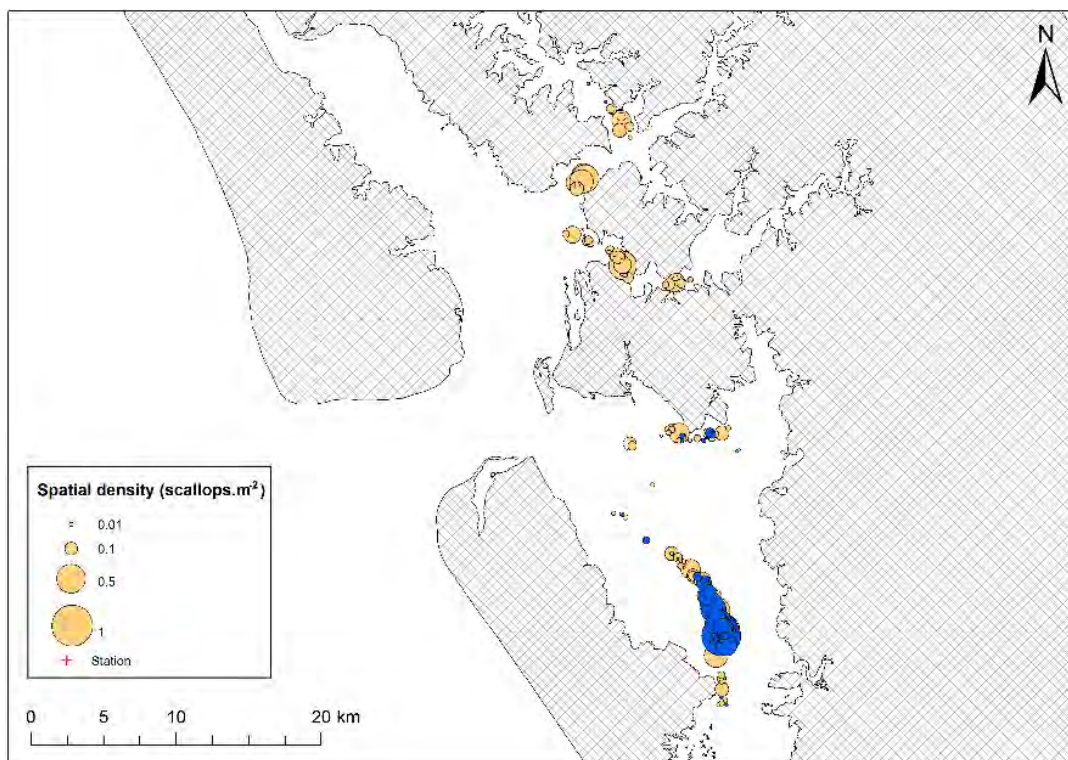


Figure 2: Spatial density of scallops in the Kaipara Harbour. Beige indicates 2007 and 2009 distributions, and blue indicates 2017 distribution.

⁶ Recruitment is defined as the addition of new individuals to the fished component of a stock. This is determined by the size and age at which fish are first caught.

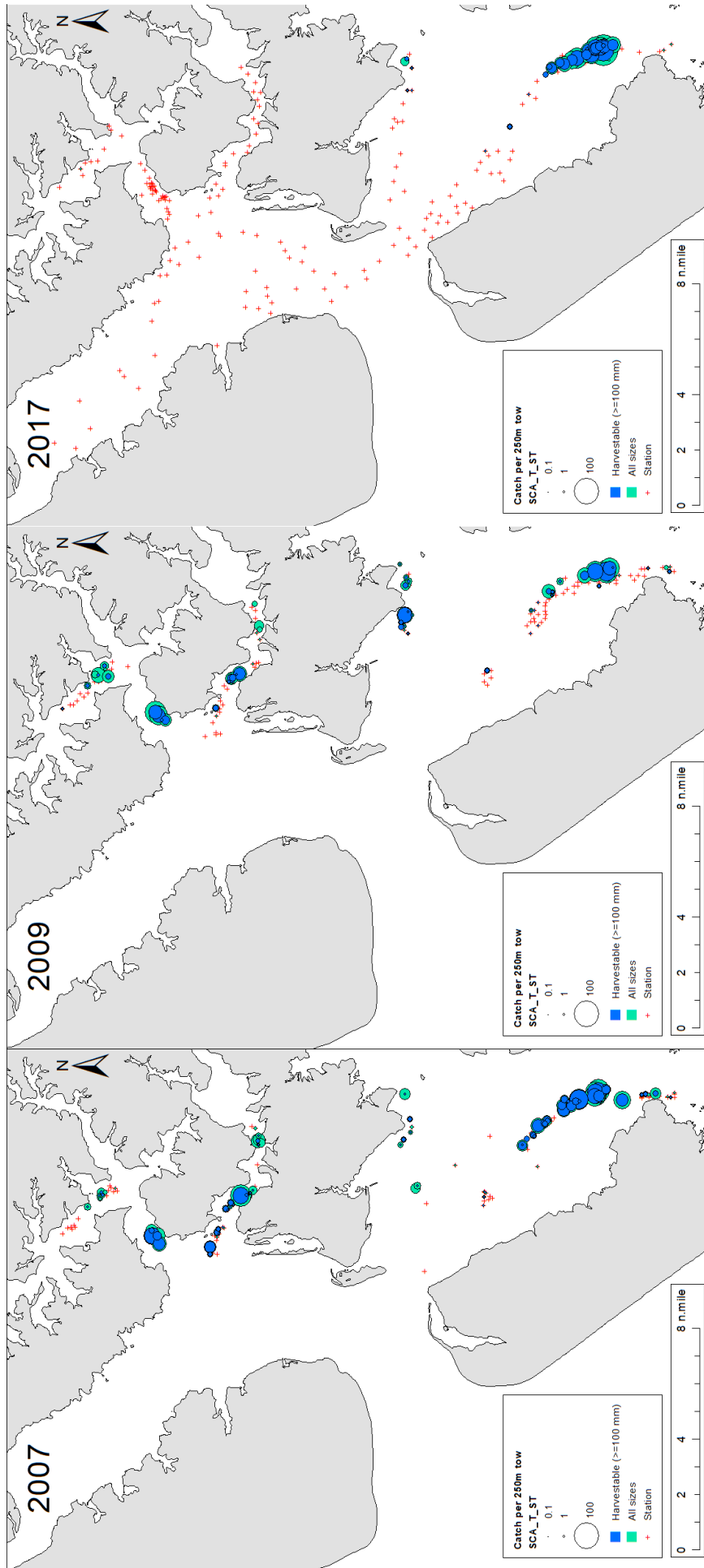


Figure 3: 2007, 2009, 2017 surveyed areas showing stations in red, all-size populations in green, and harvestable-sized populations in blue.

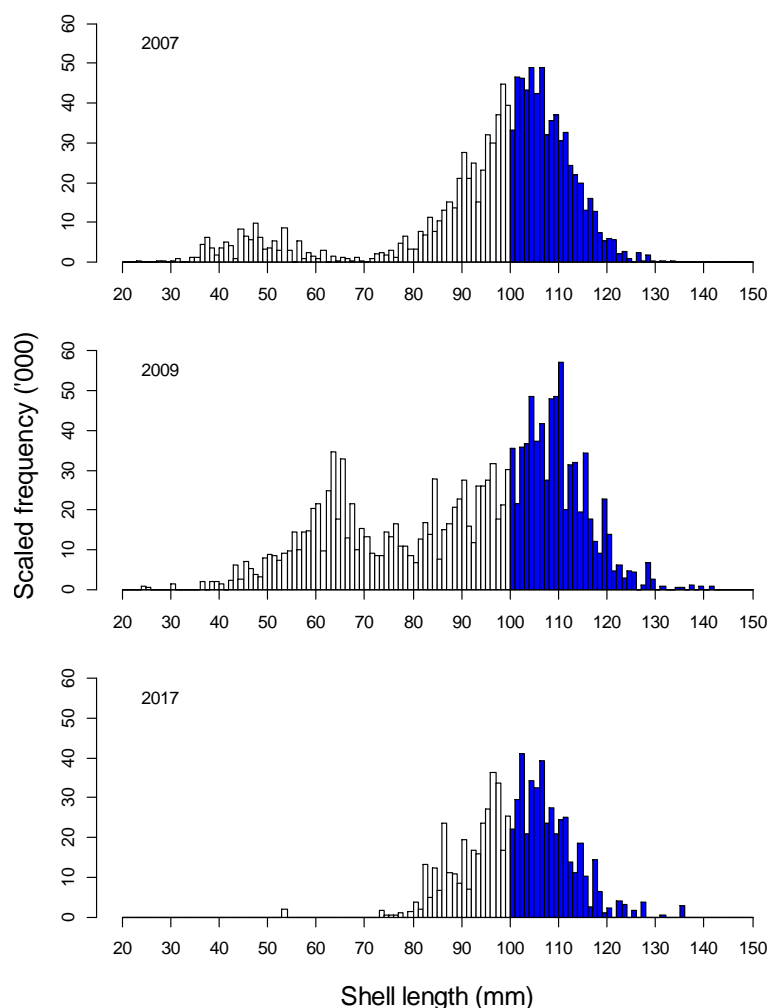


Figure 4: Length-frequency graph for sampled scallops in the Kaipara Harbour in 2007, 2009, and 2017. The length frequencies of scallops of legal size are shaded blue, while the length frequencies of sub-legal size scallops are shaded white.

671. Scallops collected from the areas of Shelly Beach (south-western Kaipara Harbour) and Tauhoa (eastern central Kaipara Harbour) during the 2017 survey were identified to be in poor condition. Histopathology and bacteriology studies⁷ detected several diseases. Evidence included extreme damage to digestive glands, which is consistent with virus-like particles common to scallops.
672. Survey results over a 10-year period also indicate increased amounts of sedimentation in the harbour.⁸ As young scallops are unable to survive if they have to settle on mud or silt, this contributes to reduced recruitment to the scallop population. The absence of scallops in areas which previously supported dense scallop beds suggests that previously suitable habitats for scallops may no longer be present.

⁷ Williams, J.R.; Bian, R.; Roberts, C.L. (2018). Survey of scallops in Kaipara Harbour, 2017. New Zealand Fisheries Assessment Report 2018/20.

⁸ Morrison, M.A.; Lowe, M.L.; Jones, E.G.; Makey, L.; Shankar, U.; Usmar, N.; Miller, A.; Smith, M.; Middleton, C. (2014). Habitats of particular significance for fisheries management: the Kaipara Harbour. New Zealand Aquatic Environment and Biodiversity Report No. 129. 169 p. <https://www.mpi.govt.nz/dmsdocument/4367/send>

2.2 OPTIONS CONSULTED ON

673. Fisheries New Zealand consulted on two options for management settings for scallops in the Kaipara Harbour:
674. Option 1 (*Status quo*), where no management changes would occur. Recovery and sustainability of the scallop population would rely on the current rules for managing the scallop fishery.
675. Option 2, a closure of the Kaipara Harbour to the taking of scallops, under section 11 of the Act as a sustainability measure. If implemented, the closure could be revoked in the future if there was evidence to show that scallop abundance, distribution, and health had improved sufficiently to support utilisation.

2.3 VIEWS OF SUBMITTERS

2.3.1 Submissions received

676. Fisheries New Zealand received eight submissions and 14 responses to the online survey on the proposal to close the Kaipara Harbour to the taking of scallops. These were from:
- a) Environment and Conservation Organisations of NZ (ECO)
 - b) The Royal Forest and Bird Protection Society of New Zealand Ltd (Forest & Bird)
 - c) Nga Tirairaka o Ngāti Hine Environmental Organisation
 - d) Ngāti Whātua Fisheries Ltd
 - e) Raewyn Peart – Environmental Defence Society
 - f) Te Ohu Kaimoana
 - g) Te Runanga o Ngāti Hine
 - h) Trish Rea – New Zealand Sport Fishing Council

2.3.2 Responses from the online survey

- a) Ben – recreational sector
- b) Candice Lawson – recreational sector
- c) Esther Stuck – recreational sector
- d) Finn Innes – recreational sector
- e) Glenn Kipling – recreational sector
- f) Jackson Middleton – recreational sector
- g) John Llewellyn – recreational sector
- h) Jono Sergeant – recreational sector
- i) Karen Field – environmental sector
- j) Lennon – recreational sector
- k) Michael Jenkins – recreational sector
- l) Shayne Elliot – recreational sector
- m) Steve Oswald – recreational sector
- n) Member of the general public (name redacted)

2.3.3 Summary of all views submitted

677. Of the total 22 views submitted, including submissions and survey responses, 18 were in support of a closure, one was in support of current management arrangements, and one was in support of other options. Two submissions supported the views of tangata whenua of the Kaipara Harbour.
678. Most submissions came with either general comments or no comments relaying their option of support.
679. Full submissions are attached in Appendix 2.
680. Environment and Conservation Organisations of NZ supports the closure of the Kaipara Harbour scallops fishery for an indefinite period. Environment and Conservation Organisations of NZ notes that they support another survey in 2020, and using this information to guide future management. They also note that benthic impacts of scallop dredging should be considered and that there is currently no strategy to avoid, remedy, or mitigate the impacts of bottom fishing.
681. Forest & Bird supports the proposed closure of the recreational fishery.
682. Nga Tirairaka o Ngāti Hine Environmental Organisation commented that they support tangata whenua of the Kaipara region and their choices in regards to scallops in the Kaipara Harbour.
683. Ngāti Whātua Fisheries Ltd supports Option 2.
684. The Environmental Defence Society supports Option 2. The Environmental Defence Society also believes you are obliged to consider additional measures in order to meet the purpose of the Act under s 8. This is because they believe excluding the harvest of scallops within the harbour alone will likely be insufficient to ensure sustainability, and that it is also likely to be insufficient to apply the environmental principle that “habitat of particular significance for fisheries management should be protected” under s 9C. They therefore seek for this to be fulfilled by Fisheries New Zealand urgently preparing, and you are considering for approval, a fisheries plan for the Kaipara Harbour under s 11A of the Act.
685. Te Ohu Kaimoana supports Option 2. Te Ohu Kaimoana have commented that they support Te Runanga o Ngāti Whātua and their position to close the fishery. They note that Te Runanga o Ngāti Whātua have expressed concern over the health of the Kaipara scallop beds to the extent that kaitiaki are currently not issuing customary permits for their harvest. Te Ohu Kaimoana also urges Fisheries New Zealand to commence formal processes with iwi and other interested parties in this fishery to lead to improved management of both the habitat and scallop biomass. They state that this would involve leadership at the agency level from Fisheries New Zealand, working with users of both fishing and land-based resources.
686. Te Runanga o Ngāti Hine, the runanga organisation of Ngāti Hine, also commented that they support the tangata whenua of the Kaipara region and their choices in regards to scallops in the Kaipara Harbour.

687. The New Zealand Sport Fishing Council supports the closure of the Kaipara Harbour to all harvesting of scallops until abundance is restored.
688. Jono Sergeant, Candice Lawson, Michael Jenkins, Finn Innes, Shayne Elliot, Esther Stuck, Jackson Middleton, Ben, and a member of the general public supported Option 2.
689. Steve Oswald mentioned that he had noticed the lack of abundance and quality of the scallops over the past few years in the harbour, so he supports a closure until the scallops have made a decent recovery.
690. Karen Field stressed the importance of not letting our fish stocks become overly depleted. She also mentioned how dredging for scallops has a significant impact on bottom habitat and future recruitment of scallops, so is in support of Option 2.
691. John Llewellyn mentioned that the previous temporary closures to the taking of scallops in the Kaipara Harbour showed no real improvement in the stock, and wishes to see the closure in place for at least 10 years, and then re-evaluated.
692. Glenn Kipling preferred Option 1, to keep current management measures in place.
693. Lennon, a Survey Monkey respondent from the recreational sector, preferred an option for scallops in the Kaipara Harbour to shorten the season and reduce the daily bag limit.

2.3.4 Fisheries New Zealand's response to submissions

694. As mentioned above, the Environmental Defence Society seeks that Fisheries New Zealand urgently prepares, and you consider for approval, a fisheries plan for the Kaipara Harbour under s 11A of the Act, which (amongst other matters) identifies habitat of particular significance for scallops within the harbour. The Environmental Defence Society believes that the increased amount of sedimentation which is likely to be impacting recruitment, means that excluding fishing will likely be insufficient to ensure sustainability, and therefore the proposal to only close the harbour to the taking of scallops, does not meet s 9(c) of the Act. Because of this, they believe you are obliged to consider additional measures in order to meet the purpose of the Act under s 8. They suggest that these additional measures be the preparation of a fisheries plan as mentioned, to encourage better management of sedimentation under the Resource Management Act (RMA) and thereby helping ensure sustainability of the stock.
695. Fisheries New Zealand notes that you have the ability to approve a fisheries plan under s 11A of the Act, however you are not obliged to. An all-encompassing management plan for the Kaipara Harbour could be a useful tool to ensure the Kaipara stays healthy and productive. Fisheries New Zealand is working with the Integrated Kaipara Harbour Management Group (IKHMG) as mentioned below in section 2.4.2, as well as tangata whenua, to monitor the harbour's health and understand community concerns. As the Environmental Defence Society mentioned, sedimentation falls under the RMA, not the Fisheries Act, and therefore Fisheries New Zealand has no ability to control factors causing sedimentation.
696. Fisheries New Zealand notes that s 9(c) requires that you take into account that habitats of particular significance for fisheries management should be protected. While it is recognised that the Kaipara Harbour is an important habitat for a range of fished species,

Fisheries New Zealand considers that the variety of management measures already in place (no trawling or Danish seining and no commercial scallop dredging, among other measures) provides adequate protection. Fisheries New Zealand considers that proposing Option 2, to close the harbour to the taking of scallops, is sufficient to meet the requirements of s 8 and s 9(c) of the Act.

697. Fisheries New Zealand considers that either keeping current management or shortening the season and reducing daily bag limits will not address the risk that long-term sustainability and utilisation would be compromised for scallops in the Kaipara Harbour.

2.3.5 Input and participation of tangata whenua

698. 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 any sustainability measure.

699. In the pre-consultation stages of the October 2018 Sustainability Round, the results of the 2017 scallop survey and the option to consider a closure of the Kaipara Harbour to the taking of scallops were communicated to Ngā Maunga Whakahii o Kaipara, Te Uri o Hau, and Te Rūnanga o Ngāti Whātua. Ngā Maunga Whakahii o Kaipara Trust Board communicated its support of this closure in preliminary discussions, whilst communication was maintained with all parties, including Te Uri o Hau and Te Rūnanga o Ngāti Whātua throughout the consultation process.

700. Following receipt of the scientific survey results, we continued to engage with tangata whenua regarding their views on our proposals, through the formal consultation process, and prior to developing final advice to you.

701. The proposal to close the Kaipara Harbour scallop fishery seeks to give effect to provisions of the Fisheries Act 1996 and the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992 (the Settlement Act). These Acts address ongoing Treaty obligations on the Crown to make better provision for Māori non-commercial, customary fishing rights and interests, and Māori participation in the management and conservation of New Zealand's fisheries. In particular, the request assists in ensuring that the scallop stock in the harbour can provide, now and in the future, for the use and management practices of Māori as required by s 10 of the Settlement Act.

2.3.6 Kaitiakitanga

702. Under the Act, kaitiakitanga is 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.

703. Currently, there is no Iwi Fisheries Forum set up in the mid-north of the North Island to collectively gather the views of the iwi and hapū of this region. However, as mentioned, Fisheries New Zealand has discussed options with these groups throughout the sustainability round process, with Ngā Maunga Whakahii o Kaipara Trust Board communicating its support of this closure in preliminary discussions, and Ngāti Whātua Fisheries placing their submission in support of Option 2 during the consultation period.

704. Scallops (kuakua, tipa, tupa) are identified as a taonga species for Te Uri o Hau. Fisheries New Zealand considers that the management options presented in this document will

contribute towards maintaining kaitiakitanga for Ngā Maunga Whakahii o Kaipara, Te Uri o Hau, and Te Rūnanga o Ngāti Whātua.

2.4 EVALUATION OF OPTIONS

705. The current management measures for Kaipara scallops are a daily bag limit and a minimum size. Fisheries New Zealand does not consider that changes to these measures would be sufficient to ensure the sustainability of scallops in the harbour.

706. Closing a fishery is a management measure available to you (under s 11 of the Act) if it is necessary to ensure sustainability, and other measures such as catch limits are unlikely to suffice.

2.4.1 Option 1 (*Status quo*) – no changes made to current management

707. Under Option 1, no management changes will occur. Recovery and sustainability of the scallop population will rely on the current rules for managing the scallop fishery. Commercial fishing for scallops will continue to be prohibited in the harbour.⁹

708. This option has the least impact on harvesting, but provides the least protection to the remaining scallop population. Fisheries New Zealand considers that this option might not address the risk that long-term sustainability and utilisation would be compromised. We also consider that this option does not give adequate weight to the scientific information suggesting that the scallop population in the harbour has low abundance, limited spatial distribution, a risk to recruitment, and scallops of poor condition.

Option 2 – Implement a closure under s11 of the Fisheries Act 1996 (Fisheries New Zealand recommended)

709. Under Option 2, Fisheries New Zealand proposes a closure of the Kaipara Harbour to the taking of scallops, under s 11 of the Act.

710. The area proposed for closure is the same spatial boundary described in the New Zealand *Gazette* notice Fisheries (Kaipara Harbour Temporary Closure) Notice 2007¹⁰ as “that area of the New Zealand fisheries waters that lies within Kaipara Harbour, the entrance to which is defined by a straight line drawn from the southernmost extremity of North Head (at 36°23.81’S and 174°03.92’E) to South Head (at 36°28.06’S and 174°09.73’E)” (Figure 1).

711. The best available information suggests the abundance of scallops in the harbour is currently the lowest recorded, the scallops are limited in distribution compared to historical evidence, and have been identified to be in poor condition. In addition, information suggests there is increasing sedimentation in the harbour which poses a further risk to recruitment and the viability of a sustainable scallop population in the future. Continued harvesting of the population, while providing utilisation benefits in the short term, will result in further reduction of biomass and also associated harvesting mortality and stress to the scallop population.

⁹ Fisheries (Auckland and Kermadec Areas Commercial Fishing) Regulations 1986. Accessible at: <http://legislation.govt.nz/regulation/public/1986/0216/34.0/DLM104498.html>

¹⁰ <http://www.legislation.govt.nz/regulation/public/2008/0430/7.0/096be8ed8030086e.pdf>

712. In New Zealand, and internationally, closure of scallop beds has been used as a management tool when population abundance reaches levels that pose a risk to long term sustainability. Fisheries New Zealand considers that the latest survey information, and wider concerns about the marine environment and its ability to support scallops, suggest that there are risks if ongoing harvesting of scallops were to occur. Fisheries New Zealand considers that closure of the beds is most likely to provide the necessary time and opportunity required for the population to recover, as disturbance and stress from harvest pressure, and related mortality, will be removed.
713. Unlike the previous “fixed-term” closures, the proposed closure would be in place indefinitely until new scientific information suggests that scallop numbers have rebuilt to a level that can support harvest. Another survey is planned for 2020 that would help to inform future decision making.
714. Fisheries New Zealand notes that a closure using a *Gazette* Notice under section 11 of the Act provides flexibility, as it allows for timelier changes in management actions compared to regulatory changes, should evidence arise indicating that the population is recovering during the closure.
715. The taking of scallops from the Kaipara Harbour is an important customary fishing practice. A closure under section 11 would not apply to customary fisheries (see Statutory Considerations), however, subject to confirmation, a non-regulatory rāhui may be put in place by Kaipara Harbour tangata whenua.
716. If you were to choose this option, a *Gazette* Notice would be provided for you to sign as drafted by Fisheries New Zealand, which must be presented to the House of Representatives. Under section 11(4)(b)(i) and 303(3) of the Act, the *Gazette* Notice is a disallowable instrument but not a legislative instrument and therefore the 28-day rule in the Cabinet Guide does not apply, but it is seen as good practice to give the public time to be aware of the closure. The closure would come into effect after the Gazettal of the Notice, and the 28-day period, if you wish this time to be included.

2.5 OTHER MATTERS

2.5.1 Environmental factors

717. Fisheries New Zealand notes that environmental factors such as siltation and eutrophication (excess nutrients) in enclosed bays and sheltered harbours may be affecting scallop recruitment. Fisheries New Zealand does not have a direct role in managing such environmental impacts. However, Fisheries New Zealand will work with local authorities, tangata whenua, and the Integrated Kaipara Harbour Management Group (IKHMG) to help achieve a co-ordinated and integrated approach to management in the area, in order to mitigate as many varieties of impacts as possible.

2.5.2 Engagement with stakeholder groups

718. The results of the 2017 survey were also communicated to the IKHMG. The IKHMG was established in 2005, and has been involved in environmental management initiatives in the Kaipara Harbour, including supporting tangata whenua in previous closures.

Addendum 1: Assessment against statutory obligations

719. The following section provides information specific to the application of the statutory considerations to the management of scallops in the Kaipara Harbour.

3.1 SECTION 8 – PURPOSE

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

721. As mentioned throughout the paper, a sustainability risk to the scallop population within the harbour has been identified. Under Option 1, as recreational fishing would continue, so would the associated effects of the recreational take of scallops. Maintaining the potential of scallops within the harbour would also be limited compared to the option of closing the harbour under section 11 (Option 2).

722. Under Option 2, the closure will give the scallop population within the harbour a greater opportunity to recover. Option 2 will increase the likelihood that future generations will be able to utilise the scallops. During the closure, customary take will still be permitted which enables tangata whenua to still provide for their cultural well-being in the short term.

3.2 SECTION 9 – ENVIRONMENTAL PRINCIPLES

723. A summary of the interactions between the scallop fishery in the Kaipara Harbour and the aquatic environment, and how these are likely to be affected by the proposals, is provided below.

3.2.1 Maintaining viability of associated or dependent species (section 9(a))

724. As Option 1 is the *status quo*, the current environmental and fishing-related effects on associated and dependent species on scallops would still be able to occur.

725. Under Option 2, the proposal to close the harbour to the taking of scallops under section 11 of the Act, implicitly supports maintaining associated or dependent species at or above a level that ensures their long-term viability.

3.2.2 Maintaining biological diversity of the aquatic environment (section 9(b))

726. Under Option 1, recreational fishing would still be able to occur. For the Kaipara Harbour, as mentioned, this method for the taking of scallops is generally dredging, which can have impact on biological diversity given that the dredge is towed along the bottom of the sea floor.

727. Under Option 2, the removal of recreational fishing will reduce any effects of fishing on biological diversity and hence be likely to maintain diversity.

3.2.3 Habitats of particular significance for fisheries management (section 9(c))

728. The Kaipara Harbour is an important habitat for multiple species, including scallops. As most of the recreational scallop harvest is taken by dredging, a closure of the harbour to the taking of scallops under Option 2 will help to lessen the fishing-related damage to the habitat.

3.3 SECTION 10 – INFORMATION PRINCIPLES

729. Fisheries New Zealand has used the best available information in developing and evaluating the options in this paper, and has outlined uncertainty where it exists. This includes information from:

- a) the survey of scallops in Kaipara Harbour (2017)¹¹;
- b) previous surveys in 2007 and 2009;
- c) tangata whenua and key stakeholders;
- d) submitters, including locals; and
- e) Fisheries New Zealand databases.

3.4 SECTION 11 – SUSTAINABILITY MEASURES

730. The general considerations under s 11 are provided in *Part 2: Statutory Considerations*.

731. 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. Currently, these controls are no trawling or Danish seining, or commercial dredging of scallops within the Kaipara Harbour. For scallops, there is also a seasonal closure between 1 April and 31 August each year, a minimum legal size of 100 mm, and a recreational daily bag limit of 20 scallops per person.
- c) Section 11(1)(c): take into account the natural variability of the stock. The available biological information is discussed under section 2.1 above. Scallops are known to have high 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. Fisheries New Zealand is not aware of any other policy statements, plans or strategies that should be taken into account for the scallop fishery in the Kaipara Harbour.

¹¹ Williams, J.R.; Bian, R.; Roberts, C.L. (2018). Survey of scallops in Kaipara Harbour, 2017. New Zealand Fisheries Assessment Report 2018/20.

- 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 section 1.10 of *Part 2: Statutory Considerations*. This stock and proposal does not cover the HGMP area.
- 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 scallop fishery in the Kaipara Harbour 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. We are not aware of anything relevant to your decisions regarding scallops in the harbour.

3.5 SECTION 12 – CONSULTATION AND INPUT AND PARTICIPATION

- 732. Fisheries New Zealand formally consulted on options for managing scallops in the Kaipara Harbour on your behalf from 2 July to 27 July 2018. The feedback from submitters is outlined in this decision document.
- 733. As mentioned, Fisheries New Zealand provided for input and participation of tangata whenua throughout the Sustainability Round process, with details on the outcomes of information sharing, as in sections 2.2.2 and 2.2.3 above.

3 Conclusion and Recommendation

734. The best available information suggests that there is a sustainability risk to the scallop population within the Kaipara Harbour. Fisheries New Zealand recommends a closure under s11 which will give the scallop population the best chance to recover, with relief from fishing pressure.
735. Of the total 22 views submitted including submissions and survey responses, 18 were in support of a closure, one was in support of current management arrangements, and one was in support of other options. Two submissions supported the views of tangata whenua of the Kaipara Harbour.
736. You have broad discretion in exercising your powers of decision making, and you may make your own independent assessment of the information presented to you in making your decision. You are not bound to choose the option recommended by Fisheries New Zealand.

Option 1

Agree to take no action. The current management procedures will remain in place.

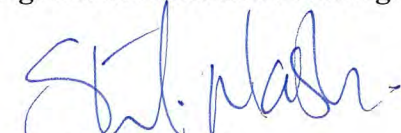
Agreed / Agreed as Amended / Not Agreed

OR

Option 2 (Fisheries New Zealand's recommended option)

Agree to put in place a closure by *Gazette* Notice under section 11 of the Act for scallops in the Kaipara Harbour.

Agreed / Agreed as Amended / Not Agreed



Hon Stuart Nash
Minister of Fisheries

13 / 9 / 2018

PART 7: INSHORE STOCKS

North Island shortfin and longfin eels (SFE/LFE 20 - 23)

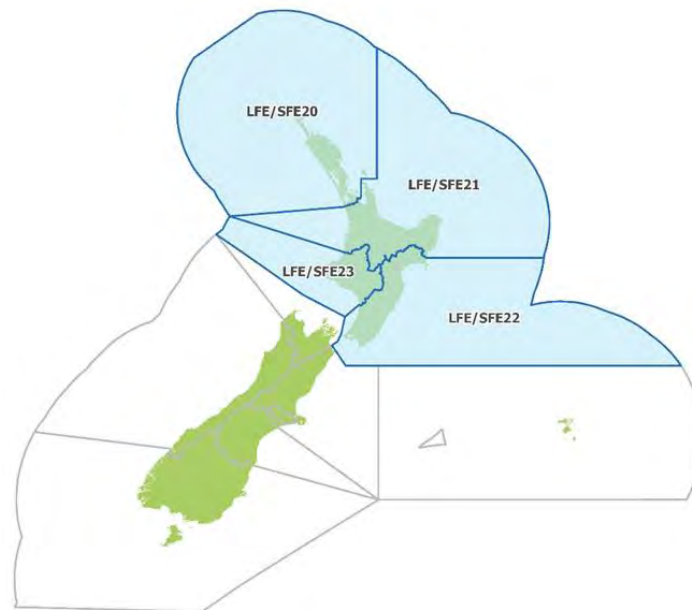


Figure 1: Quota management areas for shortfin eel (SFE) and longfin eel (LFE) stocks, with the North Island eel fishery (SFE 20 – 23 and LFE 20 – 23) highlighted in blue.

1 Summary

737. Fisheries New Zealand consulted on management settings for North Island shortfin eels (*Anguilla australis*) and longfin eels (*A. dieffenbachia*) in quota management areas (QMAs) 20 – 23 (refer Figure 1).

738. For shortfin eels (SFE 20 – 23) the *status quo* is proposed, meaning no change to the current catch limits and allowances (refer Table 1).

Table 1: Proposed management settings in tonnes for shortfin eels (SFE 20-23) from 1 October 2018.

SFE	Option	Total Allowable Catch (TAC)	Total Allowable Commercial Catch (TACC)	Allowances		
				Customary Māori	Recreational	All other sources of mortality caused by fishing
20	<i>Status quo</i>	148	86	30	28	4
21	<i>Status quo</i>	181	134	24	19	4
22	<i>Status quo</i>	121	94	14	11	2
23	<i>Status quo</i>	36	23	6	5	2

739. For longfin eels (LFE 20-23) two options are proposed (refer Table 2). The options are:
a) Option 1: *Status quo* (i.e. no change to the TAC); or
b) Option 2: Reduce the TAC (by an average of 16% across all QMAs) and the TACC (by an average of 34% across all QMAs).

Table 2: Proposed management settings in tonnes for longfin eels (LFE 20-23) from 1 October 2018, with the percentage change relative to the *status quo* in brackets.

LFE	Option	Total Allowable Catch (TAC)	Total Allowable Commercial Catch (TACC)	Allowances		
				Customary Māori	Recreational	All other sources of mortality caused by fishing
20	Option 1 - <i>Status quo</i>	39	19	10	8	2
	Option 2 – Reduction	34 ↓ (13%)	14 ↓ (26%)	10	8	2
21	Option 1 - <i>Status quo</i>	60	32	16	10	2
	Option 2 – Reduction	51 ↓ (15%)	23 ↓ (28%)	16	10	2
22	Option 1 - <i>Status quo</i>	34	21	6	5	2
	Option 2 – Reduction	26 ↓ (24%)	13 ↓ (38%)	6	5	2
23	Option 1 - <i>Status quo</i>	34	9	14	9	2
	Option 2 – Reduction	30 ↓ (12%)	5 ↓ (44%)	14	9	2

740. Significant reductions to the TACCs for North Island eels were made in 2008 to ensure the sustainability of commercial eel harvesting, and improve the availability of eels for non-commercial fishers.

741. Scientific monitoring suggests that shortfin eels are increasing in abundance, with positive trends in catch per unit effort (CPUE)¹, implying current TAC limits allow for sustainable utilisation while also allowing the abundance of shortfin eels to increase.

742. No consistent trend of increasing abundance is evident for longfin eels (most CPUE trends are stable, increasing or fluctuating without trend). In addition, the biology and habitat preferences of longfin eels mean that they are generally vulnerable to habitat modification, drain clearing, flood and hydro turbines, as well as fishing. The catch limit reductions under Option 2 take this vulnerability into account. They would mean that, combined with the reductions that occurred in 2008, TACCs for longfin eels have been reduced by 74% since introduction into the Quota Management System (QMS) in 2004.

Tangata whenua input and stakeholder submissions

743. Tangata whenua have communicated a range of views about the proposed options. Some iwi representatives are concerned that fishing is only one of many factors influencing eel abundance and that habitat destruction, drain clearing, flood and hydro turbines are having a significant negative impact. Some submitters requested that TACC limits should be reduced (or commercial fishing entirely banned) because of the native/endemic nature of eels, and that they are considered a taonga species by Māori.

744. Some iwi expressed sentiments that QMA boundaries and commercial catch limits are not adequately meeting the needs of Māori. They consider commercial fishing is causing localised depletion of eel stocks. Under these circumstances, they propose managing longfin eels to a higher abundance target that is closer to historical unfished levels.

¹ The CPUE analysis is a measure of abundance within commercially fished areas. CPUE is considered to be biased down for eels (trend shown is not as positive as it should be) due to increases in escape tube diameters on eel nets and other management changes.

745. Te Ohu Kaimoana support the *status quo* for shortfin stocks and also for LFE 21. For remaining longfin eel stocks they support a reduction in both the TACs and TACCs (a modified version of Option 2). For all shortfin and longfin stocks, with the exception of SFE and LFE 20, they support reducing the recreational allowance in favour of the customary allowance, according to a 4:1 ratio on the basis that this more accurately reflects the importance placed on eels (Tuna) by Māori.
746. In total 152 submitters provided 864 submissions on the eight eel stocks covered by the review. 240 submissions were in favour of the *status quo* and referred to the limited amount of North Island habitat accessible to commercial fishing (78% of suitable longfin eel habitat is unfished) and/or increasing abundance as the main reason to retain the *status quo*. They also cited habitat destruction, poor water quality, and reduced waterway connectivity due to dams, flood pumps, and other barriers as the main influences on eel abundance. They consider that, in comparison to these factors, fishing is having little influence on the abundance of eels and that non-fishing causes of eel mortality should be addressed as a priority, instead of further reductions to the TAC.
747. In terms of longfin eel stocks, 230 submissions supported a reduction in commercial fishing for longfin eels (Option 2). These submitters considered there is insufficient information on eel biology and commercial catch impacts to inform management. Some noted a lack of habitat and poor water quality as major issues impacting on eel abundance, with commercial harvesting intensifying pressure on eel populations.
748. A further 370 submissions advocated an end to commercial fishing of longfin and, in some cases, shortfin eels. Many of these submissions noted that fishing is not the only factor affecting eel abundance, however, they see a ban as a response that would have a direct impact on reducing longfin eel mortality.

Fisheries New Zealand recommendations

749. Fisheries New Zealand considers all options presented meet your obligations under the Fisheries Act 1996. All options are sustainable and are intended to maintain or increase overall eel abundance, based on scientific information as outlined in Fisheries New Zealand Discussion Paper No. 2018/04, and taking into account submissions received following consultation with tangata whenua, stakeholders, and the public.
750. For all shortfin stocks the recommended option is *status quo*. Fisheries New Zealand's Scientific Assessment Plenary agreed in 2017 that the available scientific information suggests the abundance of shortfin eels, as measured by CPUE, is increasing, and retaining the current catch limits is likely to allow for sustainable utilisation while simultaneously allowing the abundance of shortfin eels to increase.
751. For all longfin stocks, Fisheries New Zealand's recommended option is Option 2 – an average reduction of 16% (i.e. 12% - 23% depending on stock) in TACs and an average reduction of 34% (i.e. 26% - 44% depending on stock) in the TACCs.
752. The Plenary agreed in 2017 that the available scientific information suggests all North Island longfin eel stocks were 'likely' (> 60% probability) at or above the sustainability target², indicating that current catch limits are sustainable, and were 'very unlikely' (<

² Sustainability target: a biomass level that management actions are designed to achieve with at least 50% probability.

10% probability) to be below the soft limit³ and the hard limit⁴. This assessment was based on there being no negative trends in recruitment of elvers (juvenile eels), stable or increasing commercial CPUE trends across most QMAs, and the observation that 78% of available longfin habitat in the North Island is not currently subject to commercial fishing⁵.

753. The sustainability targets and limits used for eels by the Plenary are, however, defined in relation to the biomass that would exist with no fishing given the current amount of suitable habitat available, rather than the historical unfished biomass. This is because longfin eels have been significantly affected by irreversible habitat modifications (for example, approximately 90% of New Zealand's original wetlands have been drained⁶).
754. Many iwi and submitters have a strong preference to enhance longfin eel abundance in remaining suitable eel habitat to levels that are above the sustainability targets considered by the Plenary, and closer to historical, unfished biomass levels. Option 2 takes this preference into account, noting that the CPUE for longfin eel stocks is not showing a consistent upward trend, by proposing further catch limit reductions (primarily to TACCs).
755. Fisheries New Zealand proposes no changes to the allowances for customary, recreational, and other sources of fishing mortality, with the *status quo* being the only option across all stocks (i.e. SFE 20 – 23 and LFE 20 – 23).
756. Te Ohu Kaimoana requested an increase in the customary allowance and a reduction in recreational allowance (with the exception of SFE/LFE 21), however, they did not provide information suggesting that customary catch of Tuna has increased since the allowances were last set, and no other submissions were received to provide information on this issue.
757. Fisheries New Zealand notes that information on non-commercial eel catch is very uncertain, with no quantitative information on total recreational catch of eels. Best available information, which is anecdotal and based on feedback from Fishery Officers, stakeholders and iwi, suggests current allowances are appropriate for recreational and customary catch and other fishing-related mortality. However, a further stock assessment for North Island eels is scheduled to commence in 2019/20 which will determine whether further changes are required to North Island eel stocks, including the recreational and customary allowances. As an input into that assessment Fisheries New Zealand will commission advice on estimating recreational eel catch.

Wider measures

758. Fisheries New Zealand acknowledges the submissions advocating for complete closure of commercial harvesting of eels, particularly longfin eels. Fisheries New Zealand notes that a ban on fishing of eels (or just longfin eels) is outside the scope of the options that were consulted on. It is also not justified by the scientific assessment, which suggests that eel abundance is above sustainability targets and is stable or increasing in most areas. As only 22% of longfin habitat is currently fished, fishing of longfin eels at the cautious catch limits proposed under Option 2 is unlikely to be a significant driver of future longfin eel

³ Soft limit: a biomass limit below which the requirement for a formal time-constrained rebuilding plan is triggered.

⁴ Hard limit: a biomass limit below which fisheries should be considered for closure.

⁵ Depending on the QMA, between 50% and 98% of suitable eel habitat in each QMA is unaffected by commercial fishing because it is within conservation land or is otherwise inaccessible.

⁶ Department of Conservation, 2018, <https://www.doc.govt.nz/news/stories/2013-and-earlier/loss-value-and-protection/>

abundance. No new information was provided during consultation to challenge these underlying scientific assessments.

759. We consider a ban on commercial fishing is not an option you should consider in the context of the current review. However, Fisheries New Zealand could provide you with separate advice on options for implementing further restrictions on commercial fishing in the future, including a ban and the costs and benefits of doing so. This advice would preferably be developed jointly with the Department of Conservation and the Ministry for the Environment, as it may involve changes to the legislated status of longfin eels, and would ideally be part of a more focused effort to address issues such as water quality and waterway barriers (i.e. hydro-dams and flood pump stations), as these are the key factors that are likely to influence longfin eel abundance into the future.
760. As part of a wider package of enhancements to the assessment process, Fisheries New Zealand will: commission advice on estimating recreational eel catch as an input into ongoing assessments; continue to work with iwi intending to utilise customary tools, such as mātaimai, to manage eels in areas of importance in their rohe; and consider the adoption of spatial or temporal closures where there is evidence to suggest a sustainability concern.

2 Need for review

761. Eels are becoming increasingly important to all New Zealanders. Māori consider eels (Tuna) to be a taonga species, and feel a strong connection to them due to their native/endemic nature, and their long and interesting life history.
762. Since European settlement, eels have been significantly affected by irreversible habitat modifications. Public concern has also been expressed in recent years about the sustainability of commercial fishing for longfin eels.
763. As a result of these concerns, the Parliamentary Commissioner for the Environment produced a report in 2013, in which she recommended that an independent expert panel be convened to assess the status of longfin eels, and that commercial fishing be prohibited to allow eel stocks to recover.
764. Following a subsequent independent scientific review by a panel of international experts, the Government determined that a prohibition on commercial fishing for longfin eel was not supported by the available evidence. Instead, a package of management measures was put in place to improve the abundance and long-term sustainability of longfin eels. These measures included separate management of South Island shortfin and longfin eel stocks, and a review of sustainability settings for both North and South Island longfin eels. South Island eel stocks were separated and reviewed in 2016, resulting in significant reductions to the Total Allowable Catch (TAC) and Total Allowable Commercial Catch (TACC) limits for most South Island longfin eel stocks.
765. The current TAC, TACC, customary and recreational allowances, and other management settings for North Island eel stocks were last reviewed in the 2007/08 fishing year, when substantial cuts to the TAC and TACC limits (between 10% - 38% for shortfin eel stocks, and 35% - 78% for longfin eel stocks) were made to improve the sustainability of commercial eel harvesting, as well as availability of eels for non-commercial fishers.

766. The current review of North Island eel stocks is required to ensure catch limits and allowances remain at an appropriate level in accordance with the Fisheries Act 1996 (the Act). This paper is structured in such a way as to set out the considerations that are common to both longfin and shortfin eels, and then the specific matters that need to be considered in relation to each species. Detailed analysis is provided for each longfin eel stock, whereas this is not required for shortfin eels as only the *status quo* is proposed for all stocks.

2.1 CONTEXT

2.1.1 Biological characteristics of freshwater eel

767. New Zealand has two main species of eel: the native shortfin eel, *A. australis* (also found in South Australia, Tasmania and New Caledonia) and the endemic longfin eel, *A. dieffenbachii*. A third species, the Australian longfin eel, *A. reinhardtii*, is included in shortfin catch data for management purposes⁷.

768. New Zealand freshwater eels are a temperate species and have a unique life history. The majority of the life cycle is spent in freshwater or estuarine/coastal habitat before they migrate to an oceanic spawning ground, probably in the Southwest Pacific. Juvenile eels undertake a long oceanic migration to freshwater, where they grow to maturity, before returning to their oceanic spawning grounds.

769. While the habitats of both species overlap, 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. Once eels find a suitable habitat, movement may be limited, with an average home range of 30 m and 10 m for shortfin and longfin eel respectively⁸.

770. Growth of eels is highly variable and dependent on food availability, water temperature and population 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 longer to reach the minimum legal weight (which is 220 grams for both longfin and shortfin eels). North Island shortfin eels take an average of 5.8 years (13 years in South Island) to reach the minimum legal size, compared with 8.7 years (18 years for South Island) for longfins.

771. Migration appears to be dependent on attaining a certain length/weight combination and other environmental triggers. The range in recorded age at migration for shortfin eels is 5–22 years for males 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.

772. These different biological characteristics mean longfin eels are potentially more vulnerable to fishing pressure than shortfin eels.

⁷ This species is included as part of the shortfin catch because it is only found in very low numbers and the catch is not sufficient to justify its own separate stock.

⁸ Jellyman, D.J., Sykes, J.R.E. (2003). Diel and seasonal movements of radio-tagged freshwater eels, *Anguilla* spp., in two New Zealand streams. *Environmental Biology of Fishes* 66: 143-154. <http://www.springerlink.com/content/w841242u21703727/>

2.1.2 Management tools

773. The QMS is designed to manage fish stocks at the QMA level. A QMA is a geographical area within which TACs, TACCs, allowances and other management settings govern the amount of fish that may be harvested. The proposals in this paper seek to maintain or grow the relevant eel stocks to achieve a sustainable harvest level that also allows for utilisation of each stock across the entire QMA.
774. For the purposes of commercial catch reporting, CPUE analysis and the analysis of available eel habitat, each eel QMA is further broken down into Eel Statistical Areas. Commercial fishers report their catch against these Eel Statistical Areas to provide finer-scale data (in many cases the Eel Statistical Areas are aligned to river catchments). Across the North Island there are four QMAs (SFE/LFE 20 – 23) and 12 Eel Statistical Areas for each eel species.
775. When managing freshwater eels, Fisheries New Zealand utilises the following suite of management tools to ensure their sustainability: TAC and TACC; non-commercial allowances for customary and recreational fishing; minimum and maximum size restrictions; escapement tubes on commercial fyke nets; recreational daily catch limits; and closing areas to commercial fishing (e.g. the Whanganui, Motu and Mohaka Rivers).

2.1.3 Customary management tools

776. The proposals presented in this paper recognise that iwi have a range of legislative tools to undertake management at a finer scale than those set at the QMA level. These tools currently include the:
- Fisheries (Kaimoana Customary Fishing) Regulations 1998;
 - Co-management arrangements, such as those under the Waikato-Tainui (Waikato River Fisheries) Regulations 2011; and
 - Fisheries (Ngāi Tahu Wharetoa, Raukawa and Te Arawa River Iwi) Regulations 2017.
777. These regulations enable tangata whenua to apply to establish mātaihai reserves, which prohibit commercial fishing, and to propose bylaws for the reserves which constrain fishing activity to provide for the utilisation of the eel fishery while ensuring sustainability⁹.
778. In addition, under section 186A of the Act, any person can seek to have you prohibit or restrict fishing for up to two years to improve the size or availability of a species in an area, or to recognise a customary fishing practice.
779. Together, these regulations enable restrictions to be placed on the harvesting of eels at a rohe (local) level to assist in addressing the concerns of tangata whenua and communities over localised utilisation of a fishery.
780. Given freshwater eels have a small home range once established and a large proportion of available habitat is not commercially fished, the localised management tools available to iwi such as mātaihai are likely to be effective at protecting longfin eel abundance at the rohe level. Fisheries New Zealand will continue to work with iwi who wish to apply these tools in their rohe.

⁹ Iwi can implement these management tools once they have been gazetted under the Fisheries (Kaimoana Customary Fishing) Regulations 1998.

2.1.4 North Island eel fishery

Māori customary fishery

781. Tuna (eels) have long been considered taonga by Māori, and are traditionally an important food source. Māori have maintained age-old methods of harvesting Tuna, and hold a good understanding of their habitats and life cycle. Māori retain their traditional ties to Tuna and continue to both conserve and harvest them for customary purposes.
782. In the North Island, a number of areas have been set aside under fisheries regulations as non-commercial areas to allow only customary and recreational fishing of Tuna, including Mohaka River, Whakaki Lagoon and Lake Poukawa (all in Hawke's Bay); Pencarrow Lakes and associated catchments (Wairarapa); Whanganui River, and Motu River (Bay of Plenty).
783. There is no complete assessment of the current or past customary take for the North Island. Fisheries New Zealand records show only 410 kg of shortfin and no longfin Tuna taken under customary allowances since 2013, however, this figure is under-representative of the actual customary catch for the following reasons:
- Many Māori exercise their customary right to fish for Tuna under the recreational bag limit of six eels per person per day; and
 - Large parts of the North Island are not yet gazetted under the Fisheries (Kaimoana Customary Fishing) Regulations 1998, therefore customary fishing authorisations are issued under Fisheries (Amateur Fishing) Regulations 2013 without a requirement to report catch to Fisheries New Zealand.
784. When the North Island Tuna fishery was introduced into the QMS, an allowance was made for customary non-commercial harvest based on population and the number of marae within a given QMA, equating to 74 tonnes for shortfin and 46 tonnes for longfin across the entire North Island. Based on available information, current customary harvest is likely to be within this allowance.

Recreational fishery

785. The recreational allowance within the TAC provides for eels taken by fishers, subject to the amateur fishing regulations. This includes any harvest by Māori not taken under customary provisions. In 1994, a recreational individual daily bag limit of six eels was introduced throughout New Zealand. When the North Island eel fishery was introduced into the QMS, an allowance was made for recreational harvest for each QMA based on population, currently equating to 63 tonnes for shortfin and 32 tonnes for longfin for the entire North Island. There is no quantitative information on the recreational harvest of freshwater eels. However, based on anecdotal information from Fisheries Officers, stakeholders and tangata whenua, it is likely to be well within the existing recreational allowances.

Commercial fishery

786. Virtually all commercially-caught eels (98%) are taken with fyke nets, which is a passive fishing method causing minimal harm to captured eels, allowing any unwanted eels (i.e. undersized or oversized) to be returned to their habitat unharmed.
787. The relative proportion of each species landed varies by QMA. From analyses of landings, deliveries to eel processing factories, and estimated catch from Eel Catch Landing

Returns, shortfin are the dominant species in all areas of the North Island and comprised 87% of total commercial landings in the North Island in 2016-17 fishing year.

788. North Island eel fisheries were introduced into the QMS on 1 October 2004, with individual catch limits and allowances for each species. The TACs, TACCs, and allowances set at this time were reviewed in 2007/08, with subsequent cuts made to all North Island stocks (refer Tables 3 and 4). In total the commercial catch limits for shortfin eels were reduced by 26%, and for longfin eels they were reduced by 42%.

Table 3: Initial TACs, TACCs and allowances (in tonnes) for North Island shortfin stocks (SFE 20, 21, 22 & 23) upon entry to the QMS in 2004, and current settings following review in 2007/08.

QMA	Settings	TAC (t)	Change in TAC from initial settings	TACC (t)	Allowances		
					Customary Māori (t)	Recreational (t)	Other sources of fishing-related mortality (t)
20	Initial	211		149	30	28	4
	Current	148	63 t ↓ (30%)	86	30	28	4
21	Initial	210		163	24	19	4
	Current	181	29 t ↓ (14%)	134	24	19	4
22	Initial	135		108	14	11	2
	Current	121	14 t ↓ (10%)	94	14	11	2
23	Initial	50		37	6	5	2
	Current	36	14 t ↓ (28%)	23	6	5	2

Table 4: Initial TACs, TACCs and allowances (in tonnes) for North Island longfin stocks (LFE 20-23) upon entry to the QMS in 2004, and current settings following review in 2007/08.

QMA	Settings	TAC	Change in TAC from initial settings	TACC	Allowances		
					Customary Māori	Recreational	Other sources of fishing-related mortality
20	Initial	67		47	10	8	2
	Current	39	28 t ↓ (42%)	19	10	8	2
21	Initial	92		64	16	10	2
	Current	60	32 t ↓ (35%)	32	16	10	2
22	Initial	54		41	6	5	2
	Current	34	20 t ↓ (37%)	21	6	5	2
23	Initial	66		41	14	9	2
	Current	34	32 t ↓ (48%)	9	14	9	2

789. 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 (1 October – 30 September). Commercial eel landings for the whole of New Zealand since 1966 are shown in Figure 2.

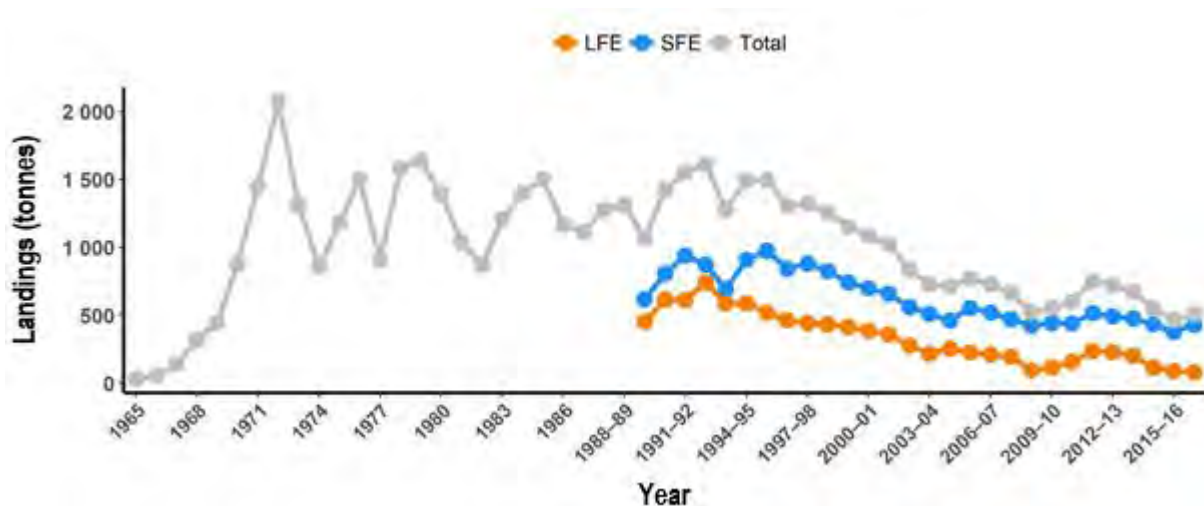


Figure 2: Total eel landings (all of New Zealand) from 1965 to 2016–17, as well as separate shortfin and longfin landings from 1989/90 to 2016/17.¹⁰

790. Total commercial catch landings for North Island stocks have been reported separately for longfin and shortfin eels since QMS entry (refer Figure 3).

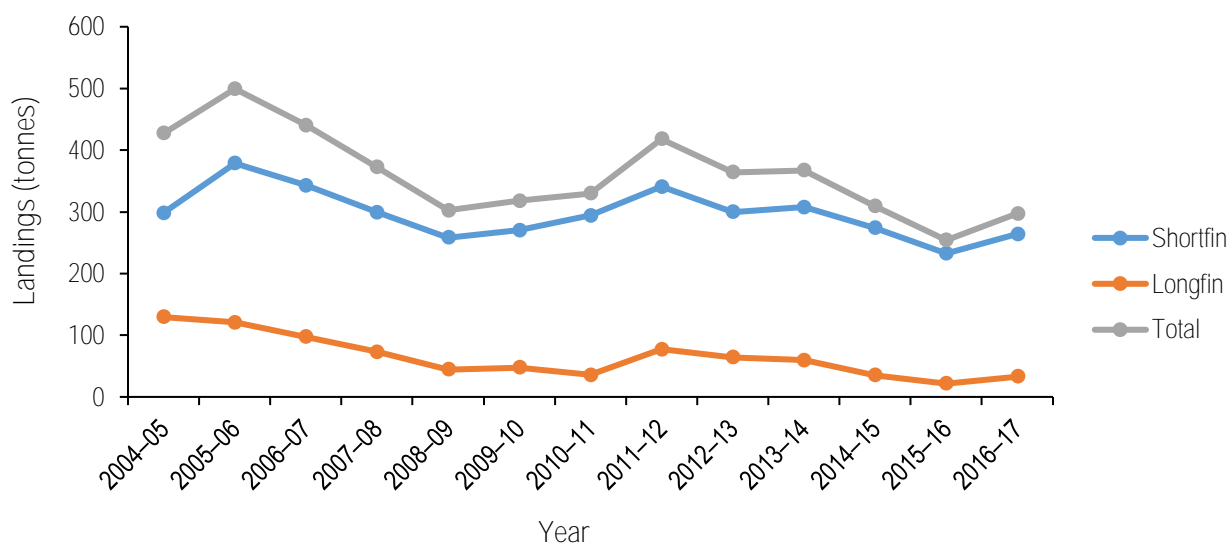


Figure 3: Total commercial landings for North Island eel stocks.

791. Based on the average port price of \$4.48 per kilogram for longfin and \$5.50 per kilogram for shortfin, the 2015/16 catch data indicates an approximate landed annual value of \$1,287,000 for shortfin and \$133,056 for longfin¹¹. Most of this catch was exported frozen to Asia and Europe.

Annual Catch Entitlement (ACE) shelving by iwi

792. Since entry into the QMS in 2004, the TACC has rarely been fully caught for either eel species. This is because market demand and also the catchability of eels varies from year to year. In addition, many iwi choose to shelve (not fish) their annual catch entitlement

¹⁰ Prior to 1988/89, the data points represent estimates for the period prior to the introduction of Eel Catch Landing Return forms, and were generated by pro-rating the unidentified eel catch by the longfin to shortfin ratio.

¹¹ Caution is needed when interpreting the above values because not all Licenced Fish Receivers provide information for the port price survey (Fisheries New Zealand has not received sufficient results during the last three years to allow an update of the port pricing for eels). Note also the port price value is what the fisher receives, not what the eels are worth on the open market.

(ACE). This is particularly true for longfin eels and reflects the concern that iwi have for the resource, the desire of many iwi to increase the abundance of longfin eels, and their preference that eels are caught for customary rather than commercial purposes.

2.1.5 Monitoring of the North Island eel fishery

793. Fisheries New Zealand monitors the North Island eel fishery by reviewing:

- annual recruitment of elvers (juvenile eels) to specific dams throughout the North Island; and
- CPUE of the commercially fished area within each QMA.

794. Elver recruitment is monitored by counting the number of elvers arriving at four dams (two on the East Coast¹² and two on the West Coast¹³) deemed to be representative of rivers throughout the North Island. Elver recruitment is monitored to ensure sufficient numbers of elvers return each year to maintain eel abundance.

795. Patterns in elver recruitment fluctuate strongly from year to year. This is because elvers migrate back to New Zealand from their breeding ground in the Pacific Ocean. They achieve this through a combination of active swimming and passively floating on ocean currents. Therefore, the number of eels returning in any given year can be affected by ocean currents and climatic conditions. While recruitment to these four dams fluctuates yearly, no negative trend (i.e. overall decline) has been observed.

796. The CPUE analysis is a measure of abundance within the commercially fished areas of each eel statistical area based on the ease with which a commercial fisher can catch their ACE. If CPUE increases, it is assumed eel abundance is increasing; conversely if CPUE reduces it is assumed that eel abundance is decreasing. Despite commercial catch data being recorded since 1965, the CPUE analysis only dates back to 1989. This is because prior to 1989 catch data was recorded using a combined code for both species collectively, and not separated into longfin and shortfin catches.

797. The Plenary noted that the CPUE trend is biased low (the trend shown is not as positive as it should be) for the following reasons:

- in 2012-13 the escape tube diameter on all commercial fishing nets was increased from 25 mm to 31 mm, allowing some legal sized eels to escape without being recorded;
- failure of some fishers to record on catch return forms all legal sized eels caught, not just those retained; and
- unrecorded release of eels over 4 kg weight after 2007¹⁴ (or over 2 kg in Waikato area due to local by-laws that apply in that area).

2.1.6 Percentage of available eel habitat commercially fished

798. In addition to recruitment monitoring and CPUE analysis, Fisheries New Zealand commissioned a research project in 2014 to determine the current proportion of longfin habitat within each eel statistical area that was fished commercially, and also impacted by anthropogenic impacts such as hydro-dams.

¹² Wairua Falls and Matahina Dam.

¹³ Karapiro Dam and Patea Dam.

¹⁴ Prior to 2007 the oversized eels were recorded as part of the catch

799. The study was based on commercial fishing data from 2009/10 to 2013/14, and presence-absence data from the New Zealand Freshwater Fish Database (NZFFD).
800. The total available longfin habitat was then determined by comparing locations of known habitat based on commercial catch data, interviews with fishers, and presence-absence data from the NZFFD with similar habitat and water conditions using REC2.
801. The results showed that currently between 2% and 50% of any Eel Statistical Area (ESA) is commercially fished. Conversely, this means that between 50% and 98% of the available longfin eel habitat within any ESA is not commercially fished. Across the entire North Island only 22% of the available longfin eel habitat is commercially fished, leaving 78% of available habitat unaffected by commercial fishing.
802. Fisheries New Zealand acknowledges that this figure may positively or negatively change in the future. However, given the relatively small home range of longfin eels (approximately 10 m), and the large percentage of the available longfin habitat that is not commercially fished, these unfished areas are a refuge from commercial fishing and play a significant role in ensuring protection and long-term sustainable management of the species¹⁵.

2.1.7 Stock assessment

803. As part of the review of North Island eels, the Fisheries New Zealand Science Plenary undertook a stock assessment of the North Island shortfin and longfin eel fisheries in 2017. A stock assessment is an evaluation of relevant data (in this case CPUE, elver recruitment, and the percentage of eel habitat commercially fished) in order to obtain an understanding of the status of the stock relative to defined reference points (targets and limits).
804. Targets and limits are usually defined as percentages of B_0 , which is often equated with the biomass that existed prior to the advent of human fishing. However, in the case of eels, which have been affected by significant irreversible habitat modifications (approximately 90% of New Zealand's original wetlands have been drained), it is more appropriate to think of it as the biomass that would exist with no fishing given the current amount of suitable habitat available. This is because the habitat has been modified to such an extent it will no longer be able to support the original unfished biomass.
805. For most temperate water finfish stocks, a sustainability target of 40% B_0 has become the globally-accepted standard. New Zealand also defines a soft limit of 20% B_0 and a hard limit of 10% B_0 . These targets and limits are Fisheries New Zealand's default management settings for finfish stocks where an alternative cannot be justified¹⁶, and were agreed to for both shortfin and longfin eels by the Plenary. However, as these management targets are an interim measure only, they may be reviewed in the future as more information becomes available.
806. For longfin eels, the Plenary was able to reach conclusions on stock status in relation to the targets and limits within each Eel Statistical Area, based partly on the proportion of habitat fished or impacted by hydro-dams.

¹⁵ These areas may still be subject to customary and recreational fishing pressures where access to the river allows.

¹⁶ Harvest Strategy Standard for New Zealand Fisheries, Ministry of Fisheries, October 2008

807. For longfin eels, the Plenary agreed that all North Island stocks were ‘likely’ (> 60% probability) to be at or above the target. Furthermore, the Plenary agreed that all longfin stocks were ‘very unlikely’ (< 10% probability) to be below either the soft limit or the hard limit. This assessment was based on there being no negative trend in the recruitment of elvers, positive or stable CPUE trends across most QMAs (coupled with the fact that these trends are biased downwards due to management regulations), and between 50% - 98% of available longfin habitat not being exposed to commercial fishing.
808. Because the percentage of available shortfin habitat that is fished is unknown, the Plenary was not able to make the same statements about shortfin eels, which are all of unknown status relative to their sustainability target, and hard/soft limits.

2.2 OPTIONS CONSULTED ON

809. Fisheries New Zealand consulted on your behalf on proposed catch limits and allowances for North Island eels (refer Table 5 and 6). Fisheries New Zealand released Discussion Paper No. 2018/04 on 18 June 2018 for approximately 6 weeks consultation. Quota holders and other persons and organisations with an interest in and/or affected by the proposals were notified of the consultation and directed to the consultation web page which contained the paper. The consultation period closed on Friday 27 July 2018.

Table 5: Proposed management settings in tonnes for shortfin eels (SFE 20-23) from 1 October 2018.

QMA	Option	Total Allowable Catch (TAC)	Total Allowable Commercial Catch (TACC)	Allowances		
				Customary Māori	Recreational	All other sources of mortality caused by fishing
20	<i>Status quo</i>	148	86	30	28	4
21	<i>Status quo</i>	181	134	24	19	4
22	<i>Status quo</i>	121	94	14	11	2
23	<i>Status quo</i>	36	23	6	5	2

Table 6: Proposed management settings in tonnes for longfin eels (LFE 20-23) from 1 October 2018, with the percentage change relative to the *status quo* in brackets.

QMA	Option	Total Allowable Catch (TAC)	Total Allowable Commercial Catch (TACC)	Allowances		
				Customary Māori	Recreational	All other sources of mortality caused by fishing
20	Option 1 - <i>Status quo</i>	39	19	10	8	2
	Option 2 – Reduction	34 ↓ (13%)	14 ↓ (26%)	10	8	2
21	Option 1 - <i>Status quo</i>	60	32	16	10	2
	Option 2 – Reduction	51 ↓ (15%)	23 ↓ (28%)	16	10	2
22	Option 1 - <i>Status quo</i>	34	21	6	5	2
	Option 2 – Reduction	26 ↓ (24%)	13 ↓ (38%)	6	5	2
23	Option 1 - <i>Status quo</i>	34	9	14	9	2
	Option 2 – Reduction	30 ↓ (12%)	5 ↓ (44%)	14	9	2

2.3 VIEWS OF SUBMITTERS

2.3.1 Engagement with tangata whenua

810. Prior to undertaking statutory consultation, 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.
811. Prior to the release of the Discussion Document and throughout the consultation period, Fisheries New Zealand provided for input and participation from tangata whenua through face-to-face meetings with the following Fisheries Forums:
- Te Hiku o Te Ika Fisheries Forum (two meetings);
 - Mai i Nga Kuri a Whareki Tihirau Fisheries Forum (two meetings);
 - Te Tai Hauauru Iwi Forum (one meeting); and
 - Nga Hapu o Te Uru o Tainui Forum (two meetings).
812. Fisheries New Zealand officials also held meetings with all iwi that had a protocol with Fisheries New Zealand relating to eels. Where a functioning forum did not exist, Fisheries New Zealand emailed out a written summary of the review requesting input and undertook meetings as requested.
813. During pre-engagement, and throughout the consultation process, views of tangata whenua in relation to North Island eels were mixed, ranging from supporting the *status quo* through to a complete ban on commercial take of eels, longfin in particular. However, in relation to the management targets there was a consistent theme that abundance is low (“there is not enough Tuna on the table”) and that a management target of 40% doesn’t meet the needs of concerned iwi. In particular the following themes were consistently raised:
- Commercial fishing is not the biggest impact on Tuna populations - they are severely impacted by loss of habitat, barriers to migration and high levels of mortality caused by flood control pumps and drain clearing, etc.
 - The CPUE for some stocks (especially longfin) is flat, and iwi are concerned that small changes to current environmental conditions could lead to a drop in abundance.
 - There is ‘less Tuna on the table when compared to the past’. Iwi directly relate the abundance of Tuna within their rohe to the frequency of which they see it on the table.
 - Some iwi believe that Tuna are more than taonga (treasured) - some iwi believe they are connected through Whakapapa (genealogy/ancestry), i.e. without Tuna some iwi wouldn’t be here today.
 - Iwi own large amounts of quota (up to 60% in some QMAs). They are aware if the commercial harvest of Tuna is banned it may not be reinstated, and this has the potential to remove future income from their mokopuna (descendants).
 - The fact that iwi are shelving ACE and forgoing income from the quota they own, highlights the fact that iwi/hapu/tangata whenua place a higher value on eels than the commercial fishery. Therefore, when making decisions regarding eels, a standard cost benefit analysis that uses port-price should not be used to assess the impact of the decision on tangata whenua. Tangata whenua use a different currency (customary/cultural – which is not equal to monetary value) to measure the value of their Tuna fishery.

- Customary and recreational allowances should be left the same to ensure Māori can continue to access to Tuna.
- Matauranga Māori (Māori knowledge/worldview) hasn't been included in the CPUE assessment.
- Many iwi shelve their ACE to improve eel abundance and believe CPUE increases are probably due to shelved ACE. If the TACC were raised, this would defeat the purpose of Māori shelving their ACE in the first place.
- Hapu put a lot of time and money into local waterway clean-up and restoration and this should be recognised in Fisheries New Zealand decision-making.
- Research needs to be targeted at the rohe (local area) level.
- Iwi/hapu require assistance and resourcing to undertake iwi/hapu-led research, surveys and independent assessment of their Tuna stocks.
- The percentage of habitat fished should be calculated for shortfin.
- More frequent monitoring of elver recruitment could influence results.
- The TACC needs to be reduced if the goal is to increase Tuna abundance.
- A rahui (moratorium) on the commercial harvest of eels (in particular longfin) should be considered for at least five years, until all iwi have had their rohe gazetted.
- The generic target set under the Fisheries New Zealand Harvest Strategy of 40% is too low - it needs to be higher to allow more breeding stock to migrate.
- Fisheries New Zealand should track Tuna harvest throughout the year and ban it during the downstream migration.
- Concerns were raised about people outside the QMA fishing within a QMA they do not live in and depleting the 'food basket' of the local hapu from that area.
- The QMAs are too large, management needs to be undertaken at the catchment level or sub-catchment level.
- Concerns were raised around the inadequate length of the consultation period. Iwi prefer to meet face-to-face to discuss important issues. After meeting with the Crown they require more time to meet with their respective hapu and whanua prior to writing a submission. Iwi feel that the 6 weeks consultation time was inadequate to prepare meaningful submissions.

814. Iwi also acknowledged that there are tools in place under the Fisheries (Kaimoana Customary Fishing) Regulations 1998 to assist with management of fish stocks within their rohe. However, some iwi outlined that they are not able to progress the gazetting of their rohe as part of the Fisheries (Kaimoana Customary Fishing) Regulations 1998, due to financial and resource limitations.

2.3.2 Te Ohu Kaimoana proposals

815. Te Ohu Kaimoana proposed a range of options for North Island eels which included proposals relating to the TAC, TACC, customary and recreational allowances for some stocks (SFE/LFE 21 – 23), restrictions on recreational fishing methods, size restrictions targeting longfin eels, and reducing recreational take.

816. In relation to TAC and TACC limits, Te Ohu Kaimoana proposed the following options for each stock:

- SFE 20 – 23: maintain the *status quo*;
- LFE 20: adopt Option 2 (reduce TAC/TACC);
- LFE 21: maintain the *status quo*;
- LFE 22: adopt Option 2 (reduce TAC/TACC); and
- LFE 23: adopt Option 2 (reduce TAC/TACC).

817. In relation to customary and recreational allowances Te Ohu Kaimoana considers that when the TAC was originally set for the stock, customary interests were not adequately considered. As a taonga species, the primary non-commercial interest in the fishery is Māori, with iwi being the most prolific participants in the recreational Tuna fishery. Te Ohu Kaimoana therefore considers redistribution of the recreational and customary allowances using a 1:4 ratio will more accurately reflect the current take within the fishery. Te Ohu Kaimoana has proposed this approach for QMAs 21, 22 and 23, and noted that iwi in Northland rejected this proposal as many people there rely on fishing under the amateur regulations to put food on the table.

818. To restrict the amateur take in line with their proposed restriction on recreational allowances, Te Ohu Kaimoana proposes the following recreational fishing restrictions for longfin eels:

- Setting an upper weight limit of 4 kg; and
- Requiring all recreational fishers to use fyke nets with 31 mm escapement tubes to allow eels with a diameter of 31 mm or less to escape, effectively setting a 300 g minimum weight limit to the recreational fishery.

2.3.3 Submissions received

819. In total, 152 submitters provided 864 submissions on the eight stocks covered by the review.

820. Of the 357 submissions relating to shortfin eels, approximately 45% supported the *status quo*, 48% supported other options (in most cases a reduction or ban on the commercial harvest of shortfin eels), and 7% had no opinion (refer Figure 4).

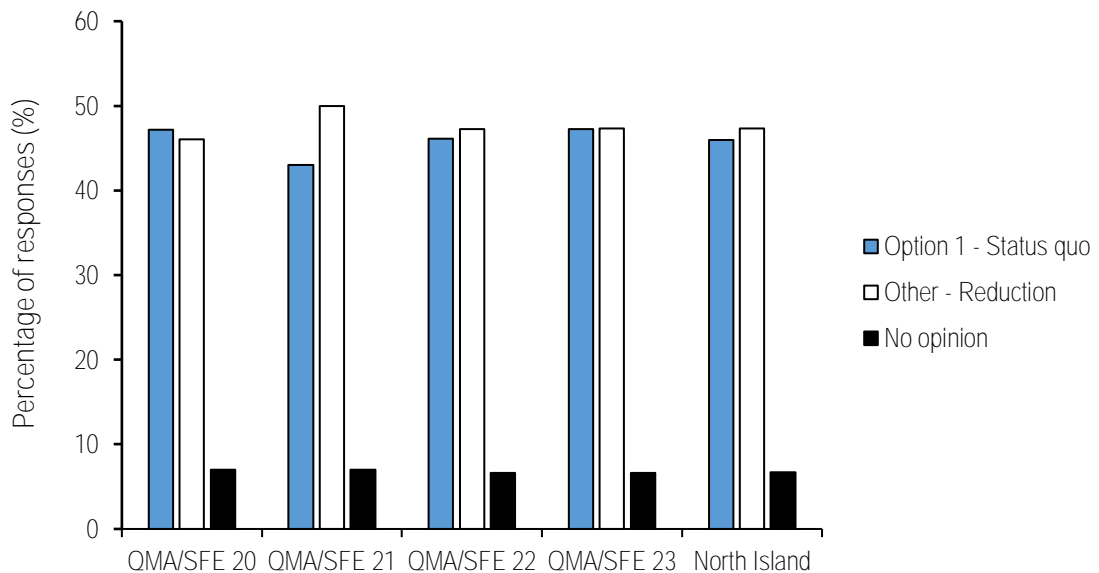


Figure 4: Survey responses relating to the preferred options for shortfin eels.

821. Of the 437 responses received relating to longfin eels, approximately 15% supported the *status quo*, 45% supported a reduction in longfin catch limits (Option 2), and 40% recommended other options which in most cases was a complete ban on the commercial harvest of longfin eels (refer Figure 5).

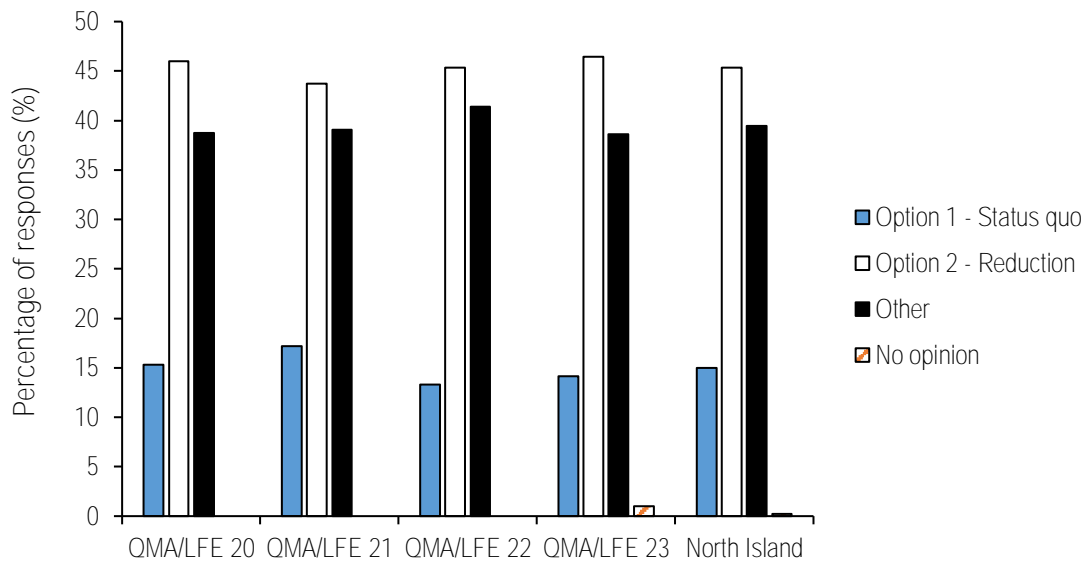


Figure 5: Survey responses relating to the preferred options for longfin eels.

2.3.4 Summary of submissions

822. Most submissions covered multiple eel stocks and/or species, or just referred to ‘eels’ or ‘Tuna’ in general. For this reason the responses to submissions have been summarised into the following categories:

- Submission supporting the *status quo*; and
- Submissions supporting a reduction or total ban on commercial fishing;

823. Where submitters referred to specific eel stocks those submissions have been discussed in the relevant subsection of section 2.4 (“Summary of TACs, TACCs, and Allowances by QMA”) of this document.

Submissions requesting continuation of the status quo

824. A number of submissions were received supporting the *status quo*, raising the following points:

- Only 22% of the available longfin eel habitat in the North Island is commercially fished. Department of Conservation reserves, National Parks as well the Motu, Mohaka and Whanganui rivers are already closed to commercial activity. In addition to these areas, occupational health and safety restrictions are making it increasingly difficult to access waterways through private farmland. These unfished areas provide significant protection for eels from commercial fishing.
- Habitat destruction, poor water quality, reduced habitat connectivity due to hydro-dams, flood pumps, and other waterways barriers are the main issues affecting eel abundance.
- Quota was bought as a property right and should not be eroded away to appease certain groups.
- Commercial fishers throughout the North Island have reported increasing abundance of longfin eels to the point where some stocks TAC/TACC’s increase could be proposed.
- In the case of longfin, the recent stock assessment aligns with the industry view that the stock for both species is rebuilding and above the soft and hard limit, with at least a 60% probability of being at or above the sustainability target.

- The CPUE graphs are downwardly biased because large eels are returned alive and not reported by commercial fishers.
- Reducing the TACC for longfin eels will put additional pressure on areas that are currently predominantly fished for shortfin.
- Negative media attention following the PCE report released in 2013, which suggested the longfin eel was on a ‘pathway to extinction’, has also had a major impact on the eel industry, with access to water being denied by private land owners.
- Industry are actively engaging with iwi through the Eel Enhancement Company and Te Ohu Kaimoana to establish effective and sustainable eel harvest strategies.
- Low rates of catch reporting for longfin eels is related to low market demand, low port price, and a large proportion ACE being shelved – it is not because of a low abundance – it is more closely linked to access.
- In recent years, the commercial eel industry has adopted a no target approach for longfin stocks because of reduced market demand. Any reduction in catch is not due to lack of abundance, but due to the market situation.

Submissions requesting a reduction or total ban of commercial eeling

825. A number of submissions were received requesting a reduction of TAC, TACC, and/or a total ban to commercial fishing in certain (or all) QMAs. These submissions raised the following points:

- Given the lack of knowledge around eel biology and commercial catch data, a precautionary approach should be utilised when setting the TAC/TACC and set it as low as possible until stocks can be shown to have recovered.
- Eels are a native species and longfin eels are endemic. Therefore, they should be given ‘protection status’.
- Many iwi have a strong connection to eels, longfin in particular and consider them a taonga species. For many generations eels (Tuna) have been their main source of protein. Some iwi also believe eels are their ancestors and that they are connected to eels through their genealogy. They are concerned that commercial fishing is a threat to the species and should be stopped.
- Both the QMAs and the Discussion Document fail to recognise iwi boundaries, making it hard for mana whenua to manage their customary eel fisheries.
- Commercial fishing is removing eels before they get to an appropriate size for customary food preparation techniques.
- The use of elver recruitment sites on dammed rivers in the North Island does not provide certainty about recruitment rates for iwi located outside these catchment areas.
- Commercial fishing pressure is affecting mahinga kai (traditional food gathering) sites.
- New Zealand’s waterways are already in a degraded state, which is putting significant stress on eel populations.
- There is ongoing agricultural, industrial and residential growth which is putting increasing pressure on our waterways.
- Even though large portions of eel habitat is unfished, migrating eels need to swim back through the commercially fished areas on their migration to the sea.
- TAC/TACC cuts are required now before abundance falls past the point of no return.
- Irresponsible commercial fishing with large numbers of nets being left in waterways for days at a time, with rotting eels in them, is damaging to eel populations.
- Eels are easily caught and sections can be cleared out by a commercial fisher in a single night.

- Eels are vulnerable to fishing pressure (i.e. they are long lived and are easily caught by fishing methods in large numbers);
- Eels are a top predator and therefore have an important role in freshwater ecosystems.
- Uphold the Parliamentary Commissioner for the Environment recommendation to suspend commercial fishing of longfin eels until the evidence shows the species has recovered.

Department of Conservation

826. In discussions prior to public consultation, the Department of Conservation (DOC) supported the options presented in the Discussion Document. However, their final position is that a ban on longfin eel fishing should be considered. In particular DOC has communicated its concerns that longfin eels:
- Are classified as “At Risk: Declining” in the New Zealand Threat Classification System;
 - Have characteristics that make them particularly vulnerable;
 - Have an important ecosystem role; and
 - Have been, and continue to be, impacted by major alterations to habitat.
827. DOC considers the biology, current state of the fishery, and the importance of longfin eels to Māori as being sufficient reasons to take a precautionary approach. While Option 2 in the discussion paper seeks to increase the abundance of longfin eels across all QMAs by reducing total allowable catch, DOC doesn’t consider this to be sufficiently precautionary.
828. Furthermore, DOC has taken the position that the discussion document does not explore the full range of options for longfin eel management and could benefit from undertaking a wider consideration of options such as:
- A full moratorium on commercial fishing of longfin eels; and/or
 - Creation of a set of reserves to protect mature individuals.

Parliamentary Commissioner for the Environment

829. The Parliamentary Commissioner for the Environment (PCE) maintains that rapid interventions are needed to increase the abundance and long-term viability of longfin eels and that a reduction in harvest pressure is the only policy intervention that will rapidly and directly reduce longfin mortality. The PCE considers that of the two options proposed, Option 2 is more likely to reduce the risk of further decline of the species.
830. Although in discussions prior to public consultation the PCE supported the options presented in the Discussion Document, its final view is that it would have preferred a moratorium also being presented as an option for consultation. It considers that the reduction proposed is insufficient, because the two indicators presented in the discussion document do not provide sufficient evidence of significant increases in eel numbers and/or that other pressures on eel abundance have been significantly reduced.
831. Finally, the PCE requests that Fisheries New Zealand work with all agencies responsible for managing the pressures impacting longfin eel abundance to ensure policy interventions are aligned and effective.

832. Fisheries New Zealand acknowledges that a large number of submitters, as well as DOC and the PCE, advocated for further reductions in commercial fishing beyond those consulted on, including a complete closure of commercial harvesting of eels.
833. The purpose of the Fisheries Act 1996 is to provide for utilisation of fisheries resources while ensuring sustainability. Therefore, if fishing can be undertaken sustainably you are obliged to allow for continued utilisation. The best available information on stock status indicates that the eel population can continue to be sustainably harvested at current levels of biomass. This is based on peer reviewed scientific assessment which suggests that eel abundance is stable or increasing in most areas, and that fishing of longfin eels, at the cautious catch limits proposed in this paper, is unlikely to be a significant driver of any future decreases in longfin eel abundance. The information provided during consultation did not challenge this underlying scientific assessment¹⁷.
834. In this context, Fisheries New Zealand considers the key question under the Act is not whether fishing can be provided at all, but rather, what is an appropriate target level for eel abundance, noting that habitat destruction, water quality and waterway barriers (i.e. hydro-dams and flood pump stations) need to be addressed in order to significantly enhance longfin eel abundance.
835. For the reasons discussed above, we consider a ban on commercial fishing is not an option you should consider in the context of the current review. Fishing is unlikely to be the main factor influencing longfin eel abundance going forward. Other management measures that could be considered in future include spatial or temporal restrictions, such as closing certain areas to eel fishing, during certain times of year (such as during spawning or migrating periods). Fisheries New Zealand will continue to work with iwi who wish to utilise customary tools, such as *mātaitai*, to manage tuna in areas of importance to them in their rohe.
836. The options consulted on provide you with a range driven by the best available information on biology, current abundance levels, environmental impacts and current management controls. Under Option 2, TACCs for longfin eels would be reduced by 72% since the time when eels were brought into the QMS in 2004.
837. However, if in light of submissions you consider the range of options too narrow then Fisheries New Zealand can provide you with additional advice on options for implementing further restrictions on commercial fishing, including spatial or temporal restrictions, and the costs and benefits of doing so. This advice would preferably be developed jointly with DOC and other agencies, as it may involve changes to the legislated status of longfin eels, and would ideally be part of a more focused effort to address issues such as habitat destruction, water quality and waterway barriers (which are all beyond the control of Fisheries New Zealand). These are the key factors that are likely to influence longfin eel abundance.

¹⁷ Officials from DOC and the Office of the PCE did not participate in the scientific working groups or the Fisheries Assessment Plenary meetings where the scientific basis for our recommendations was discussed and reviewed by independent experts.

2.4 SETTING TACS

838. Longfin and shortfin eel stocks are listed on Schedule 3 of the Act, allowing the TAC to be set under section 14. Under section 14, if you are satisfied 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 consider appropriate to achieve the purpose of the Act. Fisheries New Zealand consider this 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 North Island eels in this paper.

2.4.1 Environmental principles

839. When making a decision concerning the TAC for a stock under section 14, you must have regard to interdependence of stocks, the biological characteristics of the species in question, and any environmental conditions affecting the stock.

840. 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.

841. Eels are a targeted species using passive (live capture) fishing techniques. There is little bycatch and few associated or dependent species associated with current catch limits for eels. DOC notes the role of longfin eels as an apex predator in the freshwater environment. The options proposed either maintain or reduce current catch limits, thereby mitigating such concerns.

2.4.2 Sustainability measures

842. Section 11 measures that are directly relevant to the North Island shortfin and longfin eel fisheries are discussed within this section; generic considerations relating to section 11 are set out in the introductory section of these papers:

- a) Section 11(1)(b) takes into account any existing controls under the Act that apply to the stock or area concerned. For both shortfin and longfin stocks, the measures that currently apply are TAC and TACC limits, allowances for customary and recreational take, and other sources of fishing-related mortality. Other management controls apply to the North Island shortfin and longfin eel fisheries including deemed values, recreational bag limits, minimum and maximum size limits and fishing method controls. Fisheries New Zealand has taken these controls into account in its stock assessment and the advice developed for you on North Island eels.
- b) Sections 11(2)(a) and (b) requires you to take into account the 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 applies to the coastal marine area and that you consider relevant. Fisheries New Zealand has consulted with DOC during the review process and has taken into account any strategies under the Conservation Act 1987 relating to eels. For all the eel stocks being reviewed, there are policy statements and plans under the Resource Management Act 1991 and the Conservation Act 1987 relating to activities in the freshwater environment in which

eels live. These statements and plans include provisions that limit the activities that can occur in such waterways, including fishing. Where relevant, these are taken into account in the stock assessment and advice provided. For example the stock assessment conclusion that 78% of suitable habitat is not commercially fished due to access issues and restrictions under the Resource Management Act 1991 and the Conservation Act 1987.

2.4.3 Management targets

843. Fisheries New Zealand's Fisheries Assessment Plenary has agreed from a sustainability perspective that the interim default reference points of 40% B_0 (target), 20% B_0 (soft limit) and 10% B_0 (hard limit) were appropriate for both shortfin and longfin eels.
844. Fisheries New Zealand acknowledges that while these targets will ensure sustainability, they are defined in relation to the biomass that would exist with no fishing given the current amount of suitable habitat available, rather than the historical unfished biomass. Longfin eels, in particular, have been significantly affected by irreversible habitat modifications. Therefore, many iwi and submitters are requesting further catch limit reductions to enhance longfin eel abundance trends further above the sustainability targets considered by the Fisheries Assessment Plenary.
845. A number of submissions raised concerns regarding a perceived lack of knowledge relating to eel biology and, therefore, that a precautionary approach should be used when setting the TAC. Fisheries New Zealand accepts there are some knowledge gaps related to eel biology and abundance, noting that this is the case with almost all fish species and the proposals are based on peer reviewed science and take this uncertainty into account.

SHORTFIN EELS (SFE 20 – 23)

2.4.4 Setting the TAC

846. Fisheries New Zealand proposed no change to the TAC for all shortfin stocks in its discussion document, with the *status quo* being the only option proposed.
847. Commercial fishers, several iwi, and Te Ohu Kaimoana have indicated support for the *status quo* for shortfin eels as they consider the abundance of the stock to have been either stable or steadily increasing over the last 30 years. Fisheries New Zealand consider this position to be supported by the 2017 stock assessment which determined abundance, as measured by the CPUE, was increasing for most shortfin stocks.
848. Many submissions proposed a reduction and/or ban on fishing or commercial fishing for shortfin eels (i.e. a TAC and/ or TACC of zero). These submissions perceive there to be a lack of knowledge about eel biology and the commercial catch data. Many submitters also raised lack of habitat and poor water quality as major issues impacting on eel abundance, arguing that commercial harvest is intensifying stress already encountered by eel populations. They are advocating for a precautionary approach to be taken when setting the TACC, and to set it as low as possible until stocks have been substantially recovered.
849. Fisheries New Zealand acknowledges these concerns, and notes the large number of submissions requested a complete ban on the commercial harvest of eels generally.

However, banning the commercial harvest of shortfin eels is not supported by the available science, which suggests the abundance of shortfin eels is increasing across all shortfin eel stocks.

850. In relation to such submissions from iwi, we note that iwi also have legislative tools available under the Fisheries (Kaimoana Customary Fishing) Regulations 1998 to address such issues and to exclude commercial fishing, including mātaimai reserves and temporary closures (rahui).
851. Taking into account the feedback and views during consultation, Fisheries New Zealand considers the *status quo* to be appropriate because abundance, as measured by CPUE, is stable or increasing across most areas. This suggests the current TACs allow for sustainable utilisation while also allowing the abundance of shortfin eels to increase.
852. Fisheries New Zealand notes commercial and recreational fishing only occurs in a limited proportion of the available shortfin eel habitat, with the remaining habitat acting as a refuge from commercial activities. Maintaining the *status quo* should result in no immediate negative impacts on the biological diversity of the aquatic environment.
853. Overall, Fisheries New Zealand considers this approach to be most consistent with your statutory obligations under the Act, which is to provide for utilisation of the shortfin eel resource while ensuring sustainability.

2.4.5 Allocating the TAC

Allocating for customary, recreational, and other sources of mortality caused by fishing

854. Fisheries New Zealand proposes no changes to the allowances for customary, recreational, and other sources of fishing mortality, proposing *status quo* for these as the only option across all stocks (i.e. SFE 20 – 23 and LFE 20 – 23).
855. Fisheries New Zealand considers this to be appropriate because the best available information suggests current allowances sufficiently provide for recreational and customary catch and other fishing-related mortality.
856. During engagement with tangata whenua, many iwi supported the *status quo* in relation to allowances, with strong support from some iwi for no reduction to the customary allowance. Some iwi acknowledged that many Māori exercise their customary right to fish, as recreational fishers, and suggested their catch should be allowed for under the customary allowance.
857. Te Ohu Kaimoana supported the *status quo* for SFE 20 only and, in the case of SFE 21 – 23, are proposing a reallocation of recreational and customary allowances by a 1:4 ratio to reflect the importance of customary take with a larger allocation.
858. Fisheries New Zealand notes that the framework for determining customary and recreational allowances is set out under sections 20 and 21 of the Act and this is discussed in *Part 2: Statutory Considerations*. As noted in that section, the Supreme Court has said that the recreational allowance is simply the best estimate of what recreational fishers will catch while being subject to the controls which you decided to impose upon them (e.g. bag limits, minimum sizes and other restrictions), however, in setting allowances you are not obliged to fully meet the need of any sector in full. In Fisheries New Zealand's view

this would also apply to the customary allowance, albeit that you do not have the same ability to control the customary allowance as you do for the recreational allowance.

859. Fisheries New Zealand does not have full information on customary catch, because much of the North Island is not covered by the Fisheries (Kaimoana Customary Fishing) Regulations 1998, which require customary catches to be reported. Therefore the allowances are based on the population and the number of marae in each QMA. Te Ohu Kaimoana's submission does not provide information suggesting that customary catch has increased since these allowances were set, and no other submissions were received to provide information on this issue.
860. Nor does Fisheries New Zealand have any quantitative information on total recreational catch of eels. Anecdotal reports from Fishery Officers, stakeholders and tangata whenua suggests it is unlikely the current allowance is being over caught, and catch could even be less than the current allowance in most QMAs. Recreational eel fishing occurs in freshwater, and is therefore not captured by the National Panel Survey of Marine Recreational Fishers. There is no national survey designed to estimate recreational catch of freshwater species, such as eel, at this time.
861. Given the uncertainty associated with recreational and customary catch estimates, we prefer that current settings be retained while work is completed to quantitatively estimate recreational eel catch. In addition, reducing the recreational allowance does not in itself constrain recreational catch. To give effect to a reduction in the recreational allowance, regulatory changes, such as the amendments to the daily bag limit and recreational restrictions described in the Te Ohu Kaimoana submission, would be required. To adjust these regulations and set new corresponding recreational allowances with any certainty, we first need reliable information on recreational catch to determine whether a given restriction will constrain catch to the allowance. Prior to undertaking any regulatory amendment, Fisheries New Zealand would need to undertake a further public consultation process and allow for adequate input and participation as outlined in the Act.
862. A further stock assessment for North Island eels is scheduled to occur in 2019, which will determine whether further changes are required to North Island eel stocks, including the recreational and customary allowances. Fisheries New Zealand will commission advice on estimating recreational eel catch over the next year as input into this assessment.

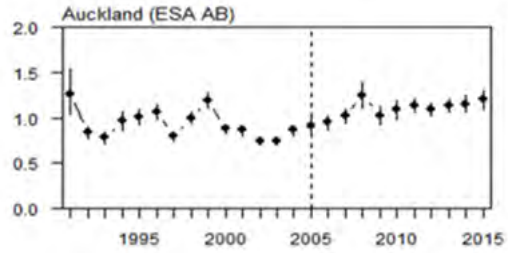
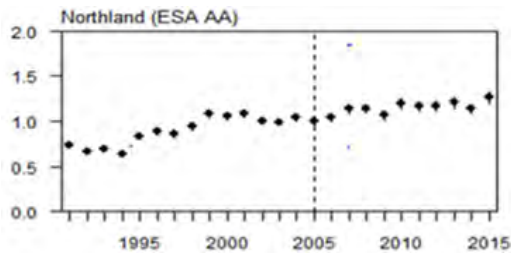
TACC

863. Fisheries New Zealand proposed no changes to the TACC for all shortfin stocks in its discussion document, with the *status quo* being the only option presented.
864. Commercial fishers, iwi, and Te Ohu Kaimoana support this option, stating that shortfin eels are showing increasing trends in abundance.
865. Some iwi submissions also favoured a commercial ban to address concerns relating to local areas of significance to customary fishing. We note that iwi have legislative tools available under the Fisheries (Kaimoana Customary Fishing) Regulations 1998 to address such issues, including mātaimai reserves and temporary closures (rahui), which relate to commercial fishing. Fisheries New Zealand will continue to work with iwi to manage their concerns regarding localised depletion of tuna in their rohe.

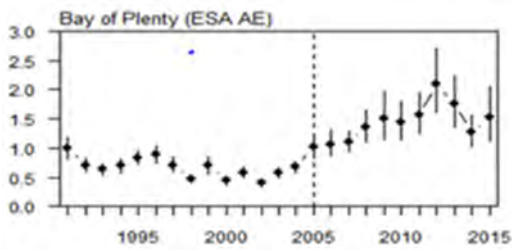
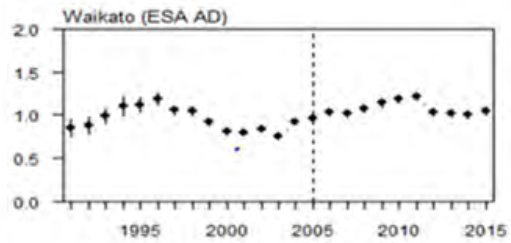
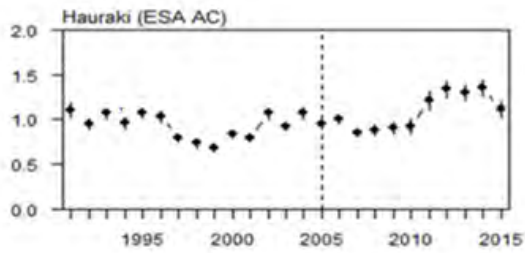
866. Fisheries New Zealand considers the *status quo* is to be appropriate because abundance, as measured by CPUE, is stable or increasing across all areas (Figure 6). In 2008 substantial cuts (between 18% and 42%) were made to the TACCs of all North Island shortfin stocks to improve eel sustainability and significantly reduce commercial fishing pressure on North Island shortfin eels. CPUE trends indicate the current TACs allow for sustainable utilisation, while also allowing for the abundance of shortfin eels to increase¹⁸.

¹⁸ CPUE trends are considered to be biased down (not as positive as they should be) because in 2012-13 the escape tube diameter on all commercial fishing nets was increased from 25 mm to 31 mm, allowing some legal sized eels to escape without being recorded.

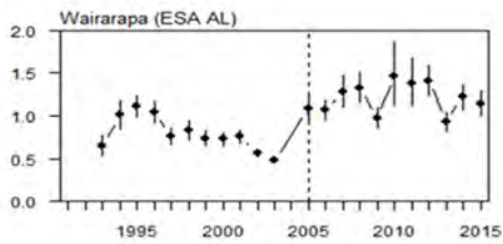
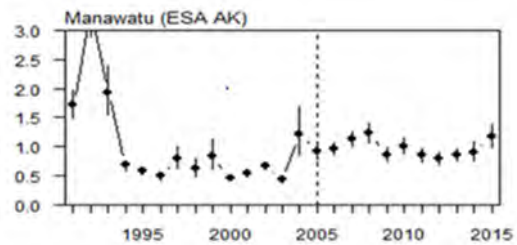
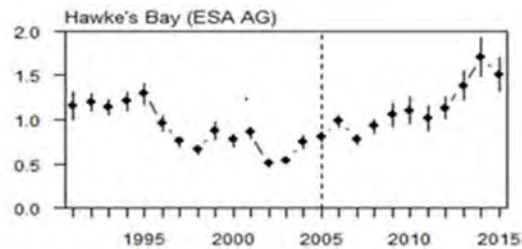
a) SFE 20



b) SFE 21



c) SFE 22



d) SFE 23

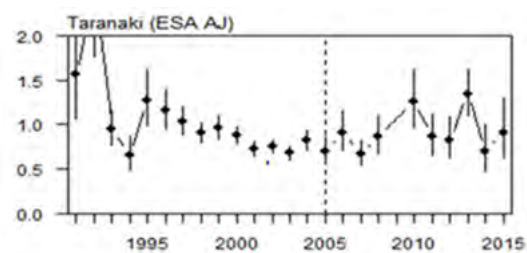
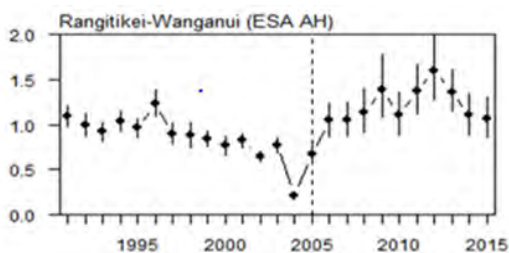


Figure 6: Commercial catch per unit effort (CPUE) from 1990 to 2015 for shortfin eels in: a) OMA 20; b) OMA 21; c) OMA 22; and d) OMA 23.

867. Fisheries New Zealand notes that a large number of submissions requested a complete ban on the commercial harvest of eel. However this is not supported by the available science which suggests the abundance of shortfin eels is increasing across all shortfin eel stocks.

LONGFIN EELS (LFE 20 - 23)

2.4.6 Setting the TAC

868. For longfin stocks, Fisheries New Zealand proposed in its discussion document the following two options for each stock:

- Option 1: *Status quo* (no change); or
- Option 2: Reduce the TAC (by an average of 16% across all QMAs) and the TACC (by an average of 34% across all QMAs).

Option 1 – Status quo

869. Option 1 retains the current TAC. It takes into account the Plenary consensus that all longfin stocks were ‘likely (> 60% probability) at or above the target’, and ‘very unlikely (< 10% probability) to be below the soft limit and the hard limit’. It also recognises the significant cuts to the North Island longfin TACs and TACCs of between 35% and 78% that occurred in 2008. Catch reductions in 2008 for longfin were larger than those for shortfin, reflecting the greater sustainability concerns associated with that species.

870. Commercial fishers and some iwi supported the *status quo* for longfin eels because only 22% of the available LFE habitat in the North Island is commercially fished, with the remaining unfished areas providing significant protection for eels from commercial fishing.

871. Some submissions, mainly from commercial fishers, stated that the abundance of longfin eels is increasing, particularly those larger than 4 kg, and low catches are due to low market demand, low port price and ACE being unavailable as most of it is shelved. Te Ohu Kaimoana indicated support for this approach for the LFE 21 stock only.

872. They also consider this to be supported by stable or increasing CPUE trends across most areas reported in the 2017 stock assessment and the Plenary Report which indicated stocks have at least a 60% probability of being at or above the agreed sustainability target.

873. Fisheries New Zealand considers there are grounds to support the arguments from these submitters that CPUE trends have also been biased downwards (reflecting a trend less positive than it should be) as a result of recent changes to gear to allow smaller eels to escape, and increasing numbers of larger eels being released. These eels are not generally recorded on catch forms.

874. The sustainability targets and limits used by the Fisheries Assessment Plenary for eels are, however, defined in relation to the biomass that would exist with no fishing given the current amount of suitable habitat available, rather than the historical unfished biomass. This is because longfin eels have been significantly affected by irreversible habitat modifications. Many iwi and submitters are requesting further catch limit reductions to enhance longfin eel abundance trends further above the sustainability targets considered by the Fisheries Assessment Plenary.

Option 2 – Reduction

875. Option 2 sets a lower TAC that is more likely to support/promote an increase in longfin eel abundance. It takes into account that there is some level of uncertainty with the science relating to the long-term management targets for eels. It also places additional weight on the concerns raised in pre-consultation by some iwi that the current management regime does not allow for adequate utilisation by iwi.
876. Under Option 2, the same approach would be taken as in 2008, whereby the TACC is reduced to the average annual commercial catch.¹⁹ This would reduce the longfin eel catch that can be taken commercially by an average of 34%. It ensures that catch would be significantly constrained in all years when it would otherwise have been above the long term average.
877. A large number of submissions supported a reduction and/or total ban on commercial fishing for longfin eels. There is a perceived lack of knowledge in terms of eel biology and commercial catch data, and concerns that longfin eels are native, endemic and considered taonga by Māori, but are perceived to be less abundant now compared to historical levels. In addition, many submitters raised lack of habitat and poor water quality as the major issues impacting on eel abundance. Under these conditions, commercial harvest is adding further pressure to longfin eels. Therefore a precautionary approach should be utilised when setting the TAC and it should be set as low as possible until stocks have been shown to have recovered.
878. Te Ohu Kaimoana support a reduction in the TAC and TACC for LFE 20, 22 and 23, because tangata whenua have clearly raised concerns regarding low abundance of eels in their rohe.
879. Taking into account these submissions, Fisheries New Zealand's recommended option for all longfin stocks, is Option 2 – an average reduction of 16% (i.e. 12% - 23% depending on stock) in TACs and an average reduction of 34% (i.e. 26% - 44% depending on stock) in the TACCs. These reductions are based on the average annual commercial catch since 2008 and represent a 26 tonne per annum reduction across the North Island²⁰, and a 72% (138 tonne) reduction in TAC when compared to the original 2004 QMS settings. Setting catch limits at this level would significantly constrain the catch in all years when it would have otherwise been above the long term average.
880. Option 2 takes into account that the Fisheries Assessment Plenary agreed in 2017 that the available scientific information suggests all longfin stocks were 'likely' (> 60% probability) at or above the sustainability target, indicating that current catch limits are sustainable, and were 'very unlikely' (< 10% probability) to be below the soft limit and the hard limit. However, it also places weight on the strong preference from many iwi and submitters to increase longfin eel abundance above sustainability targets considered by the Fisheries Assessment Plenary and recognises that the abundance is calculated in relation to currently available habitat and that much of the original habitat has been lost.

¹⁹ The average annual commercial catch for longfin eels reported since the last TACC reduction in 2008 and rounded to the nearest whole tonne.

²⁰ Proposed reductions in TAC per QMA are: LFE20 = 5 tonnes; LFE 21 = 9 tonnes; LFE 22 = 8 tonnes; LFE23 = 4 tonnes.

2.4.7 Allocating the TAC

Allowances for customary, recreational, and other sources of mortality caused by fishing

881. Under both Options 1 and 2, the allowances for customary, recreational, and other sources of fishing mortality would be retained.
882. Information on non-commercial catch of eels in the North Island remains highly uncertain. Caution is required to ensure that recreational and customary allowances are adequate to provide for the likely range of customary and recreational catch and other fishing-related mortality levels that occur. Available information suggests current allowances are adequately providing for customary catch (through a combination of customary and recreational allowances) and for recreational catch (which is constrained by a six eel per day bag limit).
883. During engagement with tangata whenua many iwi supported the *status quo* in relation to allowances, with strong support from some iwi for no reduction to the customary allowance. Some iwi acknowledged that many Māori exercise their customary right to fish, as recreational fishers, and suggested their catch should be allowed for under the customary allowance.
884. Te Ohu Kaimoana has proposed an alternative approach for most SFE and LFE stocks, with a reallocation of recreational allowances to customary to reflect the importance of customary take. Our response to this proposal is set out under the allowance sections. This is discussed in detail under the relevant section for shortfin eels.
885. In summary, Fisheries New Zealand does not have quantitative information on total recreational catch of eels. Anecdotal reports from Fishery Officers, stakeholders and tangata whenua suggests it is unlikely the current allowance is being over caught, and catch could even be less than the current allowance in most QMAs. However, given the uncertainty, we prefer that current settings be retained while work is completed to quantitatively estimate recreational eel catch.

Setting the TACC

886. Fisheries New Zealand proposed in its Discussion Document either the *status quo* for longfin TACCs (Option 1), or (Option 2) to reduce the TACC (by an average of 34% across all QMAs).
887. Some submissions supported the *status quo* for longfin, stating that low catch of longfin eels is due to low market demand, low port price and large proportions of ACE being voluntarily shelved and low abundance or an inability to catch eels.
888. Fisheries New Zealand acknowledges that CPUE may be biased downwards, and that market demand influences commercial catches. However, the extent of this bias is not quantified. The biology and habitat preferences of longfin eels mean that they are vulnerable to habitat modification, drain clearing, flood and hydro turbines, as well as fishing. While fishing may no longer be the primary factor influencing longfin eel abundance, it is important to take this vulnerability into account.
889. Most submissions supported a reduction and/or total ban on commercial fishing for both species. These submitters advocated for a precautionary approach when setting the TACCs for longfin eels or, to implement a complete ban.

890. Fisheries New Zealand’s recommendation for all longfin stocks is to reduce TACC limits as proposed in Option 2. In the absence of a consistent trend of increasing abundance for longfin eels, it is important to take into account the biology and habitat preferences of longfin eels which mean that they are vulnerable to habitat modification, drain clearing, flood and hydro turbines, as well as fishing. The TACCs proposed under Option 2 would mean that, combined with the reductions that occurred in 2008, commercial catch limits for longfin eels have been reduced by 74% since introduction into the QMS in 2004.
891. In terms of iwi concerns relating to local areas of significance to customary fishing, we note that iwi have legislative tools available under the Fisheries (Kaimoana Customary Fishing) Regulations 1998 to manage local abundance and restrict access to commercial fishers in their rohe. This a step that has already been adopted by many iwi that want to manage Tuna populations at a local level.
892. The economic impact of the reduced TACCs under Option 2 will vary with changes in market prices. Based on an average port price²¹ of \$4.48²² for longfin eels, under Option 2, the total port price value of the North Island longfin eel commercial fishery would be reduced from \$362,880 (based on the current North Island TACC total across all stocks) to \$246,400 (North Island TACC total across all stock as proposed under Option 2) (refer table 7 below). However, analysis based on port price does not take into account the significant economic impacts beyond landing of eels, for example impacts on eel processors. No estimates of the economic impact of Option 2 were provided in eel industry or other submissions.

Table 7: Value of fishery based on average port price (\$4.48/kg) from 2010/11 – 2017/18

	Potential value of fishery
Option 1 – <i>Status quo</i>	\$362,880
Option 2 – Reduction	\$246,000

2.4.8 Summary of TACs, TACCs and Allowances for each longfin eel stock

LFE 20

893. Proposed options for LFE 20 TACC are given in Table 8.

Table 8: Proposed TACs, TACCs and allowances for LFE 20 (all values in tonnes):

	TAC	TACC	Customary	Recreational	Other fishing related mortality
Option 1 – <i>Status quo</i>	39	19	10	8	2
Option 2 – Reduction (Recommended)	34	14	10	8	2

894. The TAC and TACC for LFE 20 were reduced from 67 tonnes and 47 tonnes (a reduction of 42% and 60% respectively) in 2008 (refer Table 4).

²¹ Caution is needed when interpreting the above values because not all Licenced Fish Receivers provide information for the port price survey (Fisheries New Zealand has not received sufficient results during the last three years to allow an update of the port pricing for eels). Note also the port price value is what the fisher receives, not what the eels are worth on the open market.

²² Average port price for longfin eel between 2010/11 and 2017/18

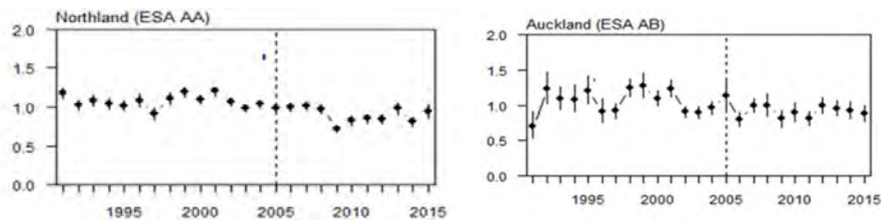


Figure 7: Commercial catch per unit effort (CPUE) from 1990 to 2015 for longfin eels in LFE 20.

895. For Eel Statistical Areas AA and AB the Plenary agreed that:

- AA: Very slight downward trend in CPUE over the time series (Figure 7); and
- AB: A slight decline in CPUE to 2005, but stable thereafter.

896. Option 1 proposes that the TAC and TACC remain at the *status quo*. This recognises CPUE has been largely stable since the early 1990s and that, of the two Eel Statistical Areas (AA and AB) that make up this QMA, only 36% and 35% (respectively) of the available eel habitat is commercially fished. Furthermore, when assessing the status of the LFE 20 fish stock, the Plenary concluded LFE 20 is ‘likely’ (> 60% likelihood) at or above the ‘target’ and ‘very unlikely’ (< 10% likelihood) to be below the soft limit or the hard limit. Therefore, longfin eel abundance is expected to continue around existing levels.

897. Option 2 (preferred) proposes a TAC based on the average annual commercial catch for longfin eels reported since the last TAC reduction in 2008. Basing the TAC and TACC on the average annual commercial catch would significantly reduce the total longfin eel catch available to be taken commercially, and the overall long-term catch of longfin eels. This is because catch would be significantly constrained in all years when it could have otherwise been above the long term average. This approach is more likely to support an increase in longfin eel abundance, and takes into account that longfin eels are more vulnerable than shortfin eels due to biological differences, and also addresses concerns raised by some iwi.

898. Views from tangata whenua were mixed. As an example, views expressed at Te Hiku o Te Ika Fisheries Forum (Northland) were generally supportive of the *status quo*, whereas some iwi in the lower half of the same Northland region voiced strong support for a reduction in TACC limits. This contrast in views is driven in part by the strong connection of specific iwi and hapu to Tuna in their rohe, and differing attitudes to approaches to utilisation. Fisheries New Zealand also received submissions supporting the views of many iwi that the QMAs are too large to adequately meet the needs and expectations of tangata whenua.

899. Te Ohu Kaimoana support a reduction in TACC in this stock because local iwi have raised concerns with them regarding low abundance of eels.

900. Fisheries New Zealand considers Option 2 (reduction in TAC and TACC) to be the most appropriate option because longfin eels have suffered significant loss of habitat and abundance, as measured by CPUE, is, at best, stable in both Eel Statistical Areas across the QMA. In addition to this, there was strong support from some iwi, particularly in the lower half of the QMA, to reduce the TACC to assist in increasing abundance.

901. Proposed options for LFE 21 TAC, TACC, and allowances are given in Table 9.

Table 9: Proposed TACs, TACCs and allowances for LFE 21 (all values in tonnes):

	TAC	TACC	Customary	Recreational	Other fishing related mortality
Option 1 – <i>Status quo</i>	60	32	16	10	2
Option 2 – Reduction (preferred)	51	23	16	10	2

902. The TAC and TACC for LFE 21 were reduced from 92 tonnes and 64 tonnes (35% and 50% respectively) in 2008 (refer Table 4).

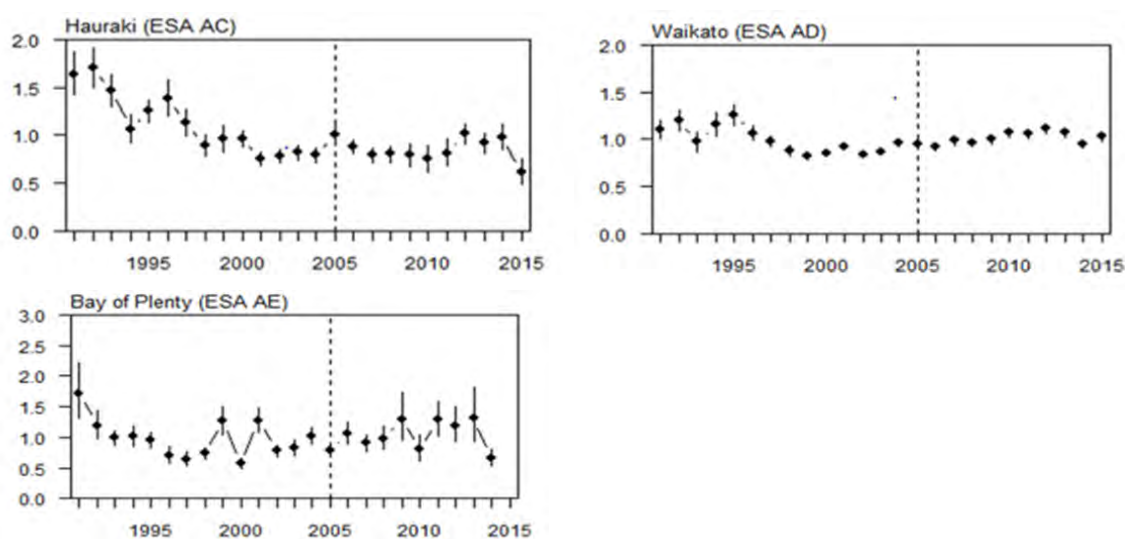


Figure 8: Commercial catch per unit effort (CPUE) from 1990 to 2015 for longfin eels in LFE 21

903. For Eel Statistical Areas AC, AD and AE the Plenary agreed that:

- AC: Steep decline in CPUE to 2000/01, and then stable until 2014/15 (Figure 8);
- AD: A moderate decline in CPUE to 1998, and then a gradual increase to around the level of the former peak by 2014/15; and
- AE: A steep decline in CPUE to 2000, and then a gradual increase to a peak in 2012/13.

904. There is no CPUE graph generated for AF (Poverty Bay) because there is insufficient commercial fishing activity to generate the required amount of data.

905. Option 1 proposes the TAC and TACC remain at the *status quo*. This recognises that the CPUE has been stable since 2000 for AC, and increasing since 2003 for AD and AE. There is a slight downward turn in CPUE between 2014 and 2015 for AC and AE. Fisheries New Zealand consider this to be natural fluctuation possibly caused by environmental factors, rather than the emergence of a long term trend. AC, AD and AE have 50%, 43.2% and 17.4% (respectively) of their available eel habitat commercially fished.

906. Furthermore, when assessing the status of the LFE 21 fish stock, the Plenary concluded that LFE 21 is ‘likely’ (> 60% likelihood) at or above the ‘target’, which in this case

means a sustainable harvest level, and that LFE 20 was ‘very unlikely’ (< 10% likelihood) to be below the soft limit or the hard limit. Therefore, with all other things being equal, and given the positive trend in CPUE across two of the three Eel Statistical Areas that make up this QMA, longfin eel abundance is likely to continue to increase over time. However, if at any point in the future longfin abundance is seen to decline, Fisheries New Zealand will look to review the stocks.

907. Te Ohu Kaimoana support the *status quo* because iwi they consulted with in the area indicated that they support no changes, especially due to progress made in working with industry to address local concerns.
908. Option 2 (preferred) proposes a TAC and TACC be set based on the average annual commercial catch for longfin eels reported since the last TACC reduction in 2008. Basing the TAC and TACC on the average annual commercial catch would significantly reduce the total longfin eel catch available to be taken commercially, and will reduce the long term catch of longfin eels. This is because the catch would be significantly constrained in all years when it could have otherwise been above the long term average. This approach takes into account that a lower TAC is likely to support an increase in longfin eel abundance, that longfin eels are more biologically vulnerable than shortfin eels, and also addresses concerns raised by some iwi.
909. Submissions from commercial fishers supported the *status quo*, stating that they have observed a steady increase in eel abundance, a position that is supported by CPUE data. They say that low catch rates are due to low market demand, not low abundance.
910. Submissions from several iwi requested a ban in commercial fishing specifically in the Waipaoa River catchment area, and in some cases the entire QMA. These submissions were supported by Māori led research that showed localised depletion rates reaching levels as high as 90%, when compared to an abundance estimate contained in another study undertaken in 2008.
911. Submissions in support of the *status quo* stated eel abundance has been steadily increasing and that low catch rates are due to low market demand and are therefore not indicative of low abundance.
912. There are two Iwi Fisheries forums represented in LFE 21: Nga Hapu o Te Uru o Tainui Forum and Mai i Nga Kuri a Whareki Tihirau Fisheries Forum. Neither of these forums submitted on the Discussion Document. Mai i Nga Kuri a Whareki Tihirau Fisheries Forum contacted Fisheries New Zealand and stated their puni (group) would not submit on this review and that forum members would provide individual submissions.
913. Te Aitanga a Mahaki Trust submitted on behalf of 12 marae along the Waipaoa River, in support of a reduction in the TACC for both longfin and shortfin eels, and also requested a complete ban on the commercial harvest of eels, within the Waipaoa River, until abundance has returned to 2008 levels.
914. Fisheries New Zealand considers Option 2 (reduction in TAC and TACC) to be the most appropriate option because longfin eels have suffered significant loss of habitat and abundance, as measured by CPUE, is only showing a slight increase across the QMA since the early 2000s. While this increase in abundance has been reflected in submissions from commercial fishers, it is contrasted by a large number of submission received from tangata whenua stating that in their experience eel abundance has significantly dropped.

In addition to this, AC, AD and AE have 50%, 43.2% and 17.4% (respectively) of their available eel habitat commercially fished. While this leaves large parts of the QMA untouched by commercial fishers, the percentage of QMA 21 that is fished is significantly higher than other North Island QMAs. Therefore Fisheries New Zealand considers it appropriate to reduce the TACC so as to support an increase in eel abundance.

LFE 22

915. Proposed options for LFE 22 TAC, TACCs and allowances are given in Table 10.

Table 10: Proposed TACs, TACCs and allowances for LFE 22 (all values in tonnes)

	TAC	TACC	Customary	Recreational	Other fishing related mortality
Option 1 – <i>Status quo</i>	34	21	6	5	2
Option 2 – Reduction (Recommended)	26	13	6	5	2

916. The TAC and TACC for LFE 22 were reduced from 54 tonnes and 41 tonnes (a reduction of 37% and 49% respectively) in 2008 (refer Table 4).

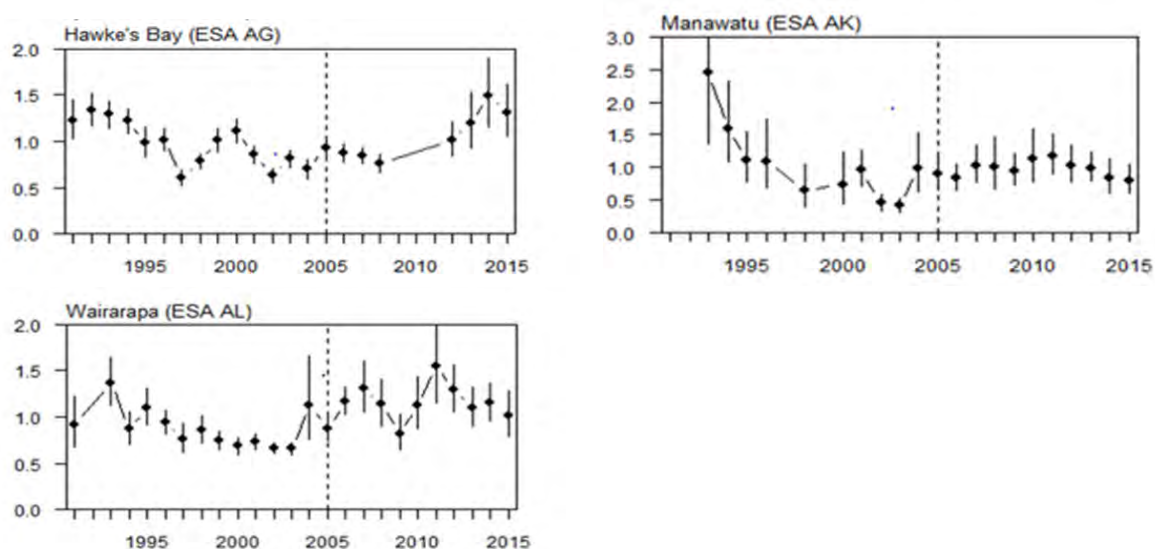


Figure 9: Commercial catch per unit effort (CPUE) from 1990 to 2015 for longfin eels in LFE 22

917. For Eel Statistical Areas AG, AK and AL the Plenary agreed that:

- AG: CPUE declined until 1997, was stable until 2008 and then increased (Figure 9);
- AK: CPUE declined steeply until 2003, increased in 2004 and has fluctuated without trend since then ; and
- AL: CPUE declined steeply until 2003, increased in 2004 and has fluctuated without trend since then.

918. No CPUE graph was generated for AM (Wellington) because there is insufficient commercial fishing data to plot.

919. Option 1 proposes the TAC and TACC remain at the *status quo*. This approach recognises that the CPUE has been increasing since the early 2000's for Eel Statistical Areas AG and AL, and stable for AK. Of the four Eel Statistical Areas that make up this QMA - AG,

AK, AL and AM - only 17.3%, 36%, 4.4%, and 2.4% (respectively²³) of the available eel habitat is commercially fished. Furthermore, when assessing the status of the LFE 22 fish stock, the Plenary concluded LFE 22 is ‘likely’ (> 60% likelihood) at or above the ‘target’ and ‘very unlikely’ (< 10% likelihood) to be below the soft limit or the hard limit. Therefore, with all other things being equal, and given the positive trend in CPUE across three of the four Eel Statistical Areas that make up this QMA, longfin eel abundance is likely to continue to increase over time.

920. Option 2 (preferred) proposes a TAC based on the average annual commercial catch for longfin eels reported since the last TACC reduction in 2008. Basing the TAC and TACC on the average annual commercial catch would significantly reduce the total longfin eel catch available to be taken commercially and will reduce the long term catch of longfin eels. This is because the catch would be significantly constrained in all years when it could have otherwise been above the long term average. This approach takes into account that a lower TAC may support an increase in longfin eel abundance, that longfin eels are more biologically vulnerable than shortfin eels, and addresses concerns raised by some iwi.
921. Submissions received from commercial fishers and industry representatives all supported maintaining the *status quo* for all longfin eel stocks stating that eel abundance has been steadily increasing and that low catch rates are driven by low market demand, rather than low abundance.
922. There is no iwi fisheries forum in operation in LFE 22. However, numerous submissions were received from local iwi requesting either a reduction or complete ban on commercial fishing throughout the QMA.
923. Te Ohu Kaimoana support a reduction because tangata whenua have raised concerns regarding a low abundance of eels experienced at the rohe level.
924. Fisheries New Zealand considers Option 2 (reduction in TAC and TACC) to be the most appropriate option because longfin eels have suffered significant loss of habitat and abundance, as measured by CPUE, is increasing in only one of the three Eel Statistical Areas, and fluctuating without trend in the remaining two since the early 2000s. While an increase in abundance has been alluded to in submissions from commercial fishers, this is in contrast to a large number of submissions received from iwi stating that eel abundance has significantly dropped in their rohe when compared to historical experiences. Therefore Fisheries New Zealand considers it appropriate to set a TACC at a level that enables eel abundance to increase.

LFE 23

925. Proposed options for LFE 23 TACs, TACCs, and allowances are given in Table 11.

Table 11: Proposed TACs, TACCs and allowances for LFE 23 (all values in tonnes):

	TAC	TACC	Customary	Recreational	Other fishing related mortality
Option 1 – <i>Status quo</i>	34	9	14	9	2
Option 2 – Reduction (Recommended)	30	5	14	9	2

²³ This figure was not calculated for AM due to a lack of commercial fishing in that Eel Statistical Area.

926. The TAC and TACC for LFE 23 were reduced from 66 tonnes and 41 tonnes (reductions of 48% and 78% respectively) in 2008 (see Table 4).

927. For Eel Statistical Areas AH and AJ the Plenary agreed that:

- AH: No comment due to lack of data (Figure 10); and
- AJ: Moderate decline in CPUE until 2003, increasing to 2012, and then declining to 2015.

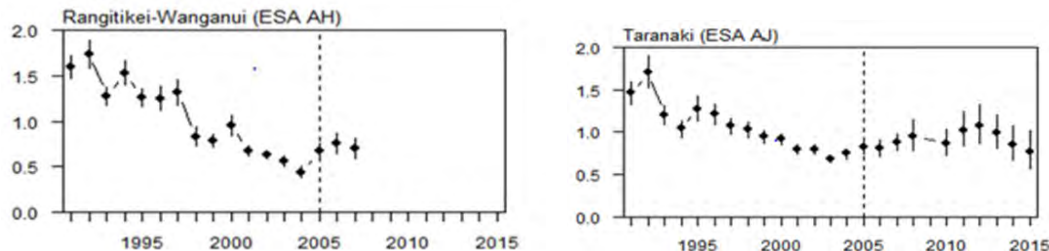


Figure 10: Commercial catch per unit effort (CPUE) from 1990 to 2015 for longfin eels in LFE 23.

928. Option 1 proposes the TAC and TACC remain at the *status quo*. This approach recognises that the CPUE has a stable trend since entry into the QMS in 2004. Commercial catch data in AH and AJ was so low that a CPUE analysis could not be generated. It also takes into account that for AH and AJ only 24.8% and 17% (respectively) of the available eel habitat is commercially fished. Furthermore, when assessing the status of LFE 23, the Plenary concluded it is 'likely' (> 60% likelihood) at or above the 'target' and 'very unlikely' (< 10% likelihood) to be below the soft limit or the hard limit. Therefore, with all other things being equal and given the upward trend in CPUE for AJ and the very low percentages of available eel habitat that is commercially fished across both AH and AJ, longfin eel abundance is likely to continue to increase over time

929. Option 2 (preferred) proposes a TAC based on the average annual commercial catch for longfin eels reported since the last TACC reduction in 2008. Basing the TAC and TACC on the average annual commercial catch would significantly reduce the total longfin eel catch available to be taken commercially and will reduce the long term catch of longfin eels. This is because the catch would be significantly constrained in all years when it could have otherwise been above the long term average. This approach takes into account that a lower TAC is likely to support an increase in longfin eel abundance, longfin eels are more biologically vulnerable than shortfin eels, and addresses concerns raised by some iwi.

930. Submissions received specifically relating to LFE 23 that supported Option 1 (*status quo*) raised the following points/ideas:

- Perceived increase in the abundance of eels above 4 kg;
- High abundance should eventually lead to a TAC increase;
- Access to previously fished waterways is becoming increasingly difficult due to Occupational Health & Safety restrictions on private land meaning that eel refuges have expanded; and
- Reduced catch rates are related to low market demand, not lower abundance.

931. Submission received in support of Option 2 (reduced TAC and TACC) raised the following points/ideas:

- QMAs do not adequately recognise iwi boundaries and management needs;
- TACC does not leave enough eels of an appropriate size for customary needs;

- Eels are considered a taonga species and should be harvested conservatively; and
 - There should be a 10 year moratorium on commercial eel fishing.
932. Te Ohu Kaimoana supports a reduction in TAC and TACC because iwi in the area have raised concerns with them regarding low abundance of eels.
933. Fisheries New Zealand considers Option 2 (reduction in TAC and TACC) to be the most appropriate option because longfin eels have suffered significant loss of habitat and abundance, as measured by CPUE, has decreased in recent years for one of the eel statistical areas (AJ), and is unavailable in the other eel statistical area (AH) due to insufficient commercial catch data. While a number of commercial fishers stated they had observed an increase in abundance of longfin eels throughout QMA 23, this was not confirmed in the CPUE analysis. Furthermore, a large number of submissions were received from iwi stating that eel abundance has dropped significantly when compared to their historical experience. Therefore, Fisheries New Zealand considers it appropriate to set a lower TACC so as to enable eel abundance to increase.

3 Other Matters

934. During consultation there were a number of matters raised by submitters that were considered to be outside the scope of this review. These issues and Fisheries New Zealand's response is outlined below.

3.1 NATIVE SPECIES

935. Some submitters stated that, due to eels being native (endemic in the case of the longfin eel), they should be protected from commercial harvesting.
936. Fisheries New Zealand notes that the Act does not draw a distinction between native/endemic and introduced species in determining sustainable management practices (unlike species managed under other legislation such as the Wildlife Act).

3.2 IMPACT ON QUOTA RIGHTS

937. During pre-consultation and throughout the consultation phase, concerns were raised regarding a perceived negative impact on rights (quota ownership) associated with potential TACC reductions.
938. Fisheries New Zealand notes that quota rights are for a proportion of a TACC. While reductions in TACC do impact on the amount of ACE associated with a quota, they do not reduce the number quota shares that a holder owns.

3.3 NEGATIVE MEDIA ATTENTION

939. Concerns were raised by some submitters surrounding the negative media attention following the release of the PCE's report on the status of longfin eels in 2013. This report suggested that the longfin eel was on a "pathway to extinction" and some submitters are

concerned this has had a negative impact on public perceptions of commercial fishers and eel abundance, and resulted in significant numbers of submissions being received.

940. Fisheries New Zealand's advice is based on the best available scientific information, and the information provided through submissions (not on the number of submissions).

3.4 INAPPROPRIATE SIZE OF QUOTA MANAGEMENT AREAS

941. Throughout pre-engagement, consultations, and in written submissions iwi raised their concerns that QMAs are sized inappropriately, and that the current QMAs do not sufficiently allow for localised eel management.

942. Fisheries New Zealand acknowledges that the current QMAs do not allow for localised management at a level that would be considered appropriate by iwi. However, as previously discussed, there are a number of legislative tools available for iwi to manage eels at a local scale, allowing for area-specific protection measures from commercial fishing pressures.

3.5 CREATION OF A SET OF RESERVES TO PROTECT MATURE INDIVIDUALS

943. DOC suggests creation an additional set of reserves to protect mature longfin eels.

944. Fisheries New Zealand considers the current management regime allows for sufficient protection of mature longfin eel populations. At present 78% of available longfin eel habitat within the North Island is unfished because it is either inaccessible to commercial fishers or is located in areas closed to commercial fishing (e.g. DOC estate).

945. These closed areas act as a substantial refuge for eels, protecting them from the pressures of commercial fishing. In addition to this, there are tools under the Fisheries (Kaimoana Customary Fishing) Regulations 1998 that enable tangata whenua to establish mātaihai reserves, which prohibit commercial fishing, or to propose bylaws which constrain fishing.

3.6 RECREATIONAL FISHERIES REGULATIONS

946. To restrict the amateur take in line with their proposed restriction on recreational allowances, Te Ohu Kaimoana proposes the following recreational fishing restrictions for longfin eels:

- Setting an upper weight limit of 4 kg; and
- Requiring all recreational fishers to use fyke nets with 31 mm escapement tubes to allow eels with a diameter of 31 mm or less to escape, effectively setting a 300 g minimum weight limit to the recreational fishery.

947. Fisheries New Zealand notes there is no quantitative information available to estimate recreational catch, or the impact of such changes, and proposes to commission analysis to better determine this as an input into the next stock assessment. Depending on the results of this assessment and with input from tangata whenua and Te Ohu Kaimoana, Fisheries New Zealand will review if changes to regulations are appropriate.

4 Conclusion and Recommendation

949. Fisheries New Zealand considers that all options presented in this paper satisfy the purpose of the Act in that they provide for utilisation of the North Island shortfin and longfin eel stocks while ensuring sustainability. Fisheries New Zealand's preferred options provide a balance of continued utilisation while enabling an increase in eel abundance into the future.
950. For all shortfin stocks (SFE 20 – 23), Fisheries New Zealand's preferred option is the *status quo*. This is appropriate because abundance, as measured by CPUE, is increasing across all stocks. In 2008 substantial cuts of between 18% and 42% (depending on QMA) were made to the TACC of all North Island shortfin stocks to improve eel sustainability and significantly reduce commercial fishing pressure on their populations. CPUE trends indicate the current TAC limits for each stock allows for sustainable utilisation while simultaneously enabling the abundance of shortfin eels to increase.
951. For all longfin stocks (LFE 20 – 23), Fisheries New Zealand's preferred option is Option 2 (i.e. reductions in TAC and TACC). Fisheries New Zealand considers this approach to be appropriate because abundance as measured by the CPUE shows no consistent increasing trend.
952. Fisheries New Zealand acknowledges submissions calling for an end to the commercial harvest of eels (particularly longfin eels). However, we do not consider this proposal to be supported by the scientific information. 78% of the available longfin eel habitat is currently unfished and acts as a refuge from commercial fishing pressure and iwi also have a number of tools available to them to restrict commercial access in their rohe and enable them to manage eel abundance at a local level.
953. Should Option 2 be adopted, longfin eel TACC limits will have been reduced by a total of 72% since their entry into the QMS. Further, fishing is unlikely to be the main driver of changes in eel abundance under current QMS settings. Habitat degradation, water quality, and waterway barriers (i.e. hydro-dams) are likely to be the factors most heavily influencing eel abundance into the future. Fisheries New Zealand could, however, provide you with separate advice on options for implementing further restrictions on commercial fishing, including a ban and the costs and benefits of doing so, if you wish.
954. Localised management tools available to iwi such as mātaimai are likely to be effective at protecting longfin eel abundance at the rohe level. Fisheries New Zealand will continue to work with iwi who wish to utilise customary tools, such as mātaimai, to manage Tuna in areas of importance to them within their rohe.
955. Fisheries New Zealand will continue to monitor the fishery with a further stock assessment of North Island eels due to occur in 2019. This will also be an opportunity to obtain information on recreational catch, and reassess whether recreational allowances and catch limits require revision (as suggested by Te Ohu Kaimoana).
956. All changes associated with the North Island eel review will be implemented on 1 October 2018 (with the exception of *status quo*, which requires no change).

Shortfin eel 20:

Option 1 – Status quo

Agree to maintain the SFE 20 TAC of 148 tonnes and within the TAC:

- i. Retain the allowance of 30 tonnes for Māori customary non-commercial fishing interests;
- ii. Retain the allowance of 28 tonnes for recreational fishing interests;
- iii. Retain the allowance of 4 tonnes for other sources of fishing-related mortality;
- iv. Retain the SFE 20 TACC at 86 tonnes.

Agreed / Agreed as Amended / Not Agreed

Shortfin eel 21:

Option 1 – Status quo

Agree to maintain the SFE 21 TAC of 181 tonnes and within the TAC:

- i. Retain the allowance of 24 tonnes for Māori customary non-commercial fishing interests;
- ii. Retain the allowance of 19 tonnes for recreational fishing interests;
- iii. Retain the allowance of 4 tonnes for other sources of fishing-related mortality;
- iv. Retain the SFE 21 TACC at 134 tonnes.

Agreed / Agreed as Amended / Not Agreed

Shortfin eel 22:

Option 1 – Status quo

Agree to maintain the SFE 22 TAC of 121 tonnes and within the TAC:

- i. Retain the allowance of 14 tonnes for Māori customary non-commercial fishing interests;
- ii. Retain the allowance of 11 tonnes for recreational fishing interests;
- iii. Retain the allowance of 2 tonnes for other sources of fishing-related mortality;
- iv. Retain the SFE 22 TACC at 94 tonnes.

Agreed / Agreed as Amended / Not Agreed

Shortfin eel 23:

Option 1 – Status quo

Agree to maintain the SFE 23 TAC of 36 tonnes and within the TAC:

- i. Retain the allowance of 6 tonnes for Māori customary non-commercial fishing interests;
- ii. Retain the allowance of 5 tonnes for recreational fishing interests;
- iii. Retain the allowance of 2 tonnes for other sources of fishing-related mortality;

- iv. Retain the SFE TACC at 23 tonnes.

Agreed / Agreed as Amended / Not Agreed

Longfin eel 20

Option 1 – Status Quo

Agree to maintain the LFE 20 TAC of 39 tonnes and within the TAC:

- i. Retain the allowance of 10 tonnes for Māori customary non-commercial fishing interests;
- ii. Retain the allowance of 8 tonnes for recreational fishing interests;
- iii. Retain the allowance of 2 tonnes for other sources of fishing-related mortality;
- iv. Retain the LFE 20 TACC at 19 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 2 – Reduction

Agree to decrease the LFE 20 TAC from 39 to 34 tonnes and within the TAC:

- v. Retain the allowance of 10 tonnes for Māori customary non-commercial fishing interests;
- vi. Retain the allowance of 8 tonnes for recreational fishing interests;
- vii. Retain the allowance of 2 tonnes for other sources of fishing-related mortality;
- viii. Decrease the LFE 20 TACC from 19 to 14 tonnes.

Agreed / Agreed as Amended / Not Agreed

Longfin eel 21

Option 1 – Status quo

Agree to maintain the LFE 21 TAC at 60 tonnes and within the TAC:

- i. Retain the allowance of 16 tonnes for Māori customary non-commercial fishing interests;
- ii. Retain the allowance of 10 for recreational fishing interests;
- iii. Retain the allowance of 2 for other sources of fishing-related mortality;
- iv. Retain the LFE 21 TACC at 32 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 2 – Reduction

Agree to decrease the LFE 21 TAC from 60 to 51 tonnes and within the TAC:

- i. Retain the allowance of 16 tonnes for Māori customary non-commercial fishing interests;
- ii. Retain the allowance of 10 tonnes for recreational fishing interests;
- iii. Retain the allowance of 2 tonnes for other sources of fishing-related mortality;
- iv. Decrease the LFE 21 TACC from 32 to 23 tonnes.

Agreed / Agreed as Amended / Not Agreed

Longfin eel 22

Option 1 – Status Quo

Agree to maintain the LFE 22 TAC at 34 tonnes and within the TAC:

- i. Retain the allowance of 6 tonnes for Māori customary non-commercial fishing interests;
- ii. Retain the allowance of 5 tonnes for recreational fishing interests;
- iii. Retain the allowance of 2 tonnes for other sources of fishing-related mortality;
- iv. Retain the LFE 22 TACC at 21 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 2 – Reduction

Agree to decrease the LFE 22 TAC from 34 to 26 tonnes and within the TAC:

- i. Retain the allowance of 6 tonnes for Māori customary non-commercial fishing interests;
- ii. Retain the allowance of 5 tonnes for recreational fishing interests;
- iii. Retain the allowance of 2 tonnes for other sources of fishing-related mortality;
- iv. Decrease the LFE 22 TACC from 21 to 13 tonnes.

Agreed / Agreed as Amended / Not Agreed

Longfin eel 23

Option 1 – Status Quo

Agree to maintain the LFE 23 TAC at 34 tonnes and within the TAC:

- i. Retain the allowance of 14 tonnes for Māori customary non-commercial fishing interests;
- ii. Retain the allowance of 9 tonnes for recreational fishing interests;
- iii. Retain the allowance of 2 tonnes for other sources of fishing-related mortality;
- iv. Retain the LFE 23 TACC at 9 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 2 – Reduction

Agree to decrease the LFE 23 TAC from 34 to 30 tonnes and within the TAC:

- i. Retain the allowance of 14 tonnes for Māori customary non-commercial fishing interests;
- ii. Retain the allowance of 9 tonnes for recreational fishing interests;
- iii. Retain the allowance of 2 tonnes for other sources of fishing-related mortality;
- iv. Decrease the LFE 23 TACC from 9 to 5 tonnes.

Agreed / Agreed as Amended / Not Agreed

Stuart Nash

Hon Stuart Nash
Minister of Fisheries

13 / 9 /2018

Elephant fish (ELE 3)

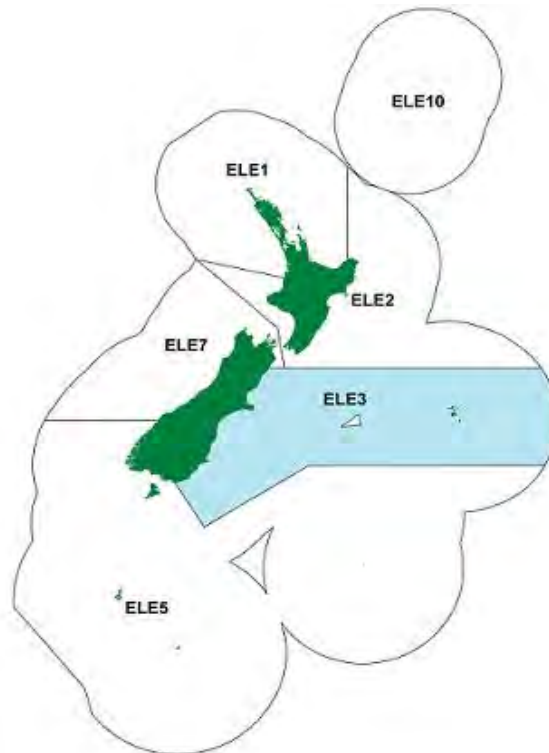


Figure 1: Quota Management Areas (QMAs) for elephant fish (ELE), with ELE 3 highlighted in blue.

1 Summary

957. Fisheries New Zealand consulted on two options for management settings for elephant fish (*Callorhinchus milii*; reperepe) in quota management area (QMA) ELE 3 (Figure 1). These options are set out in Table 1:

Table 1: Proposed management settings (in tonnes) for ELE 3 from 1 October 2018, with the percentage change relative to the *status quo* in brackets.

Option	Total Allowable Catch (TAC)	Total Allowable Commercial Catch (TACC)	Allowances		
			Māori Customary	Recreational	All other mortality to the stock caused by fishing
Option 1 (<i>Status quo</i>)	1060	1000	5	5	50
Option 2 (<i>Recommended</i>)	1228 ↑ (16%)	1150 ↑ (15%)	5	15 ↑ (200%)	58 ↑ (16%)

958. ELE 3 catch is approaching historically high levels (Figure 2) and the stock size appears to have increased substantially. Commercial fishers indicate that they find it difficult to stay within the TACC, despite this species being largely caught as a bycatch of other target species.

959. Six submissions commented on the proposed options for ELE 3. Three commercial submissions supported Option 2, while the recreational organisation New Zealand Sport Fishing Council conditionally supported Option 2. Te Ohu Kaimoana supported an

amended Option 2 (by ‘transferring’ the increase in recreational allowance into the TACC). The Conservation Organisations of New Zealand supported Option 1.

960. After considering the submissions and feedback received, Fisheries New Zealand recommends Option 2. This option increases the TAC by 16% to allow utilisation of the increased abundance in ELE 3. There are currently no sustainability concerns for ELE 3 and the stock is likely to be at, or above, the stock biomass management target. Fisheries New Zealand considers this option allows for sustainable commercial and non-commercial utilisation given the best available information.
961. The interim deemed value rate of ELE 3 is currently set at 90% of the annual deemed value rate and, as the current interim and annual deemed value rates are consistent with the Deemed Value Guidelines, no changes are proposed to the deemed value rates for ELE 3, (Table 2.)

Table 2: Standard Deemed Value Rates (\$/kg) for ELE 3

	Interim Rate (\$/kg)	Annual Differential Rates (\$/kg) for excess catch (% of ACE)					
		100-120%	120-140%	140-160%	160-180%	180-200%	200%+
<i>Status quo</i>	1.50	1.65	1.98	2.31	2.64	2.97	3.30

2 Need for review

962. Trawl surveys and catch per unit effort (CPUE)¹ monitoring suggest the biomass of ELE 3 has increased, with the fishery taking historically high levels of catch. Commercial fishers indicate that they find it difficult to stay within the TACC despite this species being largely (60%) caught as a bycatch of other target species. The current TACC has been consistently exceeded since 2009/10 (Figure 2), and is on track to exceed the TACC again this current fishing year.

2.1 Context

2.1.1 Biological information

963. Elephant fish are common off the east coast of the South Island. Elephant fish are fairly slow growing and late maturing with low fecundity, which all contributes to them being vulnerable to fishing pressure.
964. Mature elephant fish migrate to shallow inshore waters in spring and aggregate for mating. Egg cases are laid on sand or mud bottoms, often in very shallow waters. After egg laying, the adults are thought to disperse and are difficult to target. The commercial sector has voluntarily closed an inshore region of the Canterbury Bight to trawl fishing in order to protect the egg cases.

¹ Catch per unit effort is the quantity of fish caught with one standard unit of fishing effort; e.g., the number of fish taken per 1000 hooks per day or the weight of fish taken per hour of trawling. CPUE is often assumed to be a relative abundance index.

2.1.2 Fishery characterisation

Customary Māori fishery

965. Elephant fish (reperepe) is an important species for customary fishers, by virtue of its wide distribution in shallow, accessible coastal waters. The ELE 3 QMA is under two different regulations for customary catch, the Fisheries (South Island Customary Fishing) Regulations 1999 and the Fisheries (Kaimoana Customary Fishing) Regulations 1998. The South Island Regulations apply south of the Clarence River down the east coast of the South Island; while the Kaimoana regulations apply to the Chatham Islands. There have been six permits authorised for ELE 3 since 2010 for an estimated quantity of 1158 tonnes.

Recreational fishery

966. Recreational catches of elephant fish are small when compared to that of the commercial sector, with the principal methods being surf casting and rod/line use off a trailer motor boat. The methods used to manage recreational take of elephant fish include a maximum daily bag limit of five per person. There is no minimum size limit. There is no information to suggest that a change to recreational controls, such as the recreational daily bag limit, is needed.

967. The National Panel Survey of Marine Recreational Fishers in 2011/12 (National Panel Survey)² is the best available information on recreational harvest for ELE 3. The National Panel Survey estimated 4853 elephant fish were harvested recreationally in ELE 3 during the 2011/12 fishing year. Based on the average weight of an elephant fish of 3 kg, this gives an estimated harvest weight of approximately 15 tonnes.

968. A repeat of the 2011/12 National Panel Survey is currently underway, and updated estimates of recreational catch in ELE 3 will be used to inform future management.

Commercial fishery

969. Elephant fish in ELE 3 are predominantly taken in the spring and summer as an important bycatch of bottom trawl fisheries targeting red cod, flatfish and barracouta. There is also a small set net fishery mostly targeting rig that also catches elephant fish. It is important in the domestic market.

970. Catches from the commercial sector have consistently exceeded the TACC (Figure 2), despite landings substantially being bycatch (60%) of other target fisheries. This has led to significant deemed value payments by fishers who claim they are unable to avoid the bycatch of elephant fish.

971. Across the fishery, the annual deemed value penalty payments over the last five years have averaged \$185,415. The significant deemed value payments appear to be a result of elephant fish becoming harder to avoid. Fishers report that they are actively avoiding elephant fish and this impacts on the ability to catch other target species within the mixed trawl, which in turn, is likely biasing downwards abundance indices using CPUE.

² 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. Accessible at: <https://www.mpi.govt.nz/dmsdocument/4719/send>

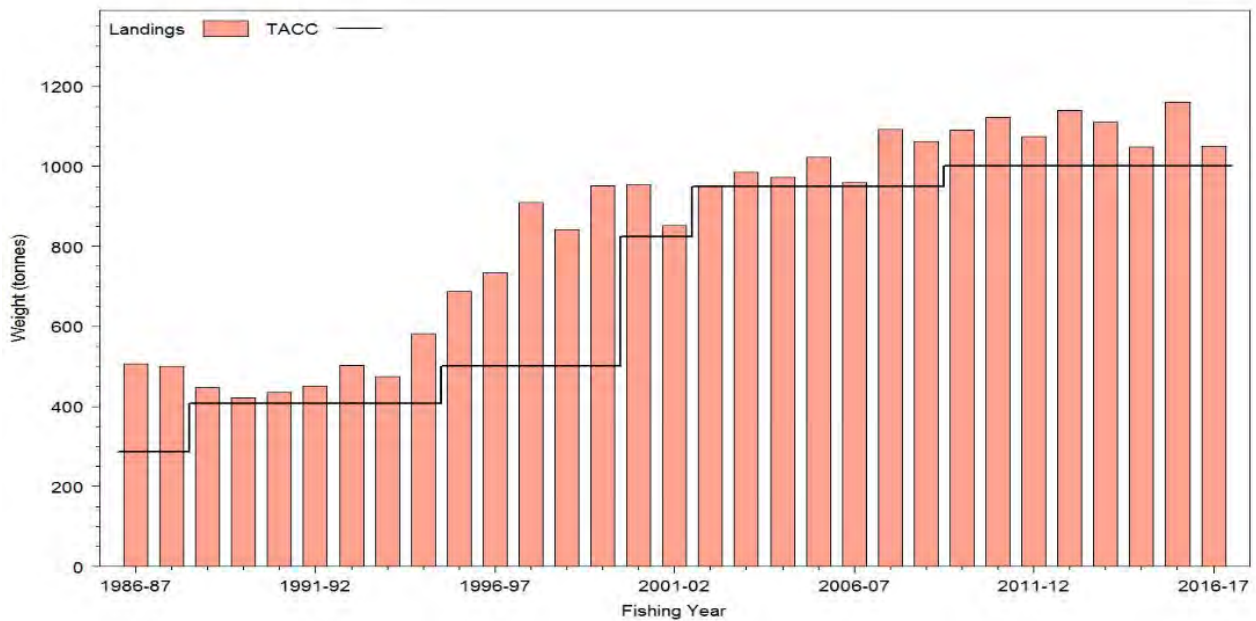


Figure 2: Reported commercial landings and TACC for ELE 3 from 1986/87 to 2016/17.

2.1.3 Current management approach

972. ELE 3 management is guided by the Harvest Strategy Standard. The average CPUE of the ELE 3(MIX³) series from 1998–99 to 2010–11 was accepted by the Fisheries New Zealand science working group as a “ B_{MSY} conceptual proxy” for the ELE 3 fish stock. This period was selected by the working group because of its relative stability following a period of continuous increase.
973. Fisheries New Zealand monitors the stock status of ELE 3 using CPUE analysis and the biennial East Coast South Island (ECSI) inshore trawl survey. The ELE 3 TAC was last reviewed in 2009.

Status of the stock

974. The CPUE information suggests that ELE 3 is likely (40-60% probability) to be at, or above, the stock biomass management target. The CPUE series shows a generally increasing trend from the beginning of the series in 1989/90. The series reached a peak in 2007/08, when the East Coast South Island trawl survey was expanded inshore (to depths less than 30 metres). The more recent CPUE indices since 2007/08 have remained relatively stable and fluctuated without trend near the proposed target. It is possible that fisher avoidance have also biased (low) the CPUE trends reported for this fishery.
975. In addition to commercial CPUE indices the status of the ELE 3 stock is monitored through biennial east coast South Island trawl surveys to provide data on relative abundance⁴.
976. Results from the east coast South Island trawl surveys undertaken over the last decade do not provide strong indications for any trend in changes to the ELE 3 biomass, and support the relatively stable ELE 3 CPUE indices since the survey was expanded inshore to

³ ELE 3 being largely a bycatch fishery, the CPUE is derived from a range of target fisheries within the South East mixed trawl fishery.

⁴ A quantitative measure of fish density or abundance, usually as a time series.

monitor ELE in 2012. While the 2016 survey indicated a substantial biomass increase and then an equal decline in 2018, given the large confidence intervals (or error bars), Fisheries New Zealand considers the results of the 2016 survey an anomaly and unreliable for indicating any trend in the biomass index series, and most likely a consequence of the survey encountering an elephant fish aggregation.

977. With the exception of the 2016 trawl survey, both the ELE 3 CPUE and east coast South Island trawl survey indices suggests that the ELE 3 stock biomass levels have not varied significantly over the last decade while catch has remained high. In addition, the stock has been assessed to be unlikely (< 40%) to be below the soft limit and very unlikely (< 10%) to be below the hard limit.

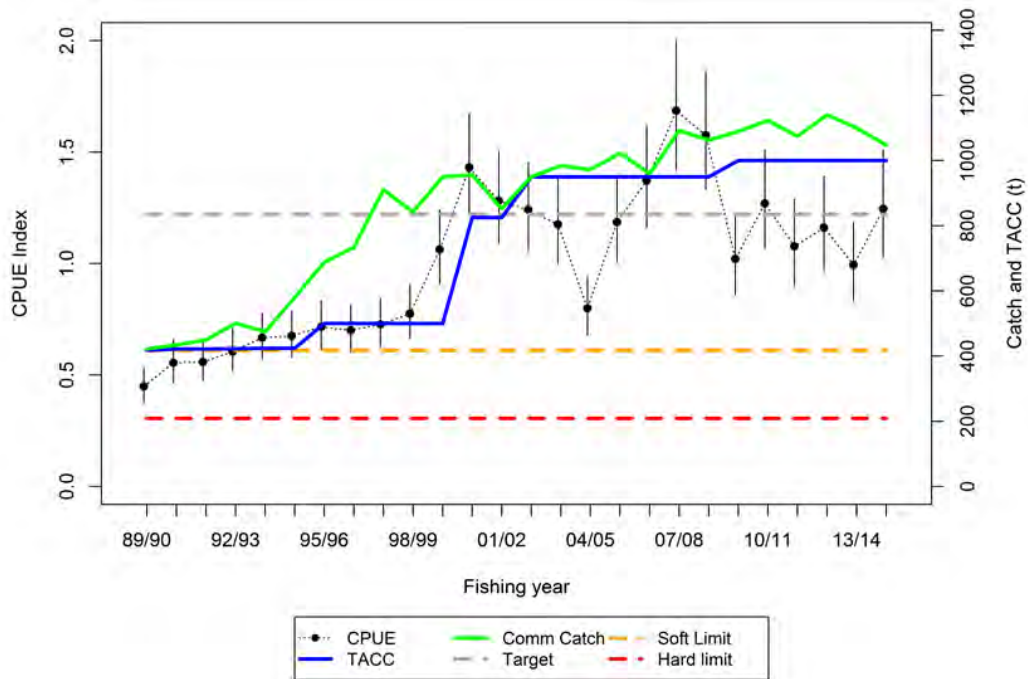


Figure 3: Comparison of the mixed target species bottom trawl CPUE series (ELE 3(MIX)) with the trajectories of catch and TACCs from 1989/90 to 2014/15. The dashed lines represent the target and corresponding soft limit and hard limit.

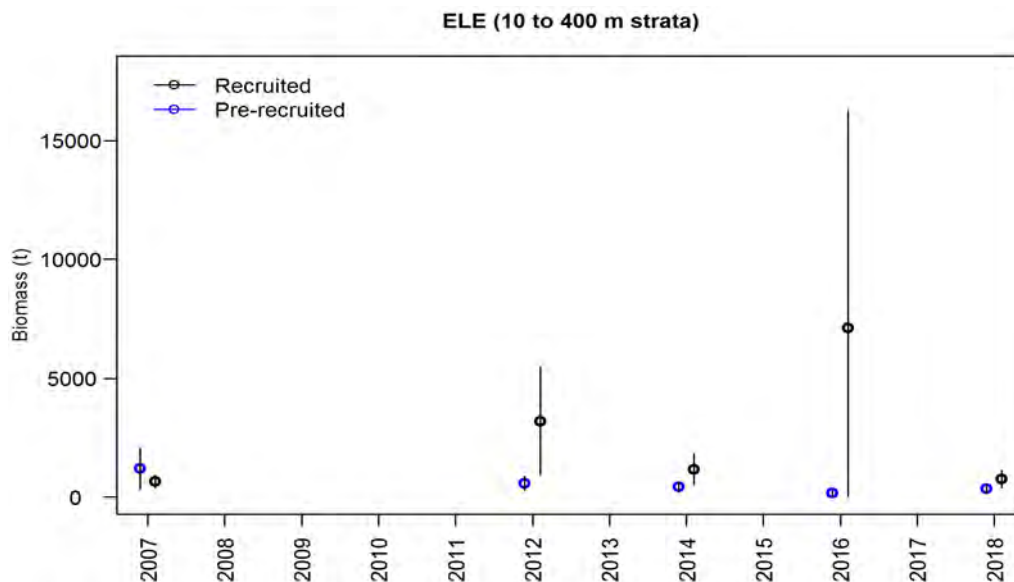


Figure 4: Elephant fish trawl survey pre-recruit and recruited biomass estimates from the biennial east coast South Island trawl survey, with associated confidence intervals, including the most recent survey which was completed in May 2018. Recruited fish were defined as fish above 40 cm fork length.

2.1.4 National Plan of Action for Sharks (NPOA Sharks)

978. In reviewing the available indices of relative biomass and the catch limits and allowances for ELE 3 to ensure sustainable utilisation, Fisheries New Zealand is fulfilling several objectives of the National Plan of Action for Sharks (NPOA Sharks)⁵. Elephant fish is a shark species identified as being within the scope of the Plan, and the Plan takes into account the biological characteristics of elephant fish, noting in particular the vulnerability of elephant fish to fishing pressure and the connectivity of stocks.
979. One of the goals of the NPOA Sharks is to maintain the biodiversity and long-term viability of New Zealand shark populations, based on a risk assessment framework. The assessment framework evaluates stock status, measures to ensure any mortality is at appropriate levels, and protection of critical habitat. Objectives of this goal that are met by the current review of elephant fish in ELE 3 are:
- a) For shark species managed under the quota management system (QMS), undertake an assessment to determine the stock size in relation to the level of biomass that can produce the maximum sustainable yield (B_{MSY}) or other accepted management targets and on that basis review catch limits to maintain the stock at or above these targets;
 - b) Mortality of all sharks from fishing is at or below a level that allows for the maintenance at, or recovery to, a favourable stock and/or conservation status giving priority to protected species and high risk species; and
 - c) Ensure adequate monitoring and data collection for all sectors (including commercial, recreational, customary fishers, and non-extractive users) and that all users actively contribute to the management and conservation of shark populations.

⁵ The NPOA Sharks is accessible at: <https://www.mpi.govt.nz/dmsdocument/1138-national-plan-of-action-for-the-conservation-and-management-of-sharks-2013>. For more information on how Fisheries New Zealand manages sharks, see: <https://www.mpi.govt.nz/protection-and-response/sustainable-fisheries/managing-our-impact-on-marine-life/sharks/>

2.1.5 Environmental principles (s.9) and sustainability measures (s.11)

980. Elephant fish are primarily a bycatch of other target fisheries in the South East mixed trawl fishery. Proposed TAC increases are equivalent to the current landings of the fishery. Therefore, it is unlikely there will be any increase in fishing effort or increased interaction with seabirds or marine mammals, or negative impacts on environmental biodiversity. Particular considerations under sections 9 and 11 of the Act are set out below.
981. When exercising powers in relation to the utilisation of fisheries resources or ensuring sustainability, Section 9 of the Act requires you to take into account three environmental principles as detailed within the ‘Statutory Considerations’ chapter of this document. The likely impacts of the options in terms of associated or dependant species, the biological diversity of the aquatic environment and habitats of particular significance for fisheries management, are set out below.
982. Section 11 of the Act sets out various matters that you must take into account or have regard to when setting or varying any sustainability measures (such as a TAC). These include any effects of fishing on the stock and the aquatic environment as well as any relevant fisheries plan (refer to section 1.6 of *Part 2: Statutory Considerations* for a full description).
983. The key environmental interactions associated with the ELE 3 fishery are discussed below, with reference to the likely impacts of the proposed management options.

Seabirds

984. The ‘National Plan of Action – 2013 to Reduce the Incidental Catch of Seabirds in New Zealand Fisheries’ (NPOA Seabirds 2013), which is currently under review, is the driver for all actions to reduce the incidental mortality of seabirds from fishing. It puts in place a risk-based approach to managing fishing interactions with seabirds, targeting mitigation on those species most at risk, but also aiming to reduce captures overall.
985. The most recent seabird risk assessment was published in 2017. It is a primary input to the NPOA Seabirds. The risk assessment calculates a species-level risk broken down by fishery group. Fishery groups are assigned on the basis of target species, vessel size and, for trawl vessels targeting middle-depth species, whether or not the vessel is a factory vessel. Vessels in the same fishery group are assumed to attract and capture birds in a similar way.
986. In this review the greatest risk of set nets to sea birds was highlighted as entanglement and potential drowning when diving for food and striking trawl warps. This is heightened during trawl retrieval.
987. Fisheries New Zealand considers the proposed options for ELE 3 are unlikely to see an increase in interactions with seabirds as no increase in fishing effort is expected.
988. Fisheries New Zealand will continue to monitor seabird captures, and instigate further management action to protect these species where necessary.

Marine mammals and protected species

989. The endemic Hector's dolphin is declared as a threatened species under the provisions of the Marine Mammals Protection Act 1978. Fishing is the greatest known human threat to Hector's dolphin, in particular set nets. Hector's dolphins have also been caught in trawl nets, but this happens less often. The Department of Conservation and the then Ministry of Fisheries developed a Hector's and Māui dolphin Threat Management Plan in 2007, which is currently being reviewed.

Benthic impacts

990. Research has characterised 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. The environmental impacts of fishing are summarised annually by Fisheries New Zealand. Fisheries New Zealand will continue to monitor the bottom trawl footprint of fisheries.

2.2 OPTIONS CONSULTED ON

991. The options proposed for ELE 3 are given in Table 3 and discussed below.

Table 3: Proposed management settings (in tonnes) for ELE 3 from 1 October 2018, with the percentage change relative to the *status quo* in brackets.

Option	Total Allowable Catch (TAC)	Total Allowable Commercial Catch (TACC)	Allowances		
			Māori Customary	Recreational	All other mortality to the stock caused by fishing
Option 1 (<i>Status quo</i>)	1060	1000	5	5	50
Option 2	1228 ↑ (16%)	1150 ↑ (15%)	5	15 ↑ (200%)	58 ↑ (16%)

2.3 VIEWS OF SUBMITTERS

992. Section 12 of the Act requires you to consult on any proposed management changes. Fisheries New Zealand has consulted on your behalf and this section outlines the views of submitters and issues they raised.

2.3.1 Submissions received

993. Fisheries New Zealand received six submissions from:

- Ocean Fisheries Ltd,
- Fisheries Inshore New Zealand (Fisheries Inshore),
- Southern Inshore Fisheries Management Company Ltd (Southern Inshore),
- New Zealand Sport Fishing Council; and
- Environment and Conservation Organisations of New Zealand and Te Ohu Kaimoana.

994. Three commercial submissions supported Option 2 while New Zealand Sport Fishing Council submitted a modified Option 2 that would substantially increase the allowance for other sources of fishing related mortality. Te Ohu Kaimoana also supported an amended Option 2 by transferring the increase in recreational allowance into the TACC. Environment and Conservation Organisations of New Zealand supported Option 1.

Commercial

995. Commercial submitters (Ocean Fisheries Ltd, Fisheries Inshore and Southern Inshore) were in support of Option 2. However, these submitters also stated Option 2 does not completely provide for the current abundance and likely bycatch.

996. Southern Inshore submit that fisher information confirms that the current limits on this stock are constraining fishing and accruing deemed value penalties, which should not be the case in such an abundant fishery.

997. Ocean Fisheries Ltd state they support Option 2, but they would also support a larger increase than the proposed 15% increase to the TACC.

998. The commercial sector has not requested a reduction in the deemed values for ELE 3, but rather an increased TACC which would provide additional annual catch entitlement (ACE) to cover unavoidable bycatch. The previous TAC review in 2009/10 resulted in the TACC being increased by 50 tonnes.

Recreational

999. One submission was received from recreational interests group the New Zealand Sport Fishing Council, which supported an increase but with the following conditions:

- a) No further TACC increases are given until systems are in place to increase compliance;
- b) No further TACC increases are given until research is carried out to better understand the extent and effects of dumping and misreporting in this fishery; and
- c) The recreational allowance is reviewed when the new recreational harvest estimates are obtained from the current National Panel Survey.

1000. Fisheries New Zealand considers these conditions can all be addressed as part of the on-going monitoring and management of the fishery, and are not in themselves reasons not to change management settings for the fishery.

1001. The New Zealand Sport Fishing Council also raises historical concerns based on “Operation Achilles” and “Hippocamp” that dumping and non-reporting were occurring in the ELE 3 fishery and, therefore, the all other sources of fishing related mortality estimates should be increased considerably.

1002. Fisheries New Zealand notes that decisions are being made on the implementation of digital monitoring, and on possible changes to policies associated with landings and return of fish to sea. Better information on the level of fishing related mortality will be available as a result of this work to guide the setting of allowances.

1003. In the interim, while there may be uncertainty associated with the estimates of other sources of fishing related mortality, there is evidence of increased abundance, as shown in the recent fishery independent east coast South Island trawl survey.

Non-Governmental Organisations (NGOs)

1004. Environment and Conservation Organisations of New Zealand does not support an increase in the ELE 3 fishery at this stage. Environment and Conservation Organisations of New Zealand notes catch rates are flat and don't, in their view, justify an increase in TAC. Environment and Conservation Organisations of New Zealand is also concerned about the impact of any increase fishing effort on Hector's dolphin.

1005. In addition, Environment and Conservation Organisations of New Zealand is concerned that: -

- a) Benthic impacts of bottom trawl fishing are occurring with no strategy to avoid, remedy or mitigate the impacts of bottom fishing;
- b) Habitat of particular significance for fisheries management has not been identified;
- c) Maintenance of biological diversity has not been given effect; and
- d) Fisheries New Zealand should work towards a full assessment of this fishery.

1006. Fisheries New Zealand notes that the increase to the TAC proposed would provide for the current over-catch in the fishery, which is incurring deemed value payments. Given most elephant fish is taken as a bycatch, the increased TACC and will not lead to significantly increased fishing effort.

1007. The remaining concerns raised are acknowledged, but will be addressed as management improvements to ELE 3 fishery occur.

Te Ohu Kaimoana

1008. While Te Ohu Kaimoana supports an increase to the ELE 3 TAC, it proposes the increase in the recreational allowance being transferred to the TACC. Fisheries New Zealand notes that the framework for determining customary and recreational allowances is set out under sections 20 and 21 of the Act and this is discussed in section 2.1 of this paper. As noted in that section, the Supreme Court has said that the recreational allowance is simply the best estimate of what recreational fishers will catch while being subject to the controls which you decided to impose upon them (e.g. bag limits, minimum sizes and other restrictions).

2.3.2 Input and participation of tangata whenua

1009. In addition to the consultation considerations discussed elsewhere, s 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.

1010. The proposal to consult on a sustainability review covering a range of South Island stocks was first presented to the Iwi Fisheries Forum relating to South Island iwi, the Te Waka a Māui me Ōna Toka Iwi Fisheries Forum (Te Waka a Māui) in March. This forum represents the iwi of the South Island, each holding mana moana and significant interests (both commercial and non-commercial) in South Island fisheries. The forum supported a review of the ELE 3 fishery, but otherwise offered no further input or participation.

1011. The Araiteuru and Murihiku Mahinga Kai Hui held in Karitane and Bluff on 27 May and 7 July respectively agreed that the stock abundance for ELE 3 appears to have increased and support this proposal to increase the TAC.
1012. The Chatham Island iwi/imi have discussed this proposal as part of a general sustainability round engagement as a component of wider engagement in March and early June this year. They had no view on a preferred option.
1013. Fisheries New Zealand took the proposed options to the Te Waka a Māui Forum again in March to seek further input. The forum supported a review of the ELE 3 fishery, but otherwise offered no further input or participation.

2.3.3 Kaitiakitanga

1014. Under Section 12(1)(b), you must also have particular regard to kaitiakitanga before setting or varying a TAC. Under the Act, kaitiakitanga is 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.
1015. Relevant Iwi or Forum Fish Plans provide a view of the objectives and outcomes iwi seek from the management of the fishery and can provide an indication of how iwi exercise kaitiakitanga over fisheries resources. Iwi views from Forum meetings and submissions received from iwi can also provide an indication.
1016. Elephant fish (reperepe) is identified as a tāonga species in the Te Waipounamu Iwi Fisheries Plan. This plan contains objectives to support and provide for the interests of South Island iwi. The plan contains three objectives which are relevant to the management options proposed for ELE 3:
- a) Management objective 1: to create thriving customary non-commercial fisheries that support the cultural wellbeing of South Island iwi and our whānau;
 - b) Management objective 3: 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; and
 - c) Management objective 5: to restore, maintain and enhance the mauri and wairua of fisheries throughout the South Island.
1017. Fisheries New Zealand considers that the management options presented in this advice paper will contribute towards the achievement of these three management objectives in ensuring that appropriate allowances are made for customary non-commercial fishing, the fishery remains sustainable, and that environmental impacts are minimised.

2.4 SETTING THE TAC

1018. In cases such as ELE 3, where a proxy or conceptual B_{MSY} is used, 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) 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.

1019. The best available information is that the biomass level of elephant fish in ELE 3 is currently at or above the management target. CPUE as an index of relative abundance is likely to be biased downwards, as fishers are actively avoiding elephant fish. The level of monitoring (CPUE and Trawl Survey) allows for responsive action to any change in the fishery. Consequently, there is an opportunity to increase utilisation (increase the TAC) while ensuring sustainability.

2.4.1 Option 1 (*Status quo*)

1020. Option 1 is the *status quo*, meaning no change to the TAC and allowances.

1021. Environment and Conservation Organisations of New Zealand support this option because of concerns about the impact of any increase in fisheries effort on benthic impacts from bottom trawl fishing when there is no strategy to avoid, remedy or mitigate the impacts; habitat of particular significance for fisheries management has not been identified and the maintenance of biological diversity has not been given effect to. They submit that Fisheries New Zealand should work towards a full assessment of the fishery.

1022. Fisheries New Zealand considers this option reflects a very cautious approach to change. It does not provide for any additional utilisation, despite there being evidence that an increase is sustainable.

2.4.2 Option 2 (Fisheries New Zealand recommended)

1023. Option 2 is a 16% increase in the TAC to 1228 tonnes. Estimates of the total biomass from the fishery independent east coast South Island trawl survey, CPUE information and catch data suggest that there is an opportunity to increase sustainable utilisation in this fishery.

1024. Option 2 sets the TAC at a level that more closely reflects the catch from the fishery. This TAC would provide for a modest increase in available ACE and the allowances for the fishery to cover known levels of catch, including commercial over catch because of current abundance, but with a low risk to sustainability.

1025. Three commercial submissions supported Option 2, while the New Zealand Sport Fishing Council submitted a modified Option 2 that would substantially increase the allowance for other sources of fishing related mortality. Te Ohu Kaimoana also supported an amended Option 2 by transferring the increase in recreational allowance into the TACC.

1026. Environment and Conservation Organisations of New Zealand does not support Option 2 at this stage. Environment and Conservation Organisations of New Zealand notes catch rates are flat and don't in their view justify an increase in TAC, and is concerned about the impact of any increase fishing effort on Hector's dolphin.

1027. This option is not expected to significantly change the environmental impacts and interactions of the ELE 3 fishery (s 9 of the Act). It will provide for additional ACE to cover existing catch primarily taken as bycatch of other target fisheries within the mixed trawl fishery. As additional targeted fishing effort is not expected for elephant fish (rather Option 2 provides additional ACE to cover catch that occurs as a bycatch, any additional impacts on bycatch species, protected species, and the benthic environment are unlikely).

1028. There have been instances on the west and east coast of the South Island where endangered Hector's dolphin have been caught in commercial and non-commercial set nets. To manage this risk, a range of commercial and non-commercial set netting restrictions have been put in place around much of the coast in ELE 3.
1029. From 1 October 2008, regulations intended to protect the Hector's dolphin were introduced in the ELE 3 fishery, restricting the use of set nets for commercial and recreational fishers out to 4 nautical miles with a few exceptions around estuaries and harbours. In addition, trawl gear within 2 nautical miles of shore was restricted to flatfish nets with defined low headline heights. Fisheries New Zealand considers that the proposed TACs under Option 2 will not result in an increase in set net effort in areas where Hector's dolphin may be found.
1030. Management of commercial fishing for elephant fish in ELE 3 is guided by the Harvest Strategy Standard. In addition, the NPOA sharks provides goals to be met in setting fisheries management measures for species such as elephant fish. Fisheries New Zealand notes that the proposed TAC options are consistent with the objectives of the NPOA sharks.
1031. Under both Options 1 and 2, ongoing monitoring of the stock using CPUE and fishery independent trawl surveys (the next is in 2020) will enable responsive management and appropriate adjustments to address any risk or possible utilisation opportunity.

2.5 ALLOCATING THE TAC

1032. The TAC sets the total quantity of a stock that can be sustainably harvested each year, consistent with the objective of maintaining the stock at or above a level that can produce the maximum sustainable yield.
1033. After setting or varying the TAC for a stock, a separate decision arises in respect of allocating the TAC. This involves deciding what portion of the TAC is available for Māori customary non-commercial fishing interests, recreational interests, all other mortality to that stock caused by fishing, and commercial fishers (the TACC). You have considerable discretion in determining the allocation.

2.5.1 Māori customary allowance

1034. There is no proposal to increase the customary allowance for ELE 3. The ELE 3 TAC was last reviewed in 2015. Customary catch data shows no increase in catch since the last review, and levels of customary catch are within the current customary allowance. There were no submissions on this matter.
1035. When allowing for Māori customary non-commercial interests you must take into account any mātaihai reserve within the relevant QMA. While there are a number of mātaihai, and taiāpure within ELE 3, Fisheries New Zealand notes that the proposals in this paper are unlikely to impact on these because they are generally parts of the coastline with rocky reef habitat supporting species such as paua.

2.5.2 Recreational allowance

1036. The 2011/12 National Panel Survey⁶ (National Panel Survey) provided an estimate that 4853 elephant fish were harvested recreationally in ELE 3 during the 2011/12 fishing year. Based on the average weight of an elephant fish as 3 kg, this gives an estimated harvest weight of approximately 15 tonnes.
1037. Given uncertainty in using this estimate to predict current or future catches and the strength of the current stock biomass, Fisheries New Zealand considers it reasonable to increase the allowance for recreational fishers by 10 tonnes (to a total allowance of 15 tonnes) to cover current recreational catch and allow recreational utilisation of the increased abundance.
1038. Te Ohu Kaimoana does not support an increase in the recreational allowance, and instead suggests it be transferred to the TACC. Fisheries New Zealand notes that the framework for determining customary and recreational allowances is set out under sections 20 and 21 of the Act and this, along with Te Ohu Kaimoana submissions, are discussed in detail in that section of this paper.
1039. A repeat of the 2011/12 National Panel Survey is currently underway in 2017/18, and updated estimates of recreational catch in ELE 3 will be used to inform future management.

2.5.3 Allowance for other sources of mortality caused by fishing

1040. There is limited information on which to base the setting of an allowance for other sources of fishing-related mortality in ELE 3. Option 2 proposes an increase to this allowance that would result in the allowance being approximately 5% of the TACC. This is a proportional approach that takes into account the robustness of the species and the likely incidental mortality from the main fishing methods used.
1041. The New Zealand Sport Fishing Council put forward a revision of Option 2 in their submission, which proposes a significant increase in the estimate for other sources of fishing related mortality. Better information on the level of unreported fishing related mortality will be available as part of the digital monitoring programme to guide the setting of allowances. Fisheries New Zealand notes that, despite any uncertainty about total catch, there is evidence of increased abundance as shown in the recent fishery independent east coast South Island trawl survey. In the interim best, available information suggests a more modest, proportional increase to this allowance, as proposed in Option 2 is appropriate.

2.5.4 TACC

Option 1 (Status quo)

1042. Option 1 proposes no change to the *status quo*. The existing TACC would be retained.
1043. Environment and Conservation Organisations of New Zealand support this option.

⁶ 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. Accessible at: <https://www.mpi.govt.nz/dmsdocument/4719/send>

1044. Retaining the current TACC would result in lost utilisation (\$394 500 under Option 2) for the commercial sector, and additional costs through the payment of deemed values for over-catch in this predominantly bycatch fishery. Option 1 will also not allow fishers to access the value available from other target species, as they try to avoid catching elephant fish) given the current high abundance of ELE 3).

Option 2 (Fisheries New Zealand preferred)

1045. Option 2 proposes an increase to the TACC from 1000 to 1150 tonnes, which aligns more closely with commercial landings since 2015/16 than Option 1.

1046. All submitters, with the exception of Environment and Conservation Organisations of New Zealand, support an increase to the TACC.

1047. Catches from the commercial sector have consistently exceeded the TACC (Figure 2), despite landings being substantially as a bycatch of other target fisheries, and efforts by many fishers to avoid catching elephant fish. It is possible that fisher avoidance and discarding have biased (low) the CPUE trends reported for this fishery.

1048. By increasing the TACC, fishers are more likely to be able to cover current levels of ELE 3 catch with ACE and, therefore, in addition to increased revenue from catches, will be less likely to incur deemed value payments. The economic implications of this proposed option are outlined in Table 4.

Table 4: Predicted changes to commercial revenue of the proposed options, based on the price to the fisher of \$2.63/kg for ELE 3 in 2017/18.

	TACC (t)	Change from <i>status quo</i> (t)	Predicted revenue change (\$ p.a.)
Option 1 (<i>Status quo</i>)	1000		
Option 2	1150	150 ↑	\$394,500 ↑

2.6 OTHER MANAGEMENT CONTROLS

2.6.1 Recreational controls

1049. The methods used to manage recreational take of elephant fish include a maximum daily bag limit of five per person. There is no minimum size limit. There is no information to suggest a change to recreational controls (such as the recreational daily bag limit) are needed.

2.6.2 Deemed value rates

1050. There are no proposed changes to the deemed value rates for ELE 3 for the 2018/19 fishing year (see Table 2 above).

3 Conclusion and Recommendation

1051. The ELE 3 stock has been assessed to be at or above the target and well above both soft and hard limits. By increasing the TAC, TACC and some allowances to match this increased abundance, the social, economic and cultural benefits that can be obtained from the fishery will also increase.
1052. While commercial and recreational submitters support an increase for the TAC in ELE 3, ECO hold concerns about aspects of the impacts of fishing. Fisheries New Zealand notes that a TAC increase as proposed is unlikely to result in additional fishing effort, or cause the environmental impacts of concern to ECO.
1053. Fisheries New Zealand recommends that you implement Option 2. This option will not result in sustainability concerns for the fishery in the short to intermediate term, and reflects the current status of elephant fish in ELE 3 while also providing for increased utilisation opportunity.
1054. Fisheries New Zealand notes you have discretion in choosing an option and may make your own independent assessment of the information presented to you in making this decision. You are not bound to choose the option recommended by Fisheries New Zealand.

Option 1

Agree to retain the ELE 3 TAC of 1060 tonnes and within the TAC:

- i. Retain the allowance of 5 tonnes for Māori customary non-commercial fishing interests;
- ii. Retain the allowance of 5 tonnes for recreational fishing interests;
- iii. Retain the allowance of 50 tonnes for all other sources of mortality to the stock caused by fishing;
- iv. Retain the ELE 3 TACC at 1000 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 2

Agree to increase the ELE 3 TAC from 1060 to 1228 tonnes and within the TAC:

- i. Retain the allowance of 5 tonnes for Māori customary non-commercial fishing interests;
- ii. Increase the allowance for recreational fishing interests from 5 to 15 tonnes;
- iii. Increase the allowance for all other sources of mortality to the stock caused by fishing from 50 to 58 tonnes;
- iv. Increase the ELE 3 TACC from 1000 to 1150 tonnes.

Agreed / Agreed as Amended / Not Agreed

Hon Stuart Nash
Minister of Fisheries
/ /2018

Option 1

Agree to retain the ELE 3 TAC of 1060 tonnes and within the TAC:

- i. Retain the allowance of 5 tonnes for Māori customary non-commercial fishing interests;
- ii. Retain the allowance of 5 tonnes for recreational fishing interests;
- iii. Retain the allowance of 50 tonnes for all other sources of mortality to the stock caused by fishing;
- iv. Retain the ELE 3 TACC at 1000 tonnes.

Agreed / Agreed as Amended / **Not Agreed**

OR

Option 2

Agree to increase the ELE 3 TAC from 1060 to 1228 tonnes and within the TAC:

- i. Retain the allowance of 5 tonnes for Māori customary non-commercial fishing interests;
- ii. Increase the allowance for recreational fishing interests from 5 to 15 tonnes;
- iii. Increase the allowance for all other sources of mortality to the stock caused by fishing from 50 to 58 tonnes;
- iv. Increase the ELE 3 TACC from 1000 to 1150 tonnes.

Agreed / Agreed as Amended / **Not Agreed**

Stuart Nash

Hon Stuart Nash
Minister of Fisheries

13 / 9 / 2018

Option 3

TAC = 1285 tonnes

TACC = 1150 tonnes

Māori = 5 tonnes

Recreational = 15 tonnes

OSFRM = 115 tonnes

Agreed

Flatfish (FLA 1)

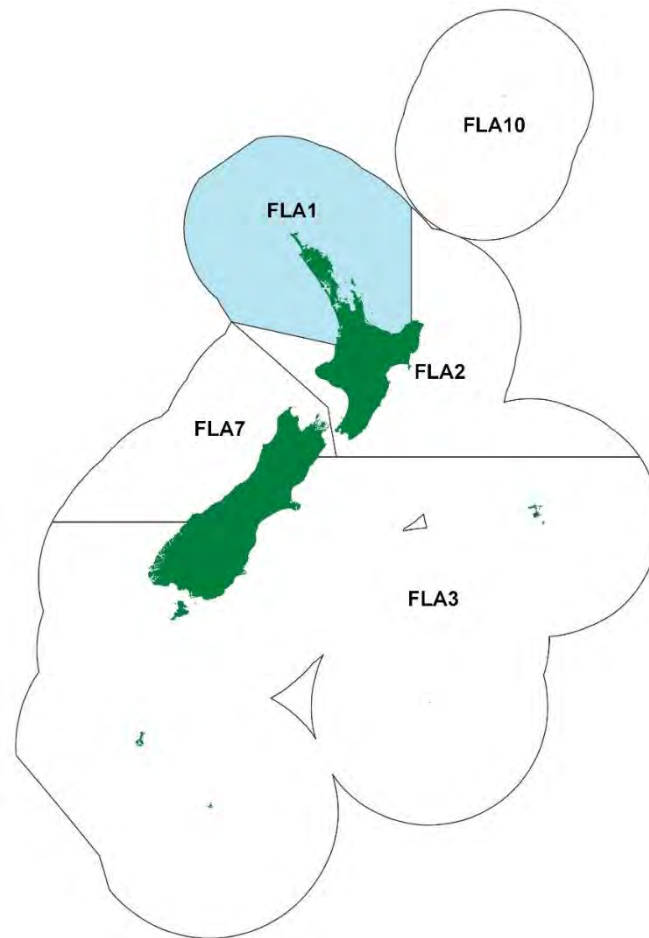


Figure 1: Quota Management Areas (QMAs) for flatfish (FLA), with FLA 1 highlighted in blue.

1 Summary

1055. Fisheries New Zealand consulted on three options for management settings for flatfish (pātiki; a complex of 8 species¹) in FLA 1 (including quota management areas (QMAs) 1 and 9, see Figure 1). In addition to retaining the *status quo*, Fisheries New Zealand initially proposed two options for reducing catch limits and allowances. A reduction of the catch limits is considered to be necessary to address a risk to sustainability under the *status quo* measures.

1056. Fisheries New Zealand recognises that reducing the Total Allowable Catch (TAC) is unlikely to be the complete answer to managing FLA 1 fisheries; however, a reduction of the TAC is consistent with your obligations under s 13 of the Fisheries Act 1996 (the Act), and with the tools provided in the Act for managing stocks, such as flatfish, whose abundance is highly variable.

¹ The FLA 1 stock complex is composed of eight species of flatfish: yellow-belly flounder, *Rhombosolea leporine* (YBF); sand flounder, *Rhombosolea plebeian* (SFL); black flounder, *Rhombosolea retiaria* (BFL); greenback flounder, *Rhombosolea tapirina* (GFL); lemon sole, *Pelotretis flavilatus* (LSO); New Zealand sole, *Peltorhamphus novaezeelandiae* (ESO); brill, *Colistium guntheri* (BRI); and turbot, *Colistium nudipinnis* (TUR). For management purposes, the commercial landing codes for these species are combined into the flatfish complex code FLA.

1057. In consideration of submissions received, Fisheries New Zealand recommends an alternative option to those consulted on for the FLA 1 TAC, total allowable commercial catch (TACC), non-commercial catch, and allowance for other mortality from fishing for FLA 1. This is outlined in Option 4 (Table 1).

1058. Option 4 would be an interim measure to reduce risk, better align with the Act, and lessen any social and economic impacts while a broader management arrangement for FLA 1 is considered. Fisheries New Zealand is intending to initiate a process with stakeholders to review stock boundaries and consider options for more responsive management. You are not asked to decide on these matters in this current process.

Table 1. Proposed management settings in tonnes for FLA 1 from 1 October 2018, with the percentage change relative to the *status quo* in brackets.

Option	Total Allowable Catch (TAC)	Total Allowable Commercial Catch (TACC)	Allowances		
			Customary Māori	Recreational	All other mortality to the stock caused by fishing
Option 1 (<i>Status quo</i>)	1762	1187	270	270	35
Option 2	510 ↓ (71%)	423 ↓ (64%)	50 ↓ (81%)	27 ↓ (90%)	10 ↓ (71%)
Option 3	467 ↓ (73%)	381 ↓ (68%)	50 ↓ (81%)	27 ↓ (90%)	9 ↓ (74%)
Option 4 (<i>New option</i>)	986 ↓ (44%)	890 ↓ (25%)	50 ↓ (81%)	27 ↓ (90%)	19 ↓ (46%)

1059. Fisheries New Zealand also consulted on setting the interim deemed value rate for FLA 1 at 90% of the annual deemed value rate, consistent with Principle 7 of the Deemed Value Guidelines,² to incentivise fishers to regularly cover catch with annual catch entitlement (ACE) throughout the year, as outlined in Table 2. Further details on this proposed change can be found in the Deemed Values section of this discussion document.

Table 2: Current and proposed Standard Deemed Value Rates (\$/kg) for FLA 1

	Interim Rate (\$/kg)	Annual Differential Rates (\$/kg) for excess catch (% of ACE)					
		100-120%	120-140%	140-160%	160-180%	180-200%	200%+
<i>Status quo</i>	0.75						
Proposed	1.35 ↑	1.50	1.80	2.10	2.40	2.70	3.00

1060. Twenty two submissions were received on the options presented for the management of FLA 1. Ten of these submissions provided a position on the options proposed during the consultation period.

1061. However, the majority of submissions (twelve submissions representing a variety of commercial, non-commercial, and environmental interests) did not provide a position on any one option proposed. These submissions were primarily concerned with the current approach to the management of FLA 1. Some of these submissions also commented on the need to mitigate the immediate social and economic impacts to fishers if you were to agree to a substantial reduction to the FLA 1 TAC, as proposed under either Option 2 or Option 3.

² Accessible from www.mpi.govt.nz/document-vault/3663

1 Need for review

1062. Fisheries New Zealand considers that there is a sustainability risk for FLA 1 under the current management settings. The latest assessment of FLA 1 in 2018³ indicated that catch per unit of effort (CPUE)⁴ indices of relative abundance for two of the three main areas of targeted fishing for flatfish in FLA 1 (the Kaipara and Manukau Harbours) have continued to decline since the last assessment in 2015. The CPUE in the other main fishing area, the Hauraki Gulf and Firth of Thames, increased substantially in the last year of the assessment, after a long period of decline, but it is uncertain if this reflects an increasing long-term trend in flatfish abundance.

1063. Since the sub-stocks within FLA 1 are performing differently, Fisheries New Zealand also invited submissions on proposals to review the FLA 1 QMA stock boundaries (currently spread across Fisheries Management Areas 1 and 9, the north-east and north-west coasts of the North Island). This review will occur in a future process.

2.1 CONTEXT

2.1.1 Biological Information

1064. Sand flounder and yellow-belly flounder are the principal flatfish species caught in FLA 1. Both species are fast-growing and short-lived, generally only surviving to 3-4 years of age.

1065. Tagging studies show that the main flatfish species have a relatively small home range, and it is likely that the flatfish in FLA 1 consist of a number of sub-stocks with limited mixing, particularly between the east and west coasts and between harbours on the west coast.

1066. Because the adult populations of sand flounder and yellow-belly flounder generally consist of only one or two year classes, the size of populations and flatfish available to catch depends heavily on the strength of the recruiting year class and is therefore highly variable.

2.1.2 Fishery characterisation

1067. Flatfish is highly valued and the fishery is shared by commercial, recreational, and customary Māori fishers. Flatfish are principally taken by shallow-water set netting by all sectors, and also by hand spear by non-commercial fishers.

Customary Māori fishery

1068. Flatfish (pātiki) is a valued taonga species for tangata whenua and has traditionally been a popular source of food that can be easily caught by netting and spearing. The flatfish and flounder species included under the QMS (quota management system) code of FLA 1

³ Fisheries New Zealand (2018). Fisheries Assessment Plenary, May 2018: stock assessments and stock status. Compiled by the Fisheries Science and Information Group, Fisheries New Zealand, Wellington, New Zealand. 1764p. Accessible from <https://fs.fish.govt.nz/Page.aspx?pk=61&tk=212>

⁴ Catch per unit effort (CPUE) is often calculated as the catch weight (in kilogrammes) per metre of net used for set net fisheries such as flatfish. The length of time the net is in the water may also be a component of the CPUE. A declining CPUE means that more effort – metres of net and/or soak time – is required to catch a given volume of flatfish.

have been identified as taonga species under the Iwi Forum Fisheries Plans of Te Hiku o Te Ika, the Mai I Ngā Kuri a Whareki Tihirau, and the Ngaa Hapu o te Uru o Tainui.

1069. In pre-consultation discussions about the upcoming review of FLA 1 settings, the Ngaa Hapu o te Uru o Tainui Fisheries Forum, representing the Māori customary interests of the Waikato/Tainui area, emphasised the importance of flatfish species and the need to manage in a way that supports customary fishing, even if that means lower levels of commercial fishing.
1070. Information held by Fisheries New Zealand on Māori customary catch, where FLA 1 was authorised to be taken, suggests that approximately 2 tonnes was applied for under permits since the year 2000, and the highest amount in any single year was 600 kgs. However, catches of flatfish in FLA 1 are uncertain as 16 of the 35 confirmed customary authorisations since 2000 were applied for under regulation 50 of the Fisheries (Amateur Fishing) Regulations 2013, which does not require that customary permits or catches be reported. In some areas in FLA 1 there are tangata whenua that operate under the Fisheries (Kaimoana Customary Fishing) Regulations 1998, and the remaining 19 authorisations since 2000 were issued under these regulations.
1071. The FLA 1 area (QMA 1 and 9) contains the mātaihai reserves of Marokopa, Aotea Harbour, Te Puna, Waikare Inlet, Te Maunga o Mauao and Raukokere, and the taiāpure of Kawhia-Aotea Harbour and Maketu. Fisheries New Zealand considers that the options proposed for FLA 1 will not impact the ability to take flatfish for customary purposes in these areas.

Recreational fishery

1072. Flatfish are important species for recreational fishers. Recreational fisheries for sand flounder and yellow-belly flounder occur in most estuaries, coastal lakes, and inlets throughout the North Island, including the west coast harbours, the lower Waikato River, the Hauraki Gulf, the Firth of Thames, and Ohiwa and Tauranga Harbours. The main recreational fishing methods are netting and spearing. The best available information on current recreational catch is provided from the National Panel Survey of Marine Recreational Fishers in 2011/12⁵ (National Panel Survey), which estimated the total recreational catch of flatfish in FLA 1 at 26.6 tonnes. A repeat of the National Panel Survey is underway in 2017/18, and updated estimates of recreational catch in FLA 1 will be used to inform future management.

Commercial fishery

1073. The commercial fishing sector harvests the greatest amount of flatfish in FLA 1, and flatfish quota provides for the landing of eight species of flatfish. The 1,187 tonne TACC for FLA 1 has not been changed since the introduction of flatfish species into the QMS in 1986, and has not been fully caught since it was initially set (Figure 2). FLA 1 commercial catches have fluctuated markedly and long-term declines are evident on both the east and west coast in the three main fishing areas in FLA 1.

⁵ 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. Accessible at: <https://www.mpi.govt.nz/dmsdocument/4719/send>

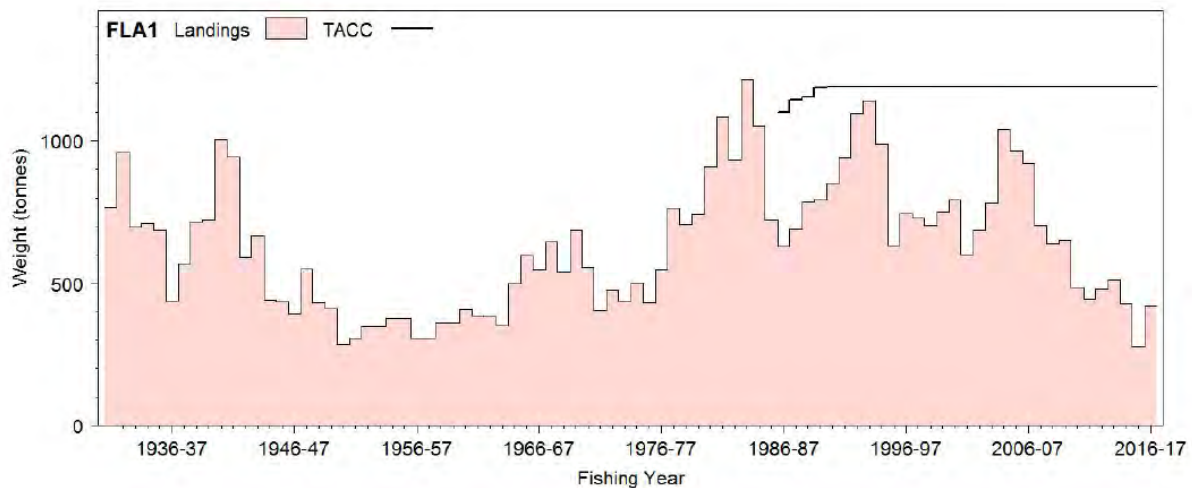


Figure 2. Historical landings vs TACC for FLA 1

1074. There are many smaller commercial operators in the FLA 1 fishery and the majority of these own quota for FLA 1, usually at a level to cover their foreseeable level of flatfish catch within a fishing year. Due to the excess quota in the fishery, fishers are readily able to source additional FLA 1 ACE as required. In the current fishing year, there are 134 holders of FLA 1 quota, however, approximately 50% of the FLA 1 quota is held by only 15 parties.

1075. A combination of the low cost to enter the commercial FLA 1 fishery (ACE is available with a low trading value, easily accessible inshore fishing areas, relatively low cost of investment in vessel type and fishing gear) and high market value has led to an excess of fishing capacity that has remained in the fishery since periods of higher flatfish abundance.

1076. Fisheries New Zealand recognises that commercial fishers are not obliged to fully catch their entitlement, and there are various reasons unrelated to the abundance of the stock that can affect how much flatfish fishers choose to take (for example, ACE availability and market demand for the fish). However, the existing FLA 1 TACC appears to be artificially high, given that it has never been fully caught.

1.1.3 Environmental interactions

1077. Section 9 of the Act prescribes the environmental principles that you must take into account when exercising powers in relation to the utilisation of fisheries resources or ensuring sustainability (refer to section 1.4 of *Part 2: Statutory Considerations* for a full description of the principles).

1078. Fisheries New Zealand notes that environmental factors, such as sedimentation and a decline in water quality, as well as the encroachment of invasive species in enclosed bays and sheltered harbours, is likely to be affecting flatfish recruitment.

1079. Fisheries New Zealand does not have a direct role in managing such environmental impacts. Nonetheless, Fisheries New Zealand will monitor work underway to address these impacts, including advocating for further work where appropriate.

Seabirds

1080. Seabirds can be caught in set nets (which are principally used for catching flatfish in FLA 1) because they can become entangled and drown in the nets while diving for food. Relative to other fishing methods, Fisheries New Zealand considers that, on a nationwide scale, set netting practices pose a significant risk to seabirds,⁶ though the greatest risks were to penguin species that have general distributions in more southern regions. Risks to seabirds that are specific to the FLA 1 fishery have not been thoroughly examined, though it is likely that shearwater and shag species are at the greatest risk from set net fishing in FLA 1.
1081. Commercial vessels set netting in the FLA 1 fishery are generally small, and in most circumstances it is impractical for vessels to carry observers. As such, there has been minimal observer coverage in the FLA 1 set net fishery and seabird capture rates in FLA 1 are poorly understood.
1082. Commercial fishers are obliged to report any captures and releases of seabirds, as well as note each seabird's status of survival. Within the last 10-year period, commercial fishers targeting flatfish in FLA 1 have reported 10 seabirds caught, the majority of which were shags, with four shags out of the eight captured being released alive. Additional captures were single incidents of an antipodean albatross released alive, and an undisclosed penguin species that did not survive.
1083. Fisheries New Zealand does not require vessels using set nets in FLA 1 to employ seabird mitigation devices, but Fisheries New Zealand notes that the commercial fishing industry in FLA 1 has developed codes of practice for set net use and encourages fishers to use set nets in a responsible manner to mitigate seabird capture.
1084. Fisheries New Zealand notes that there have been reports of large numbers of fluttering shearwaters being caught in the Hauraki Gulf in recreational set nets, but Fisheries New Zealand has no information to quantify this, or other captures of seabirds in recreational set nets in the FLA 1 area of QMA 1 and 9.
1085. Fisheries New Zealand considers that the proposed reductions to the FLA 1 TACs under Options 2, 3 and 4 will not result in an increase in set net effort or pose further risk to any seabird species in FLA 1.
1086. The National Plan of Action – 2013 to reduce the incidental catch of seabirds in New Zealand fisheries (NPOA-Seabirds 2013),⁷ which is currently under review, is the driver for all actions to reduce the incidental mortality of seabirds from fishing. It puts in place a risk-based approach to managing fishing interactions with seabirds, targeting mitigation to those species most at risk but also aiming to reduce overall captures.

Marine mammals

1087. The set net fishery in areas of the North Island west coast, particularly the west coast harbours, has the potential to interact with Māui dolphins. There have been instances on the west coast of the North Island where the endangered Māui dolphins have been caught

⁶ Rowe, S. 2010. Level 1 risk assessment for incidental seabird mortality associated with fisheries in New Zealand's Exclusive Economic Zone. Department of Conservation. 75p <https://www.doc.govt.nz/Documents/science-and-technical/dmcs10entire.pdf>

⁷ Accessible from <https://www.mpi.govt.nz/dmsdocument/3962-national-plan-of-action-2013-to-reduce-the-incidental-catch-of-seabirds-in-new-zealand-fisheries>

in both commercial and non-commercial set nets. Due to their low abundance on the west-coast of North Island, the endemic Māui dolphin is declared as a critically endangered species under the provisions of the Marine Mammals Protection Act 1978. Management of interactions with the Māui dolphin are driven by the draft Hector's and Māui Dolphin Threat Management Plan,⁸ which is currently being reviewed.

1088. There have been reports of Māui dolphin sightings in some west coast harbours where set netting for flatfish occurs, however, at present there is insufficient evidence that the dolphins regularly come into the harbours.

1089. To manage this risk, the set net and bottom trawl fisheries have been subject to a range of measures designed to reduce interactions of this fishery with Māui dolphins, including a prohibition of set netting within four nautical miles from shore for much of the coast in FMA 9, and within the entrance to the Manukau Harbour. To increase awareness of the risk of interactions with marine mammals, Fisheries New Zealand works closely with the commercial fishing industry on mitigation measures and also promotes responsible non-commercial set net use.

1090. Fisheries New Zealand considers that the proposed reductions to the FLA 1 TACs under Options 2, 3 and 4 will not result in an increase in set net effort in areas where Māui dolphins may be encountered, and may mitigate chances of fishing interactions with Māui dolphin.

Sharks

1091. Management of shark species in New Zealand is driven by the National Plan of Action for the conservation and management of sharks 2013 (NPOA Sharks)⁹ with the overarching purpose 'to maintain the biodiversity and the long-term viability of all New Zealand shark populations by recognising their role in marine ecosystems, ensuring that any utilisation of sharks is sustainable, and that New Zealand receives positive recognition internationally for its efforts in shark conservation and management'.

1092. Rig (SPO) is the principal shark species managed under the QMS that is taken as bycatch in the FLA 1 fishery, and the current catch of rig in the FLA 1 area has continued to decline to a level well below the SPO 1 TACC.

1093. Fisheries New Zealand notes that enclosed bays and sheltered harbours are important areas for pupping and the growth of juvenile rig, especially in the west coast harbours. Fisheries New Zealand will continue to monitor interactions with rig and other shark species in the FLA 1 fishery, and will consider management action if impacts are found to pose a risk to the sustainability of any shark species.

Benthic impacts and biological diversity

1094. Management measures to mitigate the impact of fishing activities on benthic ecosystems have focused on spatial closures in FLA 1, and set netting is prohibited in some areas of FLA 1. However, Fisheries New Zealand considers the benthic and biodiversity impacts of set netting as low, relative to other fishing methods.

⁸ Accessible from <https://www.doc.govt.nz/Documents/conservation/marine-and-coastal/hectors-and-maui-dolphin-threat-management-plan-2007.pdf>

⁹ Accessible from: <https://www.mpi.govt.nz/dmsdocument/1138-national-plan-of-action-for-the-conservation-and-management-of-sharks-2013>

1095. Regardless, Fisheries New Zealand considers that the use of set nets can potentially impact on species diversity because set nets have the potential to catch a wide range of inshore species.
1096. Many harbours or inlet areas that are targeted for flatfish in FLA 1 are important nurseries for other inshore species. However, there is no indication that set netting for flatfish adversely affects the productive value of species in FMA 1 and FMA 9 harbours and inlets, as nurseries for both flatfish and other fish species.
1097. Fisheries New Zealand recognises the importance of habitats where fishing for flatfish in FLA 1 occurs, particularly the Kaipara and Manukau Harbours, and notes that there are also several management controls in place to protect these areas from the adverse effects of fishing.

Interdependence of stocks

1098. Flatfish in FLA 1 are principally taken by target fishing for flatfish in enclosed bays and sheltered harbours, and there is no information to suggest that fishing for FLA 1 has a direct impact on other stocks that would limit considerations of the FLA 1 TAC options proposed. The decline in flatfish biomass may be having an impact on predator species, subject to the availability of alternative food sources, and this may also affect other complex interactions within the ecosystem. However, Fisheries New Zealand cannot quantify the scale of the impact of the low abundance of flatfish.
1099. The majority of bycatch in the FLA 1 fishery comprise species managed under the QMS. For the three species most commonly taken as bycatch (kahawai, rig, and parore), only kahawai in the corresponding KAH 1 and KAH 8 has been at a level of the TACC in recent years. Fisheries New Zealand notes that kahawai is principally taken by fishing methods other than set net in the FLA 1 area, and considers that set netting for flatfish in FLA 1 does not pose a risk to sustainability of kahawai.

1.1.4 Current management approach

1100. The initial FLA 1 TACC of 1,187 tonnes was set in 1986 at the highest catch level on record. This approach for FLA 1 recognises the highly variable abundance of FLA 1, since the TAC and TACC are set at an elevated level to allow for increased catches in years of high abundance. However, this approach also poses risks to the stock in years when abundance is low. There are indications that environmental influences may be limiting the abundance of localised flatfish sub-stocks.
1101. The current approach may no longer fit with the legislative framework of the Fisheries Act 1996, which now obliges you to set a TAC that moves or maintains FLA 1 biomass to a level at or above the level that can support the maximum sustainable yield (MSY), and which also provides alternative ways for managing highly variable stocks.
1102. All flatfish stocks (including FLA 1) are listed on Schedule Two of the Act. This allows for the TAC and catch allowances for all sectors to be increased within a fishing year, where an increase in abundance of flatfish in FLA 1 indicates that there is an utilisation opportunity that would not risk the long-term sustainability of the stock. However, there is no monitoring program currently in place to allow for this more responsive form of management.

1103. The TAC and non-commercial allowances for FLA 1 were set in 2005. The TAC, TACC, and allowances have not been reviewed since.

1.1.5 Current stock status

1104. There is no information to determine whether or not the FLA 1 stock is at, above, or below the biomass level that would produce the maximum sustainable yield (B_{MSY}), and there are no established proxies for stock biomass management targets or limit reference points.

1105. It is assumed that the changes in commercial CPUE reveal a proportional change in the abundance of flatfish in FLA 1. The commercial CPUE generally has shown a long-term decline since the introduction of flatfish into the QMS. The apparent long-term decline in various localised fisheries (based on catch and CPUE) indicates that abundance of flatfish has declined throughout the FLA 1 QMA, likely due to a reduction in the spawning stock biomass and recruitment. The decline is most evident in the Manukau and Kaipara Harbours, which are two of the three main areas providing the majority of the flatfish catch in FLA 1.

1106. Approximately one-quarter of the flatfish catch in FLA 1 comes from the west coast, principally from the Kaipara and Manukau Harbours, in addition to other sheltered harbours. More than 90% of the reported commercial catch of flatfish on the west coast is yellow-belly flounder, and CPUE indices for the west coast therefore likely reflect the abundance of yellow-belly flounder rather than sand flounder or other, less commonly caught, flatfish species. Both the Manukau and Kaipara Harbours have shown a strong, but fluctuating, declining trend in CPUE since the mid-90s (Figures 3 and 4).

1107. Approximately three-quarters of flatfish catch in FLA 1 comes from the east coast, and significant quantities of both sand flounder and yellow-belly flounder are caught in the Hauraki Gulf, particularly the Firth of Thames. The FLA 1 CPUE series (combined sand flounder and yellow-belly flounder index) for the Hauraki Gulf shows an overall declining trend for the last ten years up to 2015/16 (Figure 5). There was a sharp upturn in the CPUE series in the 2016/17 fishing year, with the final index being above the long-term series mean. Given the short life-history of flatfish in FLA 1, however, it is uncertain if this recent CPUE increase will be reflected in increased flatfish abundance in the coming years.

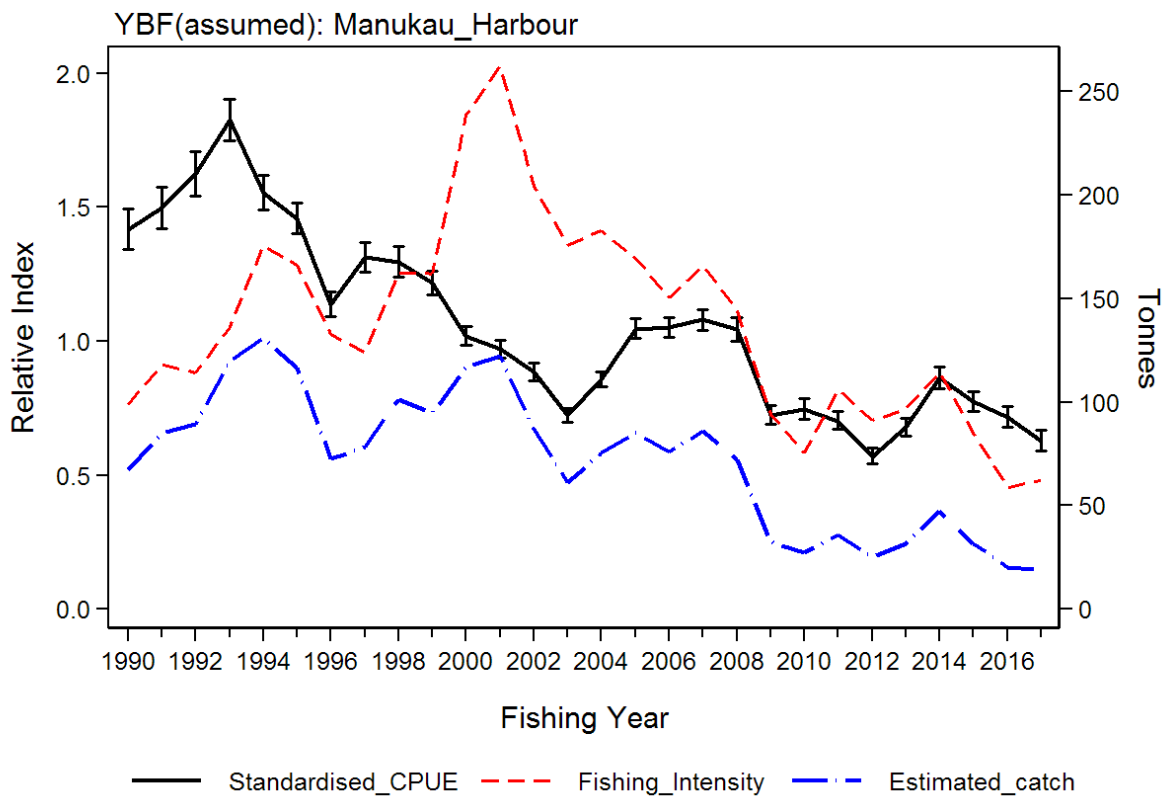


Figure 3: CPUE and total annual estimated catches for yellow-belly flounder (YBF) in Manukau Harbour. Also shown is the fishing intensity (catch/CPUE).

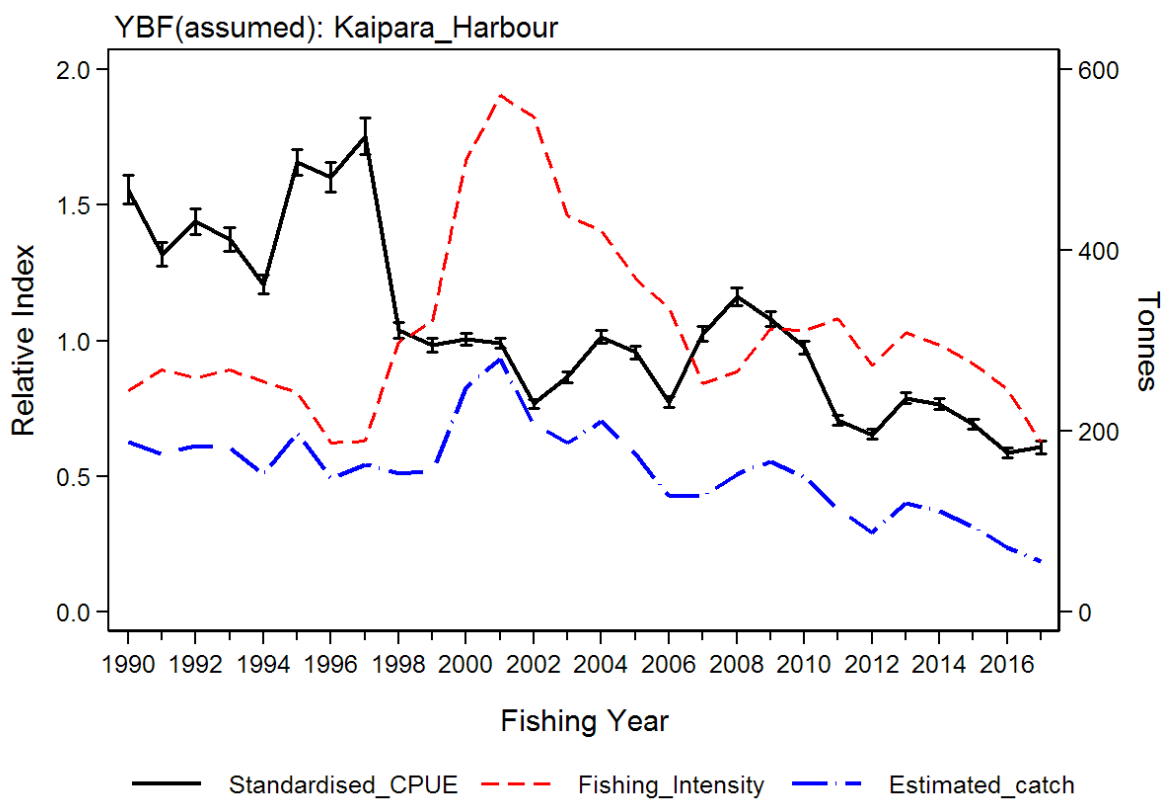


Figure 4: CPUE and total annual estimated catches for yellow-belly flounder (YBF) in Kaipara Harbour. Also shown is the fishing intensity (catch/CPUE).

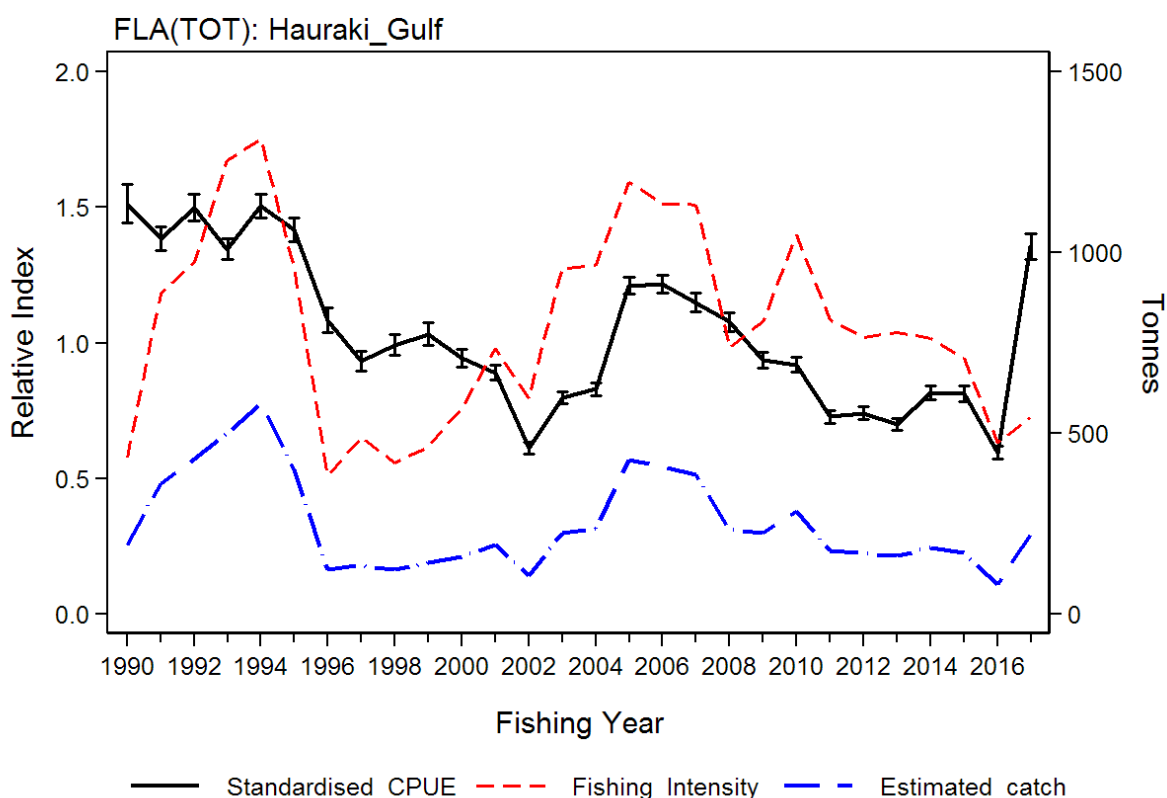


Figure 5: CPUE and total annual estimated catches for combined indices of both sand flounder and yellow-belly flounder, FLA(TOT), in the Hauraki Gulf. Also shown is the fishing intensity (catch/CPUE).

1.2 OPTIONS CONSULTED ON

1108. Fisheries New Zealand consulted on the following options (Table 3):

Table 3. Options that were consulted on: Proposed management settings in tonnes for FLA 1 from 1 October 2018, with the percentage change relative to the *status quo* in brackets.

Option	Total Allowable Catch (TAC)	Total Allowable Commercial Catch (TACC)	Allowances		
			Customary Māori	Recreational	All other mortality to the stock caused by fishing
Option 1 (<i>Status quo</i>)	1762	1187	270	270	35
Option 2	487 ↓ (72%)	423 ↓ (64%)	27 ↓ (90%)	27 ↓ (90%)	10 ↓ (71%)
Option 3	444 ↓ (75%)	381 ↓ (68%)	27 ↓ (90%)	27 ↓ (90%)	9 ↓ (74%)

1109. Given the evidence for localised populations of flatfish in FLA 1 (that could be considered as separate biological stocks), Fisheries New Zealand also invited submissions on proposals for a future review of the FLA 1 QMA stock boundaries (currently spread across QMA 1 and 9, the north-east and north-west coasts of the North Island), as well as other FLA 1 management settings.

1.3 VIEWS OF SUBMITTERS

2.3.1 Submissions received

1110. Section 12 of the Act requires you to consult on any proposed management changes. Fisheries New Zealand has consulted on your behalf, and this section outlines the views of submitters and issues they raised. Submissions were received from the following 22 individuals and organisations:

- a) Iwi Collective Partnership
- b) Ngati Whatua Fisheries Ltd.
- c) Te Runanga o Ngati Hine
- d) Te Ohu Kaimoana
- e) Andrew Turnwald (commercial)
- f) Brian McMillen (commercial)
- g) Malcolm Pinkney (commercial)
- h) Marcus Culley (Kawhia and Raglan Flounder Ltd.)
- i) Mark Mathers (Raglan Seafood Ltd.)
- j) Murray Lambert (commercial)
- k) P.A and G.A Thorburn (Piako Petes, commercial)
- l) Rex Smith (commercial)
- m) Rob Billings (commercial)
- n) Rod Scott (commercial)
- o) Ted Howard (commercial)
- p) Zak Olsen (Southern Cross Fishing Ltd.)
- q) Fisheries Inshore New Zealand Ltd.
- r) Whitianga and Coromandel Peninsula Fishermen's Association
- s) The Environment and Conservation Organisations of New Zealand
- t) The Royal Forest and Bird Protection Society of New Zealand Ltd. (Forest & Bird)
- u) Environmental Defence Society
- v) New Zealand Sports Fishing Council

Submissions concerning the wider FLA 1 fishery

1111. Iwi Collective Partnership supports Option 1, noting that the current proposed options do not address localised sustainability issues for flatfish in FLA 1. Iwi Collective Partnership is a fisheries seafood collective of 15 North Island Iwi members representing owners of settlement quota.

1112. Ngati Whatua Fisheries Ltd. supports Option 2, but did not provide rationale. Ngati Whatua Fisheries Ltd. is a commercial fishing enterprise and holds FLA 1 quota.

1113. Te Runanga o Ngati Hine did not provide a position on any one option presented but support the views of other customary representatives for a decrease to the FLA 1 TACC, but with no change to the current customary or recreational allowances. These views from other customary interests are further outlined in section 2.3.2, the input and participation of tangata whenua.

1114. New Zealand Sports Fishing Council does not provide a position on any one option presented in the consultation period, but in consideration of the impact on commercial fishers, New Zealand Sports Fishing Council advocates for a more conservative interim TACC reduction to a level of the 10-year average of recorded catch, at around 500 tonnes, with a view to consider other management measures in the future. New Zealand Sports Fishing Council represents the interests of non-commercial fishers, with over 34,000 affiliated members from 56 fishing clubs nationwide.
1115. New Zealand Sports Fishing Council notes the localised nature of the many independent commercial operators fishing for flatfish in FLA 1 and emphasises that there is wide public support for local, high value fisheries that are well operated and managed, and able to supply a quality product to the local community.
1116. New Zealand Sports Fishing Council acknowledges that a reduction in catch allowances is an appropriate approach to managing the FLA 1 fishery, but also submits that if the TACC reductions proposed under either Option 2 or Option 3 were imposed, it would be likely that commercial fishers would find it more difficult to obtain FLA 1 ACE and that this may lead to some long-standing independent commercial fishing operations becoming economically unviable.
1117. New Zealand Sports Fishing Council acknowledges that sustainability concerns for FLA 1 are difficult to define, given the highly variable recruitment and abundance of flatfish. New Zealand Sports Fishing Council note that the recreational catch and fishing effort has also declined with decline in flatfish abundance in FLA 1, and argue that any increases to flatfish abundance is quickly taken by the more mobile commercial fishers and leads to conflicts between sectors.
1118. New Zealand Sports Fishing Council does not provide comment on the proposed recreational allowance, but comments that Fisheries New Zealand should develop a coherent approach for setting the allowance for all other fishing-related mortality.
1119. Forest & Bird supports Option 3, noting that they will continue to advocate for any measures to reduce set net fishing in areas where Māui dolphins may occur off the west coast of the North Island and in the west-coast Harbours, as well as helping to support a rebuild of flatfish abundance. Forest & Bird submits that they have no immediate concern with set net fishing on the east coast, provided the risks to protected species and non-target fish are managed appropriately. Forest & Bird is New Zealand's largest independent conservation organization, numbering around 80,000 members and supporters.
1120. The Environment and Conservation Organisations of New Zealand supports Option 3 on the basis of a concern for environmental impacts of fishing and the sustainability of the fishery. ECO is a national alliance of 48 groups with a concern for the environment.
1121. Fisheries New Zealand has received submissions regarding commercial fishing interests from Fisheries Inshore New Zealand and Te Ohu Kaimoana. Fisheries Inshore New Zealand is the commercial sector representative entity for inshore finfish, and has provided a submission on behalf their Northern Regional Committee, and Te Ohu Kaimoana works on behalf of 58 mandated iwi organisations (MIOs) to represent the commercial fishing interests of all Iwi throughout all Aotearoa New Zealand.

1122. Neither Fisheries Inshore New Zealand nor Te Ohu Kaimoana have provided a position on any one option presented. Fisheries Inshore New Zealand notes divergent views of the commercial fishers they represent on Fisheries New Zealand's proposed options. Te Ohu Kaimoana has noted that the options proposed do not address current spatial management issues of localised populations.
1123. However, both Fisheries Inshore New Zealand and Te Ohu Kaimoana submit that before any TAC and TACC decisions are made, they encourage Fisheries New Zealand to undertake further engagement with tangata whenua and stakeholders in a wider review of an appropriate approach to FLA 1 management. Te Ohu Kaimoana supports a review of the current spatial management for FLA 1 to address localised sustainability issues, which may include a review of QMA boundaries. However, Fisheries Inshore New Zealand is unable to support a review at this stage without input from their representatives.
1124. Fisheries Inshore New Zealand acknowledges anecdotal views that current fishing levels are not posing a sustainability risk to FLA 1 in most fishing areas, and more information on contributions to changes in FLA 1 recruitment and abundance is needed in order to address sustainability concerns. Fisheries Inshore New Zealand submits that a general decline in CPUE in the main fishing areas of FLA 1 should not be the basis for defining a sustainability concern given that fishing effort has also generally declined, as well as environmental factors likely driving the trends in abundance and recruitment of flatfish in FLA 1.
1125. While Te Ohu Kaimoana submits that a reduction to the FLA 1 TACC would disproportionately impact on smaller independent commercial operators in FLA 1 in favour of larger quota holders, Fisheries Inshore New Zealand does not provide comment on this.
1126. Environmental Defence Society does not provide a position on any one option, but comments on the likely social and economic impacts to commercial fishers under Option 2 and Option 3 and advocates for a more conservative 25% interim reduction to the FLA 1 TAC with a view to consider other management measures for FLA 1 in the future. Environmental Defence Society is a not-for profit, non-governmental environmental organisation.
1127. Environmental Defence Society and Forest & Bird support anecdotal views from local communities suggesting that there are sustainability concerns with the current catches of flatfish in FLA 1.
1128. Fisheries Inshore New Zealand, New Zealand Sports Fishing Council, Rod Scott, Ted Howard and Te Ohu Kaimoana comment on the potential for an in-season management approach provided for under the Schedule Two of the Act, but note that this would require further work to develop a management procedure, and uncertainty as to how this would be implemented for FLA 1. These submitters further note that operating the in-season management procedure for other stocks, including a South Island flatfish stock, is a protracted process and due to this the intended benefits of the in-season management procedure are not always provided to fishers. Fisheries Inshore New Zealand also comments this may be unworkable across the entire FLA 1, given differing CPUE trends of the main fishing areas.

1129. Te Ohu Kaimoana does not support a reduction to the Māori customary allowance, noting that flatfish abundance varies year-to-year, and decisions whether to catch flatfish under customary permit or under recreational allowance are made by the appointed kaitiaki.

Submissions concerning the west-coast North Island FLA 1 fishery

1130. Marcus Culley (Kawhia and Raglan Flounder Ltd.), Murray Lambert and Malcolm Pinkney set net for flatfish in the west coast harbours of northern North Island, including Hokianga Harbour, and are FLA 1 quota holders and source additional FLA 1 ACE as required. These submitters have mixed views on the abundance trends for west coast FLA 1. However, these submitters generally support a reduction to the FLA 1 TACC for sustainability concerns, but advocate for a more conservative TACC reduction due to the immediate economic impacts of large reductions proposed under Option 2 and Option 3, such as the likely outcome of a resulting increase in FLA 1 ACE transfer prices.

1131. Mark Mathers does not offer a position on any proposed option, but expresses concern for the economic outcomes and encourages Fisheries New Zealand to further engage with interested stakeholders before any changes are made to the management settings for FLA 1 that would further constrain the fishery, noting that set net restrictions for Māui dolphin have already restricted access to flatfish fishing grounds. Mr Mathers is a Licensed Fish Receiver (LFR), based in Raglan, which receives and sells flatfish caught off the west coast of the North Island as part of a mixed target trawl fishery. Mr Mathers does not consider that there are any localised sustainability concerns for FLA 1 off Raglan, and that the variable catches of flatfish by trawl fishing are more dependent on fishing activities.

Submissions concerning east-coast North Island FLA 1 fishery

1132. Whitianga and Coromandel Peninsula Fishermen's Association supports Option 1, with no change to the current TACC, and submits that due to the differing trends in abundance and catches between east coast and west coast stocks, a review of Fisheries New Zealand's approach to the management of the FLA 1 fishery needs to be undertaken before any changes to the FLA 1 TAC and TACC are considered. Whitianga and Coromandel Peninsula Fishermen's Association represents the commercial fishing interests of 35 members that hold FLA 1 quota, ACE, and actively fish commercially for flatfish in the Hauraki Gulf and Firth of Thames, and the wider Coromandel region.

1133. Brian McMillen, P.A. & G.A. Thorburn (Piako Petes Ltd.), Rob Billings and Ted Howard all support Option 1, with no change to the current TACC. These submitters commercially set net for flatfish in the Hauraki Gulf and Firth of Thames, and consider that under the current FLA 1 TACC, current catch rates would not pose a risk to the sustainability of the fishery on the east-coast of the North Island.

1134. Brian McMillen, P.A. & G.A. Thorburn (Piako Petes Ltd.), Rob Billings and Ted Howard own FLA 1 quota and source additional ACE as required. They have all commented on the likely increase to FLA 1 ACE prices if there was a reduction to the TACC, indicating that the majority of FLA 1 quota is consolidated in a few holders that don't actively fish the quota. As such, they note the economic impacts to their fishing operations if they were to source additional ACE above their own quota holdings, for example, in years of higher flatfish abundance. Some of these submitters have additionally noted that a significant reduction to the FLA 1 TACC proposed under Option 2 and Option 3 would likely make their fishing operations economically unviable.

1135. Mr Howard submits that biological management targets such as B_{MSY} are not appropriate for fishstocks such as FLA 1 where fish are short-lived and highly-productive, and environmental factors are the principle drivers of trends in abundance and recruitment.
1136. Mr McMillen and P.A. & G.A. Thorburn both note that the number of active fishers in FLA 1 has declined over the years, with fewer new fishers entering the fishery. They also note that increasing development of mussel farms in the Firth of Thames is limiting the available area they have historically used to commercially catch flatfish.
1137. Rex Smith also owns FLA 1 quota and ACE and commercially fishes for flatfish in FLA 1, but did not provide a position on any one option. Mr Smith considers that under the current FLA 1 TACC, current catch rates would not pose a risk to the sustainability of the fishery on the east-coast of the North Island. However, he generally supports a reduction to the FLA 1 TACC, though to a more conservative level than proposed under Option 2 and Option 3, if only that it would result in removing excess FLA 1 quota from the fishery that is not being utilised. Mr Smith also supports a reduction to the FLA 1 TACC for the purposes of helping to mitigate the entry of new fishers given the excess of available quota and ACE.
1138. Zak Olsen (Southern Cross Fishing Ltd.) supports Option 3 to help rebuild the abundance of flatfish in FLA 1. Mr Olsen commercially fishes by long-line in the Hauraki Gulf and off the east coast of Northland and, from his observations, agrees that there has been a decline of flatfish abundance in the wider north-east North Island region.
1139. Rod Scott does not provide a position on any one option, but notes that Option 2 and Option 3 would have significant economic impacts on commercial fishers. Mr Scott also advocates for a review of FLA 1 QMA boundaries. Mr Scott is a former commercial fisher that holds trust interests in several QMA 1 fishstocks, including FLA 1.
1140. Andrew Turnwald does not provide a position on any one option, but submits that species such as flatfish in FLA 1 should be managed as part of a mix of stocks commonly taken by commercial fishing in the northern North Island region. Mr Turnwald commercially trawls for a range of fish in QMA 1, including flatfish, and has previously fished by Danish seine on both sides of the northern North Island.

General comments from submitters on the management approach to FLA 1

1141. Many submitters comment that adjusting the FLA 1 TAC, TACC, and allowance settings does not adequately address the more complex FLA 1 management concerns or the implications for management decisions under the options proposed during consultation.
1142. Many submitters also comment on an increase in prevalence of invasive species and the decline in environmental quality of the sheltered inshore waters where fishing for flatfish occurs. The majority of submitters acknowledge that environmental factors, in addition to fishing, are likely to be driving the declines in flatfish recruitment and abundance. However, submissions also acknowledge that Fisheries New Zealand has a role in addressing the sustainability concerns for flatfish in FLA 1.
1143. The Environment and Conservation Organisations of New Zealand, the Environmental Defence Society, Fisheries Inshore New Zealand and Te Ohu Kaimoana submit that Fisheries New Zealand should be undertaking more research into the impacts on the sustainability of FLA 1, including identifying contributors to FLA 1 stock declines,

mitigating influences from environmental factors, and implementing measures to protect habitats of importance for flatfish in FLA 1.

Fisheries New Zealand's response

1144. The biomass of flatfish stocks is highly variable. On introduction into the QMS in 1986, the initial TACC for FLA 1 was set at a level of the highest catches on record, to allow for increased catches of flatfish in years of higher abundance. Given that this level of catch has not been reached since, and as there has been a long-term decline in commercial catches and a general declining trend in CPUE (which is an index of relative abundance) since setting this initial TAC and TACC, Fisheries New Zealand considers that the amount of ACE available creates a risk to sustainability should fishers attempt to catch it all. In addition, the oversupply of ACE means that prices are low, which reduces benefits from the fishery and potentially exacerbates the risk of new entrants adding effort to the fishery. Fisheries New Zealand considers it appropriate to review this approach for setting the FLA 1 TAC and TACC.
1145. New Zealand's fisheries management framework has changed since the FLA 1 TAC was initially set, with the Fisheries Act 1996 including obligations to maintain FLA 1 at or above a level that supports the MSY. The Act recognises stocks such as FLA 1 which have highly variable abundance, and provides specific tools for managing these stocks. For stocks listed on Schedule Two of the Act, including FLA 1, the TAC and catch allowances for all sectors can be increased within a fishing year when there is evidence of greater abundance within that year. This provides for responsive management and an appropriate management approach, which enables greater utilisation in times of high abundance. Fisheries New Zealand's proposals aim to reduce the sustainability risk while aligning the management approach for FLA 1 with the provisions under the Act.
1146. Declines in flatfish catches and CPUE trends indicate a general decline in flatfish recruitment, and potentially the productivity of some areas within FLA 1. Fisheries New Zealand considers that a decline in the FLA 1 flatfish abundance in harbours on both the west and east coast of the North Island is possibly linked with a decline in water quality and increasing sea surface temperatures,¹⁰ suggesting that for closed bays and harbours there may be factors other than fishing that are contributing to the decline in flatfish recruitment abundance. This is supported by submissions noting that flatfish abundance shows a cyclic nature, often reflecting prevailing climatic conditions and events in the flatfish recruitment period 1-2 years prior.
1147. Fisheries New Zealand recognises the importance of collaboration across agencies to improve inshore environmental quality and to prevent invasive species from becoming established. A limited amount of research and collaborative work across agencies has been done on the environmental impacts on fishstocks, but Fisheries New Zealand acknowledges that climatic conditions are likely to be an influence on flatfish recruitment and abundance. Fisheries New Zealand also notes that the management of invasive species and environmental impacts that are not related to fishing activities are out of the scope of the Act.
1148. Regardless of the cause of decline in recruitment and abundance of flatfish in FLA 1, the effects need to be managed to ensure sustainability. Fisheries New Zealand considers that

¹⁰ McKenzie, J.R, Parsons, D.M. and Bian, R. 2013. Can juvenile yellow-belly and sand flounder abundance indices and environmental variables predict adult abundance in the Manukau and Mahurangi Harbours? New Zealand Fisheries Assessment Report 2013/10. 31p. Accessible from <https://www.mpi.govt.nz/dmsdocument/4251/send>

if a fishery is declining, appropriate measures need to be implemented to ensure that the fishery is not further affected.

1149. In consideration of the submissions received during the consultation period, Fisheries New Zealand is proposing an additional option for the management settings for FLA 1 to those that were consulted on. This additional option, Option 4, is outlined in Table 4 and described below.

Table 4. Proposed management settings in tonnes for FLA 1 from 1 October 2018, with the percentage change relative to the *status quo* in brackets.

Option	Total Allowable Catch (TAC)	Total Allowable Commercial Catch (TACC)	Allowances		
			Customary Māori	Recreational	All other mortality to the stock caused by fishing
Option 1 (<i>Status quo</i>)	1762	1187	270	270	35
Option 2	510 ↓ (71%)	423 ↓ (64%)	50 ↓ (81%)	27 ↓ (90%)	10 ↓ (71%)
Option 3	467 ↓ (73%)	381 ↓ (68%)	50 ↓ (81%)	27 ↓ (90%)	9 ↓ (74%)
Option 4 (<i>New option</i>)	986 ↓ (44%)	890 ↓ (25%)	50 ↓ (81%)	27 ↓ (90%)	19 ↓ (46%)

1150. Option 2 and Option 3 would align with your obligations under the Act to set a TAC that would move the stock towards or above a level that supports MSY. However, some submitters noted the social and economic impacts to commercial fishers and local communities that may result from setting a TAC under either Option 2 or Option 3.

1151. In response, Fisheries New Zealand has proposed Option 4 as an interim approach to setting a TAC that will reduce risk to the sustainability of the FLA 1 stock, and lessen the social and economic impacts to fishers, while the broader management arrangements for FLA 1 are considered. Option 4 would be accompanied by a further process of engagement with tangata whenua and stakeholders to develop a plan for different QMA boundaries for FLA 1 and a review of other management settings.

1152. Fisheries New Zealand will continue to engage with tangata whenua and stakeholders and will seek input and feedback on any proposed changes to the management settings of FLA 1 in a future consultation process.

2.3.2 Input and participation of tangata whenua

1153. 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.

1154. In the pre-consultation stages of the October 2018 Sustainability Round, information about the proposal to review the management of FLA 1 was provided to the Te Hiku o te Ika Fisheries Forum, and presented to the Mai I Ngā Kuri a Whareki Tihirau Iwi Fisheries Forum and Ngaa Hapu o te Uru o Tainui Fisheries Forum. Fisheries New Zealand was unable to discuss FLA 1 with Te Hiku o Te Ika forum prior to consultation, but engaged with this forum during the formal consultation period.

1155. The Mai I Ngā Kuri a Whareki Tihirau Iwi Fisheries Forum and Ngaa Hapu o te Uru o Tainui Fisheries Forum both supported a review and changes to support management of

flatfish. Ngaa Hapu o te Uru o Tainui Fisheries Forum emphasised the high importance of flatfish for customary fishers.

1156. In Fisheries New Zealand's discussions with Ngaa Hapu o te Uru o Tainui Iwi Fisheries Forum and Mai I Ngā Kuri a Whareki Tihirau Iwi Fisheries Forum, both agreed that 270 tonnes is likely to be higher than what is being taken under current customary authorisations. Fisheries New Zealand was unable to discuss this with Te Hiku o Te Ika forum in the pre-consultation stages of these proposals.
1157. During the formal consultation period, Fisheries New Zealand participated in the Te Hiku o te Ika Iwi Fisheries Forums, Mai I Ngā Kuri a Whareki Tihirau Iwi Fisheries Forum and Ngaa Hapu o te Uru o Tainui Fisheries Forum where the proposed options for FLA 1 were discussed with forum members.
1158. Te Hiku o te Ika Iwi and Ngaa Hapu o te Uru o Tainui iwi do not support a reduction to the Māori customary allowance, and express that they have always advocated that the Māori customary allowance for all species should never be reduced.

2.3.3 Kaitiakitanga

1159. Under Section 12(1)(b), you must also have particular regard to kaitiakitanga before setting or varying a TAC. Under the Act, kaitiakitanga is 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.
1160. Relevant Iwi or Forum Fish Plans provide a view of the objectives and outcomes iwi seek from the management of the fishery and can provide an indication of how iwi exercise kaitiakitanga over fisheries resources. Iwi views from Forum meetings and submissions received from iwi can also provide an indication.
1161. Flatfish and flounder species (pātiki) are identified as taonga species in the Te Hiku o Te Ika, Ngaa Hapu o Te Uru o Tainui and Mai I Ngā Kuri a Whareki Tihirau Iwi Fisheries Plans. These plans contain objectives to support and provide for the interests of Northern North Island iwi.
1162. The Te Hiku o Te Ika Fisheries Plan contains three management objectives which are relevant to the management options proposed for FLA 1.
- a) Management objective 1: Iwi management systems support Te Hiku iwi in their fisheries decision making;
 - b) Management objective 2: Fish stocks are healthy and support the social, cultural and economic prosperity of Te Hiku iwi and Hapu; and
 - c) Management objective 3: To maximise iwi influence on all key environmental decisions that impact on fisheries.
1163. The Ngaa Hapu o Te Uru o Tainui Fisheries Plan contains two management objectives which are relevant to the management options proposed for FLA 1.
- a) Management objective 1: Ngaa Hapu o Te Uru o Tainui kaitiaki are able to participate in and influence fisheries decision-making; and

- b) Management objective 2: Relationships and partnerships with key stakeholders, managers and agencies are established and maintained.

1164. The Mai I Ngā Kuri a Whārei ki Tihirau Iwi Fisheries Plan contains four management objectives which are relevant to the management options proposed for FLA 1.

- a) Management objective 1: Iwi fisheries management activities support the growth and wellbeing of our people;
- b) Management objective 2: Iwi are actively engaged with others to increase their fisheries potential within environmental limits;
- c) Management objective 3: The fisheries environment is healthy and supports a sustainable fishery; and
- d) Management objective 4: Tino rangatiratanga is advanced to ensure that iwi driven goals are achieved.

1165. Fisheries New Zealand considers that the management options presented in this decision document will contribute towards the achievement of these management objectives in ensuring that appropriate allowances are made for customary non-commercial fishing, the fishery remains sustainable, and that environmental impacts are minimised.

1.4 SETTING THE TAC

1166. In cases such as flatfish, where the biomass level that can produce the maximum sustainable yield (B_{MSY}) and the current stock biomass are not known, s 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.

1167. There is no provision for setting a TAC under s 13 of the Act at an elevated level in order to provide for additional utilisation in years of increased abundance. However, you must be satisfied that if the TAC is taken, it will nevertheless do what s 13(2) of the Act requires – maintain the stock at or above MSY, or enable the level of the stock to move towards MSY (in the case of s 13(2)(b), within the period appropriate to the particular stock). As such, you would need to be confident that any TAC you set for FLA 1 would ensure sustainability under average biomass levels from year to year, as well as ensuring that catch levels do not pose a sustainability risk when the stock is at low abundance.

1168. FLA 1 is on Schedule Two of the Act, which provides for an increase to the TAC and catch allowances within a fishing year if there is evidence of increased stock abundance and thereby taking advantage of the associated utilisation opportunity. Fisheries New Zealand considers that this is an appropriate future management approach for FLA 1, but will require additional monitoring of the stock.

1169. Adopting the available management approach under s 13(2A) and Schedule Two, and setting a lower TAC than current while providing for in-season increases, would meet your obligations under s 13 of the Act.

1170. Due to the long-term declines in FLA 1 CPUE indices, Fisheries New Zealand considers that it is unlikely the current FLA 1 TAC (Option 1, *status quo*) is moving the stock towards a level that supports MSY. Should current fishing pressure continue or increase in the future, this could exacerbate ongoing sustainability concerns for the stock. Fisheries

New Zealand provides three options (discussed below) that would better align with your obligations to set a TAC that would allow for utilisation of the FLA 1 fishery, without posing a risk to the long-term sustainability of the stock.

1171. Fisheries New Zealand notes that the catch per unit effort (CPUE) analyses indicate a long-term decline in abundance and recruitment in two of the three main fisheries. It is also apparent that commercial fishing effort for flatfish has declined, and that the relative fishing intensity (exploitation rate and the proportion of the available biomass taken) in localised fisheries in FLA 1 has not increased. This suggests that fishing intensity is currently below target levels, however, there is a risk that this could increase above sustainable levels should effort increase in an attempt to take the full current TACC.

1172. Information indicates that catches of flatfish in FLA 1 have continued to decline, irrespective of the level of fishing effort. Regardless of whether these declines are caused by fishing, Fisheries New Zealand considers that the abundance of a fishstock (as indexed by CPUE) is a relevant factor when setting the TAC.

1173. Section 13(2A) of the Act also requires you to consider the interdependence of stocks and environmental conditions in setting or varying a TAC, and these are discussed in the following sections.

1174. You are required to consider any environmental impacts of the proposed management settings (section 9). The options proposing a reduction to the TAC reflect the decline in abundance of flatfish in FLA 1 and recent levels of catch. Fisheries New Zealand considers that any proposal to reduce the FLA 1 TAC is not expected to significantly change the environmental impacts and interactions resulting from the flatfish fishery in FLA 1, including set netting for flatfish, as outlined in section 2.1.1, Environmental Interactions.

1.4.1 Section 11 considerations

1175. Section 11 of the Act sets out various matters that you must take into account or have regard to when setting or varying any sustainability measures (such as the TAC). These include any effects of fishing on the stock and the aquatic environment as well as any relevant fisheries plan (refer to section 1.6 of *Part 2: Statutory Considerations* for a full description).

Sustainability measures

1176. You are required to take into account any existing controls that apply to the stock or area concerned. For FLA 1, the current TAC is the key control under consideration for change.

1177. Fisheries New Zealand considers that other existing controls, such as the recreational limit of 20 flatfish as part of the combined daily bag limit and the minimum legal sizes (23 cm for sand flounder and 25 cm for yellow-belly flounder) are appropriately set. We do not consider the level of recreational catch to pose a sustainability risk, and hence propose only to adjust the allowance for recreational and customary catch according to the best available information. However, we do note that the current stock boundary for FLA 1 should be reviewed, as discussed elsewhere in this paper.

1178. Fisheries New Zealand notes that there are existing mesh size controls on netting for flounder, and that some submitters have proposed changes to mesh sizes. We would

consider such changes within any future process of broader review of management controls along with changes to stock boundaries.

1179. We are proposing to increase the interim deemed value for FLA 1 to 90% of the annual value, consistent with the Guidelines and in order to better achieve the purpose of the Act.

Hauraki Gulf Marine Park Act 2000

1180. FLA 1 includes the Hauraki Gulf Marine Park, hence s 7 and s 8 of the Hauraki Gulf Marine Park Act 2000 (refer to section 1.10 of *Part 2: Statutory Considerations* for a full description) are applicable to any management decisions. Fisheries New Zealand notes that there is a significant catch of flatfish within the Hauraki Gulf Marine Park, and that the proposed management options to ensure sustainability of FLA 1 are consistent with the objectives of the Hauraki Gulf Marine Park Act 2000.

1.4.2 Future management direction for FLA 1

1181. The issues surrounding this fishery are complex. The fishery is an assemblage of short-lived species, and their abundance can vary depending on variations in recruitment and environmental conditions. There is also evidence for localised populations of flatfish in FLA 1 (that could be considered as separate biological stocks). Fisheries New Zealand agrees that a TAC reduction in isolation will not resolve all these issues, although we believe it will start to move the management regime closer to one the Act envisages.

1182. We propose to work with interested parties in the near future to further develop the management approach for FLA 1, incorporating the aspects discussed below, as well as consideration of how best to implement a responsive approach to adjusting TACs on the basis of abundance in each fishing year. The TAC options below should be considered in that context.

1183. The stock status of FLA 1 has been evaluated using standardised CPUE. It is intended to next update the CPUE analysis in 2021. Additional monitoring of abundance and CPUE indices of the main fishing areas for flatfish in FLA 1 would be required to support a more responsive approach, or the development of an ‘in-season’ management procedure to allow for additional utilisation of flatfish in years of high abundance. This approach to in-season management and agreed decision rules could provide more certainty for fishers.

1184. A key step towards a more responsive approach, such as an in-season management procedure, would be to adopt separate QMAs for the discrete stocks of flatfish within FLA 1 to account for the differing trends in CPUE indices across the wider FLA 1 fishstock.

1185. Fisheries New Zealand proposes to work with stakeholders to undertake a review of Quota Management Area boundaries and to consider options for more responsive management of FLA 1. The TAC options below should be considered in that context.

1.4.3 Option 1 (*Status quo*)

1186. Fisheries New Zealand considers Option 1 (*status quo*) is least likely to achieve your statutory obligations under s 13(2A) of the Act to set a TAC that would move the stock towards or above a level that would support MSY.

1187. In consideration of your obligations under s 13(3), Option 1 would have no short-term negative effects on commercial fishers, but could have social and economic impacts on both commercial and non-commercial fishers if the FLA 1 biomass declines further under current catch limits.
1188. Option 1 was generally supported by the commercial fishing interests of the east coast of the northern North Island, noting that they do not perceive there to be a sustainability concern for flatfish in this area. Submitters supporting Option 1 also raised concerns about the likely outcome of an increase to FLA 1 quota and ACE prices if the TACC was reduced (as proposed under Options 2 and 3), and potentially making some commercial fishing operations economically unviable.
1189. Fisheries New Zealand notes that the existing management of FLA 1 relies on a TAC that is well above current catches for all sectors. However, a constant catch at the level of the current TAC is unlikely to be attainable or sustainable, nor would it be likely to allow the stock to move towards a size that will support the MSY.
1190. Importantly, in years when recruitment is lower, the high TAC may allow localised depletion of flatfish in areas of high fishing effort. Also in years when recruitment is lower, commercial fishers may be able to preferentially harvest flatfish because of their greater fishing power and this may create conflict with other users of the resource, both customary and recreational. A benefit of reducing the TAC is that if commercial fishers have less ability to expand effort to maintain catches in years of low abundance, this could mitigate tensions with non-commercial fishers.

1.4.4 Option 2

1191. Option 2 is based on setting the TAC at a level that reflects current catches, which are substantially below the current allowable limit. Fisheries New Zealand considers setting a lower TAC would reduce the risk to sustainability, and is more likely to achieve the obligation under s 13 of the Act in relation to MSY.
1192. One submission supported Option 2, representing commercial fishing interests, but did not provide rationale for support.
1193. In your considerations of s 13(3) of the Act (the way and rate of movement towards the biomass that support MSY), Option 2 would have a lesser social and economic impact to quota holders and commercial fishers than Option 3. Notwithstanding this, Fisheries New Zealand considers that Option 2 would be less likely than Option 3 to help rebuild the stock to a level that would support MSY, as consistent with your obligations under s 13(2A) of the Act.
1194. To align with the provisions of the Act for managing stocks with highly variable abundance, Option 2 would require the consideration of the abundance of FLA 1 within each fishing year, and a consequent increase of the TAC, if there were to be evidence of greater abundance (discussed further below).

1.4.5 Option 3

1195. Option 3 is based on setting the TAC at a level that is approximately 10% below current catches. Similarly to Option 2, Option 3 would further reduce the risk to sustainability of FLA 1 and be most likely to help to rebuild the stock to the level that can produce the MSY.
1196. Option 3 was supported by groups with environmental interests, as well as one submission from eastern North Island commercial fishing interests. All of these submissions support Fisheries New Zealand's proposed measures to ensure the long-term sustainability of FLA 1 and to help rebuild the fishstock. One submission also noted this option would best help to mitigate fishing interactions with protected species.
1197. However, in consideration of your obligations under s 13(3) of the Act, Fisheries New Zealand considers that Option 3 will have the greatest social and economic impact on FLA 1 quota holders and commercial fishers.
1198. To minimise the loss of value from the fishery if there were to be evidence of greater abundance in future years, Option 3 would require Fisheries New Zealand to develop a management procedure for an in-season TAC adjustments quicker than the other options.

1.4.6 Option 4 (*New option; Fisheries New Zealand recommended*)

1199. Submissions from a variety of fishing interests did not provide a position on any one option proposed and, while they generally support a reduction to the FLA 1 TAC, some of these submissions have alternatively proposed a more conservative TAC reduction. Additionally, the majority of these submissions supported Fisheries New Zealand's consideration to review the management approach to flatfish in FLA 1.
1200. In consideration of these submissions, Fisheries New Zealand proposes an additional option. Option 4 bases the setting of a TAC that reflects the most recent 5-year period of high abundance of flatfish in FLA 1 (2003/04 to 2007/08 inclusive). Option 4 is based on reducing the TAC by a lesser amount than initially proposed and consulted on under Option 2 and Option 3, and equates to a TAC reduction of approximately 44%.
1201. Fisheries New Zealand considers that setting the TAC proposed under Option 4 is not inconsistent with moving the stock towards B_{MSY} as required under s 13(2A) of the Act. Option 4 includes setting the allowances for recreational and Māori customary fishers similar to Options 2 and 3.
1202. Fisheries New Zealand proposes Option 4 is an interim approach to setting the FLA 1 TAC that may help better ensure sustainability while still providing for utilisation, while considering other management settings, for example, alternative quota management area boundaries. Option 4 takes into account and mitigates some of the likely social and economic impact of Options 2 and 3 on FLA 1 quota owners and commercial fishers, while still reducing the sustainability risk and helping to supporting moving the stock towards B_{MSY} .

1.4.7 Other section 13 considerations

1203. In consideration of all options proposed, Fisheries New Zealand notes that all flatfish stocks (including FLA 1) are listed on Schedule Two of the Act which allows for an increase to the FLA 1 TAC within a fishing year under section 13(7) of the Act, through the provision of additional ‘in-season’ ACE for commercial fishers and increases to non-commercial catch allowances. If there were a reduction to the FLA 1 TAC, this may help mitigate some of the lost opportunity cost to all fishing sectors who may not be able to catch their current catch allowance of flatfish in years of high abundance.

1.5 ALLOCATING THE TAC

1204. Having set the TAC, you must set the TACC and, in setting or varying the TACC, you must make allowances for Māori customary non-commercial fishing interests, recreational fishing interests, and all other mortality to the stock caused by fishing (ss 20 & 21 of the Act).

1.5.1 Māori customary allowance

1205. When allowing for Māori customary interests, you must take into account any mātaihai reserves and temporary closures within the relevant area (s 21(4) of the Act). The FLA 1 area (QMA 1 and 9) contains the mātaihai reserves of Marokopa, Aotea Harbour, Te Puna, Waikare Inlet, Te Maunga o Mauao and Raukokere, and the taiāpure of Kawhia-Aotea Harbour and Maketu. Fisheries New Zealand considers that the options proposed for FLA 1 will not impact the ability to take flatfish for customary purposes in these areas.

1206. The current allowance for Māori customary fishing in FLA 1 is 270 tonnes. The best available information on customary catch of FLA 1 is uncertain and inadequate, but the annual take reported under customary permit since 2000 was less than one tonne, and the total quantity applied for under these authorisations was approximately 2 tonnes. It is also likely that a significant amount of customary non-commercial catch occurs under the recreational flatfish catch allowance.

1207. Only the submission from Te Ohu Kaimoana commented on the proposal to set the FLA 1 Māori customary allowance at 27 tonnes, and they do not support a reduction of the customary allowance. No other submissions commented on this allowance or provided alternative options to set the Māori customary allowance. However, from discussions at Iwi Fisheries Forums, Te Hiku o te Ika Iwi and Ngaa Hapu o te Uru o Tainui Iwi have informed Fisheries New Zealand that they do not support a reduction to the Māori customary allowance.

1208. Fisheries New Zealand recommends that the allowance for customary Māori interests be reduced from 270 tonnes to 50 tonnes, recognising that we do not have complete information on the level of customary catch and that the allowance is not intended to be a constraint. Fisheries New Zealand notes it will continue to work on obtaining better information, which will be assisted by more areas being gazetted under the Fisheries (Kaimoana Customary Fishing) Regulations 1998 in the future.

1209. Fisheries New Zealand acknowledges that this allowance is a significant reduction from the current Māori customary allowance provided under Option 1 (*status quo*). However, the allowance will be reviewed when better information becomes available. Fisheries

New Zealand encourages the ongoing customary catch reporting of flatfish taken in FLA 1 to inform the setting of this allowance in the future.

1.5.2 Recreational allowance

1210. The best information on estimates of recreational catch of flatfish come from the most recent 2011/12 National Panel Survey,¹¹ and indicates a moderate recreational catch of FLA 1 species compared to other fish species taken in FMA 1 and FMA 9. FLA 1 species are the eighth highest species harvested (by number) in the combined regions, and are more important on the west coast of the North Island, being the fourth highest (by number) taken by recreational fishers in FMA 9. However, current catches do not necessarily reflect the importance of the species, as the ability to catch flatfish species in FLA 1 is also likely to have been impacted by reductions in local flatfish abundance in these areas.

1211. The current allowance for recreational fishing in FLA 1 is 270 tonnes, which was set based on a previous survey now considered unreliable. Fisheries New Zealand considers the estimate of 26.6 tonnes from the 2011/12 National Panel Survey to be the best available information on recreational flatfish catch in FLA 1. A repeat of the 2011/12 National Panel Survey is currently underway in 2017/18, and updated estimates of recreational catch in FLA 1 will be used to inform future management.

1212. No submissions were received that commented on the proposal to set the FLA 1 recreational allowance at 27 tonnes, or provided alternative options to set a recreational allowance.

1213. Fisheries New Zealand recommends that the recreational catch allowance be reduced from 270 tonnes to 27 tonnes for all options.

1.5.3 Allowance for other sources of mortality caused by fishing

1214. There are various other potential sources of mortality caused by fishing for FLA 1, but Fisheries New Zealand is not able to quantify these precisely. The allowance for other mortality caused by fishing is currently set at 35 tonnes, as being approximately 2% of the combined total of the TACC, Māori customary, and recreational allowances.

1215. The New Zealand Sport Fishing Council was the only submission that commented on the process for setting the allowance for other sources of mortality caused by fishing, but did not provide an alternative option.

1216. FLA 1 is a shared fishery which is mostly caught by set net by all sectors. Fisheries New Zealand has no information to indicate that the allowance for all other sources of mortality caused by fishing should be changed from 2% of the combined TACC, Māori customary, and recreational allowances.

1217. Fisheries New Zealand considers that all options propose an appropriate allowance for other sources of mortality caused by fishing, and recommends that the allowance be varied according to the options as outlined in Table 1.

¹¹ Wynne-Jones, J.; 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. 139p. Accessible at: <https://www.mpi.govt.nz/dmsdocument/4719/send>

1.5.4 TACC

1218. The TACC for FLA 1 has not been reviewed since the stock was introduced into the QMS in 1986. Three options were proposed for consultation in the initial discussion paper, and a fourth is now proposed in consideration of submissions.
1219. The current 1,187 tonne TACC was set at the highest ever level of catch before 1986. This has allowed commercial fishers the flexibility to fish FLA 1 in years of higher abundance without the Minister needing to adjust the TACC, and has allowed fishers to fish on both sides of the northern North Island (QMA 1 and 9) to take advantage of seasonal and regional flatfish abundance patterns. Any reduction to the TACC will mean an opportunity cost for commercial fishers, who will no longer be able to catch up to the current catch limit (1,187 tonnes TACC). However, the current TACC has never been fully caught and catches have declined, as has abundance.
1220. The proposed TACCs under Options 2, 3, and 4 are lower than levels of historic FLA 1 catches, however, the uncertainty about current recruitment suggests that earlier catches are unrepresentative of what the fishery can now support.
1221. Submitters have noted that reducing the TACC, as proposed under Option 2 and Option 3, will have an immediate social and economic impact on commercial fishers that may be disproportionate to the sustainability risk. The extent of this risk depends on which option is chosen (if you choose an option for reducing the TACC), and also depends on the inter-annual variations in flatfish abundance in FLA 1.
1222. Fisheries New Zealand notes there is a significant amount of FLA 1 quota that remains unfished throughout fishing years. Any reduction to the TACC would remove some of this unfished quota, but would also significantly impact on fishers that have invested in, and fish, their own quota.
1223. Fisheries New Zealand notes that, compared to other inshore fisheries, there are a large number of parties with commercial fishing interests involved in the FLA 1 fishery. Additionally, most of the FLA 1 commercial catch is taken by fishers that do not own quota, but purchase annual catch entitlement (ACE) from quota holders. The majority of quota holders do not fish their own quota, but provide ACE to fishers through an active ACE trading market. If the commercial catch limit is reduced, Fisheries New Zealand anticipates that most commercial fishers will still be able to obtain FLA 1 ACE to cover their catches, based on the assumption that currently active ACE market practices will continue.
1224. However, if the FLA 1 TACC is reduced under either Option 2 or Option 3, ACE and quota will become scarcer and these prices are likely to increase above the current average trade values of around \$0.50/kg and \$0.80/kg, respectively. These increases are likely to affect the profitability of individual (ACE) fishing operations, and conversely, quota holders may benefit in the medium term, because trade prices for both quota and ACE may increase.
1225. Reducing the FLA 1 TACC under either Option 2, 3, or 4, and restricting the availability of ACE, is also likely to limit the number of new fishers entering the fishery and may help mitigate any chance of an increase in fishing effort. Fisheries New Zealand considers

that existing fishers will remain more likely to be able to access ACE, as they are likely to already have existing relationships with quota holders.

1226. Fisheries New Zealand has considered submissions received during the FLA 1 consultation period and acknowledges any FLA 1 TACC reduction will have disproportionate impacts on ACE fishers relative to quota holders, as well as disproportionate impacts on commercial fishing interests on the east and west coasts of FLA 1. To help offset these impacts, Fisheries New Zealand is proposing an additional option, Option 4, with more conservative reductions to catch allowances and commits to reviewing other management measures for FLA 1 in the future.

1227. As FLA 1 is listed on Schedule Two of the Act, there is provision for an in-season increase to the TAC (under section 13(7)), through the allocation of additional 'in-season' ACE under section 68 of the Act, which could allow for increased FLA 1 catch during years of high abundance and potentially mitigate some of the lost opportunity costs.

1228. Fisheries New Zealand considers that Options 2, 3, and 4 are based on the best available information on the status of FLA 1 and the TACCs proposed represent commercial catch allowances to address the risk of additional commercial catch or effort in this fishery, where abundance and recruitment are likely to have declined.

Option 1 (Status quo)

1229. Option 1 proposes no change to the current TACC and would have no impact on existing fishing.

Option 2

1230. Option 2 reflects the short-term average commercial catch of flatfish in FLA 1, noting the inter-annually variable nature of flatfish abundance. This option is likely to better reflect the current abundance of flatfish in FLA 1, as observed from more recent catch levels.

1231. Option 2 would have no short-term impact on commercial catch levels, but could make some fishing operators unviable as they would face higher costs in obtaining sufficient ACE. Fisheries New Zealand also notes that the proposed catch limits for Option 2 may constrain commercial flatfish catches in years of higher abundance than has been observed in recent years, unless in-season increases were to be provided.

Option 3

1232. Option 3 is to set a TACC at a level 10% lower than recent average commercial catch, which would constrain commercial catch below the current catch levels of recent years.

1233. Fisheries New Zealand notes that the catch of FLA 1 has declined under the current TACC. Setting a TACC below more recently observed catch levels is intended to reduce current commercial fishing pressure (both catch and effort) on the FLA 1 stock, which may in turn help rebuild flatfish abundance in FLA 1.

1234. Option 3 would have greater social and economic impacts than Option 2 or 4 on commercial fishers and those with commercial FLA 1 fishing interests, such as Licenced Fish Receivers and retailers of flatfish catches. FLA 1 has a relatively high commercial value (port price of \$6.23/kg in 2016/17, but could be higher in some localised regions). While the social impacts of a reduction to the TACC is not quantified, a greater reduction

to the FLA 1 TACC under Option 3 would result in a potential loss of economic revenue of \$261,660 per annum compared with the potential revenue under Option 2.

Option 4

1235. In consideration of the range of positions presented by the submitters across all sector interests, and the likely immediate social and economic impacts of a substantial FLA 1 TAC reduction, you may wish to set a TAC under Option 4 at this stage as in interim approach to considering a review of other management measures for the FLA 1 fishery in the future.
1236. Option 4 proposes to set the TACC at a level 25% below the current level. In consideration of the cyclic nature of flatfish abundance in FLA 1, this option is based on the approximate average annual catch of the most recent 5-year period of high abundance (from 2003/04 to 2007/08).
1237. Though this interim approach was not consulted on, a number of submissions proposed variations of this approach, in setting a more conservative TAC while other management settings for FLA 1 were considered.
1238. While Option 4 would have no direct economic impact in terms of reduced catches, many of the same outcomes of reducing the TACC, quota and ACE availability outlined in Option 2 and Option 3 would also apply. However, the economic impact on commercial fishers would be significantly reduced.
1239. A TACC set under Option 4 would also help to mitigate a race to obtain FLA 1 quota, as well as providing ACE fishers the opportunity to arrange FLA 1 ACE agreements and ACE packages before the start of the 2018/19 fishing year.

1.6 OTHER MANAGEMENT CONTROLS

1.6.1 Deemed value rates

1240. The review of deemed value rates for FLA 1 has been triggered by a sustainability review, and not by landings in excess of TACC or a significant change in port prices. The current interim deemed value rate is set at 50% of the annual rate. Consistent with Principle 7 of the Guidelines,¹² and to incentivise fishers to regularly cover catch with ACE throughout the year, Fisheries New Zealand proposes increasing the interim deemed value rate for FLA 1 for the 2018/19 fishing year to 90%, as outlined in Table 2. Further details are provided in the Deemed Values chapter of this document.

1.7 FUTURE MANAGEMENT

1241. The issues regarding managing the risks to the sustainability of FLA 1 are complex. Fisheries New Zealand recognises that a TAC reduction alone will not resolve all the concerns with the current approach to the management of flatfish in FLA 1. However, an initial TAC reduction at this stage would move the management regime for FLA 1 towards one that the Act envisages.

¹² Accessible from www.FNZ.govt.nz/document-vault/3663

1242. Fisheries New Zealand intends to work with interested parties to further develop the management approach for FLA 1, incorporating changes to management boundaries (outlined in more detail in the section below). This could also include the potential splitting the multi-species stock, considerations to how to best avoid, remedy, or mitigate wider human-induced environmental impacts on flounder recruitment, as well as consideration of how best to implement a responsive approach to adjusting TACs. We propose that the work be undertaken over the next year with a view to presenting a report to you this time next year on the proposed approach.

1.7.1 Quota Management Area (QMA) boundaries

1243. Fisheries New Zealand invited feedback from tangata whenua and stakeholders on considerations for a future review of FLA 1 QMA boundaries to better align with biological stocks of flatfish.

1244. The sand flounder and yellow-belly flounder stocks appear to be composed of localised populations in FLA 1, especially in the enclosed areas such as bays and harbours. However, the inter-relationships of neighbouring populations have not been thoroughly studied, and fish in fairly enclosed waters may be effectively isolated from neighbouring populations and could be considered as separate biological stocks.

1245. Fisheries New Zealand proposes to engage with quota holders/operators in Fisheries Management Areas 1 and 9 to review FLA 1 quota management area boundaries with the intent of implementing changes to stock boundaries on the basis of quota holder agreements in the future.

1246. A division in the FLA 1 quota management boundaries would further support using any proposals to implement an in-season management approach to annually review catch allowances for flatfish stocks in FLA 1, given the differing CPUE trends in the main fishing areas in FLA 1.

1.7.2 Commercial set net fishing practices and regulations

1247. Submissions received by Fisheries New Zealand have raised issues with some of the current commercial set net fishing regulations and practices. These have identified concerns about the increasing commercial fishing trend of using of mono-filament net as this is perceived to be a more indiscriminate netting method.

1248. Submissions have also promoted increasing the minimum net mesh size and decreasing the maximum set net length and maximum soak times. These would reduce the capture and mortality of small flatfish and species by better allowing for removal and return of undersize fish with a better chance of survival, as well reducing wastage of fish caught to scavenging and predation by lice, crabs, fish and birds.

1249. Fisheries New Zealand notes that we have developed a set net code of practice for both commercial and non-commercial fishers to encourage responsible set net practices that would help to mitigate adverse impacts on the protected species, non-target catch and the environment. Fisheries New Zealand acknowledges that the commercial fishing industry has also developed a code of practice for the use of set nets.

1.7.3 Recreational controls

1250. As part of the recreational mixed species daily bag limit, the limit for all QMS flatfish species is 20 per person per day, and the minimum legal sizes apply (23 cm for sand flounders and 25 cm for yellow-belly flounder and other flatfish).¹³ Fisheries New Zealand has no information to support the need to change these measures at this stage but may consider reviewing recreational set net use and regulations in the future.

2 Conclusion and Recommendation

1251. The best available information suggests that there has been a long-term decline in recruitment and abundance of flatfish in FLA 1, which would pose a risk to the sustainability of FLA 1 should fishers attempt to fully catch the current TAC and TACC. Option 2 and Option 3 proposed a reduction to the FLA 1 TAC to address that risk.

1252. Fisheries New Zealand invited feedback from tangata whenua and stakeholders on other management measures for FLA 1, including a review of the FLA 1 quota management area boundaries. In response to views submitted, Fisheries New Zealand is proposing an additional option, Option 4, which would be an interim approach to setting a more conservative TAC, TACC, and allowances, with Fisheries New Zealand committing to a plan to engage with tangata whenua and stakeholders to review other FLA 1 quota management settings in the future.

1253. After considering the best available information and the submissions received, Fisheries New Zealand recommends Option 4 as providing a reasonable balance between addressing sustainability risk and mitigating adverse social and economic impacts on fishers.

1254. Fisheries New Zealand notes that you have broad discretion in exercising your powers of decision making under the Act, and you may have your own independent assessment of the information presented to you in making your decision. You are not bound to choose any option presented to you by Fisheries New Zealand.

1255. Fisheries New Zealand will continue to work closely with all interested tangata whenua and stakeholders to achieve wider management objectives, including reviewing alternative management settings for FLA 1 in the future. We propose this work be undertaken with a view to reporting back to you this time next year on the recommended outcomes.

¹³ Fisheries (Amateur Fishing) Regulations 2013 <http://www.legislation.govt.nz/regulation/public/2013/0482/latest/DLM3629901.html>

Option 1 (status quo)

Agree to retain the FLA 1 TAC at 1762 tonnes and within the TAC:

- i. Retain the allowance of 270 tonnes for Māori customary non-commercial fishing interests;
- ii. Retain the allowance of 270 tonnes for recreational fishing interests;
- iii. Retain the allowance of 35 tonnes for other sources of fishing-related mortality;
- iv. Retain the FLA 1 TACC at 1187 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 2

Agree to decrease the FLA 1 TAC from 1762 to 510 tonnes and within the TAC:

- i. Decrease the allowance for Māori customary non-commercial fishing interests from 270 to 50 tonnes;
- ii. Decrease the allowance for recreational fishing interests from 270 to 27 tonnes;
- iii. Decrease the allowance for other sources of fishing-related mortality from 35 to 10 tonnes;
- iv. Decrease the FLA 1 TACC from 1187 to 423 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 3

Agree to decrease the FLA 1 TAC from 1762 to 467 tonnes and within the TAC:

- i. Decrease the allowance for Māori customary non-commercial fishing interests from 270 to 50 tonnes;
- ii. Decrease the allowance for recreational fishing interests from 270 to 27 tonnes;
- iii. Decrease the allowance for other sources of fishing-related mortality from 35 to 9 tonnes;
- iv. Decrease the FLA 1 TACC from 1187 to 381 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 4 (New option; Fisheries New Zealand recommended)

Agree to decrease the FLA 1 TAC from 1762 to 986 tonnes and within the TAC:

- i. Decrease the allowance for Māori customary non-commercial fishing interests from 270 to 50 tonnes;
- ii. Decrease the allowance for recreational fishing interests from 270 to 27 tonnes;

- iii. Decrease the allowance for other sources of fishing-related mortality from 35 to 19 tonnes;
- iv. Decrease the FLA 1 TACC from 1187 to 890 tonnes.

Agreed / Agreed as Amended / Not Agreed

Stuart Nash
Hon Stuart Nash
Minister of Fisheries

13 / 9 /2018

Green-lipped mussel (GLM 9)

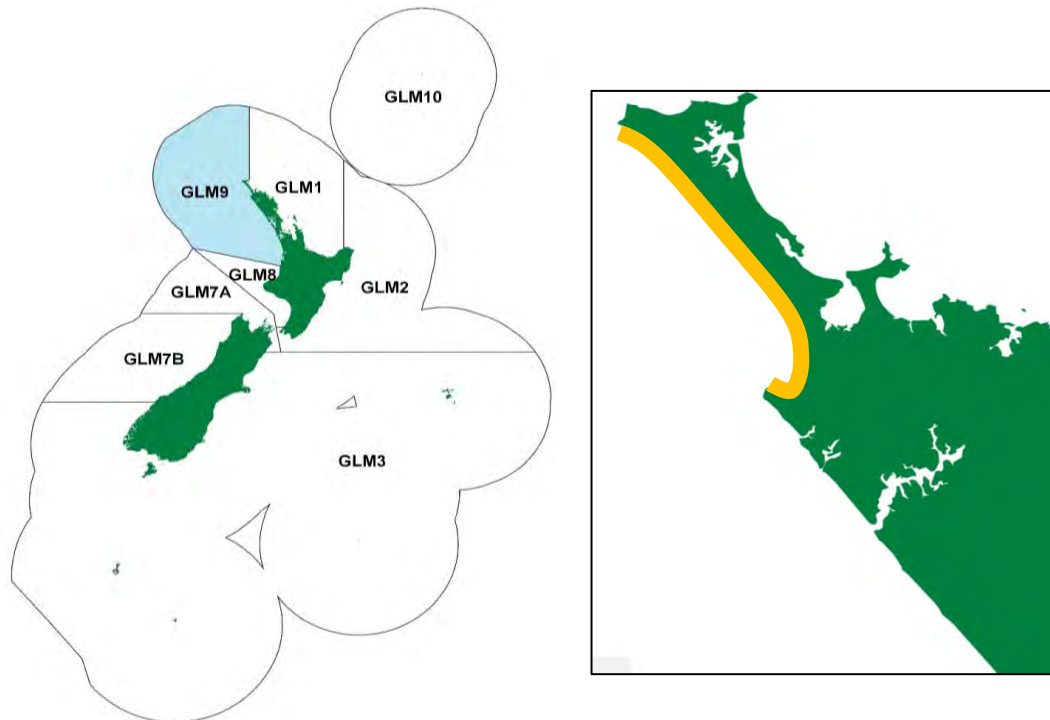


Figure 1: Quota Management Areas (QMAs) (left) for green-lipped mussel (GLM), with GLM 9 highlighted in blue, and Ninety Mile Beach/ Te Oneroa a Tohe (right), the location of the GLM 9 commercial fishery, highlighted in gold.

1 Summary

1256. Green-lipped mussel (*Perna canaliculus*) is an important non-commercial species, harvested and valued by customary, recreational fishers across the GLM 9 Quota Management Area (QMA) (see Figure 1). Commercial fishing currently only occurs at Ninety Mile Beach/Te Oneroa a Tohe where green-lipped mussel spat (mussels less than 10 mm) wash up on the beach attached to seaweeds and are harvested to supply mussel farms around New Zealand. The current review of management settings for GLM 9 is driven by a proposal to a key change management setting for this commercial mussel spat fishery.

1257. Fisheries New Zealand has decided to change the spat ratio¹ that prescribes how to convert the weight of spat landed attached to seaweed, into separate weights of spat and seaweed for reporting and balancing spat catch against GLM 9 Annual Catch Entitlement (ACE). Fisheries New Zealand intends to change the ratio to better align with best available information on the composition of catches, requiring fishers to report 25% of the weight of the spat/seaweed material as spat, instead of the current 50%.

1258. Because the ACE for GLM 9 only relates to green-lipped mussel (the seaweed that mussel spat is taken with is not included in requirements for catch balancing, and currently has no catch limit) the reduction to the spat ratio would effectively mean that more

¹ Section 188A of the Fisheries Act 1996 gives to the chief executive (now Director-General of MPI) the power to set a spat ratio. This power is delegated to a number of people including the Director Fisheries Management, who is the designated decision maker in this case.

spat/seaweed catch can be taken within a given TACC. In recognition of this, Fisheries New Zealand has also undertaken consultation on whether the Total Allowable Catch (TAC) and Total Allowable Commercial Catch (TACC) for GLM 9 (set under sections 14 and 21 of the Fisheries Act) should be adjusted to account for the effects of the spat ratio change. A review of this setting also provides an opportunity to consider the current and projected growth in demand for the mussel spat by the mussel farming industry.

1259. Fisheries New Zealand consulted on two options. Under Option 1 both the TAC and TACC for GLM 9 would be reduced by 90 tonnes to offset the effect of the spat ratio change and maintain the *status quo* in terms of the amount of spat/seaweed material harvested. Under Option 2 no changes would be made to the TAC and TACC, effectively allowing for twice the amount of spat/seaweed to be harvested.

Table 1: Proposed management settings for GLM 9 (catch limits in tonnes, and allowances in tonnes) from 1 October 2018, with the percentage change relative to the current settings in brackets.

Option	Total Allowable Catch (TAC)	Total Allowable Commercial Catch (TACC)	Allowances		
			Customary Māori	Recreational	All other mortality to the stock caused by fishing
	<i>Includes spat & adult mussels</i>	<i>Currently only a fishery for spat</i>	<i>Currently only a fishery for adult mussels</i>		
Current settings- <i>The current TAC and TACC were set within the context that commercial fishers were required to report 50% of harvested spat/seaweed material as spat</i>	278	180	59	39	0
Option 1 – <i>proposes an adjustment to the TAC and TACC to account for planned reporting change which will require fishers to report a lower proportion (25%) of the harvested spat/seaweed material as spat</i>	188 ↓ (32%)	90 ↓ (50%)	59	39	0
Option 2 – <i>proposes no adjustments to the TAC and TACC, which would effectively provide for twice as much spat/seaweed material to be taken if the spat ratio change is implemented</i>	278	180	59	39	0
Option 3 (added post-consultation) - <i>proposes an adjustment to the TAC and TACC, which would effectively provide for 1.5 times as much spat/seaweed material to be taken if the spat ratio is implemented</i>	233 ↓ (32%)	135 ↓ (25%)	59	39	0

1260. Mussel spat is an unusual fishery because by the time the spat has washed up at Ninety Mile Beach/Te Oneroa a Tohe, it has already been disrupted from settling and growing in its natural habitat; and therefore is unlikely to survive and contribute back to the stock.

The key focus for managing the spat fishery is therefore on managing utilisation and any associated impacts on the environment from fishing.

1261. Tangata whenua of the Te Hiku o Te Ika Fisheries Forum, Te Ohu Kaimoana and a combined submission from Talley's, Westpac Mussels and Scott Madsen have all challenged the need for the spat ratio change and have submitted that there are other concerns with the way the fishery is operating that need to be addressed as the management priority.
1262. Te Hiku o te Ika Fisheries Forum have longstanding concerns with the increased use of tractors for mechanical harvesting in this fishery, and the potential impacts that this may have on the beach environment and in particular on shellfish such as toheroa. Te Ohu Kaimoana has submitted that part of the reasoning for managing the spat fishery within the QMS and having a TACC was to incentivise co-ordination of effort and ultimately reduce the level of vehicle activity on Ninety Mile Beach/ Te Oneroa a Tohe associated with the fishery. Talley's, Westpac Mussels and Scott Madsen have submitted concerns about harvesters who have fished outside of the TACC framework by using the deemed value system, and the impact this has on the management framework and on the value of quota holdings.
1263. In contrast, 26 submissions including Aquaculture New Zealand and a number of quota holders, spat harvesters and marine farmers, submitted in support of the spat ratio change and have also submitted in support of Option 2, to make no changes to the TAC and TACC, to enable increased harvest of spat. These submissions emphasise the significance of the Ninety Mile Beach/ Te Oneroa a Tohe spat fishery to supply existing mussel farms and acknowledges the increasing demand for spat as the valuable mussel farming industry grows into the future (Aquaculture New Zealand anticipates the industry could produce another 50,000 tonnes of mussels within the next 10 years, but is dependent on sufficient spat availability). Aquaculture New Zealand acknowledge the concerns of tangata whenua and propose to work through these concerns and develop solutions.
1264. Fisheries New Zealand notes that when the GLM 9 fishery was introduced into the Quota Management System in 2004, the TACC was based on expected harvest levels at that time and was not intended to be constraining as the mussel farming industry grows. Instead, it was set at a level to provide incentives for good harvesting practices, while providing a framework to manage competition for catch.
1265. Following feedback and submissions Fisheries New Zealand has developed a third option for your consideration. Option 3 would reduce the TAC and TACC by 45 tonnes, which effectively provides for a 50% increase in spat/seaweed harvest, as opposed to the effective 100% increase in harvest provided by Option 2. Option 3 acknowledges recent harvest levels and recognises the strong demand for increased supply of spat within the mussel farming industry, but provides a more moderate opportunity for growth.
1266. Alongside Option 3 Fisheries New Zealand consider that it is important to ensure that mechanisms are in place that will provide for ongoing discussion and collaboration in respect to the future management of the Ninety Mile Beach/ Te Oneroa a Tohe spat fishery.
1267. Aquaculture New Zealand have submitted that they are committed to ensuring that the spat fishing activity at Ninety Mile Beach/ Te Oneroa a Tohe is responsible and sustainable. Following the close of consultation, Aquaculture New Zealand has advised

that representatives of the mussel farming industry will be meeting with fishers to reconfirm the commitment to a fisher's code of practice, which was first developed in 2008. Aquaculture New Zealand has also proposed, with support from Fisheries New Zealand, to bring together fishers, quota owners, the mussel farming industry and Te Oneroa a Tohe iwi, to renew a management plan, or alternative, for the fishery. Fisheries New Zealand is supportive of this approach and consider the current work will help inform future management decisions.

2 Need for review

1268. Fisheries New Zealand is considering a change to the “spat ratio” used to apportion the weight of the combined spat/seaweed material harvested at Ninety Mile Beach/Te Oneroa a Tohe into amount of spat and seaweed harvested. The ratio, which has been in place since 2004, will change from 50 (spat): 50 (seaweed) to 25 (spat): 75 (seaweed). The proposed spat ratio reflects new research information that indicates the actual ratio is about 18%. A 25:75 ratio adopts a cautious approach in light of this information.

1269. Because the practical effect of the change to the spat ratio would be to halve the amount of spat that is reported per unit of spat/seaweed material, Fisheries New Zealand has also undertaken consultation to inform a decision on whether to reduce the Total Allowable Catch (TAC) and Total Allowable Commercial Catch (TACC) for GLM 9.

2.1 CONTEXT

2.1.1 Biological characteristics of green-lipped mussel

1270. Green-lipped mussel is a filter-feeding mollusc found around New Zealand, but most commonly in North and Central areas. They are broadcast spawners and can produce up to 100 million eggs per season. Fertilisation is largely dependent on the proximity of other adults. Spat initially settle primarily on filamentous red algae and then undergo a secondary settlement phase onto hard substrates. Spat washes up on 90 Mile Beach after attaching to seaweed (primary settlement) and then becoming detached from the seafloor in storm conditions. Because mussel spat has a relatively long pelagic stage (about 30 days), parent mussel beds can be some considerable distance away from spat settlement.

2.1.2 Fisheries characterisation

1271. Fishing within GLM 9 includes harvest by customary and recreational groups of adult mussels, and harvest of mussel spat attached to beach cast seaweed by commercial fishers.

Customary Māori fishery

1272. Green-lipped mussels (kūtai) are an important customary species. Currently 59 tonnes of Māori customary catch are allowed for annually in the fishery. Customary harvest is only known to occur for adult mussels, and is managed through authorisations under the Fisheries (Kaimoana Customary Fishing) Regulations 1998 or, where those regulations are not in place, regulation 50 of the Fisheries (Amateur Fishing) Regulations 2013.

1273. Fisheries New Zealand records show that the harvest of green-lipped mussels through customary authorisations was over 400 permits issued since 2003 in GLM 9. Total catches are uncertain because the authorisations use different units of measurement (bags, bins,

buckets) and because many tangata whenua in the area are still operating under regulation 50 of the Fisheries (Amateur Fishing) Regulations 2013, which does not require that customary permits or catches be reported.

1274. There are two mātaimai reserves and a taiapure established within the southern part of GLM 9, in the Waikato region. These are Aotea Harbour Mātaimai Reserve, Marokopa Mātaimai Reserve and Kawhia Aotea Taiapure. All of these customary areas are south of Ninety Mile Beach/Te Oneroa a Tohe.

Recreational fishery

1275. Green-lipped mussels are an important recreational species. Recreational fishing is only known to occur for adult mussels, which are gathered by hand from shore or while diving. 39 tonnes of recreational catch are allowed for annually in the fishery. This is managed by an individual daily bag limit of 50 (25 in the Auckland Coromandel Area).

1276. The best available information to estimate the recreational harvest of adult green-lipped mussels in GLM 9 is the National Panel Survey of Marine Recreational Fishers 2011/12.² This survey estimated that 153,711 mussels were taken in GLM 9 in 2011/12. An estimated weight of the 2011/12 catch is not provided in the National Panel Survey, but it would likely be significantly below the 39 tonne allowance currently set. However, Fisheries New Zealand notes there is uncertainty in this estimate and that recreational catches are also likely to vary from year to year. There is no targeted harvest of mussel spat by customary and recreational fishers.

Commercial fishery

1277. There is currently no targeted commercial harvest of adult green-lipped mussel in GLM 9. Instead, there is a significant and important fishery for mussel spat collected at Ninety Mile Beach/Te Oneroa-a-Tohe, attached to floating or beachcast seaweed. The spat is harvested from the beach, and is attached to seaweed. Under the current spat ratio, 50% of the seaweed weight is reported as spat, meaning the total amount of spat/seaweed catch provided for under the current 180 tonne TACC is 360 tonnes. This limit is currently constraining the spat fishery, and in turn the amount of spat available for mussel farming.

1278. Of importance, New Zealand's mussel farming industry relies heavily on Ninety Mile Beach/Te Oneroa a Tohe spat to seed mussel lines for production. The main alternative is to use spat that have settled on lines and structures in the water. However, this is not viable option in many marine farming areas. Ninety Mile Beach/Te Oneroa a Tohe spat is estimated to account for at least 65% of the industry's spat requirements.

1279. Aquaculture New Zealand identifies GLM 9 as being of strategic importance to the New Zealand Greenshell mussel industry because it is unique. In a number of growing regions mussel farmers are effectively limited to using GLM 9 spat by biosecurity conditions that preclude other major spat sources. Local spat can also be limited in availability or condition from year to year based on environmental or other factors. In areas where mussel farmers are able to utilise spat from several regions, accessing GLM 9 along with other spat types ensures availability of harvest-condition mussels for most of the year. This is because spat sourced from different regions fattens at different times of the year.

² 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. Accessible at: <https://www.mpi.govt.nz/dmsdocument/4719/send>

This in turn enables the industry to support year-round employment in regional New Zealand. As such, the GLM 9 fishery is extremely important to provide the existing mussel farming industry with spat, and into the future as new mussel farming areas develop.

1280. Aquaculture New Zealand also noted that GLM 9 spat can be seeded onto farms and held, if necessary, for a few months until needed, before being moved into the final grow-out cycle. This provides growers with a means of smoothing variability in the availability of spat.

1281. In the longer term, Aquaculture New Zealand suggests that the industry will increasingly be in a position to utilise hatchery spat as an adjunct to GLM 9 spat. However, at the moment there is only one company sourcing spat from one hatchery and no tangible plans in place for more.

1282. Aquaculture New Zealand has stated the Greenshell mussel industry generated around \$351 million in revenue in 2017, and that the industry indirectly employs over 2000 people in regional communities. The need for mussel spat from Ninety Mile Beach/ Te Oneroa-a-Tohe will continue to grow with new mussel farms being developed and as demand for mussel products increases.

Operation of the commercial fishery

1283. The availability of the spat and seaweed at Ninety Mile Beach/Te Oneroa a Tohe is heavily influenced by environmental conditions, and is known to vary significantly depending on ocean currents and weather patterns. However, in general, the majority of harvest occurs in the second half of the calendar year (July to December), coinciding with early spring and summer storms (see Figure 2).

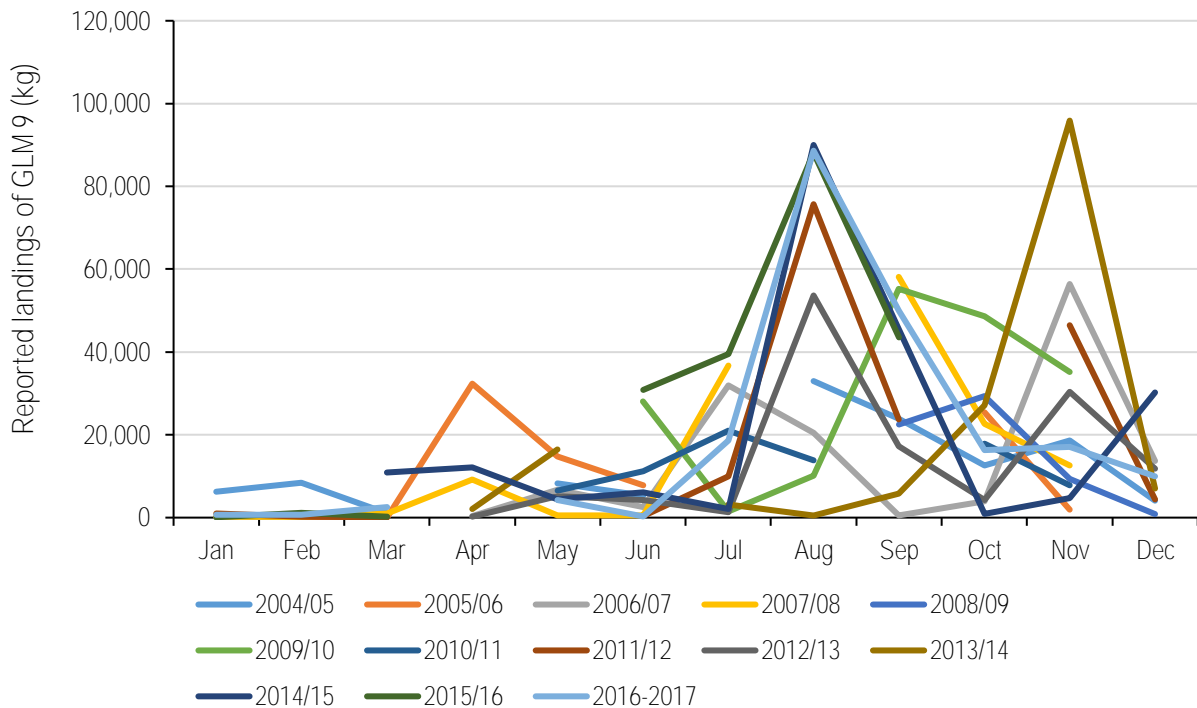


Figure 2: Reported monthly commercial landings of GLM 9 from the 2004/05 to 2016/17 October fishing years.

1284. Since QMS introduction, there have generally been about five or six permit holders operating in the GLM 9 fishery; three of which have landed mussel spat throughout the period (see Table 2 below).

Table 2: Permit holders operating in the GLM 9 fishery

		Fishing Year												
		2004 /05	2005 /06	2006 /07	2007 /08	2008 /09	2009 /10	2010 /11	2011 /12	2012 /13	2013 /14	2014 /15	2015 /16	2016 /17
Permit Holder	A	[Shaded]												
	B	[Shaded]												
	C	[Shaded]												
	D	[Shaded]												
	E	[Shaded]												
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1285. Methods for harvesting the spat/seaweed have evolved over time. This has included the development of “mechanical harvesting” methods using modified tractors.

1286. In 2007 research was undertaken by NIWA on the effects of this type of method for a key quota holder (Kaitaia Spat)³. This report concluded that there was little difference in the impact on beach infauna between the mechanical harvesting method and hand-gathering methods. As shown in Figure 3, the use of mechanical harvesting has become the preferred method for collecting spat since 2009.

1287. While spat-gathering has traditionally been characterised as collection of seaweed from the beach, Fisheries New Zealand has been informed that spat-gathering typically occurs in the shallow water (about 30 centimetres of water) before the seaweed reaches the beach and involves the use of a fine mesh net pushed through the water to target the desired seaweed material. Once collected, the fisher sorts through the seaweed on the beach to keep the best selection, returning the remaining seaweed (about 80% of initial harvest) back to the beach environment.

³ Sim-Smith, C.; Jeffs, A.G.; Cole, R. (2007). *Assessment of the impact of mechanical harvesting of mussel spat on the infauna of Ninety Mile Beach*. Unpublished NIWA Client report AKL2007-21. 17pp.

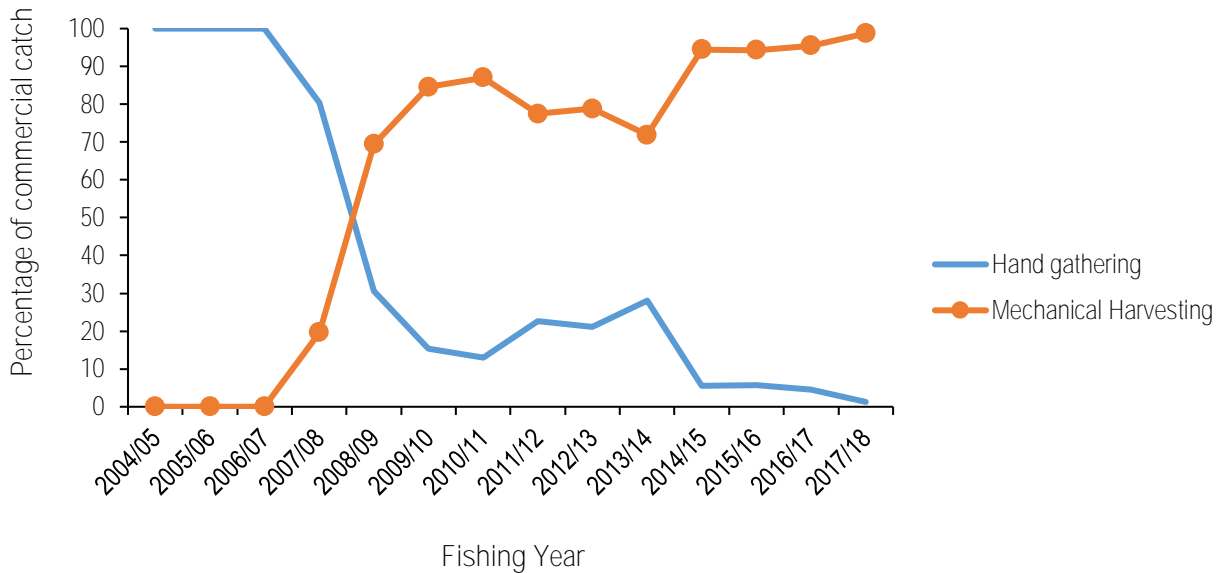


Figure 3: Reported harvest method for mussel spat in GLM 9

1288. The TACC for GLM 9 was first exceeded in 2009/10, and has since been overcaught successively in the last three fishing years (see Figure 4).

1289. The current combination of the GLM 9 TACC, deemed values, and spat ratio, within the context of the significance of the GLM 9 fishery to provide the industry with spat, will create a significant constraint to future growth of the mussel farming industry.

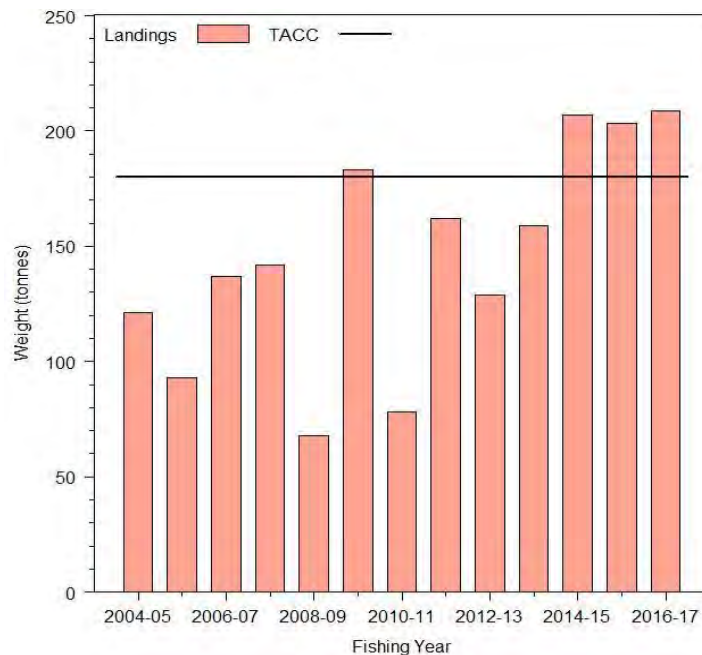


Figure 4: Commercial landings and the TACC for GLM 9 from 2004/05 to 2016/17.

1290. If the spat ratio is changed, it will effectively halve the amount of spat that is reported per unit of spat/seaweed material. This means that what would be reported as 180 tonnes of GLM 9 landings in the 2017/18 fishing year would be reported as 90 tonnes once the new spat ratio (25:75) takes effect in 2018/19. If the TACC is not reduced, the effect would be to allow for the harvest of twice as much spat/seaweed material (from 360 tonnes to 720 tonnes).

2.1.3 Management approach

1291. Harvesting of spat/seaweed material has been occurring at Ninety Mile Beach/Te Oneroa a Tohe since the 1970s and has been managed within the QMS since green-lipped mussels across New Zealand were introduced in 2004.
1292. A key rationale for managing the spat fishery within the QMS was to create a framework to improve harvest efficiency in the context of growing demand for spat by the mussel farming industry. Prior to the QMS, harvest was managed using aquaculture permits. In the early 2000s the fishery was managed under a competitive catch limit (CCL), and the various permit applications totaled 600 tonnes a year (approximately five times what was actually being taken). The QMS provided a mechanism to prevent a “race to catch” by removing the CCL and by setting a Total Allowable Commercial Catch and allocating rights to harvest a share of the TACC.
1293. Mussel spat is an unusual fishery, because by the time the spat has washed ashore at Ninety Mile Beach/Te Oneroa a Tohe it has already been disrupted from settling and growing on rocky shores, and is unlikely to survive and contribute back to the stock. This makes management of the harvest of spat quite different to managing most fisheries. To reflect this difference, GLM 9 was included on Schedule 3 of the the Act, which lists stocks where an alternative approach to setting TACs can be undertaken under section 14. While the approach must be consistent with the purposes of the Act, there is no requirement to take into account or be guided by the need to manage in accordance with Maximum Sustainable Yield (MSY).
1294. The original TAC for GLM 9 was set in 2004 to reflect the likely demand for the spat fishery at that time, while providing for non-commercial harvest of adult mussels. Since then, demand has increased for farmed green-lipped mussels, both for food and for pharmaceutical/neutraceutical purposes.

2.2 OPTIONS CONSULTED ON

1295. Fisheries New Zealand combined consultation on proposed changes to the spat ratio with the related consultation on the TAC setting. This was presented together in the combined table overleaf.

Table 3: Proposed management settings for GLM 9 (spat ratio, catch limits in tonnes, and allowances in tonnes) from 1 October 2018, with the percentage change relative to the current settings in brackets.

Option	Reporting ratio for spat:seaweed taken from Ninety Mile Beach	Total Allowable Catch (TAC)	Total Allowable Commercial Catch (TACC)	Amount of seaweed/spat material that can be harvested	Allowances		
					Customary Māori	Recreational	All other mortality to the stock caused by fishing
Current settings	50:50	278	180	360 t of seaweed & spat	59	39	0
Option 1	25:75	188 ↓ (32%)	90 ↓ (50%)	360 t of seaweed & spat	59	39	0
Option 2	25:75	278	180	720 t of seaweed & spat	59	39	0

2.2.1 Input and participation of tangata whenua

1296. 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.

1297. The mussel spat fishery has been discussed at several meetings with the Te Hiku o Te Ika Fisheries Forum, as it is a key fishery within the Forum’s region (far North). Te Hiku o Te Ika Fisheries Forum comprises mandated representatives of the commercial and non-commercial interests of the following iwi organisations: Ngati Kuri Trust Board Inc; Te Urungi O Ngati Kuri Ltd; Te Runanga Nui o Te Aupouri Trust; Te Aupouri Fisheries Ltd; Nga Taonga o Ngai Takoto Trust; Ngai Takoto Holdings Ltd; Te Runanga o Te Rarawa; Te Waka Pupuri Putea Ltd.

1298. Members of the Te Hiku o Te Ika Fisheries Forum have longstanding concerns about the green-lipped mussel spat fishery. In particular, the impacts on the beach environment from increasing use of mechanical harvesters adopted by fishers to increase efficiency in gathering the combined seaweed and spat material. Other concerns that have been raised include the lack of information about the impact of removing seaweed from the beach environment, as well as the effect that a substantial increase in catch limits might have on the QMS framework and the value of quota holdings.

1299. Fisheries New Zealand initiated discussion with the Forum about the proposal to change the spat ratio in 2015. Concerns expressed by the Forum at that time included that the science available for estimating the spat ratio only covered a limited period of time, and that the spat ratio proposal was a “backdoor” to increasing access to the fishery. In acknowledgement of these concerns Fisheries New Zealand commissioned an additional spat ratio research project, as well as deciding to undertake this TAC review at the same time as the spat ratio review to provide for a broader consideration of management.

1300. In relation to the current proposals, members of the Te Hiku o te Ika Fisheries Forum provided feedback directly to Fisheries New Zealand both prior and during the

consultation on management of GLM 9. However, only some of these iwi were present at meetings with Fisheries New Zealand and no written submission was received. The general position of the Forum is that no changes should be made to management that would result in increased mechanical harvesting.

2.2.2 Kaitiakitanga

1301. Under Section 12(1)(b), you must also have particular regard to kaitiakitanga before setting or varying a TAC. Under the Act, kaitiakitanga is 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.

1302. Relevant Iwi or Forum Fish Plans provide a view of the objectives and outcomes iwi seek from the management of the fishery, and can provide an indication of how iwi exercise kaitiakitanga over fisheries resources. Iwi views from Forum meetings and submissions received from iwi can also provide an indication of positions on these matters.

1303. Green-lipped mussel, including spat, is identified as a taonga species in the Te Hiku o te Ika Fisheries Management Plan. Key objectives within the plan relevant to the review of GLM 9 management controls include ensuring that fish stocks are healthy and support the social, cultural and economic prosperity of Te Hiku iwi and Hapu, and to maximise iwi influence on all key environmental decisions that impact on fisheries.

2.2.3 Views of submitters

1304. Section 12 of the Act requires you to consult on any proposed management changes. Fisheries New Zealand has consulted on your behalf, and this section outlines the views of submitters and issues they raised.

2.2.4 Submissions received

1305. Fisheries New Zealand received 29 submissions on the GLM 9 proposals.

Support for providing for increased harvest of mussel spat

1306. Alongside support for the proposed change to the spat ratio from 50:50 to 25:75, 26 submitters supported Option 2, to maintain the *status quo* TAC and TACC. These submissions included:

- a) Aquaculture New Zealand
- b) Marine Farming Association
- c) Top Spat Ltd
- d) Ambush Marine
- e) Rough Waters Ltd
- f) James Marine Ltd
- g) Kakariki Mussel Farm Ltd
- h) Rough Waters Ltd
- i) Paddy Bull Ltd
- j) MacLab (NZ) Ltd
- k) Bay of Plenty Regional Aquaculture Organisation

- l) Sanford Ltd
- m) RP Holdings Ltd
- n) Just Mussels Ltd
- o) Pooley Family
- p) Eastern Seafarms Ltd
- q) Ngati Whatua
- r) Pakihi Trading Company Ltd
- s) Whakatohea Aquaculture Ltd
- t) North Island Mussels Ltd
- u) Apex Marine Farm Ltd
- v) Pare Hauraki Kaimoana
- w) Coromandel Marine Farmers' Association
- x) SMW Consortium (SMW)

1307. These submissions emphasised the need for management settings that enable increased harvest to meet increasing demand for spat, and support future growth of the mussel farming industry. Representing the Greenshell mussel industry, Aquaculture New Zealand submitted that:

- a) The New Zealand mussel farming industry provides a range of positive economic benefits for New Zealand;
- b) Ongoing access to a sufficient amount of Ninety Mile Beach/Te Oneroa a Tohe spat is crucial for maintaining and sustainably growing the industry in the short term;
- c) Ongoing access to a sufficient amount of Ninety Mile Beach/Te Oneroa a Tohe spat is also important for realising the value of current and future aquaculture treaty settlement space to grow mussels; and
- d) Recent catch history and mussel industry growth projections show that more headroom is needed in the TACC.

1308. ECO supported the spat ratio change to reflect best available information, but supported Option 1, to offset the effects of that change and not provide for additional fishing.

Concerns about management change

1309. Te Ohu Kaimoana states that, at a recent meeting that they attended, Northland iwi shared their concerns about the impacts of mechanical harvesting on shellfish, including toheroa and tuatua.

1310. Te Ohu Kaimoana has submitted that they do not consider that the management issues for the fishery have been correctly identified in the proposals, and therefore support maintaining the *status quo* settings. Te Ohu Kaimoana has submitted that part of the reasoning for managing the fishery within the QMS and having a constraining TACC was to incentivise co-ordination of effort and ultimately reduce the level of vehicle activity on Te Oneroa a Tohe associated with the fishery. Te Ohu Kaimoana submits it appears the harvesters have not been successful in working together, and that a harvesting plan should be developed prior to any changes to the spat ratio or the TAC and TACC be considered.

1311. The focus of the combined submission by Talley's, Westpac Mussels and Scott Madsen is on the spat-ratio proposals. More generally however this submission raises concerns about harvesters who have fished outside of the TACC framework by using the deemed

value system and the impact this has on the management framework and on the value of quota holdings.

1312. The Iwi Collective Partnership did not submit in support of either option and encourage further korero between the industry and the Te Hiku o te Ika Forum.

Fisheries New Zealand Response

1313. Fisheries New Zealand notes that when the GLM 9 fishery was introduced into the Quota Management System in 2004, the TACC was based on expected harvest levels at that time and was not intended to be constraining as the mussel farming industry grows. Instead, it was set at a level to provide incentives for good harvesting practices, while providing a framework to manage competition for catch.

2.3 SETTING THE TAC

1314. As previously described, the mussel spat fishery is unusual because once the spat attached to seaweed has been washed ashore on Ninety Mile Beach/Te Oneroa a Tohe it has already been effectively removed from the population. The standard concerns about limiting harvest to ensure sustainability of the GLM mussel stock therefore do not apply. Because the spat fishery will likely remain the largest source of fishing in the stock, Fisheries New Zealand recommends that the TAC for GLM 9 continues to be set under section 14 of the Act which provides a flexible approach to TAC setting, while consistent with the purposes of the Act. The key focus for setting the TAC for GLM 9 is to manage utilisation and any associated impacts of harvest on the environment.

2.3.1 Section 9

1315. Section 9 of the Act prescribes three environmental principles that you must take into account when exercising your powers under the Act: that associated or dependent species should be maintained above a level that ensures their long-term viability; that biological diversity of the aquatic environment should be maintained; and that habitat of particular significance for fisheries management should be protected.

1316. Fisheries New Zealand considers that all three options address s 9 of the Act, as the amount of fishing effort under either option is low relative to the size of the extensive nature of the beach, and the impacts of fishing for spat on the beach environment are likely low relative to other activities such as tourist vehicles. However, Fisheries New Zealand and submitters have acknowledged concerns about impact on the environment and shellfish and consider there to be opportunities to work together to address these concerns.

Mechanical harvesting

1317. Previously a collaborative group has worked together “to manage the GLM 9 fishery using best practices that maximise the value New Zealanders obtain through the sustainable use of the green lipped mussel resource while operating in an environmentally sustainable manner.”

1318. The group developed a “GLM 9 Management Plan” in 2008 which, among other matters, sought to address ‘activities of the fishers that may impact on other people’s use and

values connected with the GLM 9 environment. In this respect the importance of Te Oneroa-a-Tōhē to local Iwi and indeed special places of importance to all Iwi within GLM 9 are acknowledged'. The four objectives were to: 1) Ensure sustainability 2) Support stakeholders to collectively maximise the value they receive from the resource while sharing the resource; 3) Improve understanding and perceptions of the resource and the fishery; 4) Apply good management practices.

1319. The plan included a non-statutory GLM 9 Fishers Code of Practice (see Addendum 1) which noted 'it is in the best interests of the fishers that the operation on Te Oneroa-a-Tōhē is conducted in a considered and responsible manner' and included measures to limit vehicle impacts on the beach.
1320. Aquaculture New Zealand submits that a 2013 literature review of factors affecting the abundance of toheroa highlighted that 'natural processes were likely to account for the highest level of mortality and variability in recruitment, but that anthropogenic activity such as changing land use and vehicle activity on toheroa beaches may limit the ability of the populations to recover. Anecdotal information suggests that fishers actively avoid shellfish beds, as this significantly reduces harvest efficiency and acknowledges Iwi concerns.
1321. Aquaculture New Zealand notes that the scale and location of vehicle activity from the spat fishery is most likely less than minor compared to the substantial tourist traffic in the more sensitive 'high intertidal zone'. However, they also submit that the industry is seeking to reinvigorate and reinstate the Ninety Mile Beach fishers code of practice in order to manage the impacts of, and allay any perceived issues with, the fishing activity on the Ninety Mile Beach environment. Aquaculture New Zealand signals that they would like to work with Te Oneroa-a-Tōhē Iwi to collaborate on proactive initiatives to protect and restore the toheroa populations on the beach or other initiatives to protect and restore the beach environment.
1322. Aquaculture New Zealand maintain that the industry (mussel farmers and spat fishers) have an ongoing motivation to make sure that practices on the beach are sustainable and in keeping with the interests of Te Hiku o Te Ika and the purpose of the Te Oneroa-a-Tōhē Board, which have been developed as part of the respective Te Hiku (far north) Iwi claims settlement Acts.

Removal of seaweed

1323. There is currently no limit on commercial or non-commercial collection of beachcast seaweed at Ninety Mile Beach/Te Oneroa a Tohe, but the spat/seaweed ratio incentivises fishers to be selective about what seaweed is taken. A number of studies have been undertaken internationally on the impacts of mechanical grooming of beaches, including the removal of seaweed to enhance recreational enjoyment of beaches. These studies indicate that beachcast seaweed provides habitat for macroinvertebrates, which then attract shorebirds.
1324. Fisheries New Zealand does not consider that the scale of harvest at Ninety Mile Beach/Te Oneroa Tohe would significantly affect these ecosystem dynamics because it is small relative to the size of the beach. However, no specific information is available on this matter.

2.3.2 Section 10

1325. Section 10 requires that, when exercising power under the Act, you take into account the information principles, including that you consider any uncertainties in the available information.

1326. The key information supporting changes to the spat ratio are research reports that have been undertaken for this purpose. This information has been reviewed by Fisheries New Zealand science staff outside of the Science Working Group process, because the methodology (sampling and measuring catches) was not considered complex. However, to provide further assurance, a further review has recently been undertaken by two independent scientists at Fisheries New Zealand's request.

1327. While several other research reports have been cited in this paper, including an assessment of the impacts of mechanical harvesting and research on the impacts on toheroa, there are a number of areas where information about the green-lipped mussel stock is lacking, including:

- a) Information to assess the status of the GLM 9 stock
- b) Better information on the level of harvest of adult mussels by customary and recreational fishers
- c) Precise information on commercial landings of spat, given the use of a spat ratio to estimate landings
- d) Better information on the level of demand for spat
- e) Better information on the location of spat harvest (reported information is at a statistical area scale).
- f) Updated characterisation and assessment on the impacts of mechanical harvesting
- g) The source areas for mussel larvae that forms spat that wash up on Ninety Mile Beach/Te Oneroa a Tohe

1328. In the context of the proposals, Fisheries New Zealand considers the risk from this uncertainty in information is low.

2.3.3 Section 11

1329. Section 11 says that you may set or vary any sustainability measures after taking into account various matters.

1330. Section 11(1)(a) requires that you take into account any effects of fishing on the stock and aquatic environment. As discussed under the assessment against section 9, Fisheries New Zealand considers that the impacts of the activity on the aquatic environment from the commercial harvest of mussel spat is relatively low, as the amount of fishing effort under either option is low relative to the size of the beach and the impacts of fishing for spat on the beach environment are likely low relative to other activities such as tourist vehicles. More generally, the hand-gathering of mussels by non-commercial fishers is not considered likely to have significant effects on the aquatic environment.

1331. In addition, s 11(1)(b) requires you to take into account any existing controls that apply to green-lipped mussel stocks. There are no additional controls considered relevant to your decisions.

1332. Section 11(1)(c) relates to the natural variability of the stock. Abundance of mussels is likely to vary. This is most relevant to the harvest of adult mussels by non-commercial fishers. However because this fishery is relatively small and limited by access to mussels, risks of overfishing during periods of lower abundance are minimal.

1333. Sections 11(2)(a) and (b) require you have regard to take the 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 applies to the coastal marine area and that you consider relevant. The Regional Policy Statement (RPS) for Northland covers the management of natural and physical resources in the Northland Region out to the 12 nautical mile (22.2 km) limit. A regional coastal plan has also been in place since 1994 but is soon to be replaced by a combined regional plan, which was notified in March this year. No specific provisions in this statement or plans have been identified as relevant to your decisions.

2.3.4 Evaluation of TAC options

Option 1 (reduce allowable catch in GLM 9 to offset the impact of the spat ratio change)

1334. Option 1 would reduce the TAC from 278 tonnes to 188 tonnes to offset the impact of the change in reporting in the commercial fishery. This option aligns with maintaining the current level of harvest of spat /seaweed material across GLM 9 and would defer any provision for additional spat harvest until work was undertaken to address concerns raised in submissions and by tangata whenua. This option does not provide for anticipated growth in the mussel spat fishery and may encourage the mussel farming industry to seek spat from other sources. However, at this time obtaining spat for alternative sources is limited in the short to medium-term. This option places greatest weight on the input from tangata whenua.

Option 2 (maintain current settings in GLM 9, effectively providing for increased catch)

1335. Option 2 retains the TAC at 278 tonnes. If the spat ratio is decreased, Option 2 allows for increased catches to be provided for in the commercial fishery, on the basis that there is no sustainability risk to the GLM 9 stock associated with an increase in spat harvest, and any impacts on the environment of additional harvesting activity can be monitored and if necessary a further review of management could be undertaken including consideration of regulating fishing method.

1336. Aquaculture New Zealand submits that current mussel farming production is around 100,000 tonnes per year with the majority coming from the Marlborough and Waikato regions. A conservative estimate for production increase over the next ten years utilising existing consents is an additional 50,000 tonnes per year. In today's terms the revenue from the production growth might be in the order of \$140 million per year and additional regional jobs could be in the order of 1,200. Further future growth might come from new space.

1337. Aquaculture New Zealand also submits that it is important to ensure the QMS management settings for the fishery allow new entrants into the industry the same access to the resource as others have. Under a constrained TACC this becomes a lot more difficult.

1338. Further, Aquaculture New Zealand submits that without sufficient spat the value of the Treaty settlement mussel farms may be compromised, as would the ability for the

Government to deliver on further aquaculture settlement obligations. Without access to sufficient spat, the ability for settlements to deliver mussel farming space to iwi may be compromised and the value of mussel farms would be significantly diminished.

Option 3 (reduce allowable catch in GLM 9, providing some offset of the impact of the spat ratio change)

1339. Following feedback and submissions Fisheries New Zealand, has developed an additional third option for your consideration.

1340. Option 3 would reduce the TAC by 45 tonnes (half the level proposed in Option 2).

1341. Option 3 recognises the strong demand for increased supply of spat, but provides a more moderate opportunity for growth. Fisheries New Zealand considers that there are benefits in taking a more cautious approach to growth to ensure incentives for good utilisation remain intact. This option could be accompanied with some direction on the need to develop a management plan to manage growth in the fishery, including addressing current concerns about the effects of fishing on the environment.

2.5 ALLOCATING THE TAC

1342. Having set the TAC, you must allow for Māori customary non-commercial fishing interests, recreational fishing interests, and all other mortality to the stock caused by fishing (s 20 & 21).

1343. This review was undertaken with a clear focus on the commercial spat fishery and no changes to other aspects of GLM 9 management have been proposed. You have wide discretion in your decision on how to allocate the TAC, although Fisheries New Zealand would recommend additional consultation if significant changes were to be considered.

2.5.1 Māori customary allowance

1344. Customary fishers target adult mussels and are not known to gather mussel spat. The current allowance for Māori customary fishing is 59 tonnes.

1345. Fisheries New Zealand records show that the harvest of green-lipped mussels occurs through customary authorisations (over 400 permits issued since 2003 in GLM 9). Total catches are uncertain because the authorisations use different units of measurement (bags, bins, buckets) and because many tangata whenua in the area are still operating under regulation 50 of the Fisheries (Amateur Fishing) Regulations 2013, which does not require that customary permits or catches be reported.

1346. No changes to the Māori customary allowance are proposed.

2.5.2 Recreational allowance

1347. Recreational fishers target adult mussels and are not known to gather mussel spat. The current allowance for recreational fishing is 39 tonnes.

1348. The best available information to estimate the recreational harvest of green-lipped mussels in GLM 9 is the National Panel Survey of Marine Recreational Fishers 2011/12.⁴ This survey estimated that 153,711 mussels were taken in GLM 9 in 2011/12. An estimated weight of the 2011/12 catch is not provided in the National Panel Survey, however it would likely be significantly below the 39 tonne allowance currently set. However, Fisheries New Zealand notes there is uncertainty in this estimate and that recreational catches are also likely to vary from year to year.

1349. Given these factors, Fisheries New Zealand considers that 39 tonnes remains an appropriate allowance for recreational fishing and no change is proposed. An updated National Panel Survey is currently underway and will provide results in 2019. Updated estimates of recreational catch in GLM 9 will be used to inform future management.

2.5.3 Allowance for other sources of mortality caused by fishing

1350. The allowance for all other mortality typically includes incidental mortality on the stock caused by fishing methods and/or unreported mortality from illegal activity. Fisheries New Zealand does not have any information to suggest that these, or other types of fishing mortality, need to be accounted for in GLM 9. No changes are proposed to the current allowance of zero.

2.5.4 TACC

1351. The current TACC of 180 tonnes aligns with the competitive catch limit in place when the fishery was managed using spat catching permits, prior to QMS introduction. The TACC was based on the demand for spat at that time to supply existing mussel farms, but since QMS introduction, the number and size of mussel farms has grown substantially.

1352. While unlikely under the current management framework, it is possible that adult mussels could be targeted commercially within the TACC. If this were to occur it may warrant a further review of management. Commercial fishers are required to report mussel spat (MSP) and other sized mussels (MSG) separately, and these reports are monitored to help identify any changes in the nature of the fishery that may support the need for a review.

Option 1

1353. A reduction to the TACC from 180 tonnes to 90 tonnes would be consistent with maintaining the *status quo* level of spat/seaweed material (currently 360 tonnes) being taken in the fishery when accounting for the proposed spat ratio change. Fisheries New Zealand acknowledges that the main effect of this TACC is that the mussel farming industry would not be able to acquire enough spat to meet its existing demands and maintain existing production, as well as anticipated growth within the next 10 years.

1354. This is evidenced by the fact that the TACC has been overcaught by about 18% in the last three fishing years. The industry is already constrained by the current TACC and failure to acquire the sufficient spat at current levels would likely see production decrease (the industry currently produces about 100,000 tonnes and is worth about \$350 million).

Option 2

⁴ 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. Accessible at: <https://www.mpi.govt.nz/dmsdocument/4719/send>

1355. Retaining the current TACC at 180 tonnes (Option 2) would allow for a significant increase in catch of spat/seaweed material (ie, 720 tonnes). Under this option, the amount of seaweed/spat material harvested would increase by 100%. Iwi have expressed concern about the potential effects of increased harvest on the beach environment, particularly shellfish beds. Fisheries New Zealand acknowledges these concerns and believes these are best addressed through a collaborative approach to develop a beach management plan, alongside a more moderate increase in catch.

Option 3

1356. A reduction to the TACC from 180 tonnes to 135 tonnes would provide additional spat to meet the industry's short to medium term needs, whilst addressing effects of fishing. Under this option, the amount of spat/seaweed material would increase from 360 to 540 tonnes (but enables an increased amount of spat to be collected than under Option 1)

1357. New Zealand's mussel farming industry currently produces around 100,000 tonnes and has a total revenue of about \$350m. Approximately 65% of this industry directly relies on spat derived from 90 Mile Beach to stock mussel farms. This reliance is unlikely to remain unchanged in the short to medium-term. Aquaculture New Zealand advises that increased mussel production from already consented mussel farming space in Tasman and Golden Bays, Opotiki, Bay of Plenty, and Wilsons Bay, (Firth of Thames) could produce an additional 50,000 tonnes alone in the next ten years. This is 50% more than current production, and hence likely requires at least 30-40% more spat from the GLM 9 fishery, given the small number of other spat producing areas. Spat demand from any other new farming areas coming on-stream would be in addition to this. Much of this space arises from aquaculture settlement and farms are iwi owned.

1358. The harvest of spat from Ninety Mile Beach is entirely dependent on demand from the mussel farming industry. As such, a higher TACC will not be fully caught until there is relative demand, and this will gradually occur as new mussel farms come into production. Therefore, Fisheries New Zealand considers that an interim 50% TACC increase is appropriate at this time. This TACC level will be able to meet the current demand for spat (the current TACC been overcaught by about 18% in the last three fishing years), as well as providing industry with sufficient spat to enable anticipated future mussel farming growth.

1359. An interim TACC also adopts a precautionary approach to manage the effects of fishing on the beach environment and provides an incentive for quota owners, fishers and the marine farming industry to work with Iwi to develop a comprehensive beach management plan. This plan would provide ways to address effects of fishing, including avoidance of fishing on shellfish beds, shellfish enhancement, and considerations of fishing method. This approach acknowledges that Iwi have a co-governance role under Crown settlements to manage the Ninety Mile Beach environment and associated fisheries. Once, the plan is established (likely 3-5 years), it would be timely to review management of the fishery, including the TAC and TACC.

1360. Aquaculture New Zealand have submitted that they are committed to ensuring that the spat fishing activity at Ninety Mile Beach/ Te Oneroa a Tohe is responsible and sustainable. Following the close of consultation, Aquaculture New Zealand has advised that representatives of the mussel farming industry will be meeting with fishers to reconfirm the commitment to a fisher's code of practice, which was first developed in 2008.

1361. Fisheries New Zealand is supportive of more engagement and collaboration within this fishery and will seek to support conversations between the mussel farming industry and tangata whenua.

2.6 OTHER MANAGEMENT CONTROLS

2.6.1 Fishing Year

1362. A number of submitters have raised concerns that the start of the October Fishing Year coincides with the middle of the key harvesting period, which affects fishers' ability to plan and manage harvest. Requests have been made to revisit the timing of the fishing year for green lipped mussel to address this. Fisheries New Zealand acknowledges that the timing of the fishing year is largely occurring in the middle of the peak season and that there could be benefits in a review. Fisheries New Zealand recommends that this be explored further as part of next steps for the management of the fishery, following your current decisions.

2.6.2 Deemed value rates

1363. There are no proposed changes to the deemed value rates for GLM 9 for the 2018/19 fishing year.

1364. The deemed value rates for GLM 9 were last reviewed in 2017, resulting in the annual deemed value being increased from \$6.00/kg to \$10.00/kg to better reflect the commercial value of the spat and to help constrain GLM 9 harvest within the available ACE. Changes were also made to the differential and interim deemed value rates for these reasons.

1365. During consultation in 2017, concerns were raised by some stakeholders that the increases to deemed value rates were creating further constraints on the fishery. A key purpose of the deemed value framework is to incentivise fishers to balance their catches with Annual Catch Entitlement. Fisheries New Zealand considers that concerns about constraints on the fishery and the availability of Annual Catch Entitlement are best addressed through the setting of the TAC and the TACC. No further changes to the deemed value rates are recommended.

3 Conclusion and Recommendation

1366. Following feedback and submissions, Fisheries New Zealand has developed an additional third option for your consideration. Option 3 would reduce the TAC and TACC by 45 tonnes which, following the spat ratio change, effectively provides for a 50% increase in spat/seaweed harvest, as opposed to the effective 100% increase in harvest provided by Option 2. Option 3 recognises the strong demand for increased supply of spat, but provides a more moderate opportunity for growth. Fisheries New Zealand considers that there are benefits in taking a more iterative approach to growth that would include development of a management plan that would, among other things, include initiatives aimed to address tangata whenua concerns.

Option 1

Agree to reduce the GLM 9 TAC from 278 tonnes to 188 tonnes, and, within the TAC:

- i. Retain the allowance of 59 tonnes for Māori customary non-commercial fishing interests;
- ii. Retain the allowance of 39 tonnes for recreational fishing interests;
- iii. Retain the allowance of 0 tonnes for all other sources of mortality to the stock caused by fishing;
- iv. Reduce the GLM 9 TACC from 180 tonnes to 90 tonnes (this would retain current spat harvest levels).

Agreed / Agreed as Amended / Not Agreed

OR

Option 2

Agree to retain the GLM 9 TAC of 278 tonnes, and, within the TAC:

- i. Retain the allowance of 59 tonnes for Māori customary non-commercial fishing interests;
- ii. Retain the allowance of 39 tonnes for recreational fishing interests;
- iii. Retain the allowance of 0 tonnes for all other sources of mortality to the stock caused by fishing;
- iv. Retain the GLM 9 TACC of 180 tonnes (this would increase spat harvest levels by 100%).

Agreed / Agreed as Amended / Not Agreed

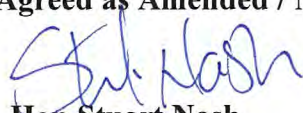
OR

Option 3

Agree to decrease the GLM 9 TAC from 278 tonnes to 233 tonnes, and, within the TAC:

- i. Retain the allowance of 59 tonnes for Māori customary non-commercial fishing interests;
- ii. Retain the allowance of 39 tonnes for recreational fishing interests;
- iii. Retain the allowance of 0 tonnes for all other sources of mortality to the stock caused by fishing;
- iv. Reduce the GLM 9 TACC from 180 tonnes to 135 tonnes (this would increase spat harvest levels by 50%).

Agreed / Agreed as Amended / Not Agreed


Hon Stuart Nash
Minister of Fisheries

13 / 9 / 2018

Addendum 1: GLM 9 Fishers Code of Practice

Overview:

It is in the best interests of the fishers that the operation on the beach is conducted in a considered and responsible manner.

For the GLM9 Fishery to be sustainable in the long term it is absolutely crucial that there is a minimum impact on the environment.

1.0 SPEED

1.1 Speed on the beach should be kept to a minimum. Excessive speed is more likely to damage shellfish populations.

1.2 Vehicles used in the water adjacent to other workers must travel no faster than a man can wade.

2.0 SEARCH & TRANSPORT

2.1 Toheroa beds are the most sensitive to vehicular travel. The highest density of toheroa is found in the dry sand area below high water mark. This area, and any other area showing signs of Toheroa should be avoided.

2.2 Tuatua beds occasionally rise to the surface and are easily visible. These areas should not be driven over. 2.3 Other wildlife on the beach such as birds, penguin, seals and horses should not be disturbed. 2.4 Use only the minimum number of vehicles necessary to collect orders. 2.5 Use the time spent on the beach efficiently ... minimizing the time spent traveling means less damage to the environment. 2.6 Reduce speed when crossing streams.

3.0 OIL & FUEL SPILL

3.1 Do not use any vehicle in or near the water that is leaking oil or fuel. Minimise damage by immediately shifting the vehicle to well above high water mark and if necessary transport back to base.

3.2 Vehicles must be checked for oil or fuel leaks prior to use on the beach. Maintenance of the vehicles in this respect is of high priority.

4.0 SAFE OPERATION OF VEHICLES

4.1 Refer to 1.0 "SPEED"

4.2 Machinery operators must be fully conversant with their machines, and able to operate them safely

4.3 Never allow passengers to ride on machinery forward of the axles.

4.4 Treat the beach as a road and obey road rules.

4.5 If driving machinery be aware of workers around you, in front, behind and both sides. (Turning loaders swing a bucket sideways.) It is an offence to injure anyone through careless use of a vehicle anywhere.

4.6 Any vehicle or operational problems must be rectified as soon as practical. 4.7 Fire extinguishers, first aid kits, telephones, and an effective oil spill kit (if one can be found) should be carried in all search and transport vehicles.

5.0 HAND GATHERING

5.1 When working at night wear high visibility vests or clothing

5.2 At night endeavor to remain within a well lit area.

5.3 Be aware of the danger of cold Wet suits are recommended in cold water temperatures, or at any time when prolonged exposure is likely. The added buoyancy is also a safety factor. Protective clothing suitable to the conditions should always be considered.

5.4 Gumboots are dangerous in surf and must not be used. Suitable lightweight footwear is recommended.

6.0 GENERAL CONSIDERATIONS

6.1 Remove any hazards from the beach such as logs or abandoned vehicles. Council will remove vehicles if they are advised of them. If possible other collectors working at night should be advised of any particular dangers.

6.2 Be considerate of other operators and users of the beach ... walk away from confrontations.

6.3 All litter cigarette butts etc must be retained in the vehicles and disposed of appropriately.

6.4 Unlawful activity on the beach should be noted and the appropriate authority advised.

6.5 Use a maximum of 2 tractors per entity.

6.6 Continue the historic practise of not collecting spat from the rocks at The Bluff.

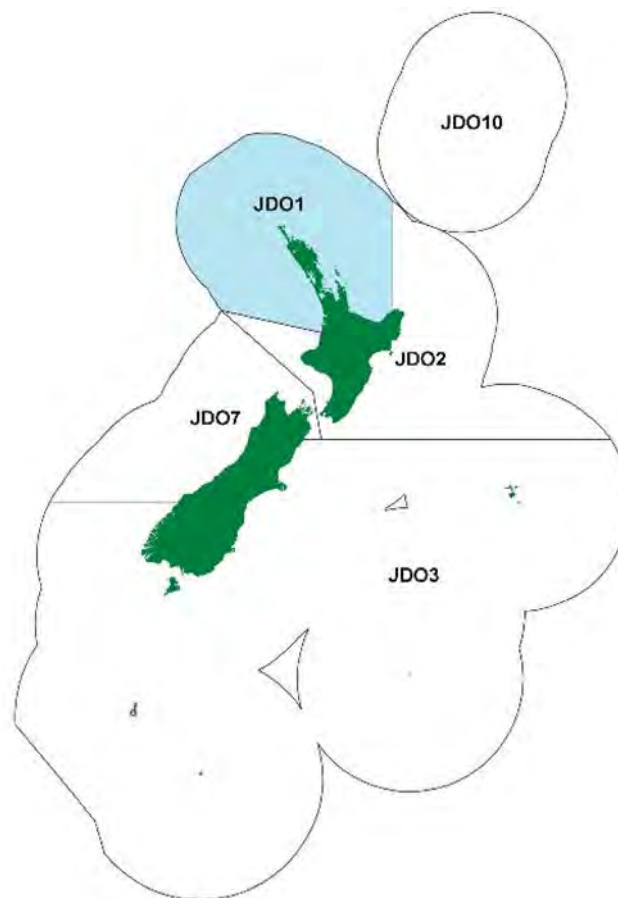


Figure 1: Quota management areas (QMAs) for John dory (JDO), with JDO 1 highlighted in blue.

1 Summary

1367. Fisheries New Zealand consulted on three options for management settings for John dory (*Zeus faber*; kuparu) in JDO 1 in the north of the North Island (see Figure 1). Although a Total Allowable Commercial Catch (TACC) for JDO 1 has been set, a Total Allowable Catch (TAC) and allowances for non-commercial sectors and other mortality from fishing have not been set. In addition to considering proposals to vary the JDO 1 TACC, you should set a JDO 1 TAC and allowances for the first time.
1368. Fisheries New Zealand assesses that there is a risk to the sustainability of JDO 1 if the current TACC is fully utilised. There are also risks to the way and rate of rebuilding the JDO 1 stock towards the biomass that will produce the maximum sustainable yield (B_{MSY}) under current levels of catch, but these are uncertain. Options to address risks are set out in Table 1.
1369. Fisheries New Zealand recommends Option 2 - that you agree to set a TAC that will constrain catches to approximately the current level, which is about 50% of the possible catch under the current limit.
1370. An estimate of B_{MSY} is not available for JDO 1, and neither is an estimate of the maximum sustainable yield (MSY). However, there is a catch per unit of effort (CPUE from the

commercial fishery) reference level which has been accepted as an index of relative abundance, and a specific reference CPUE level has been agreed to represent a proxy for the biomass that will produce the MSY.

1371. The CPUE series show that all the component stocks within JDO 1 are below the target biomass level (represented by the B_{MSY} proxy). A reduction of the current catch limit to ensure that the stock rebuilds to B_{MSY} is consistent with obligations under s 13 of the Act.

1372. Fisheries New Zealand accepts that reducing the catch limit is unlikely to be the complete answer to resolving sustainability risks pertaining to JDO 1 and, having considered submissions, intends to initiate a process to review stock boundaries with stakeholders and consider options for more responsive management. You are not asked to decide on these matters in this current process.

Table 1: Proposed management settings in tonnes for JDO 1 from 1 October 2018, with the percentage change relative to the *status quo* in brackets.

Option	Total Allowable Catch	Total Allowable Commercial Catch	Allowances		
			Customary Māori	Recreational	All other mortality to the stock caused by fishing
Current settings	-	704	-	-	-
Option 1	790	704	15	36	35
Option 2 (<i>Recommended</i>)	423 ↓	354 ↓ (50%)	15	36	18 ↓
Option 3	387 ↓	320 ↓ (55%)	15	36	16 ↓

1373. We also proposed increasing the interim deemed value rate for JDO 1 to 90% of the annual deemed value rate, as outlined in Table 2, to be consistent with the guidelines for setting deemed values. Further details on this change can be found in the Deemed Values decision paper. No changes were proposed for the annual deemed value rate or the differential schedule.

Table 2: Current and proposed Standard Deemed Value Rates (\$/kg) for JDO 1

	Interim Deemed Value Rate (\$/kg)	Differential Annual Deemed Value Rates (\$/kg) for excess catch (% of ACE)					
		100-120%	120-140%	140-160%	160-180%	180-200%	200%+
<i>Status quo</i>	1.96	3.92	4.70	5.49	6.27	7.06	7.84
Proposed	3.52 ↑						

1374. Fifteen submissions commented on the proposed options for JDO 1. Four submissions supported maintaining the *status quo*, two made submissions without preferring any option, and all others supported decreasing the TAC. Of the nine submitters who favoured decreasing the TAC, two stated a preference for Option 2 (based on a 30-50% decrease of the TACC), while seven supported Option 3 (50-60% decrease). Within this grouping, modifications to the TAC ranging from 30% to 60% decrease arose from feedback received during consultation.

2 Need for review

1375. The best available information suggests that the JDO 1 stock is currently below the biomass target levels appropriate for the fishery. Fisheries New Zealand assesses that there is a risk to the sustainability of JDO 1 under recent levels of commercial catch of John dory in at least some parts of JDO 1, and a greater risk for the entire stock if harvesting rights available within the current TACC were to be fully utilised.
1376. The current TACC has not been fully caught in the past 18 years, and there has been a long-term decline in commercial catches since a peak in the mid-1990s. Given these factors, and that JDO 1 sub-stocks are below their management targets, Fisheries New Zealand considers it appropriate to review the JDO 1 TAC, TACC, and allowances. Most submissions support making changes.
1377. Since sub-stocks within JDO 1 are performing differently, Fisheries New Zealand also invited submissions on proposals to review the JDO 1 QMA stock boundaries (currently spread across Fisheries Management Areas 1 and 9, the north-east and north-west coasts of the North Island). This review will occur in a future process.

2.1 CONTEXT

2.1.1 Biological information

1378. John dory are serial spawners (spawning more than once in a season) and, in combination with a relatively high natural mortality and relatively short lifespan, this suggests that John dory stock abundance is likely to fluctuate as recruitment strength (the addition of young fish to the population) varies.

2.1.2 Fishery characterisation

Customary Māori fishery

1379. John dory (kuparu) is a valued taonga species for tangata whenua, and has traditionally been a popular source of food. John dory has been identified as taonga species under the Iwi Forum Fisheries Plans of Te Hiku o Te Ika, the Mai I Ngā Kuri a Whareki Tihirau, and the Ngaa Hapu o te Uru o Tainui. Fisheries New Zealand holds no quantitative information to enable estimation of the current level of Māori customary non-commercial catch of JDO 1, because the reporting of customary catch under the permit regimes is not mandatory in all areas.

Recreational fishery

1380. John dory is an important recreational fishing species in the north of New Zealand. It is sometimes targeted by spear fishers and line fishers using live bait. However, most John dory is taken in small quantities as bycatch of other line-caught species. The National Panel Survey of Marine Recreational Fishers in 2011/12 (National Panel Survey)¹ estimated 36 tonnes of John dory were caught in JDO 1 in the 2011/12 fishing year.

¹ Wynne-Jones, J.; 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. 139p. Accessible at: <https://www.mpi.govt.nz/dmsdocument/4719/send>

Average landings of less than half a tonne per year of JDO 1 are reported by commercial fishers under section 111 of the Act².

Commercial fishery

1381. The TACC for JDO 1 was set first in 1986 at a level below that of the fishers' combined catch histories, but then adjusted for their commitment to and dependence on the fishery. Since then, commercial catches have fluctuated and generally trended downwards, resulting in a considerable gap between the TACC and catches. Commercial landings are shown in Figure 2 overleaf.
1382. The quota management area for JDO 1 (Figure 1) includes fishery management areas FMA 1 (east coast of the northern North Island) and FMA 9 (west coast of the northern North Island). John dory are taken mainly as a part of the mixed target bottom trawl fishery which targets snapper, John dory, trevally, tarakihi, red gurnard, and barracouta, with the majority of the remaining catch taken by Danish seine. Target fishing for John dory contributes up to 20% of catches. Controls on the main target species which take JDO 1 as a bycatch have not changed markedly since the late 1990s, hence it is not clear that these target species are influencing the catch of John dory.
1383. In each JDO 1 component stock, at least 30 vessels report landing John dory each year, although most catch is taken by a smaller subset of those vessels. There are approximately 85 owners of quota for JDO 1, of which two hold almost 60% of the quota. JDO 1 has a relatively high commercial value (port price of \$5.64/kg in 2016/17) and the current average trade values for ACE and quota are around \$0.90/kg and \$10.00/kg.
1384. The overall annual catch trends in the fishery (figure 2) are driven largely by trends in the Hauraki Gulf to Bream Bay fishery. During the 1990s and mid 2000s, this area accounted for about 60% of the total JDO 1 catch, but since 2010 the Hauraki Gulf has accounted for only about 30% of the total catch. Most of the catch from the Hauraki Gulf to Bream Bay since the 1990s has been taken by target fishing for John dory.

² Section 111 of the Act provides for commercial fishers to obtain an approval that overcomes the presumption that all fish on a commercial vessel were taken for the purposes of sale. This enables commercial fishers to take and have on board fish taken under the recreational rules.

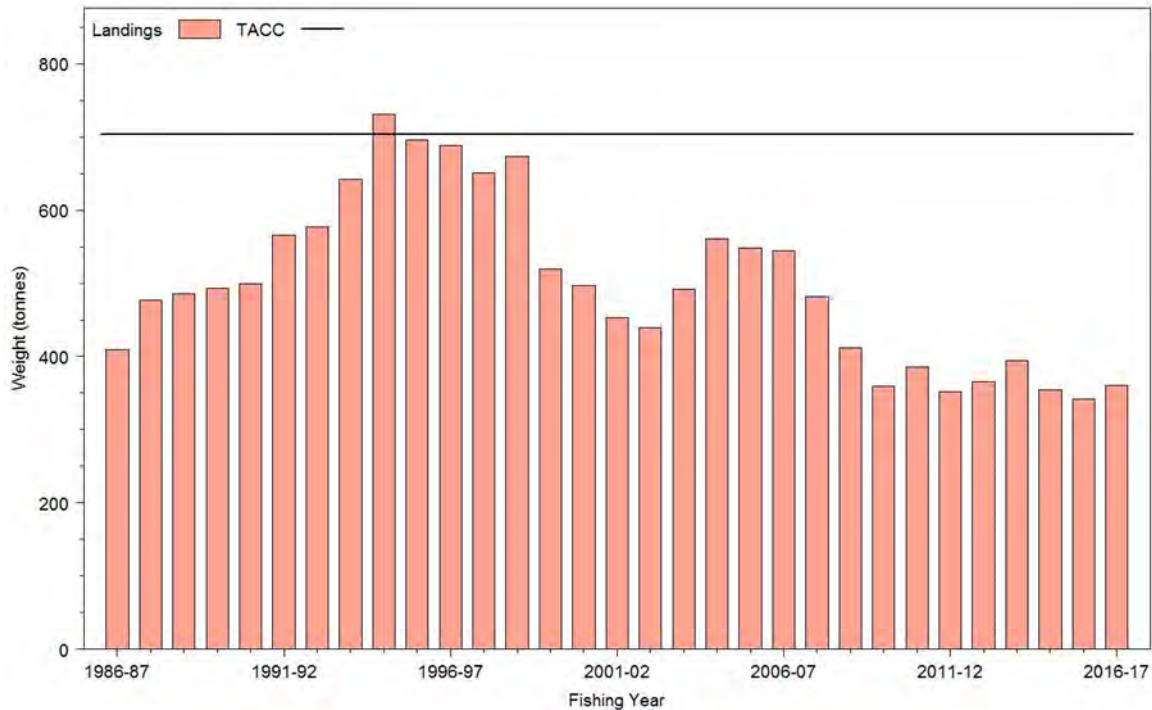


Figure 2: Commercial landings vs TACC for JDO 1 from 1986/87 to 2016/17.

Other sources of mortality from fishing

1385. Discards reported for JDO 1 are 0.02% of the catch. Reported discards are accounted for in landings, however, unreported fishing-related mortality of unwanted and unmarketable John dory may also be occurring, but can't be reliably quantified.

2.1.3 Environmental interactions

1386. The key environmental interaction of John dory fishing is the impact of fishing gear on the benthic environment. Management measures to mitigate the effects of inshore trawl and Danish seine activity (responsible for most catches of JDO 1) on benthic ecosystems have focused on spatial closures. This is achieved through regulations closing areas to bottom trawling and Danish seine. An area in Spirits Bay is closed to protect sponge and bryozoan assemblages, and areas within the Hauraki Gulf and within two nautical miles of the coast are closed to protect juvenile fish. A range of trawl and commercial and non-commercial set netting restrictions have been put in place around much of the west coast North Island to mitigate the risk of capture to Māui dolphins.

1387. Harbours are closed also to Trawl and Danish seine, as well as Purse seine, Lampara net, Box net and set nets greater than 1000m of length, to allow safe passage to shipping. These closures also protect these habitats from the effects of fishing. Adherence to the regulations is monitored, and the environmental impacts of fishing are summarised annually by Fisheries New Zealand.³

³ The Aquatic Environment and Biodiversity Annual Review (AEBAR) 2017 is available at: <http://www.mpi.govt.nz/dmsdocument/27471/loggedIn>

2.1.4 Current management approach

1388. The initial JDO 1 TACC of 704 tonnes was set on the introduction of John dory into the QMS in 1986, based on catch histories adjusted for commitment and dependence to the fishery. John dory was one of 21 species introduced into the QMS at that time that had catch histories that exceeded the TACC. The TACC has not been reviewed since, and a TAC and allowances are yet to be set for the fishery.

2.1.5 Current stock status

1389. An estimate of the stock biomass that will produce the MSY is not available for JDO 1, and neither is an estimate of the MSY. However, the Northern Inshore Fishery Assessment Working Group has agreed upon a catch per unit of effort (CPUE) reference level (indexing relative abundance) for each component stock in JDO 1 to represent a proxy for the biomass that will produce the MSY.⁴ Mean CPUE between the mid-1990s and 2010 for each component biological stock provides a proxy for a target biomass.

1390. Three individual biological stocks within JDO 1 have been identified, namely:

- Bay of Plenty
- East Northland and Hauraki Gulf
- West Coast of the northern North Island

1391. The mean CPUE between the mid-1990s and 2010 for each biological stock provides a reference point for a target biomass.

1392. Based on the CPUE analysis (Figure 3), JDO 1 in East Northland and the Hauraki Gulf is Very Unlikely (<10% probability) to be at or above the target, and unlikely to be below the soft limit (half the target). Annual commercial catches and fishing mortality have been relatively low over the last five years. There has been a modest increase in the CPUE indices over the last 4 years, indicating that the stock is rebuilding slowly, although it remains below the target. It is likely that recruitment⁵ had been low during the preceding period. The continued rebuilding of the JDO 1 stock in East Northland and the Hauraki Gulf to the target biomass level will depend on future levels of recruitment.

⁴ Langley A. D. 2015. Fishery characterisation and Catch-Per-Unit-Effort indices for John dory in JDO 1. New Zealand Fisheries Assessment Report 2015/47

⁵ Recruitment refers to the addition of new individuals to the fished component of a stock. This is determined by the size and age at which the fish are first caught.

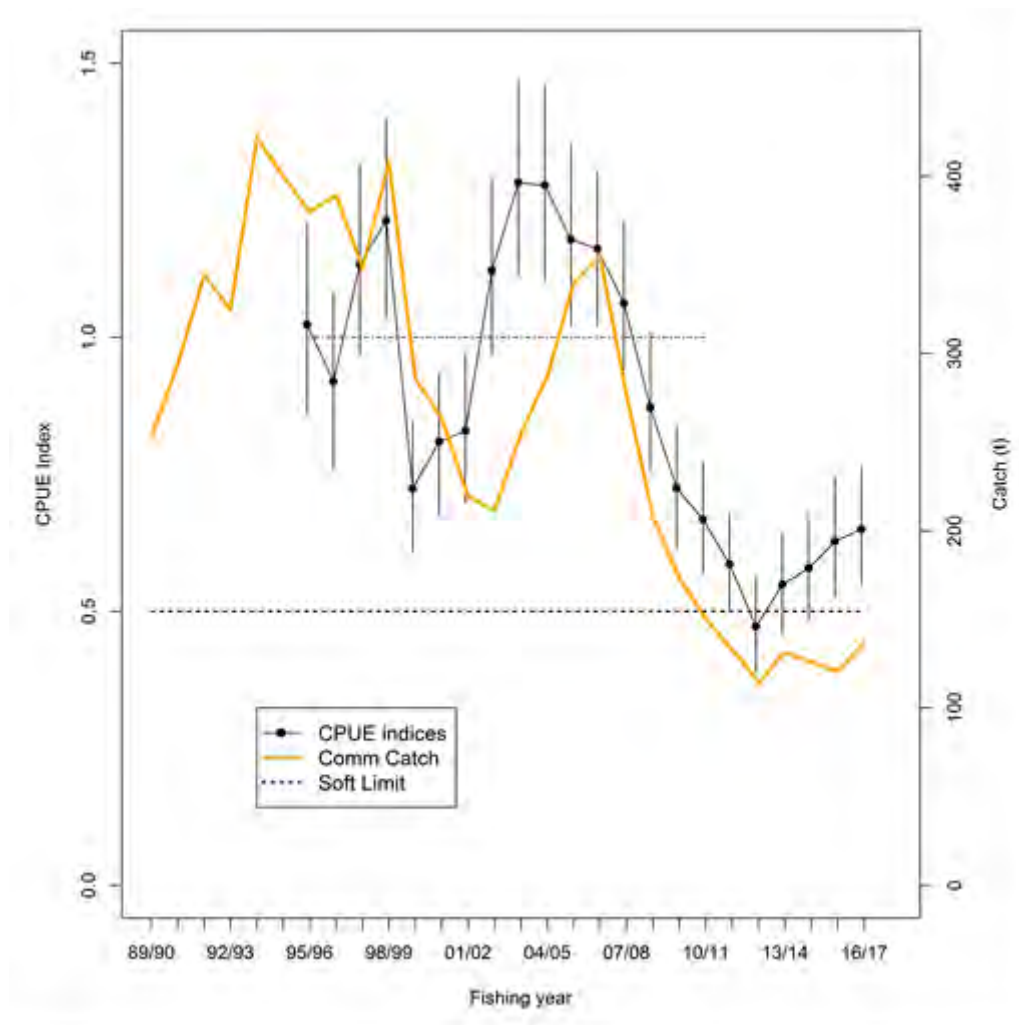


Figure 3: Standardised CPUE indices for John dory in the Hauraki Gulf and east Northland. Broken horizontal lines indicate the target and soft limit.⁶ Commercial catch from the area is also presented. Vertical lines show the 95% confidence intervals.

1393. JDO 1 in the Bay of Plenty is unlikely (<40% probability) to be at or above the target, and Very Unlikely (<10%) below the soft limit (Figure 4). The CPUE indices fluctuated over the time series and reached the lowest level in 2012-13. The CPUE indices increased in subsequent years and the 2016-17 index was at 85% of the target biomass level. Annual commercial catches have increased considerably over the last three years following the increase in abundance (as indexed by CPUE). There has been an increasing trend in fishing mortality over the last 8 years, and fishing mortality in 2016/17 was the highest in the series and considerably greater than the target level. The current (higher) level of the fishing mortality may cause the stock to begin to decline.

⁶ The Soft Limit is the biomass limit below which a requirement for a management review is triggered.

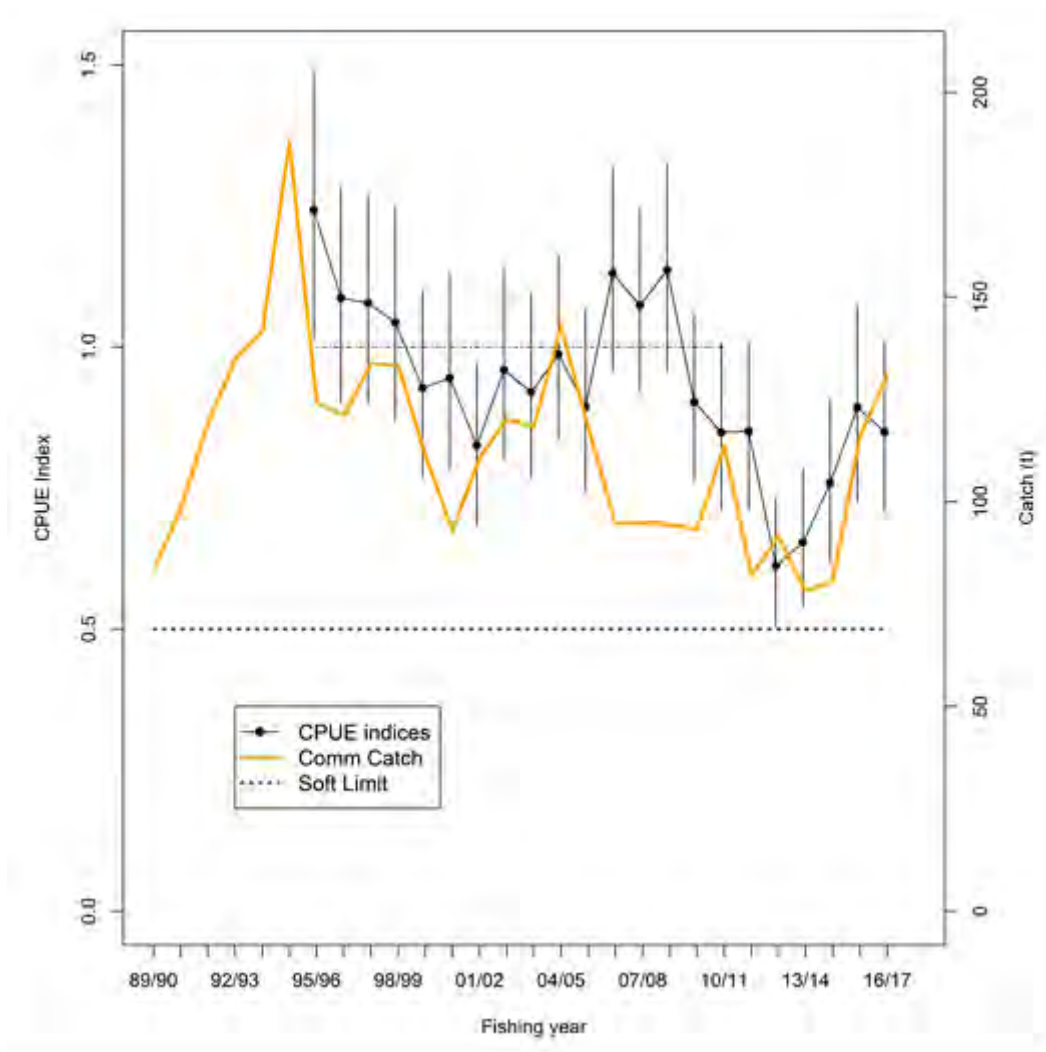


Figure 4: Standardised CPUE indices for John dory in the Bay of Plenty from estimates of catch rate in bottom trawl tows in a mixed target fishery.

1394. JDO 1 west coast North Island is Unlikely (<40%) to be at or above the target and Unlikely (<40%) below the soft limit (Figure 5). CPUE indices have fluctuated over the time series. CPUE indices were at the highest level in 2010/11 to 2012/13, and declined over the next four years. The 2016/17 CPUE index is at 79% of the target biomass level. Fishing mortality was at a relatively low level in 2010/11 to 2012/13 (corresponding to the high CPUE indices and relatively high abundance). Fishing mortality has been maintained at about the target level during 2014/15 to 2016/17, suggesting poor recruitment may be responsible for the recent decline in biomass level.

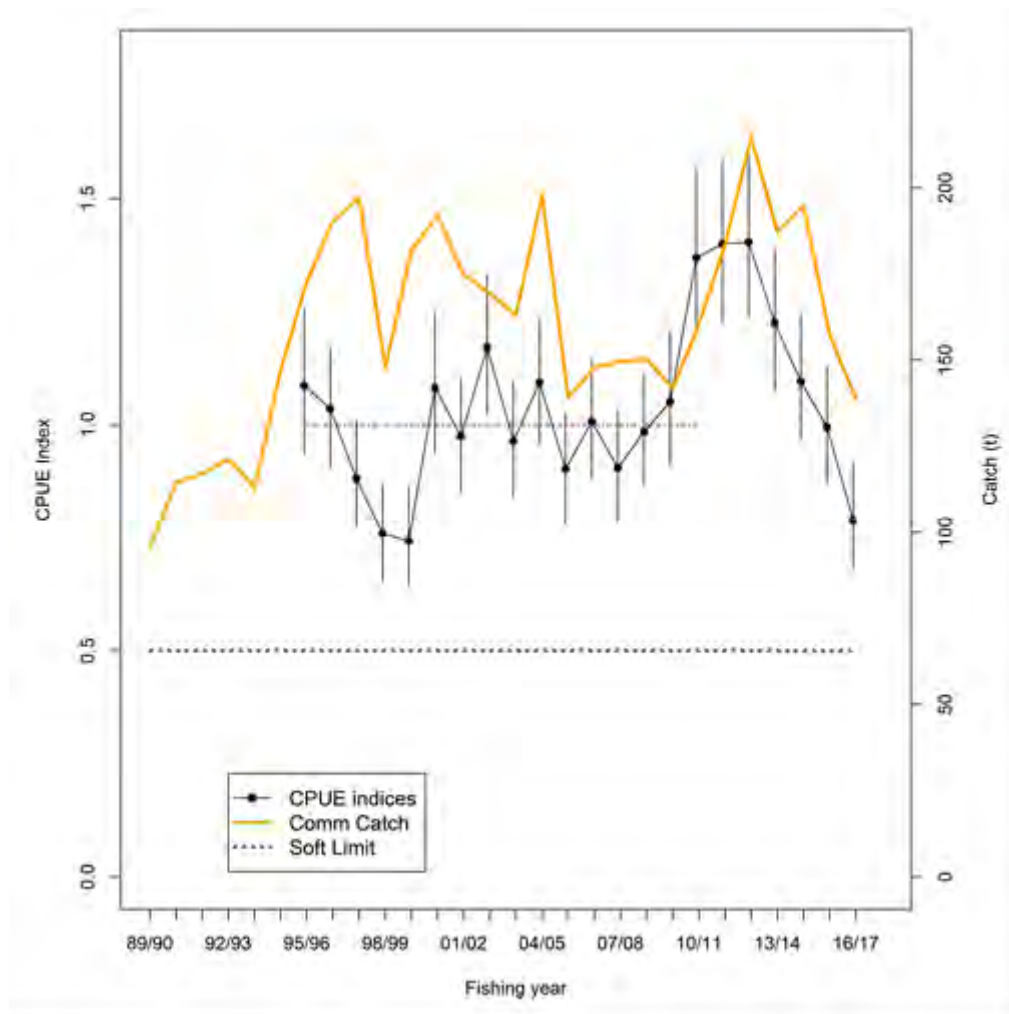


Figure 5: Standardised CPUE indices for John dory in the west coast North Island from estimates of catch rate in bottom trawl tows in a mixed target fishery.

2.2 OPTIONS CONSULTED ON

1395. Fisheries New Zealand consulted on the following options (Table 3):

Table 3: Proposed management settings in tonnes for JDO 1 from 1 October 2018

Option	Total Allowable Catch	Total Allowable Commercial Catch	Allowances		
			Customary Māori	Recreational	All other mortality to the stock caused by fishing
Current settings	-	704	-	-	-
Option 1	790	704	15	36	35
Option 2	423 ↓	354 ↓ (50%)	15	36	18 ↓
Option 3	387 ↓	320 ↓ (55%)	15	36	16 ↓

2.3 VIEWS OF SUBMITTERS

2.3.1 Input and participation of tangata whenua

1396. 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.

1397. Prior to consultation, Fisheries New Zealand discussed proposals with the Nga Hapu o te Uru o Tainui Iwi Fisheries Forum and Mai I Ngā Kuri a Whareki Tihirau Iwi Fisheries Forum, both of which agreed that the level proposed was an appropriate setting for an initial customary allowance. Te Hiku o Te Ika forum did not want their customary rights diminished and were concerned about ensuring that the first customary Māori allowance set is accurate. Te Runanga o Ngati Hine support their coastal relatives in preferring a decrease in the TACCs, with no changes to customary or recreational take for species, including John dory.

2.3.2 Kaitiakitanga

1398. Under Section 12(1)(b) you must also have particular regard to kaitiakitanga before setting or varying a TAC. Under the Act, kaitiakitanga is 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.

1399. Relevant Iwi or Forum Fish Plans provide a view of the objectives and outcomes iwi seek from the management of the fishery and can provide an indication of how iwi exercise kaitiakitanga over fisheries resources. Iwi views from Forum meetings and submissions received from iwi can also provide an indication.

1400. The Te Hiku o Te Ika Fisheries Plan contains three management objectives which are relevant to the management options proposed for JDO 1.

- a) Management objective 1: Iwi management systems support Te Hiku iwi in their fisheries decision making;
- b) Management objective 2: Fish stocks are healthy and support the social, cultural and economic prosperity of Te Hiku iwi and Hapu; and
- c) Management objective 3: To maximise iwi influence on all key environmental decisions that impact on fisheries.

1401. The Nga Hapu o Te Uru Fisheries Plan contains two management objectives which are relevant to the management options proposed for JDO 1.

- a) Management objective 1: Nga Hapu o Te Uru kaitiaki are able to participate in and influence fisheries decision-making; and
- b) Management objective 2: Relationships and partnerships with key stakeholders, managers and agencies are established and maintained.

1402. The Mai I Ngā Kuri a Whāreki Tihirau Iwi Fisheries Plan contains four management objectives which are relevant to the management options proposed for JDO 1.

- a) Management objective 1: Iwi fisheries management activities support the growth and wellbeing of our people;
- b) Management objective 2: Iwi are actively engaged with others to increase their fisheries potential within environmental limits;
- c) Management objective 3: The fisheries environment is healthy and supports a sustainable fishery; and
- d) Management objective 4: Tino rangatiratanga is advanced to ensure that iwi driven goals are achieved.

1403. Fisheries New Zealand considers that the management options presented in this advice paper will contribute towards the achievement of kaitiakitanga in ensuring that appropriate allowances are made for customary non-commercial fishing, the fishery remains sustainable, and that environmental impacts are minimised.

2.3.3 Other submissions

1404. Spearfishing New Zealand submits that John dory are prized by spear fishers due to the challenging depths where they are found and their exceptional eating qualities. The submitters support the introduction of allowances for Customary, Recreational, and Other Mortality at the level recommended. Spearfishing NZ supports option 3, as well as the need for reviewing the QMA boundaries.

1405. The New Zealand Sports Fishing Council (The Council) submits support for a modified version of option 3. The Council support a 403 tonne TAC comprising a 320 tonne TACC, 15 tonne customary allowance and a 36 tonne recreational allowance, until there is agreement to split JDO 1 and set separate east and west coast TACCs. The submitters support a split of the JDO 1 QMA into east and west coast areas, along with other inshore species.

1406. The Environmental Defence Society submits support for a modified version of option 3. Environmental Defence Society submits that a larger reduction in the TAC is required for you to meet the statutory requirements. Environmental Defence Society preferred a 20% reduction below recent catch rather than 10% accompanied by close monitoring and review within 24 months to determine whether further reductions to rebuild the stock in a timelier manner are required. Environmental Defence Society submits that a discussion on s11 considerations is required, as to do otherwise you could fail to take into account a relevant factor. Environmental Defence Society submits support for a regular annual trawl survey of the North Island inshore fisheries to provide fishery independent information to inform future management decisions. The submitters support an adjustment to management boundaries either through maximum harvest levels within the QMA or through slicing JDO 1 into 3 different QMAs.

1407. The Royal Forest & Bird Protection Society (Forest & Bird) submits support for option 3, because the proposed 55% reduction of the TACC could potentially help the stock to rebuild. The Option 2 proposal to reduce by 50% will simply restrict the current catch to what is being caught now. Forest & Bird suggests Fisheries New Zealand commits to a quantitative stock assessment of JDO1 within the next 3 – 5 years to determine how significant the decline is, and if additional management measures are needed.

1408. The Environment and Conservation Organisations of New Zealand Inc (ECO) submits support for a reduction in the TACC in accordance with option 3. ECO submits that this is the only option to reduce current catches based on standardised catch rates. ECO also

submits its concern for no strategy to avoid, remedy or mitigate the impacts of bottom fishing, no habitats of significance to fisheries management identified, and that maintenance of biological diversity has not been given effect to.

1409. The Fisheries Inshore New Zealand Northern Regional Committee (the Committee) submits support for option 1. The submitter disagrees that management decisions on TAC/TACC changes should be made to reduce headroom based on a perceived sustainability risk. The submitter notes that, for each sub-stock, CPUE is between the soft limit and the target, there are different trends among the sub-stocks, and two of the three sub-stocks are rebuilding. The submitter notes that the science working group considers fishing intensity to be low and that no overfishing is occurring in JDO 1. The Committee notes the uncertainty in the CPUE, lack of information on recruitment and unclear relationship between JDO 1 and JDO 2. The submitter states that fishers do not target JDO and that the need to avoid undersized snapper and the lack of SNA Annual Catch Entitlement (ACE) further constrain the JDO 1 fishery. In the submitter's view, increased JDO catches are expected with the rebuilding of the snapper fishery likely leading to anticipated TACC increases of SNA.
1410. Rod Scott is a former commercial fisher and trustee of a quota holding company. He submits that changes in fishing methods to avoid snapper also impacts on fishing for JDO 1, and at least in part explains the declining trend in JDO 1 catches. However, the submitter agrees that the headroom available through uncaught quota presents a sustainability risk and that the present TACC is set too high. The submitter supports a smaller reduction in TACC than under option 2 to achieve the desired result, recognizing that that might take a longer time frame. He submits that a 30-40% reduction in TACC would allow a small headroom above present landings, which could accommodate fluctuations in stock biomass.
1411. Mark Mathers is a licensed fish receiver and submits that rash decisions could lead to an unbalanced fishery. He submits that fishing on the West Coast is healthy, and the context from affected people should be taken into account when evaluating scientific advice.
1412. Andrew Turnwald, a commercial fisher, submits that fisheries should be managed as interacting stocks and not as independent species. He submits that there is little need to increase the deemed value rate for JDO 1 under proposed reductions to the TACC.
1413. Ben Turner, a commercial fisher, submits his preference for option 3 since it leaves 35 tonnes of fish in the water to rebuild the stocks. He submits that option 2 is insufficient, as effectively the same amount of fish could still be caught.
1414. The Whitianga & Coromandel Peninsula Commercial Fishermen's Association submits that it is against any TACC reductions. The submitter states that fishers do not target John dory as much as before in the important Hauraki Gulf fishery because of the need to avoid snapper and undersized snapper through the imposition of a voluntary move-on rule. They also note that the current cost of research of inshore species on quota holders (\$33 million for all species in 2016/17 including DOC levies) is enough and that the need for additional research should be funded by government.
1415. Southern Cross Fishing describe themselves as a family run fishing business operating on the East Coast North Island. The submitters support option 3, since they: have observed reductions of John dory bycatch in the snapper fishery; have concerns that uncaught quota may contain a sustainability risk; and note that pressure on this stock will only increase

with TACC reductions in TAR1. Also, from a recreational point of view, they submit that where John dory was once abundant around wharves they are no longer present, or scarce at best.

1416. Te Ohu Kaimoana submits support for a variation of option 1, setting a TAC and allowances for customary, recreational, and other sources of fishing-related mortality while maintaining the TACC at its current level. In Te Ohu Kaimoana's view, the rationale for a TACC reduction to address the management issues they consider to be applicable to JDO 1 is inadequate. The management issues identified by Te Ohu Kaimoana include residual 28N rights, the mixed nature of the fishery, and the apparent contradiction that distinct sub stocks are managed under one TACC. Te Ohu Kaimoana state there is strong evidence for separating JDO 1 into north east and west sub-areas, and urge engagement with iwi and quota owners to improve the current research program. Te Ohu Kaimoana submit support to increase the interim deemed value rate, while opposing the retention of differential rates applicable to the annual deemed value.

1417. Ngati Whatua Fisheries Limited submit support for option 2 in regard to the setting of the recreational allowance and the varying of the TACC. They submit support for setting the customary allowance at 36 tonnes, based on alignment with the recreational catch. They support investigating the need to realign QMA boundaries.

1418. The Iwi collective Partnership submit support for the views of Te Ohu Kaimoana, and support option 1.

1419. A meeting was held in Auckland on 16 July to discuss 2018 Sustainability measure proposals, including JDO 1. Commercial fishers present were concerned at the economic impact of adopting option 3 on their businesses. Northern iwi attending a hui on 20 July proposed that the JDO 1 customary allowance be set at 20 tonnes, to provide for the estimated need.

2.3.4 Future management direction for JDO 1

1420. John dory are relatively short-lived and their abundance can vary depending on variations in recruitment, which is driven largely by environmental conditions. Fisheries New Zealand considers that it would be appropriate to adopt a management approach for JDO 1 that better manages the variation in abundance.

1421. The stock status of JDO 1 has been evaluated using standardised CPUE. It is intended to next update the CPUE analysis in 2021. Additional monitoring of abundance would be required to support a more responsive approach. This could include research trawl surveys to provide abundance information that would be independent of the commercial fishery. A management approach, which applied agreed decision rules to guide management, could provide more certainty for fishers.

1422. A key step towards a more responsive approach would be to adopt separate QMAs for the discrete stocks of John dory within JDO 1.

1423. Fisheries New Zealand proposes a future review of Quota Management boundaries, and to consider options for more responsive management of JDO 1 if, for example, fisheries independent information becomes available through a series of East Coast North Island trawl surveys. The TAC options below should be considered in that context.

2.4 SETTING THE TAC

1424. The setting of a TAC for JDO 1 will need to be done under s 13(2A) of the Act, which 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. Section 13(2A) is used for stocks such as JDO 1 where the current biomass level of the stock is estimated by proxy. Fisheries New Zealand considers that the proxy target for JDO 1 determined from CPUE is an appropriate target, is consistent with the Harvest Strategy Standard (which provides best-practice guidance for determining management targets and limits), and notes it was accepted by the relevant science working group as a suitable proxy for B_{MSY} . Setting the TAC for JDO 1 with reference to the proxy target and CPUE proxy for current abundance would not be inconsistent with the objective under s 13(2A).
1425. The CPUE series shows that all the component stocks within JDO 1 are below the target biomass level and, under the Harvest Strategy Standard, a reduction of the JDO 1 TAC is justified to address sustainability risks and help rebuild the JDO 1 stock towards the target.
1426. Currently, only a TACC for JDO 1 has been set. Options to set TACs propose to account for adjustments to the TACC and, for the first time, the setting of non-commercial allowances (an allowance for customary Māori fishing and an allowance for recreational fishing), and an allowance for all other mortality caused by fishing.
1427. The management reference points used for JDO 1 stocks are proxies for B_{MSY} (and the related soft and hard limits) derived only from commercial catch and effort data. We have assumed that the levels of non-commercial catch and incidental mortality of JDO 1 have been relatively constant over time, and therefore represent a level of yield in addition to the commercial catch. The appropriate TACs proposed in Table 2 were estimated by adding the estimates of customary catch, recreational catch, and incidental mortality to the proposed commercial limits.
1428. Submissions explain that there have been changes in the Hauraki Gulf fishery, with effort shifting to areas elsewhere to avoid snapper (and the high concentrations of undersized snapper in the Gulf). It is suggested that targeted fishing for JDO 1 is affected by the availability of ACE for snapper. However, we note that the current level of ACE for SNA 1 has been the same since 1997, while JDO 1 catch and abundance has declined.
1429. JDO 1 is taken mostly, but not entirely, as a bycatch of other target fisheries for species such as snapper that are managed under the QMS. Interactions with other species in the target fishery for JDO 1 are yet to be characterised, but are unlikely to change under options 2 and 3 unless fishing effort changes.

2.4.1 Interdependence of stocks

1430. In setting the TAC, you are required to have regard to the interdependence of stocks. There is no information to suggest that the interdependence of any stocks, including JDO 1, would limit any of the TAC options that are proposed.

2.4.2 Environmental principles

1431. Section 9 of the Act prescribes three environmental principles that you must take into account when exercising powers in relation to the utilisation of fisheries resources or ensuring sustainability (refer to section 1.4 of the Statutory Considerations section for a full description of these principles).

1432. Fisheries New Zealand does not have reliable information on key environmental issues associated specifically with the JDO 1 fishery. The proposed changes to the JDO 1 TAC reflect existing or reduced catch levels. There is no information to indicate there will be impacts upon the matters noted in section 9 of the Act.

1433. Information on the environmental interactions of fishing for John dory and existing controls are outlined in section 2.1.3.

2.4.3 Section 11 considerations

1434. Section 11 of the Act sets out various matters that you must take into account or have regard to when setting or varying any sustainability measures (such as a TAC). These include any effects of fishing on the stock and the aquatic environment, as well as any relevant fisheries plan (refer to section 1.6 of *Part 2: Statutory Considerations* section for a full description).

1435. The Environmental Defence Society submits that discussion on these considerations is required, as to do otherwise you could fail to take into account a relevant factor. Fisheries New Zealand agrees and provides analysis below.

Sustainability measures

1436. You are required to take into account any existing controls that apply to the stock or area concerned.

1437. Fisheries New Zealand considers that other existing controls are being applied appropriately, apart potentially from the current stock boundaries. We recommend reviewing these controls, as outlined elsewhere in this paper.

1438. The options proposed for recreational catch in JDO 1 are based on the best available information. Fisheries New Zealand does not consider this level of recreational catch to pose a risk to the sustainability of the stock. Therefore we do not propose you review the current recreational daily bag limit of 20 John dory per person per day, nor the setting of a minimum legal size for recreationally caught John dory in JDO 1.

1439. We are reviewing the deemed value rates for JDO 1, and recommend increasing the interim deemed value rate in accordance with the Guidelines, in order to better achieve the purpose of the Act. This approach creates further economic incentives for fishers to act appropriately and balance any catch against ACE, if ACE is available.

Effects of fishing

1440. Most of the JDO 1 catch is taken by bottom trawl and Danish seine, which does impact on the benthic environment. The effects are unlikely to change under option 2 or 3 on account of the decrease in the TACC to better reflect the current catch. As a result, adopting option 2 or 3 is unlikely to have any additional detrimental impact on biological diversity of the aquatic environment.

1441. The potential adverse effects caused by increased fishing effort under option 1 is mitigated by closures, and would be limited if vessels trawl along previously-trawled tows. The trawl footprint of the inshore fisheries will continue to be mapped and monitored annually, and any changes of significance detected will give rise to a review of management arrangements.
1442. Despite these measures, ‘Sea Change’ and the Hauraki Gulf Forum have made recommendations and drafted strategic plans respectively to request that the government further restricts trawl and Danish seine fishing in the Hauraki Gulf.
1443. Natural variations in stock biomass means that management measures are sometimes required to reduce catches during times of persistent low recruitment. Conversely, increases in stock biomass can provide opportunities for increased utilisation when strong year classes appear in the population.

Hauraki Gulf Marine Park Act 2000

1444. Section 11(2)(c) requires you to have regard to sections 7 and 8 of the Hauraki Gulf Marine Park Act 2000 when setting or varying the TAC relating to stocks with boundaries intersecting with the Park. Sections 7 and 8 of the Hauraki Gulf Marine Park Act 2000 are discussed in section 1.10 of *Part 2: Statutory Considerations*.
1445. Some parts of the JDO 1 stock boundaries intersect with the Park boundaries, and about 20% of current fishing for JDO 1 occurs within the Hauraki Gulf Marine Park Act 2000. Ensuring sustainability and rebuilding the John dory stock size is consistent with objectives of the Hauraki Gulf Marine Park Act 2000. Fisheries New Zealand considers that a reduction in the level of harvest is an appropriate management action to aid a rebuild of the John dory resource within the Hauraki Gulf.
1446. The Bay of Plenty Regional Council has included measures within its revised coastal plan to exclude fishing from certain defined areas within the inshore area of the Bay of Plenty, which is within JDO 1. These are relatively small areas and, although the impact on fishing for John dory cannot be quantified, it is unlikely to be significant.

2.4.4 Option 1 (*Status quo*)

1447. There currently is no TAC set for JDO 1, and the *status quo* setting applies only to the current JDO 1 TACC of 704 tonnes. The current TACC was set when JDO 1 was first introduced into the QMS in 1986 (when the concept of a TAC and allowances was not part of the legislation) and has not been reviewed since, which is why a TAC has not been set to date. In these circumstances, Fisheries New Zealand policy is to set a TAC and allowances when the TACC is reviewed, even if you decide not to vary the TACC.
1448. You will be setting a TAC and allowances for JDO 1 for the first time. The *status quo* TAC is based on pre-1984 levels of catch, as discussed above under ‘Current Management Approach’.
1449. Option 1 provides the potential for catches to increase from recent levels, since catches are currently at about half the level of the proposed TAC. This has the greatest potential to impact the Hauraki Gulf stock since in the 1990s and mid-2000s this area supported a much greater target fishery for JDO 1. This option presents the greatest sustainability risk

to the stock, given the long-term decline in catch and abundance of John dory in JDO 1 since the mid-1990s, and would be least likely to ensure that JDO 1 rebuilds.

1450. The Committee, Te Ohu Kaimoana, Iwi Collective Partnership and the Whitianga & Coromandel Peninsula Commercial Fishermen's Association support option 1. The Committee disagrees that management decisions on TAC/TACC changes should be made to reduce headroom, based on a perceived sustainability risk. They note for each sub-stock, the biomass is between the soft limit and the target, there are different trends among the sub-stocks, and two of the three sub-stocks are rebuilding. They note also that the science working group considers fishing intensity to be low and that fishing mortality is not exceeding the target level. The Committee suggests uncertainty surrounding stock boundaries and recruitment makes the information insufficient to inform decisions.
1451. We do not agree with the above views that the Harvest Strategy Standard implies the requirement for management action is triggered only on reaching the soft limit. Harvest Strategy guidance should be used to manage stocks to fluctuate around the target, and not languish below it. Fishing mortality proxies suggest that current fishing mortality is at about the level of the target level. If the fishing intensity were to increase from current levels as provided for by option 1, Fisheries New Zealand would expect a concomitant increase to fishing mortality beyond this target.
1452. Fisheries New Zealand notes that the best available information suggests that the JDO 1 stocks are all currently below target biomass levels. Under the Harvest Strategy Standard, Fisheries New Zealand considers that a reduction in catch levels from that provided under option 1 is required to address sustainability risks and help rebuild the JDO 1 stock.
1453. We assess that a constant catch at the level of the current TAC is the least likely option to move the stock to, and then maintain at, the B_{MSY} level. This is because the option does not reduce the sustainability risk arising from the potential for increased commercial fishing intensity. The sustainability risk would be greatest for the Hauraki Gulf if the latent effort available under the *status quo* were to be applied as it was in the 1990s and mid-2000s. Fisheries New Zealand considers that Option 1 could impact on commercial and non-commercial fishers in the future if the JDO 1 biomass declines further.

2.4.1 Option 2 (Fisheries New Zealand recommended)

1454. Fisheries New Zealand consulted on Option 2, which is based on setting the TAC at a level that reflects current catches (423 tonnes).
1455. Fisheries New Zealand considers option 2 is consistent with your statutory obligation to set a TAC that would move the stock towards a level that will support the MSY (B_{MSY}). Further, we consider that setting a TAC based on current catch may be more likely to ensure that the stock rebuilds than if the TAC were set under option 1.
1456. Setting the TAC requires you to consider the factors that may be relevant to the way and rate a stock is moved towards or above B_{MSY} . There is an indication of some increase in relative abundance in the eastern stocks (East Northland and Hauraki Gulf, Bay of Plenty), and that a continuing increase to biomass towards targets will depend on recruitment strength and the levels of harvest. Fisheries New Zealand is unable to predict future recruitment of John dory into the JDO 1 stock. However, we consider that if fishing intensity is constrained to current levels, ongoing JDO 1 recruitment is likely to at least maintain the rate of rebuild towards the biomass level that can support the MSY.

1457. Ngati Whatua Fisheries Limited submitted support for Option 2, but did not elaborate on why it was their preferred option. Rod Scott supports option 2, modified to allow a small headroom above present landings which could accommodate fluctuations in stock biomass.
1458. The social, cultural and economic impact on recent commercial and non-commercial catch and commercial revenues would be negligible, as this option reflects recent reported catch levels that have been relatively stable. Further details of impacts on commercial fishing are provided in section 2.4.4.
1459. In consideration of the mixed views of submissions received and our analysis above, you may wish to set a TAC on the basis of option 2 at this stage, perhaps while other management settings are investigated. For example, alternative quota boundaries and more responsive management in the future may help better ensure sustainability while providing for utilisation.

2.4.2 Option 3

1460. Option 3 is based on a TAC that would constrain catch to approximately 10% less than current levels.
1461. Fisheries New Zealand considers option 3 is consistent with your statutory obligation to set a TAC that would move the stock towards a level that would support MSY, and is the option most likely to move the stock to B_{MSY} . Setting a catch limit 10% below more recently observed catch levels will reduce current commercial fishing pressure (both catch and effort) on JDO 1, and adopting this option would provide the greatest certainty of stock biomass rebuilding towards the target level compared to the other options, under similar recruitment. The rate of biomass change cannot be determined, but would likely be faster under a lower TAC.
1462. Option 3 was preferred by seven submissions, including two recreational groups, three Non-government Organizations (although the Environmental Defence Society preferred a 20% reduction below recent catch rather than 10%), and two commercial operators. One commercial operator preferred option 3 because they have observed reductions of John dory bycatch in the snapper fishery; have concerns that uncaught quota may contain a sustainability risk; and note that pressure on this stock will only increase with TACC reductions in TAR 1.
1463. A number of commercial fishers expressed concern at the economic impact of adopting option 3 on their businesses. Fisheries New Zealand agrees that option 3 would have the greatest potential economic impacts on commercial fishers in comparison to other options, by reducing commercial catch below recent levels. Further details on the economic consequences on commercial fishing are provided in section 2.4.4
1464. Option 3 has the support of the majority of submitters. However, Fisheries New Zealand assesses it might be a more risk-averse approach to the sustainability of the JDO 1 stock than is required, especially while other management settings such as stock boundary adjustments are investigated.

2.5 ALLOCATING THE TAC

1465. Having set the TAC, you must set the TACC and in setting or varying the TACC must make allowances for Māori customary non-commercial fishing interests, recreational fishing interests, and all other mortality to the stock caused by fishing (s 20 & 21). Relevant considerations when determining allowances are discussed in section 1.9 of *Part 2: Statutory Considerations*, and section 1.3 of *Part 3: Key issues raised in submissions*. As part of reviewing the TAC and TACC for JDO 1, new allowances for non-commercial fishing and an allowance for other sources of mortality caused by fishing are required to be set for the first time.

2.5.1 Māori customary allowance

1466. Under all options, we recommend that you set the Māori customary allowance at 15 tonnes to provide for customary interests.

1467. Prior to consultation, Fisheries New Zealand discussed the magnitude of this allowance with the Nga Hapu o te Uru o Tainui Iwi Fisheries Forum and Mai I Ngā Kuri a Whare i ki Tihirau Iwi Fisheries Forum, both of which agreed that 15 tonnes was an appropriate setting for a customary allowance.

1468. Te Hiku o Te Ika Forum did not want their customary rights diminished, and were concerned about ensuring that the first customary Māori allowance set is accurate.

1469. Te Ohu Kaimoana states that 20 tonnes was suggested by iwi at a meeting, and that they support this level of allowance. Ngati Whatua Fisheries Limited submitted support for the customary allowance aligning with the recreational catch estimate, and hence be set at 36 tonnes.

1470. Fisheries New Zealand considers that there is currently not enough information available to confirm whether or not this amount of John dory is being taken under customary authorisation. It is also likely that a significant amount of customary non-commercial catch occurs under the recreational catch allowance.

1471. Fisheries New Zealand considers that 15 tonnes is appropriate to cover the likely customary catch as agreed by some iwi, and notes that the allowance is not intended as a constraint on customary catch and can be reviewed to address new information that comes to hand.

1472. Section 21 of the Act requires that when allowing for Māori customary interests, you must take into account any mataitai reserves and temporary area or method closures in the QMA. We note that there are matatitai reserves (which are generally small inshore areas) and area closures within JDO 1, however, given the aim of the proposals is to ensure the JDO 1 stock rebuilds, we consider that the proposals are likely to improve customary fishing for John dory over time and not have any adverse effect on customary fishing interests.

2.5.2 Recreational allowance

1473. Under all options, we recommend that you set the allowance for recreational fishing interests at 36 tonnes in JDO 1. This estimate is based on the 2011/12 National Panel

Survey of recreational catch, which is currently the best available information. We note that an update of the survey is currently underway and will provide information to be included in a future review.

1474. Recreational submissions were supportive of setting this level of allowance.

1475. Te Ohu Kaimoana holds the view that the recreational allowance be based on recreational catches at the time of the Settlement and that future catch be constrained to this level. Te Ohu Kaimoana states it has insufficient information to assess what that might be.

1476. Fisheries New Zealand disagrees with Te Ohu Kaimoana's approach, and we have based our recommendation on the best available information on the current level of recreational catch in JDO 1 from the 2011/12 National Panel Survey (see section 1.3 of *Part 3: Key issues raised in submissions* for discussion of our views). Fisheries New Zealand does not consider this level of recreational catch to pose a risk to the sustainability of the stock.

2.5.3 Allowance for other sources of mortality caused by fishing

1477. Options of 35 tonnes (Option 1), 18 tonnes (Option 2) and 16 tonnes (Option 3) are proposed for setting the allowance for other sources of mortality caused by fishing in JDO 1, based on 5% of the TACC. This allowance is based on consideration of incidental mortality associated with inshore fish such as John dory caught mostly by trawl.

1478. Submissions received noted that the 5% of the TACC proposed is less than the standard 10% of the TACC usually set for other sources of mortality rates. We note that the allowance of 10% is used in cases where very large catches are taken and where gear failure is known to result in the loss of fish from the gear. That is not considered to be the case for JDO 1.

1479. The level of incidental mortality to the JDO 1 stock caused by fishing has not been quantified. Trawling and Danish seining are the methods of fishing which take the greatest quantities of John dory in JDO 1 by volume, and Fisheries New Zealand considers that there is some incidental mortality associated with those methods, at least through the subsequent mortality of fish that escape the nets. No additional source of mortality arises from having a minimum legal size and fish having to be discarded, as a limit is not set for John dory. Fisheries New Zealand does not apply standard rates to the setting of other sources of mortality, and assesses 5% of the TACC appropriate for this particular fish stock.

2.4.4 TACC

1480. The TACC for JDO 1 has not been reviewed since the introduction of John dory into the quota management system (QMS) in 1986. Three options were proposed in the discussion paper as shown in Table 3.

1481. The economic implications of the proposed options are outlined in Table 4.

Table 4: Predicted changes to commercial revenue of the proposed options, based on the price to the fisher of \$5.64/kg for JDO 1 in 2016/17.

	TACC (t)	Change from <i>status quo</i> (t)	Predicted revenue change (\$ p.a.) from <i>status quo</i>	Change from average catch (last 5 years)	Predicted revenue change (\$ p.a.) from last 5 years
Option 1	704	-	-		
Option 2	354	350 ↓	\$1,974,000 ↓	0	
Option 3	320	320 ↓	\$2,165,760 ↓	34 tonnes ↓	\$191,760 ↓

2.5.4 Option 1 (*Status quo*)

1482. Option 1 proposes no change to the current TACC of 704 tonnes.

2.5.5 Option 2

1483. Option 2 proposes a TACC set at 354 tonnes, based on the average commercial JDO 1 catch level (from reported landing returns) in the most recent 5 year period. Option 2 equates to a TACC reduction from the *status quo* of approximately 50%, and is set at a level approximating the current commercial catch of John dory in JDO 1.

1484. Reducing the effective TACC under Option 2 to current levels of catch will allow for existing value from the fishery to continue to be achieved. JDO 1 has a relatively high commercial value (port price of \$5.64/kg in 2016/17), and most of the JDO 1 commercial catch is taken by fishers contracted to quota holders. If the TACC is reduced as proposed and still allows current catches to be maintained, Fisheries New Zealand anticipates that both bycatch and some target fishing of John dory will still be able to be covered through available ACE arrangements, since there is no reason for changing existing arrangements. However, a reduction in the TACC of this magnitude will mean an opportunity cost for commercial fishers, who will no longer be able to catch up to the current catch limit (704 tonnes TACC).

1485. Fisheries New Zealand considers that existing fishers will remain more likely to be able to access ACE, as they are likely to already have existing relationships with quota holders.

1486. If the JDO 1 TACC is reduced, ACE and quota will become scarcer, and the current average trade values, of around \$0.90/kg and \$10.00/kg respectively, may increase. These increases are likely to affect the profitability of ACE fishers (fishers with little or no quota who are reliant on quota leasing arrangements), and conversely, quota holders may benefit over the medium term, because trade prices for both quota and ACE may increase. However, reducing the JDO 1 TACC under Option 2 is also likely to limit the number of new fishers entering the fishery and so limit additional demand for ACE.

2.5.6 Option 3

1487. Option 3 proposes a TACC set at 320 tonnes, based on a catch level 10% below the most recent 5 year average catch, to constrain commercial catch below the catch levels of recent years. Option 3 is a more risk-averse approach to the sustainability of the JDO 1 stock, and equates to a TACC reduction from the *status quo* of approximately 55%. Option 3

places greater weight on ensuring the likelihood that the JDO 1 stock will rebuild to the target.

1488. Option 3 would have the greatest potential economic impacts on commercial fishers in comparison to other options, by reducing commercial below recent levels. Adopting Option 3 is likely to impact on fishers that use others' ACE to target John dory in particular, while having a moderate impact on commercial catch and revenues based on recent catch levels overall. Reducing the JDO 1 TACC under Option 3 is likely to limit the number of new fishers entering the fishery, since the availability of ACE will be more restricted.

1489. Under this option, ACE and quota will become scarcer than under Option 2, and the current average trade values, of around \$0.90/kg and \$10.00/kg respectively, may increase more. These increases are likely to have a greater effect on the profitability of ACE fishers (fishers with little or no quota who are reliant on quota leasing arrangements), and conversely, quota holders may benefit over the medium term, because trade prices for both quota and ACE may increase.

2.6 OTHER MANAGEMENT CONTROLS

2.6.1 Recreational controls

1490. Fisheries New Zealand is not proposing to review the current recreational daily bag limit of 20 John dory per person per day (within a combined species limit), nor proposing to set a minimum legal size for recreationally caught John dory in JDO 1.

2.6.2 Deemed value rates

1491. The review of deemed value rates for JDO 1 has been triggered by a sustainability review, and not by landings in excess of TACC or a significant change in port prices. The current interim deemed value rate is set at 50% of the annual rate. Consistent with Principle 7 of the Guidelines⁷, and to incentivise fishers to regularly cover catch with ACE throughout the year, Fisheries New Zealand proposes increasing the interim deemed value rate for JDO 1 for the 2018/19 fishing year to 90%, as outlined in Table 2. Further details are provided in the Deemed Values chapter of this document.

2.6.3 Review of QMA boundaries

1492. In 2012, the stock structure of John dory was reviewed⁸. Evaluation of patterns in the distribution of catch and CPUE, research survey biomass trends, location of spawning and nursery grounds, size and age compositions, and anecdotal information from the fishery suggested that there are three biologically distinct John dory sub-stocks in JDO 1: Hauraki Gulf and east Northland; Bay of Plenty; and west coast North Island. This review and the most recent CPUE analyses presented in this document support the separation of the northeast and northwest coast stocks of JDO 1.

1493. Fisheries New Zealand considers it is timely to review stock boundaries for JDO 1 and potentially other inshore stocks. All submissions commenting on boundary issues were

⁷ Available at www.FNZ.govt.nz/document-vault/3663

⁸ Dunn, M R; Jones, E (2013). Stock structure and fishery characterisation for New Zealand John dory. *New Zealand Fisheries Assessment Report 2013/40*. 99 p.

supportive of this type of review. For example, the Environmental Defence Society supports an adjustment to management boundaries either through maximum harvest levels within the QMA or through slicing JDO 1 into 3 different QMAs.

1494. Fisheries New Zealand proposes to engage with quota holders/operators in Fisheries Management Areas 1 and 9 to review Quota Management boundaries with the intent of implementing changes to stock boundaries on the basis of quota holder agreements. The Act also provides the option for you to determine alternative stock boundaries without the agreement of stakeholders if you consider it to be necessary to ensure sustainability, and if you have approved a plan that specifies the detail of how the alternative boundaries would be applied.

2.7 OTHER MATTERS

5.7.1 Need for additional research

1495. A number of submitters express concern about the uncertainty in information and the need for additional research.

1496. Fisheries New Zealand has provided information that is available without unreasonable cost, effort, or time (as provided for in the definition of best available information in section 2 of the Act). The Act makes clear that while you should be cautious where information is uncertain, unreliable or inadequate, you should not postpone decisions until you have full or completely certain information.

1497. 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 Fishery Assessment Plenary Reports or Working Group Reports for individual species, when available, is given significant weighting. The information presented in these reports is subject to a robust process of scientific peer review and the John dory assessment achieved a rating by the working group of the highest quality.

1498. The option of fisheries independent information becoming available in the future through an East Coast North Island trawl survey is being considered, although the fish stocks likely to be able to be indexed are yet to be determined.

5.7.2 Preferential allocation (28N) rights

1499. Te Ohu Kaimoana considers that reducing a TACC in a fishery where there are 28N rights in play effectively sets up the scenario whereby Settlements rights will eventually be diminished.

1500. Two current quota owners hold 6.33 tonnes of preferential allocation (“28N”) rights in JDO1. On a future increase in the JDO1 TACC, these rights will need to be discharged via a reallocation of quota shares in accordance with section 23 of the Fisheries Act 1996. Te Ohu Kaimoana submitted that there should be no TACC reductions for any stock for which 28N rights exist, and that shelving of ACE should be used instead to ensure sustainability. For a full discussion of this issue, see section 1.9 of *Part 2: Statutory Considerations*, and sections 1.2 and 1.4 of *Part 3: Key issues raised in submissions*.

3 Conclusion and Recommendation

1501. Fisheries New Zealand assesses that there is a risk to the sustainability of JDO 1 if the current catch limit was fully utilised. There are also risks to the way and rate of the recovery of the JDO 1 stock under current levels of catch, but these are more uncertain.
1502. Fisheries New Zealand invited feedback from tangata whenua and stakeholders and, having considered submissions, accepts that reducing catch limits is unlikely to be the complete answer to resolving management issues pertinent to JDO 1. However, the current approach of having a very high TACC relative to commercial catches does not fit well within the legislative framework of the Act. A reduction to catch limits as proposed is consistent with obligations under s 13 of the Act.
1503. Fisheries New Zealand recommends that you implement Option 2. The sustainability risk is addressed, although the rate of rebuilding of JDO 1 may be slower than under option 3. Option 2 addresses concerns from most commercial submitters about maintaining a viable catch mix and the economic impacts of reductions on their business. The impact of adopting this option on recent commercial catch, catch mixes and revenues would be negligible, as this option reflects the stable catch levels of the most recent years. Reducing the effective TAC under Option 2 to current levels of catch will allow for more value to be achieved from existing levels of utilisation.
1504. Fisheries New Zealand also invited feedback from tangata whenua and stakeholders on other management measures for JDO 1, including a review of the quota management area boundaries. Submissions were supportive, with many conditioning their support for catch reductions to the implementation of quota boundary changes. Fisheries New Zealand proposes to engage further with quota holders/operators and report back to you this time next year with recommended outcomes.
1505. Fisheries New Zealand notes that you have discretion in choosing an option and may make up your own independent assessment of the information presented to you in making this decision. You are not bound to choose the option recommended by Fisheries New Zealand.

Note that Fisheries New Zealand proposes to engage with quota holders/operators on a review of the quota management area boundaries for JDO 1 and report back to you this time next year with recommended outcomes.

Noted

AND

Option 1

Agree to set a JDO 1 TAC for the first time of 790 tonnes and within the TAC:

- i. Set an allowance of 15 tonnes for Māori customary non-commercial fishing interests;
- ii. Set an allowance of 36 tonnes for recreational fishing interests;
- iii. Set an allowance of 35 tonnes for other sources of fishing-related mortality;
- iv. Retain the JDO 1 TACC of 704 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 2 (Fisheries New Zealand preferred)

Agree to set a JDO 1 TAC for the first time of 423 tonnes and within the TAC:

- i. Set an allowance of 15 tonnes for Māori customary non-commercial fishing interests;
- ii. Set an allowance of 36 tonnes for recreational fishing interests;
- iii. Set an allowance of 18 tonnes for other sources of fishing-related mortality;
- iv. Reduce the JDO 1 TACC from 704 to 354 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Agree to set a JDO 1 TAC for the first time of 387 tonnes and within the TAC:

- i. Set an allowance of 15 tonnes for Māori customary non-commercial fishing interests;
- ii. Set an allowance of 36 tonnes for recreational fishing interests;
- iii. Set an allowance of 16 tonnes for other sources of fishing-related mortality;
- iv. Reduce the JDO 1 TACC from 704 to 320 tonnes.

Agreed / Agreed as Amended / Not Agreed

Stuart Nash

Hon Stuart Nash
Minister of Fisheries

13 / 9 / 2018

John dory (JDO 7)

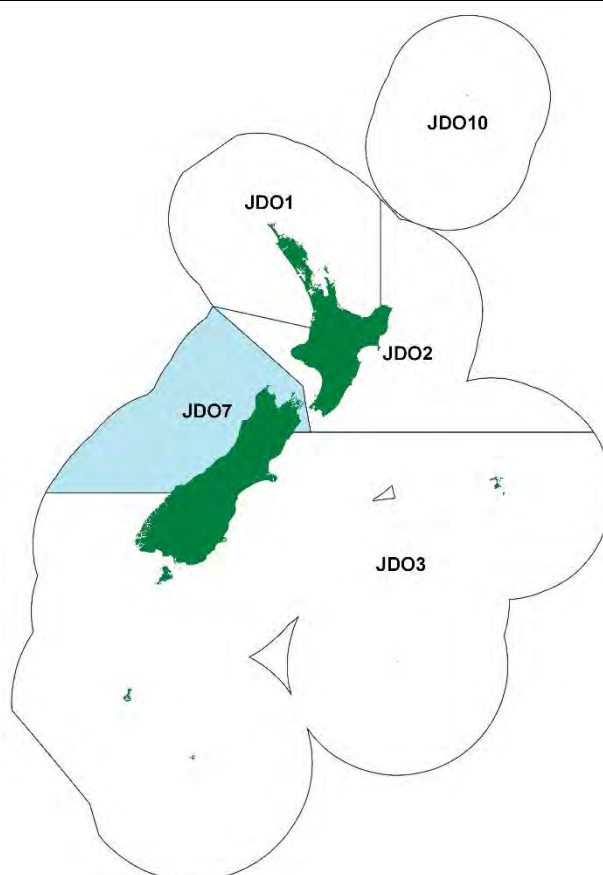


Figure 1: Quota management areas (QMAs) for John dory (JDO), with JDO 7 highlighted in blue.

1 Summary

1506. Fisheries New Zealand consulted on three options for management settings for John dory (*Zeus faber*; kuparu) in quota management area (QMA) 7 (JDO 7; Figure 1). The options consulted on are set out in Table 1.

Table 1. Proposed management settings in tonnes for JDO 7 from 1 October 2018, with the percentage change relative to the *status quo* in brackets.

Option	Total Allowable Catch	Total Allowable Commercial Catch	Allowances		
			Customary Māori	Recreational	All other mortality to the stock caused by fishing
Option 1 (<i>Status quo</i>)	206	190	2	4	10
Option 2	226 ↑ (10%)	209 ↑ (10%)	2	4	11 ↑ (10%)
Option 3	246 ↑ (19%)	228 ↑ (20%)	2	4	12 ↑ (20%)

1507. Fisheries New Zealand recommends Option 2; that you agree to increase the TAC and TACC for JDO 7 by 10%. The best available information from the 2017 west coast South Island trawl survey shows that the JDO 7 stock is currently at a high level, very likely to be well above the target biomass level.

1508. The current interim deemed value rate of \$2.62 kg is set at 50% of the annual rate. Consistent with Principle 7 of the Deemed Value Guidelines¹, and to incentivise fishers to regularly cover catch with Annual Catch Entitlement (ACE) throughout the year, it was proposed that the interim deemed value rate for JDO 7 is increased to 90% of the annual rate, as outlined in Table 2 (\$4.73 per kilogram). No changes were proposed for the annual deemed value rate or differential schedule.
1509. Five submissions were received on the proposed options for JDO 7, and input was also received from Te Waka a Māui me Ōna Toka Iwi Forum (Te Waka a Māui). One submission supported maintaining the *status quo*, while four supported an increase to the TAC. Of the submitters who favoured increasing the TAC, one, as well as Te Waka a Māui, stated a preference for Option 2 (10% increase) and two supported Option 3 (20% increase). In addition, an alternative option was put forward by Southern Inshore Fisheries who proposed a higher TACC of 250 tonnes.
1510. Fisheries New Zealand received one submission regarding the proposed deemed value rates of JDO 7. An environmental submission supported the proposed changes to the deemed value rates of JDO 7 so as to reduce the incentive for over-fishing.
1511. Taking into account these submissions, Fisheries New Zealand recommends Option 2, which would increase the TAC by 10% to 226 tonnes. This would allow utilisation of the current high biomass while ensuring the sustainability of John dory within JDO 7.
1512. Fisheries New Zealand, also recommends that the interim deemed value rate of JDO 7 be adjusted as recommended in Table 2, namely from \$2.62/kg to \$4.73/kg. Fisheries New Zealand is not recommending a change to the annual deemed value rate, or differential schedule of JDO 7.

Table 2: Current and recommended deemed value rates (\$/kg) for JDO 7

Option	Interim deemed value rate (\$/kg)	Special annual differential rates (\$/kg) for excess catch (% of ACE)			
		100-120%	120-130%	130-140%	>140%
Current	2.62	5.25	6.00	8.00	10.00
Recommended	4.73	5.25	6.00	8.00	10.00

2 Need for review

1513. The best available information indicates that the abundance of John dory in JDO 7 continues to be well above the target biomass. There is also evidence of recent strong year classes, suggesting that the biomass will remain high, at least in the short term, as these young fish recruit into the fishery in future years. Fisheries New Zealand therefore considers that there is opportunity to increase utilisation (increase the TAC) while ensuring the sustainability of John dory within JDO 7.

¹ Available at www.mpi.govt.nz/document-vault/3663

2.1 CONTEXT

2.1.1 Biological characteristics of John dory

1514. John dory are serial spawners (spawning more than once in a year) and have a maximum observed age of 12 years. John dory stock abundance fluctuates because recruitment strength varies and there are relatively few year classes in the population as a result of relatively high natural mortality. Fluctuations in stock biomass means that management measures are sometimes required to reduce catches at times of persistent low recruitment. Conversely, as is currently the case in JDO 7, fluctuations in stock biomass can provide opportunities for increased utilisation when strong year classes appear in the population.

2.1.2 Fishery characterisation

Customary Māori fishery

1515. John dory (kuparu) is a desirable fish species for customary fishers. Customary harvest within the JDO 7 QMA occurs under two different regulations for customary catch: the Fisheries (South Island Customary Fishing) Regulations 1999 (the South Island Regulations); and the Fisheries (Amateur Fishing) Regulations 2013 (the Amateur Regulations). The South Island Regulations apply south of the Kahurangi River down the west coast of the South Island, while the Amateur Regulations apply for the remainder of JDO 7 along the top of the South Island.

1516. For tangata whenua groups in JDO 7 under the South Island Regulations, there is a requirement for Tangata Kaitiaki/Tiaki to provide information on Māori customary harvest of fish. However, for those tangata whenua groups still operating under regulations 50 and 51 of the Amateur Regulations, it is not mandatory to report on permits issued or catch taken.

1517. Currently there are low levels of recorded customary take of John dory in JDO 7. This may reflect that tangata whenua in the Tasman/Golden Bay and Marlborough Sounds area are still operating under the Amateur Regulations and are not required to report catch, or it may suggest that tangata whenua use of the customary fishing regulations to harvest JDO 7 is low at this time (e.g., tangata whenua in JDO 7 are using recreational bag limits to meet their needs for John dory).

1518. Consistent with the objectives of Te Waipounamu Iwi Fisheries Plan, Fisheries New Zealand is supporting and providing for the interests of South Island iwi by providing allowances that adequately allow for the utilisation of customary resources.

1519. The taiāpure of Whakapuaka (Delaware Bay), and the mātaihai reserves of Okuru/Mussel Point, Tauperikaka, Mahitahi/Bruce Bay, Manakiaiaua/Hunts Beach, Okarito Lagoon, Te Tai Tapu (Anatori), and Te Tai Tapu (Kaihoka) are all within the JDO 7 quota management area. Fisheries New Zealand notes that the proposals in this paper are unlikely to impact on these taiāpure and mātaihai reserves.

Recreational fishery

1520. There is some recreational interest in John dory, however, recreational catches are very low in JDO 7 compared to commercial John dory catches. Recreationally, John dory is mainly caught by rod and line, with some spearfishing catch and occasional set-net catch.

1521. Information on recreational catch is available from the last National Panel Survey of marine recreational fishers in 2011/12. This survey estimated that 1,351 individual John dory were harvested in the Challenger management area (FMA 7) in the 2011/12 fishing year². This is equivalent to a harvest of 1.7 tonnes, based on an estimated mean weight of 1.26 kg per fish.
1522. The recreational harvest of John dory from JDO 7 is governed by the Fisheries (Amateur Fishing) Regulations (2013).³ The regulations include no minimum size, a combined maximum daily bag limit of 20 fish of those species specified in the table in Schedule 8 (the combined daily limit for fish), and a minimum mesh size of 100 mm for nets.

Commercial fishery

1523. John dory was introduced to the QMS on 1 October 1986. The majority of catch in JDO 7 is taken by bottom trawl (over 96%)⁴ with around 70% taken as a bycatch whilst targeting species such as flatfish, barracouta, red cod, stargazer, red gurnard and tarakihi. Annual commercial landings and the TACC for JDO 7 since 1986/87 are shown in Figure 2. Landings increased markedly after 1999/00 as a result of increasing abundance.
1524. The TACC has been increased four times since 1986. Since 2009/10 annual landings have steadily increased to take advantage of higher TACCs. Annual deemed value payments are low, with the average annual payment over the 5 years between 2012/13 and 2016/17 being \$524.
1525. In the 2016/17 year, John dory in JDO 7 was taken mainly as a bycatch of bottom trawl fisheries (70%) targeting flatfish (34%), tarakihi (25%), and red gurnard (11%), with only 19% coming from target John dory fishing.
1526. Fisheries New Zealand anticipates that the increase in TACC for John dory is expected to be used by fishers to cover an increase in bycatch of JDO 7 when targeting other fish species. This will occur as a result of the increased availability and abundance of John dory, rather than to provide for additional targeted fishing effort.

² 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 Fisheries (Amateur Fishing) Regulations (2013) <http://www.legislation.govt.nz/regulation/public/2013/0482/latest/whole.html#d56e49>

⁴Dunn, M.R.; Jones, E. (2013). Stock structure and fishery characterisation for New Zealand John dory. FAR 2013/40. 99 p https://fs.fish.govt.nz/Doc/23389/FAR_2013_40_2652_INS2011-03%20Obj1-3.%20MS4.8,12.pdf.ashx

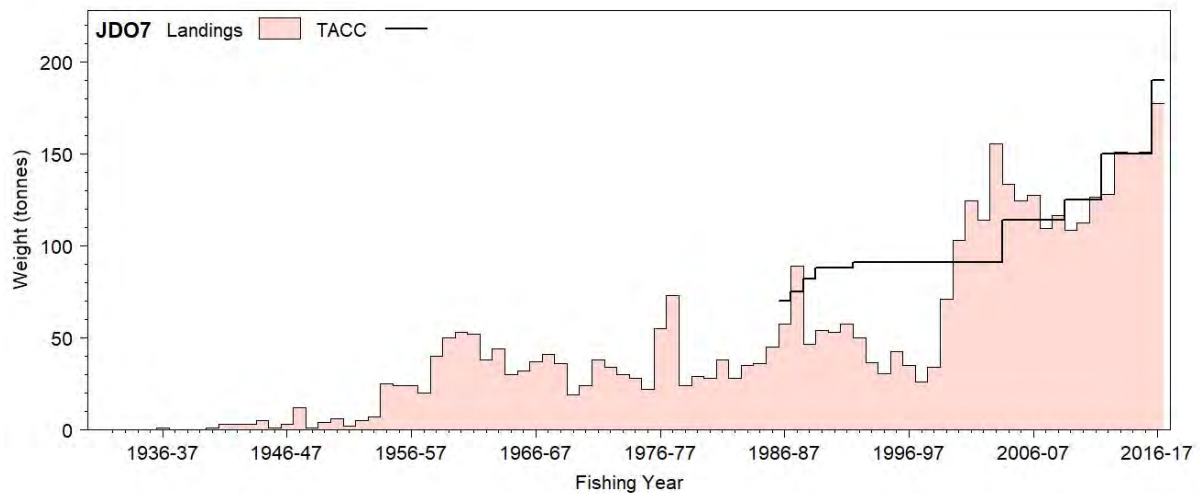


Figure 2: Commercial landings and TACC for JDO 7 from 1936/37 to 2016/17

2.1.4 Management approach

1527. The current management approach is to undertake the west coast South Island trawl survey every two years to estimate JDO 7 stock status (amongst other species). In cases such as JDO 7, where B_{MSY} (the level of biomass that can produce the maximum sustainable yield) is not known, an interim target biomass has been determined as a proxy for B_{MSY} using the average trawl survey biomass for JDO 7 between 1992 and 2011 (see Figure 3; solid blue line). The biomass estimated from the most recent west coast South Island survey (2017) was more than double the interim target biomass.

1528. The trawl survey provides an index of JDO 7 biomass, particularly recruited biomass (defined as fish that recruit into the fishery of at least 25 cm total length). The Harvest Strategy Standard⁵ defaults are used for the JDO 7 stock, where the soft limit is 50% of the interim target biomass (see Figure 3; dashed blue line), and the hard limit is 25% of the interim target biomass (see Figure 3; dashed red line).

Status of the stock

1529. The best available information from the 2017 west coast South Island trawl survey⁶ shows that the JDO 7 stock is currently at a high level, Very Likely (>90%) to be above the interim target biomass level. It is the second highest JDO 7 biomass estimate recorded in the 26 years since trawl surveys began in 1992 (Figure 3) and continues an overall increasing trend since 1997. The series has been above the long term mean since 2000/01 (Figure 3). The JDO 7 stock is Very Unlikely (< 10%) to be below the soft or hard limits.

1530. Previous high catches in JDO 7 appear to have been sustained by intermittent high recruitment. Length frequency analysis from the West Coast South Island trawl survey series showed very good recruitment in 2009, and this year class is probably supporting the current high JDO 7 biomass. Recruitment strengths in the 2011 and 2013 west coast South Island trawl surveys were more modest, but were again high in 2015. The 1+ year class of John dory (pre-recruits), visible in the 2017 West Coast South Island trawl survey

⁵ Harvest Strategy Standard for New Zealand Fisheries, October 2008, accessible at: <http://fs.fish.govt.nz/Page.aspx?pk=113&dk=16543>

⁶ Stevenson, M.L.; MacGibbon, D.J. (2018). Inshore trawl survey of the west coast South Island and Tasman and Golden Bays, March-April 2017 (KAH1703), New Zealand Fisheries Assessment Report 2018/18. 93 p.

length frequency data (Figure 4), is stronger than in any previous trawl survey in the 26-year time series, suggesting that the biomass will remain high, at least in the short term, as these fish recruit into the fishery in future years.

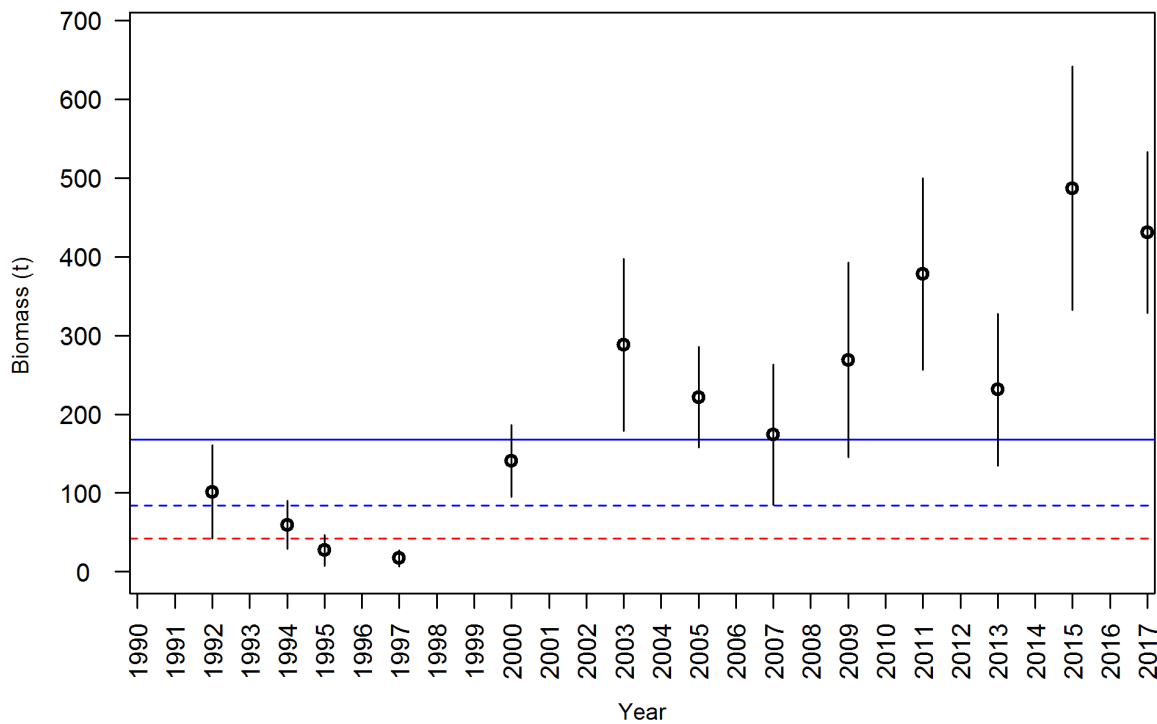


Figure 3: Trends in biomass for JDO 7 from West coast South Island inshore trawl surveys. Error bars are \pm two standard deviations. The solid blue line represents the interim target biomass, and dashed blue and red lines the soft and hard limits, respectively.

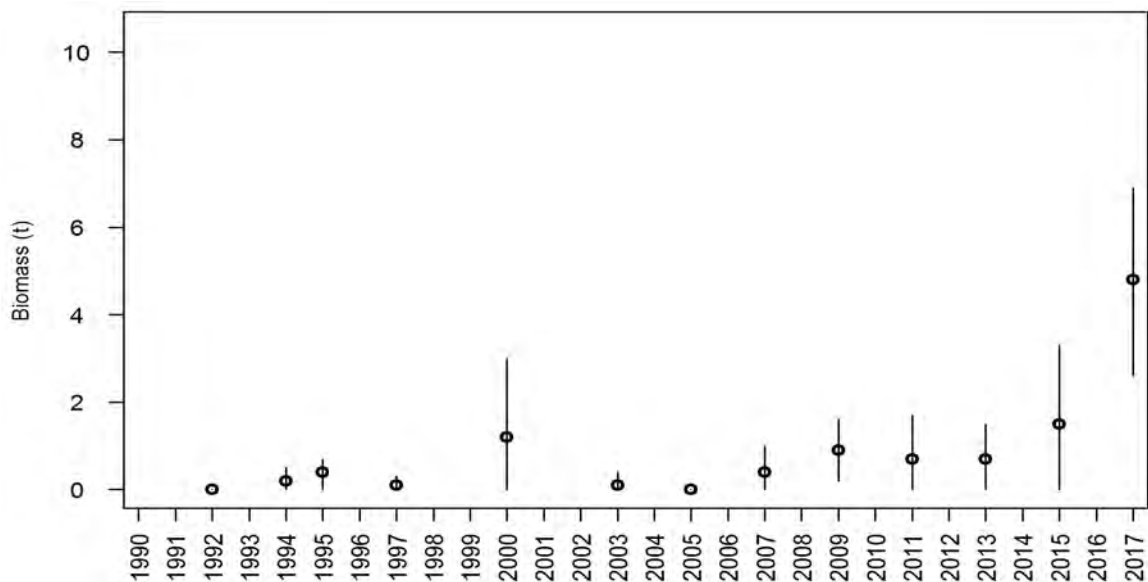


Figure 4: Trends in pre-recruit biomass for JDO 7 from West Coast South Island and Tasman Bay and Golden Bay inshore trawl surveys. Error bars are \pm two standard deviations.

2.1.3 Environmental principles and sustainability measures

1531. The key interactions associated with the JDO 7 fishery are discussed below with reference to the likely impacts of the proposed management options.

Seabirds, marine mammals, protected fish and benthic impacts

1532. Fisheries New Zealand monitors and responds to marine mammal captures and works closely with the fishing industry to increase awareness amongst the fleet of the risk of interactions with marine mammals, and to reduce this risk.

1533. The endemic Hector's dolphin is declared as a threatened species under the provisions of the Marine Mammals Protection Act 1978. Fishing is the greatest known human threat to Hector's dolphin, in particular set nets. Hector's dolphins have also been caught in trawl nets, but this happens less often. The Department of Conservation and the Ministry of Fisheries developed a Hector's and Māui dolphin Threat Management Plan in 2007, which is currently being reviewed.

1534. Under this Plan, both commercial and recreational set netting is prohibited in JDO 7 within two nautical miles offshore from Awarua Point north of Fiordland to the tip of Cape Farewell at the top of the South Island. This was done as a part of a suite of regulations intended to protect Hector's dolphins, implemented from 1 October 2008. The commercial closure is restricted to the period 1 December to end of February, which is the highest time of risk for Hector's dolphins. The recreational closure is effective for the entire year.

1535. John dory is mainly caught by mixed species bottom trawl fisheries. Hector's dolphin captures in trawl nets include the capture of three Hector's dolphins in a trawl net in Cloudy Bay in 2006. The lack of information on the depth and position of commercial trawl effort and low observer coverage precludes any estimation of the total number of Hector's dolphins caught in trawl nets. While there have been ongoing attempts to increase the level of observer coverage in inshore trawl fisheries, it remains low. In the 21 years between 1995 and 2016, observer coverage of inshore trawl tows in areas of Hector's dolphin overlap with trawling effort was only 4.7%. In order to mitigate the potential capture of Hector's dolphin, trawling was prohibited within two nautical miles offshore from Clarence Point to Cape Jackson from 1 October 2008⁷.

1536. The 'National Plan of Action – 2013 to Reduce the Incidental Catch of Seabirds in New Zealand Fisheries' (NPOA Seabirds 2013), which is currently under review, is the driver for all actions to reduce the incidental mortality of seabirds from fishing.⁸ It puts in place a risk-based approach to managing fishing interactions with seabirds, targeting mitigation on those species most at risk but also aiming to reduce captures overall.

1537. Seabird captures in trawl fisheries occur in two main ways. Seabirds either collide with or are struck by the moving trawl warps (usually larger seabirds), or are caught in the net when it is on the surface during deployment and retrieval (usually smaller seabirds). Fisheries New Zealand observers monitor each vessel's performance and the Director-

⁷ Detailed descriptions of the restrictions can be found at: Ministry for Primary Industries. Protecting Hector's and Māui dolphins. Retrieved from <https://www.mpi.govt.nz/protection-and-response/sustainable-fisheries/managing-our-impact-on-marine-life/protecting-hectors-and-maui-dolphins/>

⁸ Accessible at: <https://www.mpi.govt.nz/dmsdocument/3962-national-plan-of-action-2013-to-reduce-the-incident-catch-of-seabirds-in-new-zealand-fisheries>

General has the option of imposing vessel-specific regulations to better control management practices. Observer coverage of inshore trawl vessels that catch JDO 7 has been low, and is an area identified for focus through the NPOA Seabirds.

1538. Research has characterised both New Zealand’s benthic environment and the level of benthic impact from fisheries activity⁹. 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. The environmental impacts of fishing are summarised annually by Fisheries New Zealand. Fisheries New Zealand will continue to monitor the bottom trawl footprint of fisheries.

2.2 OPTIONS CONSULTED ON

1539. The options consulted on for JDO 7 are given in Table 3.

Table 3: Options consulted on in tonnes for JDO 7, with the percentage change relative to the status quo in brackets (all values in tonnes).

Option	Total Allowable Catch	Total Allowable Commercial Catch	Allowances		
			Customary Māori	Recreational	Other sources of fishing-related mortality
Option 1 (<i>Status quo</i>)	206	190	2	4	10
Option 2	226 ↑ (10%)	209 ↑ (10%)	2	4	11 ↑ (10%)
Option 3	246 ↑ (19%)	228 ↑ (20%)	2	4	12 ↑ (20%)

2.3 VIEWS OF SUBMITTERS

1540. Section 12 of the Act requires you to consult on any proposed management changes. Fisheries New Zealand has consulted on your behalf, and this section outlines the views of submitters and issues they raised.

2.3.1 Submissions received

1541. Five submissions were received from the following companies and organisations:

- a) Environment and Conservation Organisations of NZ Inc.
- b) Fisheries Inshore New Zealand (Fisheries Inshore)
- c) The Royal Forest and Bird Protection Society of New Zealand Ltd (Forest & Bird)
- d) Southern Inshore Fisheries (Southern Inshore)
- e) Te Ohu Kaimoana

1542. Environment and Conservation Organisations of NZ does not support an increase in the TAC. They are concerned at the impact of any increase on benthic impacts of bottom trawl fishing when there is no strategy to avoid, remedy or mitigate the impacts, habitat of particular significance for fisheries management has not been identified, and the

⁹ Aquatic Environment and Biodiversity Annual Review 2017, available here: <https://www.mpi.govt.nz/news-and-resources/open-data-and-forecasting/fisheries/>

maintenance of biological diversity has not been given effect to. They submit that Fisheries New Zealand should work towards a full assessment of the fishery.

1543. Fisheries Inshore is the Sector Representative Entity for inshore finfish, pelagic and tuna fisheries in New Zealand. They endorse the Southern Inshore submission (see below).

1544. Forest & Bird support Option 2 for JDO 7, provided there is increased monitoring of the fishery through electronic or at sea monitoring to ensure no protected or threatened seabird or marine mammals are caught and killed and that any best practice mitigation is applied.

1545. Te Ohu Kaimoana support Option 2 or 3. They also support the proposed change to the interim deemed value rate for JDO 7.

1546. Southern Inshore agree with Option 3, to increase the TACC by 38 tonnes from 190 tonnes to 228 tonnes. However, they would prefer the increase to be 60 tonnes to a TACC of 250 tonnes on the basis of increased biomass in the fishery. Given the current biomass in the fishery (Figure 3), they do not see this as an unwarranted request or that it would put the fishery at any undue risk. Given the positive recruitment into the JDO 7 fishery, they consider it prudent that forward planning on increasing TACCs is made. They note that the next west coast South Island trawl survey in 2019 will continue to monitor the fishery.

2.3.2 Input and participation of tangata whenua

1547. 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 proposal to consult on JDO 7 was presented to the Te Waka a Māui me Ōna Toka Iwi Forum hui in Nelson on 17 July 2018. This forum represents the nine iwi of the South Island, each holding mana moana and significant interests (both commercial and non-commercial) in South Island fisheries. The Forum's input has been incorporated into this advice.

1548. The Forum note that John dory is a highly desirable fish for customary and catch is likely to increase. They support Option 2, providing the fishery is closely monitored and managed in a responsive fashion.

2.3.3 Kaitiakitanga

1549. Under the Act, kaitiakitanga is 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. Relevant Iwi or Iwi Fisheries Forum Fish Plans provide a view of the objectives and outcomes iwi seek from the management of the fishery and can provide an indication of how iwi exercise kaitiakitanga over fisheries resources. Iwi views from Forum meetings and submissions received from iwi can also provide an indication.

1550. John dory (kuparu) is not listed as a taonga species in the Te Waipounamu Iwi Fisheries Plan, but the Te Waka a Māui me Ōna Toka Iwi Forum consider the species taonga. This plan contains objectives to support and provide for the interests of South Island iwi. That

Forum Fisheries Plan contains three objectives which are relevant to the management options proposed for JDO 7:

- a) Management objective 1: to create thriving customary non-commercial fisheries that support the cultural wellbeing of South Island iwi and our whānau;
- b) Management objective 3: 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; and
- c) Management objective 5: to restore, maintain and enhance the mauri and wairua of fisheries throughout the South Island.

1551. Fisheries New Zealand considers that the management options presented in this advice paper will contribute towards the achievement of these three management objectives in ensuring that appropriate allowances are made for customary non-commercial fishing, the fishery remains sustainable, and that environmental impacts are minimised.

2.4 SETTING THE TAC

1552. In cases such as JDO 7, where the level of biomass that can produce the maximum sustainable yield (B_{MSY}) is not known, s 13(2A) of the Act provides that you 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.

1553. Interactions between the JDO 7 fishery and protected species are considered to be relatively low. Fisheries New Zealand considers there will be no significant change to this low level of interaction from the proposed options when allocating the TAC. As John dory are largely a bycatch species, Fisheries New Zealand does not anticipate a significant increase in trawling activity, nor significant increase of benthic impacts, arising from the TAC increases, particularly under Option 2.

1554. The proposals are considered to adequately address the requirements of s 11 of the Act. Sections 11(2)(a) and (b) requires you to take into account the 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 applies to the coastal marine area and that you consider relevant. Fisheries New Zealand has taken into account any strategies under the Conservation Act 1987 relating to John dory.

1555. For the John dory stock being reviewed, there are policy statements and plans under the Resource Management Act 1991 and the Conservation Act 1987 relating to the marine environment in which John dory is fished, but not specifically to the activity of fishing. These statements and plans include provisions that generally limit the activities that can occur in many bodies of water, including fishing.

1556. The Proposed Marlborough Environment Plan, which is currently under development, acknowledges that “The waters of the Marlborough Sounds are important for fisheries for a number of reasons, including:

- a) An ongoing source of traditional food for Marlborough’s tangata whenua iwi;
- b) Providing a livelihood for commercial fishers;
- c) Being a significant factor in many recreational and tourism activities; and

- d) Contributing to a range of species present in the Sounds and therefore the health of marine ecosystems.”

1557. Fisheries New Zealand considers that this review complies with the objectives of the Proposed Marlborough Environment Plan, particularly Objective 13.4 – “The sustainable management of fisheries in the Marlborough Sounds”.

2.4.1 Option 1 (*Status quo*)

1558. Option 1 is the *status quo*; the TAC would stay at 206 tonnes, the TACC at 190 tonnes, the allowance for Māori customary fishing at 2 tonnes, the allowance for recreational fishing at 4 tonnes, and the allowance for all other mortality to the stock caused by fishing at 10 tonnes.

1559. Environment and Conservation Organisations of NZ supported this option.

1560. The impacts of this option on the JDO 7 stock is that the increased abundance is not utilised because the current harvest would remain the same. Any potential negative effects on the environment from an increase in fishing that targets JDO 7 would be avoided, however, there would be a cost from forgoing an opportunity to harvest the higher biomass of John dory in JDO 7.

2.4.2 Option 2 (Fisheries New Zealand preferred option)

1561. Option 2 is a proposal for a 10% increase to the TAC which would increase from 206 to 226 tonnes. This arises from the proposal to increase the TACC by 10% (from 190 to 209 tonnes) and a 10% increase to the allowance for other sources of fishing related mortality (from 10 to 11 tonnes). The current allowance for Māori customary fishing remains unchanged at 2 tonnes, and the allowance for recreational fishing remains unchanged at 4 tonnes.

1562. Te Waka a Māui and Forest & Bird support Option 2.

1563. Te Ohu Kaimoana supports Option 2 (as well as Option 3).

1564. Fisheries New Zealand recommends Option 2. The best available information indicates that the abundance of John dory in JDO 7 is currently high. In 2017 the second highest biomass level for JDO 7 was recorded in the 26 years since trawl surveys began. Abundance continues to be well above the target biomass (Figure 3). There is also evidence of strong new year classes (Figure 4), suggesting that the biomass will remain high, at least in the short term, as these fish recruit into the fishery in future years. Fisheries New Zealand considers that there is opportunity to increase utilisation while ensuring the sustainability of John dory within JDO 7.

1565. The 10% increase in the TACC is based on the nature of the commercial fishery for JDO 7, which is a bycatch of other target fisheries. It is unlikely that the increase in TACC will lead to more trawl tows targeting John dory. Only 19% of JDO 7 landings in 2016/17 were targeted at John dory and the TACC was not fully caught in the 2016/17 fishing year (93% of the TACC was landed). Rather, the proposed 10% increase in the TACC will allow for an increase in JDO 7 landings that are a result of the higher John dory biomass.

1566. The JDO 7 fish stock will be closely monitored to analyse if the target fish stock composition of the mixed trawl fishery in FMA 7 changes as a result of an increase to the TACC. The next west coast South Island trawl survey is planned for 2019. It will provide an update of JDO 7 biomass and the trend in abundance over time. Consideration of the JDO 7 TAC and TACC can then take place in the 2020 sustainability round consultation.

2.4.3 Option 3

1567. Option 3 proposes a 19% increase to the TAC, 20% increases to both the TACC and for other sources of fishing related mortality, and no changes to the other allowances. Fisheries Inshore and Southern Inshore Fisheries support Option 3.

1568. Te Waka a Māui do not support Option 3. They consider that substantial changes to the TAC and/or TACC (e.g. 20% or more) need to be accompanied by scientific recommendations that the changes proposed are sustainable for at least the next five years to ensure the long-term sustainability of the stock.

1569. Te Ohu Kaimoana supports Option 3 (as well as Option 2).

1570. Fisheries Inshore and Southern Inshore Fisheries support Option 3 but also propose an alternative option that was not part of the consultation, of a higher TAC of 250 tonnes on the basis of increased biomass in the fishery. They do not see this as an unwarranted request or that it would put the fishery at any undue risk. Given the positive recruitment into the fishery, they consider it prudent that forward planning on increasing TACC's is made. They propose that the forecasting of increasing abundance necessitates the higher TACC.

1571. Fisheries New Zealand does not support this alternative higher TAC Option. The 1+ year class (pre-recruits) of John dory is strong, suggesting that the biomass will remain high, at least in the short term, as these fish recruit into the fishery in future years. However, recruitment is not assured as there is high natural mortality of these pre-recruit year classes.

1572. Fisheries New Zealand's preference is to monitor the fishery through the next west coast South Island trawl survey in 2019 to update JDO 7 biomass and the trend in abundance, and to consider further increases (if warranted) during the 2020 sustainability round of consultation.

2.5 ALLOCATING THE TAC

1573. The TAC sets the total quantity of a stock that can be sustainably harvested each year, consistent with the objective of maintaining the stock at or above a level that can produce the maximum sustainable yield.

1574. After setting or varying the TAC for a stock, a separate decision arises in respect of allocating the TAC. This involves deciding what portion of the TAC is available for Māori customary non-commercial fishing interests, recreational interests, all other mortality to

that stock caused by fishing, and commercial fishers (the TACC). You have considerable discretion in determining the allocation.

2.5.1 Māori customary allowance

1575. We note that the position of Te Waka a Māui is that the data on the customary allowance is inaccurate and that customary take is regulated by iwi and is based on need. Tangata whenua in the Tasman/Golden Bay and Marlborough Sounds area are operating under the Amateur Regulations, are not required to report catch, and can also use recreational bag limits to meet their needs for John dory.

1576. The customary allowance for JDO 7 is currently 2 tonnes, and no change is proposed to this allowance. Fisheries New Zealand considers that the current allowance for customary Māori fishing is sufficient and should be retained because the best available information is that there are low levels of recorded customary take of John dory in JDO 7 (see section 2.1.2).

2.5.2 Recreational allowance

1577. The best available information is that the recreational take of JDO 7 is low. The National Panel Survey of marine recreational fishers in 2011/12 estimated that only 1.7 tonnes was caught by recreational fishers.

1578. No submissions were received regarding the recreational allowance. The recreational allowance for JDO 7 is currently 4 tonnes, and Fisheries New Zealand proposes to retain this allowance for recreational fishing.

1579. A repeat of the 2011/12 National Panel Survey is currently underway in 2017/18, and updated estimates of recreational catch in JDO 7 will be used to inform future management.

2.5.3 Allowance for other sources of mortality caused by fishing

1580. The allowance for other sources of mortality caused by fishing accounts for all mortality associated with fishing activity, excluding retained fish. It includes estimates for mortality of fish that encounter fishing gear but are not captured, for example small fish that pass through the trawl or set net mesh but die as a result.

1581. The allowance for other sources of mortality caused by fishing for JDO 7 is currently set at 5% of the TACC, which we consider to be a reasonable, proportional, approach that takes into account the biology and vulnerability of John dory. No change to the allowance is proposed.

1582. Te Waka a Māui noted that the new Precision Seafood Harvesting trawl net technology will land smaller bags of live, good quality fish with less incidental mortality. For this reason they propose that this allowance could be decreased.

1583. If there is a high uptake of the new Precision Seafood Harvesting trawl net technology in future in the JDO 7 fishery then Fisheries New Zealand will review the allowance for other sources of mortality caused by fishing based on research that will be undertaken to determine fish survival. Currently, Precision Seafood Harvesting is not approved for commercial use in this fishery and can only be used under a Special Permit for research.

2.5.4 Total Allowable Commercial Catch (TACC)

1584. Increasing the TACC will allow commercial fishers to take advantage of increased abundance of John dory (Table 3). An additional benefit for commercial fishers is that an increased TACC would reduce the amount spent on deemed values, provided fishers constrain their catch within the commercial catch limit.
1585. Retaining the current TAC and TACC (Option 1, *status quo*) may result in opportunity lost through unnecessarily constrained catch.
1586. The likely socio-economic impact of an increase in the TACC under Option 2 (Fisheries New Zealand's preferred option) would be approximately an additional \$123,000 per annum to the commercial sector if the TACC was fully caught.
1587. Under Option 3 the likely socio-economic impact would be approximately an additional \$247,000 per annum to the commercial sector if the TACC was fully caught.
1588. Fisheries New Zealand considers that the John dory stock in JDO 7 is able to support the proposed increases to the JDO 7 TACC, and allowances without a risk to the long-term sustainability of the fish stock. Fisheries New Zealand's preferred option is Option 2 for the reasons set out and discussed in the TAC section of this paper.

Table 3: Predicted changes to commercial revenue of the proposed options, based on port price of \$6.49/kg for JDO 7 in 2016/17

	TACC	Change from <i>status quo</i> (t)	Predicted revenue change (\$ p.a.) based on port price
Option 1 (<i>Status quo</i>)	190		
Option 2	209	19 ↑ (10%)	\$123,000 ↑
Option 3	228	38 ↑ (20%)	\$247,000 ↑

2.6 OTHER MANAGEMENT CONTROLS

2.6.1 Recreational controls

1589. No submissions were received regarding the regulations governing the recreational harvest of John dory from JDO 7. There is no information to suggest a change to recreational controls would be needed, and no change is proposed to the recreational daily bag limit.

2.5.2 Deemed value rates

1590. The Deemed Values Guidelines and the reasons for the deemed value rate decisions are given in the Deemed Value Rates part of this document.
1591. The current interim deemed value rate of \$2.62/kg is set at 50% of the annual rate. Consistent with Principle 7 of the Deemed Value Guidelines, and to incentivise fishers to regularly cover catch with ACE throughout the year, Fisheries New Zealand propose that the interim deemed value rate for JDO 7 is increased to 90% of the annual rate (\$4.73/kg). No changes are proposed for the annual deemed value rate or differential schedule.

1592. Te Waka a Māui note that they are uncertain why the JDO 7 interim deemed value increase is proposed and consider that more information is needed to ensure that it is appropriate.

3 Conclusion and Recommendation

1593. The best available information on the status of JDO 7 suggests that the stock is experiencing a period of elevated biomass. 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. The 2017 West Coast South Island trawl survey shows that the JDO 7 stock is currently very likely to be above the target biomass level and that recruitment is strong. It is the second highest biomass estimate recorded in the 26 years since trawl surveys began in 1992, and continues an overall long term increasing trend since 1997. The JDO 7 stock is very unlikely to be below the soft or hard limits. It is expected that this level of biomass will remain in the fishery for the next two to four years.

1594. Increasing the TAC and TACC during periods of abundance better provides for increased abundance of John dory within mixed trawl fisheries and creates opportunities for the fishing industry to increase the economic benefits that can be obtained from the fishery, while ensuring the sustainability of John dory within JDO 7.

1595. Fisheries New Zealand consulted on increasing the TAC, TACC, and allowance for other sources of mortality caused by fishing for the JDO 7 stock. Of the five submissions received one submission stated a preference for retaining the *status quo* and four stated a preference for increasing the TAC. Te Waka a Māui iwi Forum preferred a 10% increase (Option 2). In addition one submitter proposed a higher increase, above Option 3, for the TACC which another submitter supported.

1596. Fisheries New Zealand recommends that you agree to Option 2, a 10% increase to the TAC, TACC and allowance for other sources of mortality caused by fishing for this stock. This option is consistent with your obligations under the Fisheries Act 1996 and will provide a direct economic benefit to the fishing industry.

1597. The next trawl survey for this stock is scheduled for 2019. This will indicate whether or not the increase in catch of JDO 7 has had any measurable effect on the status of the stock, and further changes to the TAC, TACC and allowances can be considered at that time.

1598. Fisheries New Zealand recommends that the interim deemed value rate for JDO 7 is increased to 90% of the annual rate.

Option 1 (Status quo)

Agree to retain the JDO 7 TAC at 206 tonnes and within the TAC:

- i. Retain the allowance of 2 tonnes for Māori customary non-commercial fishing interests;
- ii. Retain the allowance of 4 tonnes for recreational fishing interests;
- iii. Retain the allowance of 10 tonnes for all other sources of mortality to the stock caused by fishing;
- iv. Retain the JDO 7 TACC at 190 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 2 (Fisheries New Zealand preferred)

Agree to increase the JDO 7 TAC from 206 to 226 tonnes and within the TAC:

- i. Retain the allowance of 2 tonnes for Māori customary non-commercial fishing interests;
- ii. Retain the allowance of 4 tonnes for recreational fishing interests;
- iii. Increase the allowance for all other sources of mortality to the stock caused by fishing from 10 to 11 tonnes;
- iv. Increase the JDO 7 TACC from 190 to 209 tonnes.

Agreed / Agreed as Amended / Not Agreed

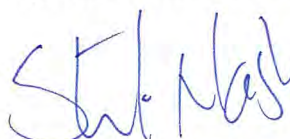
OR

Option 3

Agree to increase the JDO 7 TAC from 206 to 246 tonnes and within the TAC:

- i. Retain the allowance of 2 tonnes for Māori customary non-commercial fishing interests;
- ii. Retain the allowance of 4 tonnes for recreational fishing interests;
- iii. Increase the allowance for all other sources of mortality to the stock caused by fishing from 10 to 12 tonnes;
- iv. Increase the JDO 7 TACC from 190 to 228 tonnes.

Agreed / Agreed as Amended / Not Agreed



Hon Stuart Nash
Minister of Fisheries

13 / 9 / 2018

Kingfish (KIN 3)

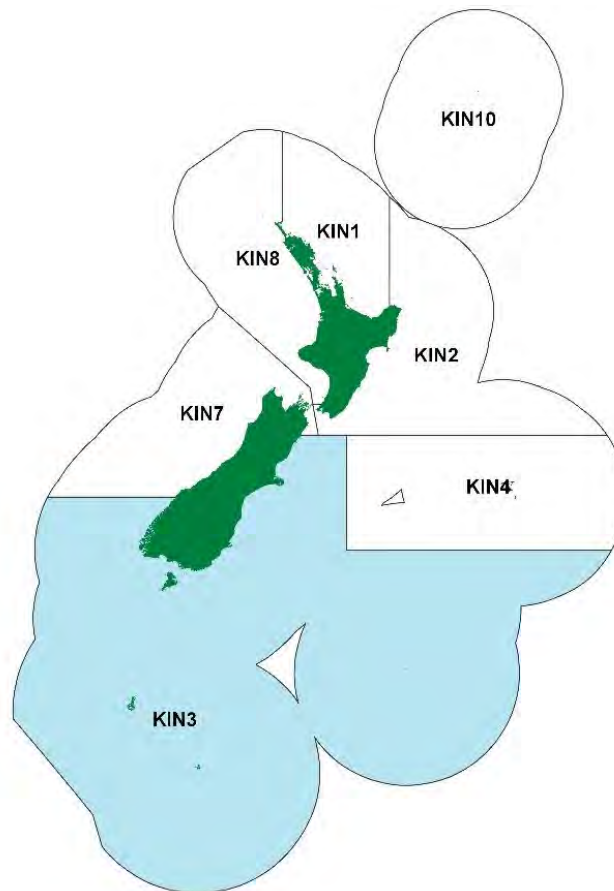


Figure 1: Quota management areas (QMAs) for kingfish stocks, with KIN 3 highlighted in blue.

1 Summary

1599. Fisheries New Zealand consulted on three options for management settings for kingfish (*Seriola lalandi*, haku) in quota management area (QMA) KIN 3 (Figure 1). The options consulted on are set out in Table 1:

Table 1: Proposed management settings (in tonnes) for KIN 3 from 1 October 2018, with the percentage change relative to the *status quo* in brackets.

Option	Total Allowable Catch (TAC)	Total Allowable Commercial Catch (TACC)	Allowances		
			Customary Māori	Recreational	All other mortality to the stock caused by fishing
Option 1 (<i>Status quo</i>)	3	1	1	1	0
Option 2	9 ↑ (200%)	3 ↑ (200%)	2 ↑ (100%)	3 ↑ (200%)	1 ↑ (100%)
Option 3 (<i>Recommended</i>)	17 ↑ (467%)	6 ↑ (500%)	4 ↑ (300%)	6 ↑ (500%)	1 ↑ (100%)

1600. Fisheries New Zealand considers the current TAC does not take into account recent increases in the abundance of kingfish in KIN 3.

1601. As the current interim and annual deemed value rates are consistent with the Deemed Value Guidelines, no changes are proposed to the deemed value rates for KIN 3, as outlined in Table 2.

Table 2: Current standard deemed value rates (\$/kg) for KIN 3

	Interim Rate (\$/kg)	Annual Differential Rates (\$/kg) for excess catch (% of ACE)					
		100-120%	120-140%	140-160%	160-180%	180-200%	200%+
<i>Status quo</i>	8.00	8.90	10.68	12.46	14.24	16.02	17.80

1602. Kingfish has been managed since 2003 as a bycatch-only fishery for the commercial sector, reflecting the value placed on harvesting by non-commercial fishers. The KIN 3 TACC is intended to reflect the level of unavoidable commercial bycatch. However, there is uncertainty in estimating this level.

1603. Fisheries New Zealand received 13 submissions, seven from the commercial sector, two from recreational groups, one from a non-government organisation and the others from members of the public. Most submitters supported Option 3. Te Ohu Kaimoana proposed an alternative option with an increase only to the TACC.

1604. After considering the submissions and feedback received, Fisheries New Zealand recommends Option 3. All sectors are noting an increase in the abundance of kingfish in KIN 3. We consider that increasing the TAC, TACC and allowances, as proposed under Options 2 and 3 takes into account recent increases in the abundance of kingfish in KIN 3, and that Option 3 best meets the utilisation objectives for the fishery without impacting on the sustainability of the stock.

2 Need for review

1605. Controls within the Quota Management System (QMS), including deemed values and listing kingfish in Schedule 6 of the Act, have been set to manage the commercial catch of kingfish to bycatch-only levels. For KIN 3 a 'nominal' TACC of 1 tonne was set.

1606. Prior to 2011/12, the TACC of 1 tonne had never been fully caught. However, since 2011/12 landings of KIN 3 have consistently exceeded the TACC each year, and by increasingly higher levels, with no evidence of any increased targeting of kingfish by commercial fishers. Over the last five years, the average commercial catch of kingfish in KIN 3 has been nearly twice the TACC of 1 tonne, with the most recent fishing year (2016/17) being 3.53 tonnes or 353% of the TACC. During the 2016/17 fishing year more than \$50,000 was paid in deemed values.

1607. Given the context noted above, we consider that management controls should be reviewed to ensure they are not inappropriately constraining utilisation and imposing unnecessary cost.

2.1 CONTEXT

2.1.1 Biological characteristics of kingfish

1608. Kingfish are largely a warm water fish and are found predominantly in northern New Zealand. From catch effort reporting by commercial fishers and anecdotal accounts from all fishing sectors it is apparent that kingfish are being observed more frequently in southern regions in recent years, especially over the summer months when inshore waters are warmer.

2.1.2 Fishery characterisation

1609. TACs for kingfish have been set to provide for use while recognising the importance of the species to non-commercial fishers.

1610. Both commercial and non-commercial catch of kingfish is constrained by minimum legal size limits, set at 65 cm for commercial fishers and at 75 cm for non-commercial fishers. There is also a non-commercial daily bag limit of three per person per day, as part of a mixed daily bag limit.

Māori customary fishery

1611. Kingfish (haku) is an important taonga species for Māori customary groups. Kingfish is not specifically identified by the Te Waka a Māui me Ōna Toka Iwi Fisheries Forum as a taonga species in the Te Waipounamu Iwi Fisheries Plan, but that Forum considers all species taonga.

1612. Māori customary catch in the KIN 3 QMA is under the Fisheries (South Island Customary Fishing) Regulations 1999. Tangata Kaitiaki/Tiaki in KIN 3 are required to provide information on Māori customary harvest of fish. Available information suggests Māori customary take has been within the current allowance of 1 tonne, however, with increasing kingfish abundance tangata whenua have stated customary catch is increasing.

Recreational fishery

1613. Kingfish is an important species for non-commercial fishing and has been managed since QMS entry to recognise this importance. Nationwide, the majority of kingfish is targeted recreationally for its sporting attributes and large size, with 662 tonnes taken in the 2011/12 fishing year,¹ equating to approximately 75% of the nationwide catch, with the remaining 25% (217 tonnes) taken by commercial fishers. Anecdotal information suggests recreational fishers are encountering kingfish more often in KIN 3, and some recreational fishers are beginning to target kingfish around East Otago.

1614. The National Panel Survey of Marine Recreational Fishers (National Panel Survey) from 2011/12 is the best information on recreational harvest for KIN 3. The National Panel Survey estimated 2.89 tonnes of kingfish were caught in KIN 3 in the 2011/12 fishing year.² There is uncertainty in using this estimate to predict current or future catches,

¹ Wynne-Jones, J.; 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. 139p. Accessible at: <https://www.mpi.govt.nz/dmsdocument/4719/send>

² Wynne-Jones, J.; 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. 139p. Accessible at: <https://www.mpi.govt.nz/dmsdocument/4719/send>

however given the increased abundance of kingfish and anecdotal evidence, it is likely recreational catch will increase.

1615. A repeat of the 2011/12 National Panel Survey is currently underway in 2017/18, and updated estimates of recreational catch in KIN 3 will be used to inform future management.

Commercial fishery

1616. The TACC and catch allowances for all kingfish stocks are set at low levels, with high deemed values to discourage the targeting of kingfish by commercial fishers. Therefore, kingfish is principally taken as unintentional bycatch.

1617. Most commercial catch of kingfish in KIN3 is taken as a bycatch in set net and longline fisheries targeting rig and school shark. The KIN 3 TACC has not been adjusted since the introduction of kingfish into the QMS in 2003, however, landings of KIN 3 have consistently exceeded the TACC in recent years (Figure 2), with the most recent 2016/17 fishing year having the highest catch on record at approximately 3.5 tonnes. There is no evidence to suggest that commercial fishers are targeting kingfish, and catches of kingfish remain uncommon, relative to the target species.

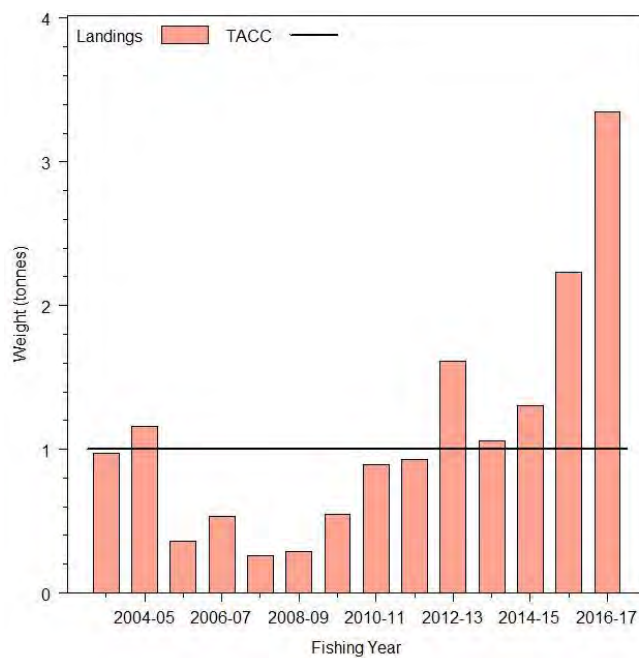


Figure 2: Commercial landings vs TACC for KIN 3 from 2004/05 to 2016/17.

1618. The return of kingfish back to the water under Schedule 6 of the Act provides commercial fishers an ability to limit their landings of kingfish within the KIN 3 TACC. However, fishers can only return kingfish to the sea if they are likely to survive. The schedule does not apply to catch of kingfish by set net as survival of these kingfish is uncertain.

1619. As a result, deemed values are being paid by set net fishers unable to avoid kingfish or return them to the sea. During the 2016/17 fishing year more than \$50,000 of deemed value payments were made. This is likely to be higher in the current 2017/18 fishing year, with over 4 tonnes of kingfish already caught by commercial fishers in KIN 3.

2.1.3 Status of the stock

1620. Catch data is used to monitor the stock, with the best available information on current catch of kingfish in KIN 3 coming from commercial landing records. As kingfish are principally taken as bycatch by commercial fishers, there are no accepted reference points to determine the status of KIN 3 in relation to a management target, and the level of stock biomass that would support B_{MSY} for KIN 3 is not known.
1621. Current stock status of KIN 3 is unknown, and there have been no stock status studies conducted. Commercial catch data and anecdotal information from commercial and recreational fishers is that KIN 3 has increased in abundance, suggesting there are no sustainability concerns for the stock at current catch levels.

2.1.4 Environmental principles (s9) and sustainability measures (s11)

1622. Kingfish in KIN 3 are an incidental bycatch of target fisheries for rig (SPO) and school shark (SCH), particularly using the method of set netting. Overall, there is unlikely to be any increase in fishing effort under any of the options proposed nor increased interaction with seabirds or marine mammals, or negative impacts on environmental biodiversity. Particular considerations under sections 9 and 11 of the Act are set out below.
1623. When exercising powers in relation to the utilisation of fisheries resources or ensuring sustainability, Section 9 of the Act requires you to take into account three environmental principles as detailed within the ‘Statutory Considerations’ chapter of this document. The likely impacts of all proposed options pertaining to associated or dependant species, the biological diversity of the aquatic environment, and habitats of particular significance for fisheries management are summarised below.
1624. Section 11 of the Act sets out various matters that you must take into account or have regard to when setting or varying any sustainability measures (such as a TAC). These include any effects of fishing on the stock and the aquatic environment as well as any relevant fisheries plan (refer to section 1.6 of *Part 2: Statutory Considerations* for a full description).

Seabirds

1625. The ‘National Plan of Action – 2013 to Reduce the Incidental Catch of Seabirds in New Zealand Fisheries’, (NPOA Seabirds 2013) which is currently under review, is the driver for all actions to reduce the incidental mortality of seabirds from fishing. It puts in place a risk-based approach to managing fishing interactions with seabirds, targeting mitigation on those species most at risk but also aiming to reduce captures overall.
1626. The most recent seabird risk assessment was published in 2017. It is a primary input to the NPOA Seabirds. The risk assessment calculates a species-level risk broken down by fishery group. Fishery groups are assigned on the basis of target species, vessel size and for trawl vessels targeting middle-depth species, whether or not the vessel is a factory vessel. Vessels in the same fishery group are assumed to attract and capture birds in a similar way.
1627. In this review the greatest risk of set nets to sea birds was highlighted as entanglement and potential drowning when diving for food. Depending on species and how the nets are

fished, this can occur during deployment (setting or hauling) or soaking (whilst the gear is fishing).

1628. Fisheries New Zealand will continue to monitor seabird captures, and instigate further management action to protect these species where necessary. For example, in KIN 3 Fisheries New Zealand is working with Fisheries Inshore New Zealand and the commercial fishing industry to further reduce set net vessel interactions with yellow eyed penguins and other seabirds.

1629. Fisheries New Zealand considers the proposed options are unlikely to see an increase in interactions with seabirds as no increase in fishing effort is expected.

Marine mammals

1630. Fisheries New Zealand works closely with the fishing industry to increase awareness amongst the fleet of the risk of interactions with marine mammals. Of particular concern to set net fisheries are Hector's and Māui dolphins.

1631. The endemic Hector's dolphin is declared as a threatened species under the provisions of the Marine Mammals Protection Act 1978. Fishing, particularly set nets, is the greatest known human threat to the Hector's dolphin. Hector's dolphins have also been caught in trawl nets, but this happens less often. The Department of Conservation and the Ministry of Fisheries developed a Hector's and Māui dolphin Threat Management Plan in 2007, which is currently being reviewed.

1632. As part of this review, a set net closure was implemented to ensure the greatest protection to Hector's dolphins from fishing-related threats within their known range. The closure applies to both commercial and amateur use of set nets on the East Coast of the South Island to four nautical miles between Cape Jackson in the Marlborough Sounds and Slope Point in the Catlins.

1633. The risk assessment for marine mammals is currently being updated as part of the review of the Hector's and Māui dolphin Threat Management Plan. Fisheries New Zealand will continue to monitor marine mammal and protected species captures, and instigate further management action to protect these species where necessary.

1634. Fisheries New Zealand considers the proposed options are unlikely to see an interactions with marine mammals as no increase in fishing effort is expected.

Benthic impacts

1635. Research has characterised 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. The environmental impacts of fishing are summarised annually by Fisheries New Zealand. Fisheries New Zealand will continue to monitor the bottom trawl footprint of fisheries.

1636. Fisheries New Zealand considers the proposed options are unlikely to see an increase in benthic impacts due to KIN 3 catch predominantly being commercial set net bycatch, and recreational line and spearfishing.

2.2 OPTIONS CONSULTED ON

1637. The options provided in this document are consistent with the purpose and principles of the Act. In formulating its advice Fisheries New Zealand has complied, on your behalf, with the legal requirements with regard to consultation, providing for tangata whenua input and participation and for kaitiakitanga.

1638. The options consulted on are in the table below (Table 3).

Table 3: Proposed management settings in tonnes for KIN 3 from 1 October 2018, with the percentage change relative to the *status quo* in brackets.

Option	Total Allowable Catch (TAC)	Total Allowable Commercial Catch (TACC)	Allowances		
			Customary Māori	Recreational	All other mortality to the stock caused by fishing
Option 1 (<i>Status quo</i>)	3	1	1	1	0
Option 2	9 ↑ (200%)	3 ↑ (200%)	2 ↑ (100%)	3 ↑ (200%)	1 ↑ (100%)
Option 3	17 ↑ (467%)	6 ↑ (500%)	4 ↑ (300%)	6 ↑ (500%)	1 ↑ (100%)

2.3 VIEWS OF SUBMITTERS

2.3.1 Submissions received

1639. Under section 12 of the Act, you are obliged to consult before setting or varying any sustainability measure. Fisheries New Zealand has consulted on your behalf and this section outlines the views of submitters and issues they have raised.

1640. Thirteen submissions were received from the following organisations, including submissions from recreational bodies: Spearfishing New Zealand and New Zealand Sport Fishing Council, commercial fishers; Ocean Fisheries Ltd, Nyhon Fishing Ltd; Southern Fisheries Inshore; Fisheries Inshore New Zealand; Independent Fisheries Ltd and Sealord, two submissions by members of the public, one from a non-government organisation: Environmental and Conservation Organisation of NZ Inc, and one submission from Te Ohu Kaimoana.

1641. The majority of submitters (eight out of 13) supported Option 3. These submitters considered that Option 3 will allow unavoidable bycatch taken by commercial fishers to be balanced against ACE, while remaining consistent with the kingfish management strategy that highlights the importance of kingfish as a recreational species.

Commercial

1642. All commercial submitters, (Ocean Fisheries Ltd, Nyhon Fishing Ltd, Southern Fisheries Inshore, Sealord Ltd, Fisheries Inshore New Zealand Independent Fisheries Ltd and Sealord) supported Option 3, with the exception of Shawn Hollings (who self-identified as a commercial fisher and generically supported *status quo* for all fish stocks being reviewed).

1643. These submitters believed Option 1 does not take into account the increase in kingfish abundance, while Option 2 would only cover current catch. Option 3 would future proof the TACC given the trend of increasing abundance in KIN 3.

1644. Ocean Fisheries Ltd stated they do support Option 3, but they would also support a larger increase than the proposed 6 tonnes to allow the opportunity to utilise this species should a market for kingfish emerge in the South Island.

1645. Fisheries Inshore New Zealand is the Sector Representative Entity for inshore finfish, pelagic and tuna fisheries in New Zealand. It endorses the Southern Inshore Fisheries Ltd submission in support of Option 3.

General public

1646. Two submissions were received from members of the general public. Both submissions were in reference to all stocks and not KIN 3 specific. One submitter wasn't in support of any options, stating there was a lack of information provided in the discussion documents to allow an informed decision on supporting any of the options. The other submitter was in support of *status quo*, on the basis that an increase in abundance is the target and, once this has been achieved, the catch limit should remain at the *status quo*.

Recreational

1647. Spearfishing New Zealand and New Zealand Sport Fishing Council were in support of Option 3. Both groups agree that kingfish is an important non-commercial, recreational and customary species. However, given the relatively low commercial catches Option 3 seems a reasonable response to the increased availability of kingfish in this area. They also mentioned reports of increased recreational targeting of kingfish from their members.

1648. The New Zealand Sport Fishing Council also recommended the East Coast South Island trawl survey be extended to include kingfish as a surveyed species, particularly given the apparent increase in abundance of kingfish in KIN 3.

Non-government organisations (NGOs)

1649. A submission was received from Environmental and Conservation Organisation of NZ, supporting Option 1. Environmental and Conservation Organisation of NZ does not support an increased TAC in the KIN 3 fishery. ECO notes that warming of sea temperatures will likely lead to an increase of kingfish in KIN 3, but as sea temperatures are variable between years they consider it best to wait and see if the current trend in catch continues before changing the TAC.

Te Ohu Kaimoana

1650. Te Ohu Kaimoana were not in support of any of the proposed options. Te Ohu Kaimoana proposed a new option which includes a TAC increase to 7 tonnes, with 4 tonne increase to TACC, and 1 tonne increase to all other mortality caused by fishing. There would be no increase to the recreational allowance. The reasoning for this proposed option is to allow commercial fishers to have enough ACE to cover bycatch to the levels experienced in 2016/17. If commercial catch continues to increase, Te Ohu Kaimoana consider a follow up review of the TAC and TACC would be appropriate.

1651. Te Ohu Kaimoana also noted at this point in time customary interests have not identified an increased need for KIN 3, and support the retention of the existing allowance for customary fishing.

2.3.5 Input and participation tangata whenua

1652. 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 proposal to consult on a sustainability review covering a range of South Island stocks was presented to the Iwi Fisheries Forum for all South Island iwi, the Te Waka a Māui me Ōna Toka Iwi Forum (Te Waka a Māui), representing the iwi of the South Island. The Te Waka a Māui forum supported the review of KIN 3, but had no specific view on the proposed options.

1653. Fisheries New Zealand discussed the KIN 3 proposals with tangata whenua at two additional hui, the Araiteuru Hui and the Murihiku Mahinga Kai Hui at Karitane and Bluff on 27 May and July 7 respectively. Tangata whenua agreed that stock abundance for KIN 3 appears to have increased and supported increases in the TAC, TACC and the customary allowance. They had observed an increase in the abundance of kingfish off East Otago and within Bluff Harbour, and also considered that customary catch of kingfish was increasing.

2.3.6 Kaitiakitanga

1654. Under Section 12(1)(b), you must also have particular regard to kaitiakitanga before setting or varying a TAC. Under the Act, kaitiakitanga is 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. The Te Waipounamu Iwi Fisheries Plan contains objectives to support and provide for the interests of South Island iwi.

1655. Kingfish (haku) is not identified as a taonga species in the Te Waipounamu Iwi Fisheries Plan, but Te Waka a Māui consider all species in their rohe taonga. Te Waipounamu Iwi Fisheries Plan contains objectives to support and provide for the interests of South Island iwi. The Plan contains three objectives which are relevant to the management options proposed for KIN 3:

- a) Management objective 1: to create thriving customary non-commercial fisheries that support the cultural wellbeing of South Island iwi and our whānau;
- b) Management objective 3: 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; and
- c) Management objective 5: to restore, maintain and enhance the mauri and wairua of fisheries throughout the South Island.

1656. Fisheries New Zealand considers that the management options presented in this advice paper take into account the requirement to have regard to kaitiakitanga through the direct engagement with tangata whenua that has occurred, and by ensuring that appropriate allowances are made for customary non-commercial fishing aligned with the Te Waipounamu Iwi Fisheries Plan, that the fishery remains sustainable, and that environmental impacts are minimised.

2.4 SETTING THE TAC

1657. In cases such as kingfish in KIN 3, where estimates for current biomass and B_{MSY} are not known, the TAC must be set under s13(2A). The options presented in this paper take into account the requirements listed in s13(2A) and 13(3) of the Act, as discussed in section 1.8 of *Part 2: Statutory Considerations*.

1658. All sectors are noting an increase in kingfish abundance in KIN 3, indicating additional weight can be placed on this anecdotal information. There is no information to indicate that the current catch level of kingfish in KIN 3, or an increase in the KIN 3 TAC would pose a risk to the sustainability of the stock. It is likely that fishing in KIN 3 is on the periphery of the main stock and, therefore, unlikely to influence the size of the core stock. Fisheries New Zealand will continue to monitor the KIN 3 fishery through catch data and other information, and may consider reviewing the TAC again in the future based on this information.

1659. Fisheries New Zealand considers that the proposed TAC increase is not inconsistent with the s13 objective of maintaining the stock at or above, a level that can produce the maximum sustainable yield, and that the modest increase in the TAC will provide for utilisation while still meeting the your statutory obligation under s13 of the Act.

1660. Given the reliance on anecdotal information, caution needs to be applied when making decisions around a TAC increase. Options 2 and 3 take this into consideration and are cautious increases, which are not expected to result in sustainability concerns.

2.4.1 Option 1 (*Status quo*)

1661. Fisheries New Zealand considers that Option 1 (*status quo*) presents the least risk to sustainability of KIN 3, but does not reflect the increased abundance of kingfish. Under this option the TAC would constrain catches, does not enable industry to respond to the increased biomass in a way that would allow them to maximise value from landing all kingfish caught in KIN 3, and may not accurately reflect best information that non-commercial catches are increasing. This option also does not provide incentives for commercial fishers to land kingfish that are caught as an inevitable bycatch that cannot be returned to the water under Schedule 6 of the Act.

2.4.2 Option 2

1662. Option 2 would increase the TAC increase by 6 tonnes, to 9 tonnes, with increases to all allowances, and a TACC increase of 200% (from 1 to 3 tonnes).

1663. This TAC reflects the level of commercial catch recorded in the most recent fishing year, and the best available information on estimated recreational catch of kingfish in KIN 3 from the 2011/12 National Panel Survey. The recreational fishing allowance would be increased by 2 tonnes to 3 tonnes, the customary fishing allowance would be increased by 1 tonne to 2 tonnes, and a 1 tonne allowance would be set for all other sources of mortality related to fishing.

2.4.3 Option 3 (*Fisheries New Zealand recommended*)

1664. Under Option 3 the TAC would increase by 14 tonnes to 17 tonnes, with increases to all allowances, a TACC slightly higher than recent reported commercial catch and higher allowances than Option 2. There are currently no sustainability concerns for KIN 3 and, based on the best available information, Fisheries New Zealand considers this option better allows for expected commercial and non-commercial catch utilisation, given the increasing trend of abundance of kingfish in KIN 3.
1665. Under Option 3, the TACC would be increased by 500% to 6 tonnes. The recreational fishing allowance would also be increased by 500% to 6 tonnes, and the customary fishing allowance be increased to 4 tonnes, with a 1 tonne allowance be set for all other sources of mortality related to fishing.
1666. Fisheries New Zealand acknowledges there is uncertainty in terms of the current status of this fishery, with no information available to determine the relationship of the stock to target levels. However, the best available information does suggest a significant increase in abundance has occurred in KIN 3.
1667. The majority of submitters (8 out of 13) were in support of this option, with support from tangata whenua, the commercial and recreational sectors.

2.5 ALLOCATING THE TAC

1668. Having set the TAC, you must set the TACC and in setting or varying the TACC must make allowances for customary non-commercial interests, recreational fishing interests, and all other mortality to the stock caused by fishing (s20 and 21 of the Act). You have considerable discretion under s21 of the Act to allocate the catch as you consider reasonable to achieve the purpose of the Act.

2.5.1 Customary allowance

1669. Māori customary catch in KIN 3 is taken under the Fisheries (South Island Customary Fishing) Regulations 1999 and Tangata Kaitiaki/Tiaki in KIN 3 provide information on Māori customary harvest of fish. Available information suggests customary Māori take has been at low levels within the current allowance, however, input from tangata whenua is that customary catch of kingfish is increasing, given the changes in abundance. Fisheries New Zealand proposes proportional increases to the customary allowance as provided for under both Options 2 and 3 to allow for an expected increase in customary harvest.
1670. Te Ohu Kaimoana proposes there be no increase to the customary (or recreational) allowance. In relation to this submission, the framework for determining allowances is discussed in section 1.9 of this paper. As noted in that section, the Court of Appeal has said that the recreational allowance (and in Fisheries New Zealand's view this would also apply to the customary allowance) is simply the best estimate of what recreational fishers will catch (while being subject, in the case of recreational fishing, to the controls which you decided to impose upon them such as bag limits and minimum sizes).

2.5.2 Recreational allowance

1671. Anecdotal evidence suggests that recreational fishers are encountering kingfish more often, and some fishers are beginning to target kingfish around East Otago. Given the increases in average sea surface temperatures in the southern regions observed over previous years, it is likely that the further spread of kingfish southwards will lead to higher availability and recreational catch. Kingfish are highly valued by recreational fishers and likely to be increasingly targeted under those circumstances. Fisheries New Zealand proposes increases to the recreational allowance to allow for this recreational catch under both Options 2 and 3.

2.5.3 Allowance for other sources of mortality caused by fishing

1672. Option 2 and 3 propose an increase to other sources of mortality caused by fishing allowance to take into account incidental mortality, as a result of increased catches of kingfish that are likely to be occurring.

2.5.4 TACC

1673. Fisheries New Zealand proposes increases to the TACC under Option 2 and Option 3. These increases are intended to allow for the commercial utilisation opportunity presented by the relatively high abundance of kingfish in KIN 3.

1674. Table 4 below outlines the predicted change to commercial revenue of the proposed options. In addition to these there will be reduced costs to fishers from fewer deemed value payments.

Table 4: Predicted changes to commercial revenue of the proposed options, based on the price to the fisher of \$3.62/kg for KIN 3 in 2017/18.

	TACC	Change from status quo (t)	Predicted revenue change (\$ p.a.)
Option 1 (<i>Status quo</i>)	1 t		
Option 2	3 t	2 ↑ (200%)	\$7,240 ↑
Option 2	6 t	5 ↑ (500%)	\$18,100 ↑

2.6 OTHER MANAGEMENT CONTROLS

2.6.1 Deemed value rates

1675. Fisheries New Zealand is not proposing to alter the deemed value rates and schedules for KIN 3 as part of this review of catch allowances. Current values are set out in Table 5. Kingfish is an important species for non-commercial fishers and retaining the current deemed value avoids incentivising targeting of kingfish by commercial fishers. Fisheries New Zealand received the following submissions from tangata whenua and stakeholders on deemed value settings for KIN 3.

1676. Nyhon Fishing Ltd proposed introducing a deemed value rate of \$0.00/kg for period of 2 years. The reasoning behind this is to get an accurate representation of catch levels as Nyhon Fishing believes we will not get accurate catch data with the current high deemed value rates.

1677. Sealord also commented on deemed values. They suggested for stocks where it is agreed that they are subject to climate influence (including kingfish) that we provide within season deemed value payments relief to fishers.

1678. Fisheries New Zealand will consider this input in future reviews of deemed value rates for kingfish.

Table 5: Current standard deemed value rates (\$/kg) for KIN 3

	Interim Rate (\$/kg)	Annual Differential Rates (\$/kg) for excess catch (% of ACE)					
		100-120%	120-140%	140-160%	160-180%	180-200%	200%+
<i>Status quo</i>	8.00	8.90	10.68	12.46	14.24	16.02	17.80

2.6.3 Schedule 6 amendment

1679. Southern Inshore Fisheries Management Company raised the need to address return to sea principles for set net caught kingfish, supported by Fisheries Inshore New Zealand. Southern Inshore Fisheries Management Company stated with the increased abundance, it is imperative that set net fishers are not unduly impacted where kingfish could be returned alive to the sea. Fisheries New Zealand does not have reliable information to suggest that kingfish will survive if returned to sea following capture in set nets, and is not proposing amendments to Schedule 6 as part of this decision.

3 Conclusion and Recommendation

1680. The best available information suggests that the abundance of kingfish in KIN 3 appears to have increased. All sectors are noting an increase in kingfish abundance in KIN 3, indicating additional weight can be placed on this anecdotal information. It is likely that fishing in KIN 3 is on the periphery of the main stock and, therefore, unlikely to influence the size of the core stock.

1681. Consequently it is unlikely that an increase in the KIN 3 TAC would pose a risk to the sustainability of the stock. By increasing the TAC and TACC to match this increased abundance, the social economic and cultural benefits that can be obtained from the fishery will also increase.

1682. Fisheries New Zealand recommends that you agree to Option 3. This option best reflects the current abundance of kingfish while providing for utilisation opportunities.

1683. As KIN 3 is almost exclusively a bycatch fishery, Fisheries New Zealand does not consider there will be negative impacts in terms of the matters set out in section 9 of the Act. Fisheries New Zealand considers that Option 3 will assist commercial fishers in reducing unnecessary costs. The available information indicates the increased catch is the result of unavoidable bycatch in associated target fisheries.

1684. You have discretion in choosing an option and may make your own independent assessment of the information presented to you in making this decision. You are not bound to choose the option recommended by Fisheries New Zealand. Fisheries New Zealand consider all three options are consistent with your statutory obligations.

Option 1

Agree to retain the KIN 3 TAC at 3 tonnes and within the TAC:

- i. Retain the allowance of 1 tonne for Māori customary non-commercial fishing interests;
- ii. Retain the allowance of 1 tonnes for recreational fishing interests;
- iii. Retain the allowance of 0 tonnes for all other sources of mortality to the stock caused by fishing;
- iv. Retain the KIN 3 TACC at 1 tonne.

Agreed / Agreed as Amended / Not Agreed

OR

Option 2

Agree to increase the KIN 3 TAC from 3 to 9 tonnes and within the TAC:

- i. Increase the allowance for Māori customary non-commercial fishing from 1 to 2 tonnes;
- ii. Increase the allowance for recreational fishing interests from 1 to 3 tonnes;
- iii. Increase the allowance for all other sources of mortality to the stock caused by fishing from 0 to 1 tonne;
- iv. Increase the KIN 3 TACC from 1 to 3 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 3 (Fisheries New Zealand preferred)

Agree to increase the KIN 3 TAC from 3 to 17 tonnes and within the TAC:

- i. Increase the allowance for Māori customary non-commercial fishing from 1 to 4 tonnes;
- ii. Increase the allowance for recreational fishing interests from 1 to 6 tonnes;
- iii. Increase the allowance for all other sources of mortality to the stock caused by fishing from 0 to 1 tonne;
- iv. Increase the KIN 3 TACC from 1 to 6 tonnes.

Agreed / Agreed as Amended / Not Agreed

Stuart Nash
Hon Stuart Nash
Minister of Fisheries

13 / 9 /2018

Paua (PAU 5B)



Figure 1: Quota management areas (QMAs) for paua (PAU), with PAU 5B highlighted in blue.

1 Summary

1685. Fisheries New Zealand consulted on three options for management settings for paua (*Haliotis iris*, *Haliotis australis*) in quota management area (QMA) 5B (PAU 5B; Figure 1). These options are set out in Table 1:

Table 1. Proposed management settings in tonnes for PAU 5B from 1 October 2018, with the percentage change relative to the *status quo* in brackets.

Option	Total Allowable Catch	Total Allowable Commercial Catch	Allowances		
			Customary Māori	Recreational	All other mortality to the stock caused by fishing
Option 1 (<i>Status quo</i>)	105	90	6	6	3
Option 2	115.2 ↑ (10%)	99 ↑ (10%)	6.6 ↑ (10%)	6.6 ↑ (10%)	3
Option 3	125.4 ↑ (20%)	108 ↑ (20%)	7.2 ↑ (20%)	7.2 ↑ (20%)	3

1686. We received six submissions on the PAU 5B proposals. These came from the commercial sector (PauaMac5 and Paua Industry Council), the environmental sector (Environmental and Conservation Organisation of New Zealand Inc.), Te Ohu Kaimoana and the Iwi

Collective Partnership (representing customary and commercial interests), and one individual (Phil Lynch).

1687. While there is strong support for increasing the TAC based on the scientific information, there is also concern and opposition driven by the impact of ‘28N rights’ on existing quota shares and allocation of any TACC increase. Under Options 2 and 3, these historic rights to a preferential allocation of quota shares will be discharged, with quota shares reduced and reallocated away from iwi and non-rights holders.¹

1688. Notwithstanding this issue, Fisheries New Zealand’s preferred option is Option 2. This provides for increased utilisation of the resource with a high probability of remaining above the sustainability target, while noting concerns raised by some submitters and iwi regarding a more significant increase in the TAC.

1689. No changes are proposed to the deemed value rates for PAU 5B (Table 2). The current deemed value rates are consistent with the Guidelines.² The current interim deemed value rate for PAU 5B is set at approximately 75% of the annual deemed value rate, and deemed value rates for other paua stocks are set at the same level.

Table 2: Standard Deemed Value Rates (\$/kg) for PAU 5B

	Interim Rate (\$/kg)	Annual Differential Rates (\$/kg) for excess catch (% of ACE)					
		100-120%	120-140%	140-160%	160-180%	180-200%	200%+
<i>Status quo</i>	50.00	66.00	79.20	92.40	105.60	118.80	132.00

2 Need for review

1690. There is an opportunity to provide for an increase in utilisation while ensuring sustainability of PAU 5B. The 2018 stock assessment suggests that biomass in PAU 5B is currently above the target biomass of 40% B_0 (i.e. the level of biomass that is 40% of what it would be if no fishing were taking place) and is trending upwards. The best available information suggests that the biomass of PAU 5B has been steadily increasing since 2002.

2.1 Context

2.1.1 Biological characteristics of paua

1691. Paua are herbivorous shellfish that form large aggregations on reefs in shallow subtidal coastal habitats. Paua move over such small spatial scales that they are considered sedentary.

1692. Paua are broadcast spawners. They release gametes into the water column, which then fertilise and develop into larvae. Spawning is thought to occur annually. Generally, juvenile paua settle from the water column (following the larval period) to the lower intertidal/upper subtidal zone. Habitat-related factors are an important source of variation in the post-settlement survival of paua. As paua grow, most tend to move into the lower subtidal zone.

¹ 28N rights are discussed in full in Part 2 (Statutory Considerations) and Part 3 (Key Issues raised in submissions) of this paper.

² Available at www.mpi.govt.nz/document-vault/3663

1693. Population density is believed to be strongly correlated with spawning success for paua. At low densities, reproductive success can be compromised due to the lower probability of gametes meeting and successfully fertilising. The aggregation behaviour of paua populations makes them vulnerable to localised depletion from fishing activities.

2.1.2 Fisheries characterisation

Customary Māori fishery

1694. Paua are extremely important to tangata whenua. Paua are a taonga species in the south, and the availability of plentiful stocks of paua upholds the mana of the marae. In particular, serving paua is important when hosting manuhiri (visitors). Although the amount of customary harvest of paua in PAU 5B is low, it is significant due to its cultural importance.

1695. Customary fishing in PAU 5B occurs under the Fisheries (South Island Customary Fishing) Regulations 1999 (the South Island Regulations). Customary food gathering reporting under the South Island Regulations shows that there have been 43 customary authorisations issued to take paua from PAU 5B since 1999.

1696. In the past eight months, 1910 paua have been taken under customary authorisations. Tangata tiaki state that the volumes taken over this period reflect tangata whenua's conservative take, and show regard to kaitiakitanga in managing PAU 5B.

1697. There are three mātaimai reserves in PAU 5B. Mātaimai reserves recognise and provide for the special relationship between tangata whenua and their traditional fishing grounds. Tangata whenua develop and manage mātaimai reserves.

Recreational fishery

1698. There is a small recreational fishery in PAU 5B. The National Panel Survey of Marine Recreational Fishers in 2011/12 (National Panel Survey) estimated there to be 0.82 tonnes of recreational harvest in PAU 5B in that fishing year.³

1699. For the purposes of stock assessment, recreational harvest has been assumed to have increased from 1 tonne in 1974 to 5 tonnes in 2006 and remained stable since then. There is a daily bag limit of 10 and minimum legal sizes of 125 mm (blackfoot paua; *Haliotis iris*) and 80 mm (yellowfoot paua; *H. australis*).

Other sources of mortality from fishing

1700. Research from other paua stocks suggests that overall incidental mortality of paua from commercial fishing could be approximately 0.3% of the landed catch (less than 1 tonne under each proposed option). This does not include incidental mortality from non-commercial fishing. However, non-commercial fisheries are small in PAU 5B and are unlikely to cause substantial incidental mortality.

1701. The incidental mortality estimate also included an assessment of illegal take from the fishery. In the case of paua stocks, this can sometimes be substantial due to an active black market trade in paua that operates nationally.

³ 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. Accessible at: <https://www.mpi.govt.nz/dmsdocument/4719/send>

1702. There are various other potential sources of paua mortality caused by fishing. For example, paua can die from wounds caused by removal from the reef, desiccation and stress if they are brought to the surface and kept out of water for a prolonged period of time. Sub-legal paua may be subject to handling mortality in the fishery if they are removed from the substrate to be measured. Indirect mortality may also occur where paua are returned to unsuitable habitat such as sand, or to areas where they are easily predated.

Commercial fishery

1703. The commercial fishing sector accounts for the majority of the harvest in PAU 5B. The current TACC of 90 tonnes has been in place since 2002. Catches have been constant at or about the level of the TACC (Figure 2). Approximately 16 active fishers are fishing Annual Catch Entitlement (ACE) in this fishery annually. This number has remained constant for a number of years. Some areas within this fishery are being utilised to supply the recently developing live whole-in-shell market, due to the large size of paua found in this fishery.

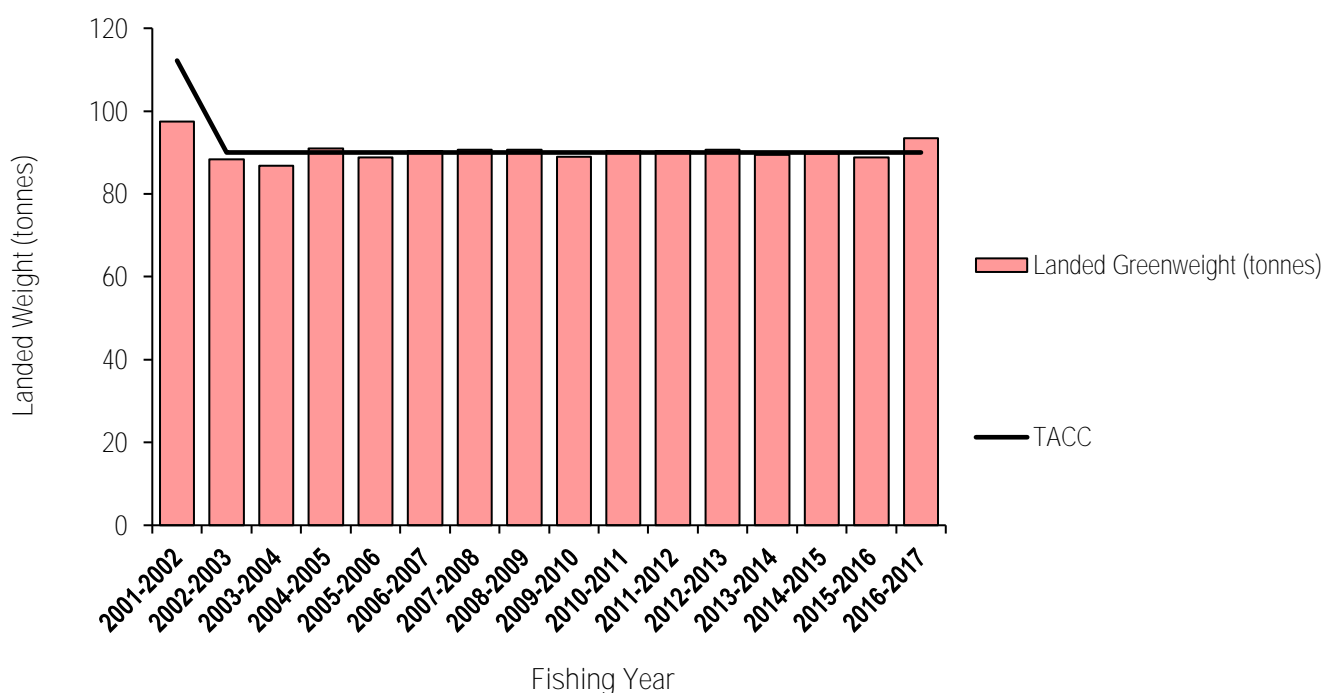


Figure 2: Annual landings vs TACC for PAU 5B between 2001/02 and 2016/17 fishing years (as at April 2017).

1704. Minimum legal sizes of 125 mm (blackfoot paua; *Haliotis iris*) and 80 mm (yellowfoot paua; *Haliotis australis*) apply to commercial fishing for paua, as well as other restrictions such as hand-gathering and freediving only, and areas of coastline that are closed to commercial fishing in PAU 5B.

1705. In recent years, additional voluntary management measures have been implemented by industry, including a larger minimum commercial harvest size of 137 mm⁴. As a result, PAU 5B fishers now, on average, harvest the largest paua of any New Zealand commercial paua fishery. This voluntary measure means that paua in the size range 125-137 mm in PAU 5B are only taken by non-commercial fishers.

⁴ Verified by a commercial post-harvest shell measurement programme that assesses the average commercial shell length.

1706. In addition, fishers in PAU 5B use digital fine-scale monitoring tools. Industry plan to use finer scale catch spreading in the future development of management actions based on the data and analysis associated with this type of monitoring.

2.1.3 Current stock status

1707. A new stock assessment carried out in 2018 suggests that biomass in PAU 5B is currently above the target biomass of 40% B_0 (i.e. the level of biomass that is 40% of what the level would be if no fishing were taking place) and is trending upwards.

1708. This target is used as a proxy for B_{MSY} (see 2.1.4 Current management approach). The 2018 stock assessment estimates spawning stock biomass of PAU 5B to be at 47% B_0 and very unlikely to fall below the target at current catch levels.

1709. Stock assessment projections suggest that under an increase in commercial harvest of 4.5 tonnes (a 5% increase to the TACC) the stock biomass may increase slightly. Stock assessment projections further suggest that under an increase in commercial harvest of 18 tonnes (20% increase to the TACC), there is a 93% probability of remaining above the target of 40% B_0 over the next 3 years. (The stock assessment does not model beyond three years because uncertainty becomes too high.)

1710. Additional projections investigated the influence of potential changes in fisher behavior that may, or may not, have occurred over time. If fishers have become more efficient in catchability over time, the projections reduced the probability of remaining above the target of 40% B_0 to 63%.

1711. The projections did not model the impact of a proportional increase in allowances, but otherwise the options in this paper reflect the range of projections provided by the stock assessment.

2.1.4 Current management approach

1712. The draft National Fisheries Plan for Inshore Shellfish categorises PAU 5B as a Group 1 fishery, meaning it is one of New Zealand's most valuable and sought after shellfish fisheries. Given the high level of benefits from paua and their susceptibility to overfishing and depletion, there is a strong management focus on ensuring paua fisheries remain healthy and are managed at high levels of abundance.

2.2 Paua stocks are subject to regular stock assessments (2.1.3 Current stock status). The Harvest Strategy Standard⁵ sets out the target for paua. Fisheries New Zealand's Fisheries Assessment Plenary (the Plenary) agreed from a sustainability perspective that the interim default reference points of 40% B_0 ⁶ (target), 20% B_0 (soft limit), and 10% B_0 (hard limit) were appropriate for all paua stocks.

⁵ Harvest Strategy Standard for New Zealand Fisheries, October 2008, accessible at: <http://fs.fish.govt.nz/Page.aspx?pk=113&dk=16543>
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).

⁶ B_0 also called the virgin biomass, this is the theoretical carrying capacity of a fish stock. In some cases, it refers to the average biomass of the stock in the years before fishing started

2.2 OPTIONS CONSULTED ON

1713. Fisheries New Zealand consulted on the following options (Table 3):

Table 3: Proposed management settings in tonnes for PAU 5B from 1 October 2018, with the percentage change relative to the *status quo* in brackets.

Option	Total Allowable Catch	Total Allowable Commercial Catch	Allowances		
			Customary Māori	Recreational	All other mortality to the stock caused by fishing
Option 1 (<i>Status quo</i>)	105	90	6	6	3
Option 2	115.2 ↑ (10%)	99 ↑ (10%)	6.6 ↑ (10%)	6.6 ↑ (10%)	3
Option 3	125.4 ↑ (20%)	108 ↑ (20%)	7.2 ↑ (20%)	7.2 ↑ (20%)	3

2.2 VIEWS OF SUBMITTERS

1714. Section 12 of the Act requires you to consult on any proposed management changes. Fisheries New Zealand has consulted on your behalf. This section outlines the views of submitters and issues they raised.

2.2.1 Submissions received

1715. Fisheries New Zealand received six submissions on the PAU 5B proposals from the following organisations and individuals:

- a) PauaMAC5
- b) Phil Lynch
- c) Paua Industry Council
- d) Environment and Conservation Organisations of NZ Inc
- e) Te Ohu Kaimoana
- f) Iwi Collective Partnership

1716. Three submissions supported a TAC increase based on the latest relevant science. Two of these submissions (from PauaMAC 5 and Paua Industry Council) also noted the 28N right issue impacting on Options 2 and 3.

1717. Environment and Conservation Organisations of NZ supported a cautious increase (Option 2) given uncertainty in the science. ECO draws attention to section 10 of the Act (see section 1.5 of *Part 2: Statutory Considerations* section of this paper).

1718. One submitter (who generically submitted on all fish stocks) did not comment on any option proposed in the consultation document.

1719. Additionally, two submissions (Te Ohu Kaimoana and Iwi Collective Partnership) supported an increase to the TAC, including an increase in the TACC, but only if an increase were implemented in a way that ensured no reallocation of settlement quota to fulfil the allocation of 28N rights.

1720. Te Ohu Kaimoana consider that a short-term solution must be reached prior to any increase in TAC in PAU 5B to ensure that it does not affect the current proportional

allocation of settlement quota. See section 1.4 of *Part 3: Key issues raised in submissions for Fisheries New Zealand's analysis of the relevance of 28N rights*.

2.2.2 Input and participation of tangata whenua

1721. 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.

1722. The proposal to consult on PAU 5B was presented to the Te Waka a Māui me Ōna Toka Iwi Forum (Te Waka a Māui). This forum represents the nine iwi of the South Island, each holding mana moana and significant interests (both commercial and non-commercial) in South Island fisheries.

1723. The forum supported a review of the PAU 5B fishery. However, the existence of 28N rights in PAU 5B means that Te Runanga o Ngai Tahu does not support Option 2 or 3.

1724. The proposals were also presented at the Ngai Tahu Murihiku Mahinga Kai hui (Southland). Iwi present at the hui were concerned that an increase in the TAC could result in a shift or increase in effort into the Titi Islands. Concerns were also voiced that without a better understanding of recreational harvest, an increase in the TAC could add to increased overall pressure. There was no agreed view on a preferred option at this hui as 28N rights were noted as a major issue.

2.2.3 Kaitiakitanga

1725. Under Section 12(1)(b), you must also have particular regard to kaitiakitanga before setting or varying a TAC. Under the Act, kaitiakitanga is 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.

1726. Relevant Iwi or Forum Fish Plans provide a view of the objectives and outcomes iwi seek from the management of the fishery and can provide an indication of how iwi exercise kaitiakitanga over fisheries resources. Iwi views from Forum meetings and submissions received from iwi can also provide an indication.

1727. Paua is identified as a taonga species in the Te Waipounamu Iwi Fisheries Plan. This plan contains objectives to support and provide for the interests of South Island iwi. That Forum Fisheries Plan contains three objectives that are relevant to the management options proposed for PAU 5B:

- a) Management objective 1: to create thriving customary non-commercial fisheries that support the cultural wellbeing of South Island iwi and our whānau;
- b) Management objective 3: 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; and,
- c) Management objective 5: to restore, maintain and enhance the mauri and wairua of fisheries throughout the South Island.

1728. Fisheries New Zealand considers that the management options presented in this advice paper take these objectives into account through the direct engagement that has occurred with tangata whenua, and by ensuring that appropriate allowances are made for customary non-commercial fishing, the fishery remains sustainable, and that environmental impacts are minimised.

2.3 SETTING THE TAC

1729. In cases such as PAU 5B, where there is uncertainty around 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.

1730. The Harvest Strategy Standard sets out the target for paua. Fisheries New Zealand's Fisheries Assessment Plenary (the Plenary) agreed from a sustainability perspective that the interim default reference points of 40% B_0 (target), 20% B_0 (soft limit), and 10% B_0 (hard limit) were appropriate for all paua stocks

1731. The best available information is that the biomass level of paua in PAU 5B is currently above this target. Consequently, there is an opportunity to increase utilisation (increase the TAC), while ensuring sustainability, in a manner that is not inconsistent with the objectives of section 13.

1732. Along with the *status quo*, two different options are proposed that allow for consideration of the uncertainty in the available information and any associated sustainability risk.

1733. When considering these options, you must consider sections 9 (Environmental Principles) and 11 (sustainability measures) of the Act (see sections 1.4 and 1.6 of *Part 2: Statutory Considerations*). These are discussed in relation to PAU 5B in the following paragraphs.

1734. Fisheries New Zealand considers the proposals for PAU 5B to be consistent with the environmental principles of the Act.

1735. There is limited information to provide an assessment of the effects of the paua fishery on biological diversity. There is evidence of an interdependent 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. Paua are also prey for a number of predators, but there are no known predators that prey exclusively on paua. The impact on biological diversity of removing paua from the aquatic environment at the levels proposed in this paper is not expected to be large.

1736. No habitats of particular significance for fisheries management have been identified in PAU 5B, and it is considered unlikely that the method of hand gathering while diving would have a demonstrable adverse effect on habitat.

1737. Fisheries New Zealand considers all options in this paper to be consistent with section 11(1) of the Act. As commercial paua fishing is by hand-gathering and has no bycatch, it is unlikely to impact demonstrably on any other stocks or the aquatic environment (section 11(1)(a) of the Act). The existing controls for PAU 5B (see section 2.1 Context of this paper) have been taken into consideration in the formulation of the advice and

proposals in this document (section 11(1)(b) of the Act). Paua stocks are considered have little natural variability (section 11(1)(c)).

1738. Fisheries New Zealand is not aware of any policy statements, plans, or strategies that you should have regard to before varying the TAC for PAU 5B (section 11(2) of the Act).

2.3.1 Option 1 (*Status quo*)

1739. The current management settings would be retained under this option. As the stock is considered to be likely above target biomass, the level that the current TAC is set at is consistent 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.

1740. Option 1 is the most cautious approach to the increase in biomass in PAU 5B. This option will result in a lost opportunity for increased utilisation of this fisheries resource because the fishing sectors will not be able to take advantage of the increased biomass.

1741. No submitters directly commented on this option although Te Runanga o Ngai Tahu, Te Ohu Kaimoana, and the Iwi Collective Partnership do not support any option that may result in a reallocation of settlement quota away from tangata whenua to 28N rights holders (see 2.5 Allocating the TAC).

1742. Under this option the stock will continue to increase in size at its current rate. However, Fisheries New Zealand considers that the purpose of the Act could be better met by allowing for increased utilisation given the value of the fishery and evidence that the stock is above its target biomass.

2.3.2 Option 2 (Fisheries New Zealand Recommended)

1743. Under Option 2, the TAC would be increased by 10.2 tonnes.

1744. The best available information indicates that there is an opportunity to increase harvest in PAU 5B. The results of the stock assessment suggest that an increase in harvest up to 18 tonnes could occur for PAU 5B, while still retaining high probability that the stock will remain at or above the target.

1745. The Environment and Conservation Organisations of New Zealand submission supports Option 2. They consider that an increase in harvest is possible, and favour a cautious approach based on the information principles in the Fisheries Act (s 10; see the Statutory Considerations section of this paper). Environment and Conservation Organisations of New Zealand considers that uncertainty in the stock assessment requires a cautious approach to TAC setting, and therefore a cautious increase to the TAC.

1746. Fisheries New Zealand considers that an increase of 10.2 tonnes would allow sectors to enjoy the benefits of the biomass increase by harvesting more paua and, for the commercial sector, increasing revenue. The increase is within the bounds of the stock assessment range and is a positive but cautious approach allowing higher utilisation, while noting the concerns raised by some submitters and iwi regarding more significant increases in the TAC (refer discussion of Options 1 and 3).

2.3.3 Option 3

1747. Under Option 3, the TAC would be increased by 20.4 tonnes.

1748. There is less confidence about the impacts of an increase of 20.4 tonnes on the PAU 5B stock than for Options 1 or 2. An increase of 20.4 tonnes is slightly higher (2.4 tonnes) than the maximum increase that was modelled by the stock assessment.
1749. The primary benefit of Option 3 is that it provides for greater utilisation than Option 2.
1750. Two submitters support Option 3. PauaMAC5 and Paua Industry Council consider that the scientific information indicates an increase in utilisation is possible, and that this increase is better served by Option 3 as it provides for greater utilisation than Option 2 while still being likely to ensure sustainability.
1751. PauaMAC5 notes that the caution required under section 10 of the Act relates to achieving the purpose of the Act, and that the balance between utilisation and sustainability is provided in the purpose of the Act, not in the application of the information principles in section 10. They consider that Option 3 better meets the purpose of the Act.
1752. Te Runanga o Ngai Tahu and Te Ohu Kaimoana both support an increase in the TAC, subject to resolution of 28N rights issues. Neither suggested a preference for Option 2 or 3 in terms of a preferred increase. Iwi present at the Ngai Tahu Murihiku Mahinga Kai hui noted concerns that a significant increase in the TAC could potentially result in a shift or increase in effort into the Titi Islands, and that without a better understanding of recreational harvest an increase in the TAC could add to increased overall pressure.
1753. There is, in effect, a safety margin in the model estimates of biomass because the commercial sector only harvest paua above 137 mm rather than the minimum legal size of 125 mm. Therefore, a portion of the biomass remains unfished commercially. This is taken into account in the model, and there is a high probability the fishery can sustain a 20% increase in TACC for the next 3 years at a MHS of 137mm.

2.3.4 Other comments

1754. Te Ohu Kaimoana did not support any of the TAC options in the paper. Te Ohu Kaimoana suggested instead that the TAC be increased by 18 tonnes, with no increase to the recreational or customary allowances⁷.
1755. One submitter (Phil Lynch) did not comment on options in the paper, but considered that there was insufficient information provided in all consultation documents for submitters to make informed submissions.
1756. The Environment and Conservation Organisations of New Zealand commented on a variety of matters that are outside the scope of this paper.
1757. Environment and Conservation Organisations of New Zealand raised concerns about potential recruitment failure of paua stocks and whether the targets set for shell fish under the harvest strategy defaults were appropriate. Fisheries New Zealand considers that a rigorous scientific process underlies the recommendations made based on the Harvest Strategy Standard, but has noted these concerns.

⁷ Te Runanga o Ngai Tahu have indicated that in respect of Tangata Tiaki/Kaitiaki, they do not support Te Ohu Kaimoana commenting on customary allocation as they feel this matter was under the mandate of the Tangata Tiaki/Kaitiaki responsible for this stock.

2.4 ALLOCATING THE TAC

1758. Under section 21 of the Act, when varying the TACC of any stock, you must have regard to the TAC and make allowances for Māori customary non-commercial fishing interests, recreational fishing interests, and all other mortality to the stock caused by fishing.

1759. The TAC sets the total quantity of a stock that can be sustainably harvested each year, consistent with the objective of maintaining the stock at or above a level that can produce the maximum sustainable yield.

1760. After setting or varying the TAC for a stock, a separate decision arises in respect of allocating the TAC. This involves deciding what portion of the TAC is available for Māori customary non-commercial fishing interests, recreational interests, all other mortality to that stock caused by fishing, and commercial fishers (the TACC). You have considerable discretion in determining the allocation.

1761. You are not bound to follow any of the recommendations in this paper. The decision you make should be within the range consulted on, or be an option raised by stakeholders during consultation (so long as that option is within the range consulted on).

2.4.1 Māori customary allowance

1762. Currently the Māori customary allowance is set at 6 tonnes.

1763. In addition to the *status quo* (Option 1), Fisheries New Zealand proposes small increases to the allowance for customary non-commercial fishing (a 10% increase for Option 2 and a 20% increase for Option 3), to reflect the likely increased availability of paua given recent increases in abundance. For Option 2 this results in a 0.6 tonne increase, raising the allowance from 6 to 6.6 tonnes. For Option 3 this results in a 1.2 tonne increase from 6 to 7.2 tonnes.

1764. Te Ohu Kaimoana state that there can be expected to be increases to the customary allowance over time as capacity to harvest is realised. However, Te Ohu Kaimoana proposes no increase to the customary allowance at this time.

1765. Te Rununga o Ngai Tahu have indicated that in respect of Tangata Tiaki/Kaitiaki, they do not support Te Ohu Kaimoana commenting on customary allocation as they feel this matter was under the mandate of the Tangata Tiaki/Kaitiaki responsible for this stock.

1766. Fisheries New Zealand considers that it is not clear if this level of allowance is still adequate given increasing paua biomass and availability of paua. Therefore, Fisheries New Zealand supports a small increase to the customary allowance to reflect that paua are likely becoming increasingly available off the coast of the Stewart Island as biomass increases.

2.4.2 Recreational allowance

1767. The recreational allowance is currently set at 6 tonnes. In addition to the *status quo* (Option 1), Fisheries New Zealand proposes small increases to reflect likely increased catch as a result of increases in paua abundance. For Option 2, a 0.6 tonne increase is proposed. For Option 3 a 1.2 tonne increase is proposed.

1768. The previous estimate from the 2012 survey of recreational take was considered to be an underestimate due to the difficulty in getting information. There is also a growing number of recreational deer hunters on Stewart Island who harvest paua.

1769. Te Ohu Kaimoana do not support any increase in the recreational allowance above the level it was first set by the Minister when the TAC was set for a stock. The framework for determining customary and recreational allowances is set out under sections 20 and 21 of the Act. Fisheries New Zealand's response to Te Ohu Kaimoana's submission on allocation of the TAC is provided in section 1.3 of *Part 3: Key issues raised in submissions*. Other submitters did not comment on recreational allowance.

1770. Fisheries New Zealand supports a small increase to the recreational allowance to allow for increased recreational catch as the abundance of paua increases. A new estimate of recreational catch will be available in 2018/19 as the results of the National Panel Survey of recreational fishing currently underway become available. The allowance can be reviewed, if appropriate, once this information is available.

2.4.3 Allowance for other sources of mortality caused by fishing

1771. Currently the allowance for other sources of mortality caused by fishing is set at 3 tonnes. Fisheries New Zealand proposes no change to this allowance as it is thought to be sufficient.

1772. Paua Industry Council questioned whether 3 tonnes was necessary for this allowance. Paua Industry Council asked whether the additional allocation over 1 tonne was to cover harvest associated with estimates of illegal take.

1773. There is no reliable current estimate for other sources of mortality caused by fishing in PAU 5B. The current 3 tonne allowance is from the original TAC settings for PAU 5B and includes fishing-related mortality and potential illegal take. Fisheries New Zealand supports retaining the allowance at 3 tonnes until better information is available.

2.4.4 TACC

1774. In addition to the *status quo* (Option 1), Fisheries New Zealand proposes two options for the PAU 5B TACC (Table 3, Figure 3): a 10% increase from 90 to 99 tonnes (Option 2) and a 20% increase from 90 to 108 tonnes (Option 3).

1775. Te Runanga o Ngai Tahu, Te Ohu Kaimoana, and the Iwi Collective Partnership oppose any TACC increase that results in the reallocation of settlement quota to honour 28N rights.

1776. PAU 5B is one of three stocks being reviewed in this sustainability round with preferential allocation rights commonly referred to as '28N' rights. The Statutory Considerations section of this paper describes these rights in detail and the implications of them for your decisions on TAC setting in this sustainability round.

1777. There are 157 kg of 28N rights in PAU 5B, held by one quota owner. An increase in the TACC will mean that quota shares belonging to quota holders that do not hold 28N rights (including tangata whenua) will be reduced and reallocated to the holder of the 28N rights to honour the right of that quota owner to the 157 kg increase.

1778. In PAU 5B, Ngai Tahu hold 10% of quota shares (10,000,000 quota shares) obtained as part of the fisheries settlement. Under both Options 2 and 3, their settlement quota shares will be reduced to approximately 9.98% of quota shares (9,982,586 quota shares).
1779. PauaMAC5 and Paua Industry Council suggest that the reallocation of shares will be less under Option 3 than under Option 2 because of the greater increase in allowable catch under Option 3.
1780. A model of reallocation completed by FishServe (Addendum 1) indicates that as reallocation is proportional to shares owned in the fishery, and both Options 2 and 3 fully discharge the 28N rights, reallocation of shares is the same for both options.
1781. PauaMAC5 and Paua Industry Council support the urgent development and adoption of a negotiated solution to section 28N rights between the Crown and quota owners (across all stocks).
1782. Paua industry Council and PauaMAC5 support a TACC increase of 18 tonnes. They consider that the science supports an increase of this magnitude, and note the considerable monetary value of this increase to industry.
1783. Te Ohu Kaimoana and the Iwi Collective Partnership also support an increase in the TACC of 18 tonnes, contingent upon this increase happening without reallocation of settlement quota to honour 28N rights.
1784. Based on a port price of \$23.50/kg, Fisheries New Zealand estimates that the increase in revenue to the commercial sector would be \$211,500 under a 9 tonnes TACC increase (Option 2) and \$423,000 under an 18 tonnes TACC increase (Option 3).
1785. Increasing the TACC also adds additional regional income from increased levels of fisher activity associated with additional harvest potential, and it will generate a substantial increase in quota value. These benefits will be higher under Option 3 than under Option 2.
1786. Given that the TACC makes up the majority of the TAC, changes to the TACC are likely to have the biggest impact on the overall sustainability of the stock. Fisheries New Zealand considers that the PAU 5B stock is able to support the proposed increases to the TACC while ensuring sustainability given the results of the stock assessment.

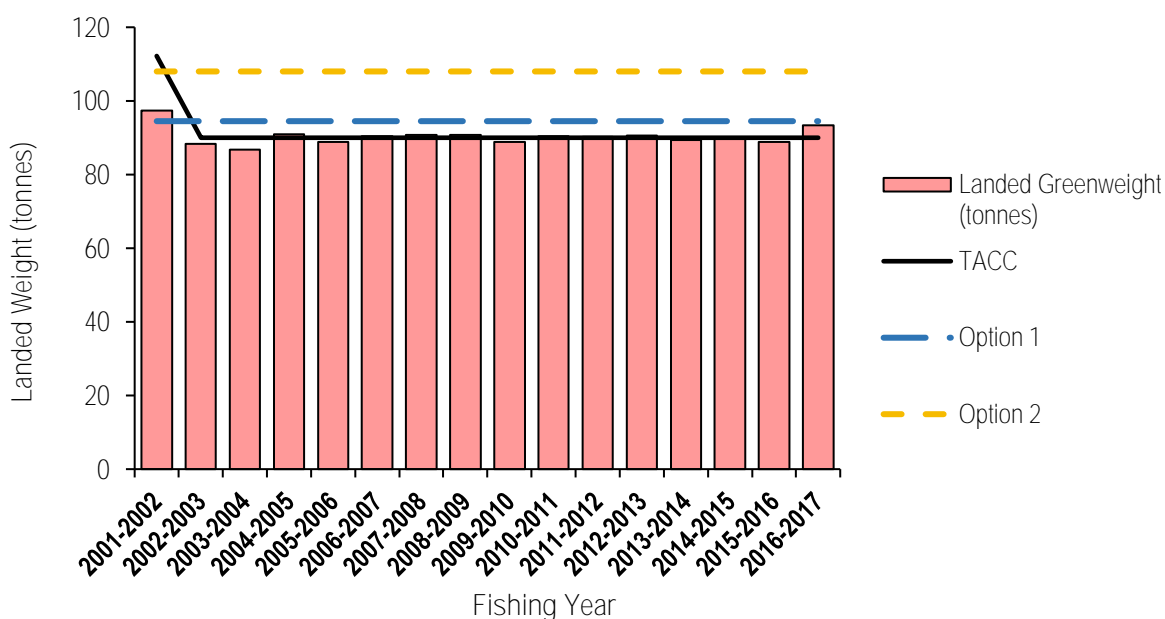


Figure 3: Annual landings vs TACC for PAU 5B between 2001/02 and 2016/17 fishing years (as at April 2017), including TACC levels proposed for Options 1 and 2.

2.5 OTHER MANAGEMENT CONTROLS

2.5.1 Recreational controls

1787. Currently, there is a daily bag limit of 10 and minimum legal sizes of 125 mm (blackfoot paua; *Haliotis iris*) and 80 mm (yellowfoot paua; *Haliotis australis*), and restrictions on the method that can be used to recreationally fish for paua (hand-gathering and free-diving only). Fisheries New Zealand proposes no changes to these regulations.

2.5.2 Deemed value rates

1788. The current interim deemed value rate for PAU 5B is set at approximately 75% of the annual deemed value rate. The deemed value rates for other paua stocks are set at the same level. As the current interim and annual deemed value rates are consistent with the Guidelines,⁸ no changes are proposed to the deemed value rates for PAU 5B (refer Table 2 at start of chapter).

⁸ Available at www.mpi.govt.nz/document-vault/3663

3 Conclusion and Recommendation

1789. The most recent stock assessment for PAU 5B suggests that biomass is steadily increasing above the target and that there is an opportunity to allow for greater utilisation in the fishery.
1790. Fisheries Input from tangata whenua and content in submissions show support for increasing the TAC based on the scientific information. However, there is concern and opposition on the issue of '28N rights'. Increasing the TACC will discharge the 157 kg of 28N rights in this fishery.
1791. Fisheries New Zealand's advice on the relevance of 28N rights in terms of the decisions you are being asked to make is set out in the Statutory Considerations section of this paper.
1792. Notwithstanding this issue, Fisheries New Zealand's preferred option is Option 2. This provides for increased utilisation of the resource with a high probability of remaining above the sustainability target, while noting concerns raised by some submitters and iwi regarding a more significant increase in the TAC.
1793. Fisheries New Zealand notes you have discretion in choosing an option and may make up your own independent assessment of the information presented to you in making this decision. You are not bound to choose the option recommended by Fisheries New Zealand. Fisheries New Zealand considers all three options are consistent with your statutory obligations.

Option 1

Agree to retain the PAU 5B TAC at 105 tonnes and within the TAC:

- i. Retain the allowance of 6 tonnes for Māori customary non-commercial fishing interests;
- ii. Retain the allowance of 6 tonnes for recreational fishing interests;
- iii. Retain the allowance of 3 tonnes for all other sources of mortality to the stock caused by fishing;
- iv. Retain the PAU 5B TACC at 90 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 2

Agree to increase the PAU 5B TAC from 105 to 115.2 tonnes and within the TAC:

- i. Increase the allowance for Māori customary non-commercial fishing interests from 6 to 6.6 tonnes;
- ii. Increase the allowance for recreational fishing interests from 6 to 6.6 tonnes;
- iii. Retain the allowance of 3 tonnes for all other sources of mortality to the stock caused by fishing;
- iv. Increase the PAU 5B TACC from 90 to 99 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 3

Agree to increase the PAU 5B TAC from 105 to 125.4 tonnes and within the TAC:

- i. Increase the allowance for Māori customary non-commercial fishing interests from 6 to 7.2 tonnes;
- ii. Increase the allowance for recreational fishing interests from 6 to 7.2 tonnes;
- iii. Retain the allowance of 3 tonnes for all other sources of mortality to the stock caused by fishing;
- iv. Increase the PAU 5B TACC from 90 to 108 tonnes.

Agreed / Agreed as Amended / Not Agreed

Hon Stuart Nash
Minister of Fisheries
/ /2018

Option 1

Agree to retain the PAU 5B TAC at 105 tonnes and within the TAC:

- i. Retain the allowance of 6 tonnes for Māori customary non-commercial fishing interests;
- ii. Retain the allowance of 6 tonnes for recreational fishing interests;
- iii. Retain the allowance of 3 tonnes for all other sources of mortality to the stock caused by fishing;
- iv. Retain the PAU 5B TACC at 90 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 2

Agree to increase the PAU 5B TAC from 105 to 115.2 tonnes and within the TAC:

- i. Increase the allowance for Māori customary non-commercial fishing interests from 6 to 6.6 tonnes;
- ii. Increase the allowance for recreational fishing interests from 6 to 6.6 tonnes;
- iii. Retain the allowance of 3 tonnes for all other sources of mortality to the stock caused by fishing;
- iv. Increase the PAU 5B TACC from 90 to 99 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 3

Agree to increase the PAU 5B TAC from 105 to 125.4 tonnes and within the TAC:

- i. Increase the allowance for Māori customary non-commercial fishing interests from 6 to 7.2 tonnes;
- ii. Increase the allowance for recreational fishing interests from 6 to 7.2 tonnes;
- iii. Retain the allowance of 3 tonnes for all other sources of mortality to the stock caused by fishing;
- iv. Increase the PAU 5B TACC from 90 to 108 tonnes.

Agreed / Agreed as Amended / Not Agreed

Option 4
 TAC = 123 tonnes
 TACC = 107 tonnes
 Māori = 7 tonnes
 Recreational = 6 tonnes
 OSFRM = 3 tonnes

Stuart Nash
 Hon Stuart Nash
 Minister of Fisheries
 13/9 /2018

Agreed

Addendum 1

QUOTA SHARES, 28N RIGHTS, ANNUAL CATCH ENTITLEMENT (ACE) AND POTENTIAL REALLOCATION OF QUOTA SHARES UNDER A 99,000 KG TACC AND 108,000 KG TACC

Client	Account type	Current Shares	Preferential Allocation Rights	Current ACE	Share reduction	New Shares	ACE allocation – 99,000 kg TACC	ACE allocation – 108,000 kg TACC
8490061 - Aqua Sea Products Limited	Normal	1333210	0	1200	2322	1330888	1318	1437
8491390 - John Stephen Leask	Normal	1112	0	1	2	1110	1	1
8492249 - Russell James Smith, Helen Faye Smith	Normal	1007247	157	907	1754 (increase)	1179634	1168	1274
8492620 - Robert Joseph White	Normal	1300507	0	1170	2265	1298242	1285	1402
8790034 - Southern Abalone Holdings Limited	Normal	6079136	0	5471	10586	6068550	6008	6554
8840010 - Michael Sclanders Taylor Trust, Bevan Howard De Berry Family Trust, Denis Michael Lander Family Trust	Normal	405573	0	365	706	404867	401	437
8960073 - Hardy Street Enterprises Limited	Normal	146184	0	132	255	145929	144	158
9090034 - Thyme Investments Limited	Normal	337829	0	304	588	337241	334	364
9090054 - Thistlewood Holdings Limited	Normal	671201	0	604	1169	670032	663	724
9090058 - Ian Bruce Wilson	Normal	1168365	0	1052	2035	1166330	1155	1260
9140079 - Ankerite Securities Limited	Normal	203232	0	183	354	202878	201	219

Client	Account type	Current Shares	Preferential Allocation Rights	Current ACE	Share reduction	New Shares	ACE allocation – 99,000 kg TACC	ACE allocation – 108,000 kg TACC
9160116 - Andrew David Parker	Normal	635546	0	572	1107	634439	628	685
9190021 - AFTP Trustees Limited, Fern Annette Anderson, Kenneth Ritchie Anderson	Normal	269193	0	242	469	268724	266	290
9190064 - Jewel Peti Scott	Normal	1111111	0	1000	1935	1109176	1098	1198
9260105 - Margaret Bond, Hinemoa Conner, Denis Gapper, Rangimarie Tracey Tamou, Adrian Wilson, Brendon Charles Wilson	Normal	1111111	0	1000	1935	1109176	1098	1198
9270020 - Ngai Tahu Seafood Resources Limited	Normal	6401811	0	5762	11148	6390663	6327	6902
9380025 - Discovery Maritime Limited	Normal	223734	0	201	390	223344	221	241
9390017 - Paul Joseph Pasco	Normal	1117776	0	1006	1947	1115829	1105	1205
9390073 - Elbury Holdings Limited	Normal	888695	0	800	1548	887147	878	958
9480012 - Kuri Export Imports Limited	Normal	111421	0	100	194	111227	110	120
9570049 - W R & P Pacey Limited	Normal	3511704	0	3161	6115	3505589	3471	3786
9770033 - Russet Investments Limited	Normal	2826531	0	2544	4922	2821609	2793	3047
9770034 - Puysegur	Normal	671201	0	604	1169	670032	663	724

Client	Account type	Current Shares	Preferential Allocation Rights	Current ACE	Share reduction	New Shares	ACE allocation – 99,000 kg TACC	ACE allocation – 108,000 kg TACC
Investments Limited								
9770110 - John Raymond Harrison, Irene Joy Harrison	Normal	402899	0	363	702	402197	398	434
9780030 - Douglas Clark Evans, Walter John Rutherford	Normal	671201	0	604	1169	670032	663	724
9790018 - Jane Marjorie Calder, Greg Edward Mead, Jeffrey Bernard Walker	Normal	405573	0	365	706	404867	401	437
9790021 - Ross Railroaders Limited	Normal	212146	0	191	369	211777	210	229
9790031 - Carolyn Squires, Ron Sasse, Lisa Brenda Squires	Normal	801341	0	721	1395	799946	792	864
9790039 - Theodore Mark White, Suzanne Grace White	Normal	374646	0	337	652	373994	370	404
9790056 - Nigel Gary Laing, Janet June Laing	Normal	5562794	0	5007	9687	5553107	5498	5997
9790079 - N & H White Limited	Normal	2814943	0	2533	4902	2810041	2782	3035
9790086 - Kenneth James Mitchell, Pamela June Mitchell	Normal	989419	0	890	1723	987696	978	1067
9790143 - R.S. Moseby Limited	Normal	1290702	0	1162	2248	1288454	1276	1392
9790515 - Stewart Manning Whanau Trust, Tuini Waaka Whanau Trust	Normal	905631	0	815	1577	904054	895	976

Client	Account type	Current Shares	Preferential Allocation Rights	Current ACE	Share reduction	New Shares	ACE allocation – 99,000 kg TACC	ACE allocation – 108,000 kg TACC
9790941 - Jewel Peti Scott, McCulloch Trustees Limited	Normal	338720	0	305	590	338130	335	365
9791292 - Aotearoa Fisheries Limited	Normal	29706918	0	26736	51732	29655186	29359	32028
9791427 - Sudankat Limited	Normal	339612	0	306	591	339021	336	366
9791668 - Atiawa Nui Tonu Fisheries Limited	Normal	223734	0	201	390	223344	221	241
9791695 - Rekohu Ocean Fisheries Limited	Normal	1904922	0	1714	3317	1901605	1883	2054
9791706 - Ngai Tahu Fisheries Settlement Limited	Settlement	10000000	0	9000	17414	9982586	9883	10781
9791777 - Tuhoe Fish Quota Limited	Normal	309751	0	279	539	309212	306	334
9791803 - Aotearoa Quota Brokers Limited	Normal	349376	0	314	608	348768	345	377
9791868 - Big Glory Oysters Limited	Normal	304848	0	274	531	304317	301	329
9791950 - Fast Lobster Holdings Limited	Normal	101616	0	91	177	101439	100	110
9792040 - Seabizz Enterprises Limited	Normal	851180	0	766	1482	849698	841	918
9792311 - Ngati Whare Holdings Limited	Normal	309750	0	279	539	309211	306	334
9792341 - Rantan Corporation Limited	Normal	346633	0	312	604	346029	343	374
9792374 - Rakiura Helicopters Limited	Normal	1208696	0	1088	2105	1206591	1195	1303

Client	Account type	Current Shares	Preferential Allocation Rights	Current ACE	Share reduction	New Shares	ACE allocation – 99,000 kg TACC	ACE allocation – 108,000 kg TACC
9792411 - Jason John Lovett, Toni Anne Lovett	Normal	282222	0	254	491	281731	279	304
9792456 - Mark Anthony Preece	Normal	222222	0	200	387	221835	220	240
9792538 - Raukawa Ki Te Tonga AHC Limited	Normal	1111111	0	1000	1935	1109176	1098	1198
9792951 - Wild Paua NZ Limited	Normal	405573	0	365	706	404867	401	437
9793104 - Hina Hina Holdings Limited	Normal	479285	0	431	835	478450	474	517
9793232 - Shirley Knight	Normal	647134	0	582	1127	646007	640	698
9900058 - DEMZ Limited	Normal	105	0	0	0	105	0	0
9900127 - Fraser Hawea McGregor Murchie	Normal	78866	0	71	137	78729	78	85
9900267 - Phillip Matthew Ballantyne, Holly Emma McKenzie	Normal	4513001	0	4062	7859	4505142	4460	4866

Number of clients: 57

100000000

157

90000

174141

100000000

99000

108000

Red Gurnard (GUR 3)

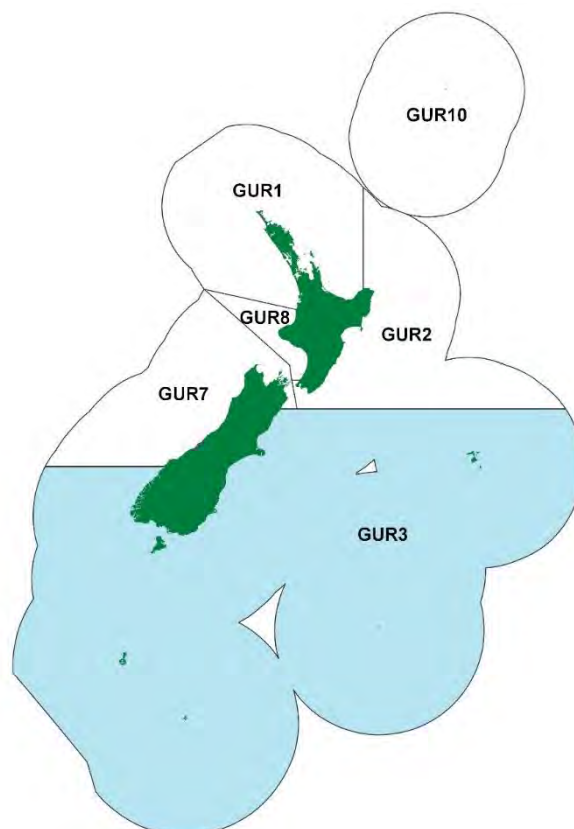


Figure 1: Quota Management Areas (QMAs) for red gurnard (GUR), with GUR 3 highlighted in blue.

1 Summary

1794. Fisheries New Zealand consulted on two options for management settings for red gurnard (*Chelidonichthys kumu*; kumukumu) in quota management area (QMA) GUR 3 off the east coast of the South Island (Figure 1). These options are set out in Table 1:

Table 1: Proposed management settings (in tonnes) for GUR 3 from 1 October 2018, with the percentage change relative to the *status quo* in brackets.

Option	Total Allowable Catch (TAC)	Total Allowable Commercial Catch (TACC)	Allowances		
			Māori Customary	Recreational	All other mortality to the stock caused by fishing
Option 1 (<i>Status quo</i>)	1290	1220	3	6	61
Option 2 (<i>Recommended</i>)	1395 ↑ (8%)	1320 ↑ (8%)	3	6	66 ↑ (8%)

1795. Seven submissions commented on the proposed options for GUR 3. Four commercial submissions and Te Ohu Kaimoana supported Option 2, while the New Zealand Sport Fishing Council submitted a modified Option 2 by increasing all other mortality to 132 tonnes. Environment Conservation Organisations of New Zealand supported Option 1.

1796. After considering the submissions and feedback received, Fisheries New Zealand recommends Option 2. This option increases the TAC by 8% to account for the increased abundance in GUR 3. There are currently no sustainability concerns for GUR 3, and

Fisheries New Zealand believes this option allows for sustainable commercial and non-commercial utilisation given the best available information.

1797. The interim deemed value rate of GUR 3 is currently set at 90% of the annual deemed value rate. As the current interim and annual deemed value rates are consistent with the Deemed Value Guidelines¹, no changes are proposed to the deemed value rates for GUR 3, as outlined in Table 2.

Table 2: Standard deemed value rates (\$/kg) for GUR 3

	Interim Rate (\$/kg)	Annual Differential Rates (\$/kg) for excess catch (% of ACE)					
		100-120%	120-140%	140-160%	160-180%	180-200%	200%+
<i>Status quo</i>	1.53	1.70	2.04	2.38	2.72	3.06	3.40

2 Need for review

1798. Biomass levels of red gurnard were low in the mid-1990s (Figure 3), but since then stock size has increased substantially. The available information suggests that the stock is above the management target, and is likely to remain so in the short term as a result of high recruitment. Commercial fishers indicate that because of the high abundance of gurnard in GUR 3, they find it difficult to stay within the TACC despite the low level of targeting of this species.

2.1 CONTEXT

2.1.1 Biological information

1799. Red gurnard is a fast growing, moderately short lived species, with a maximum age of 16 years. Due to the fast growth rate and short lifespan, variation in recruitment tends to result in large fluctuations in stock biomass.

1800. The fluctuations in stock biomass can provide opportunities for increased utilisation when there are years of good recruitment, which create strong year classes in the population. This also means that management action is required to reduce catches at times of low recruitment.

2.1.2 Fishery characterisation

Customary Māori fishery

1801. Red gurnard (kumukumu) is an important species for customary non-commercial fishing interests, by virtue of its wide distribution in shallow, accessible coastal waters. It is identified by Te Waka a Māui me Ōna Toka Iwi Fisheries Forum as a taonga species in the Te Waipounamu Iwi Fisheries Plan. This plan contains objectives to support and provide for the customary and commercial interests of South Island iwi.

1802. The GUR 3 QMA is under two different regulations for customary catch, the Fisheries (South Island Customary Fishing) Regulations 1999 and the Fisheries (Kaimoana Customary Fishing) Regulations 1998. The South Island Regulations apply south of the Clarence River down the east coast of the South Island, while the Kaimoana regulations apply to the Chatham Islands. Tangata Tiaki/Kaitiaki in GUR 3 are required to provide

¹ Available at www.mpi.govt.nz/document-vault/3663

information on Māori customary harvest of fish. Available information suggests customary Māori take is within current allowances, with 11 authorisations to take gurnard for customary purposes since 2000.

Recreational fishery

1803. The National Panel Survey of Marine Recreational Fishers 2011/12² (National Panel Survey) estimated that 2.01 tonnes of gurnard (4605 individual fish) were harvested by recreational fishers in GUR 3 during the 2011/12 fishing year. Because of the time elapsed since the survey, there is uncertainty in using this estimate to predict current or future catches, however, and given the strength of the current stock biomass, it is likely recreational catch will have increased to reflect this higher abundance.

1804. A repeat of the 2011/12 National Panel Survey is currently underway, and updated estimates of recreational catch in GUR 3 will be used to inform future management.

Commercial fishery

1805. GUR 3 is taken primarily in coastal trawl fisheries with a small proportion of the catch taken by Danish Seining. While gurnard are caught throughout inshore GUR 3, most of the catch is taken in the Canterbury Bight. The fish stock is an important bycatch species, with around 60% caught as bycatch of other target fisheries in the South East mixed trawl fishery.

1806. The GUR 3 fishery has a differential port price based on size, above and below 28cm. Small fish can have less value than the cost of Annual Catch Entitlement (ACE). As a QMS species, all gurnard catch taken should be landed, however, in practice, small fish of low value incentivise discarding. Fisheries New Zealand does not have robust information on what amount of red gurnard may be being illegally discarded.

1807. Gurnard is sold on the domestic market. Based on the current TACC and port price, the fishery has landings valued at \$2.6M.

1808. The TACC has been consistently over-caught since 2012 (Figure 2), and is at catch levels not seen since the 1970s. Thus, despite the ACE market functioning well (ACE trading freely), fishers are paying significant deemed values penalties.

1809. Fishers report that the high abundance of gurnard in GUR 3 requires them to avoid fishing many areas, and the unintentional catch of gurnard is resulting in high deemed value payments being incurred. Across the fishery, deemed value penalties of \$252,770.28 were paid in the 2015/16 fishing year and \$147,032.52 in the 2016/17 year. The large deemed value payments reflect the current abundance and availability of fish in the GUR 3 fishery.

² 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. Accessible at: <https://www.mpi.govt.nz/dmsdocument/4719/send>

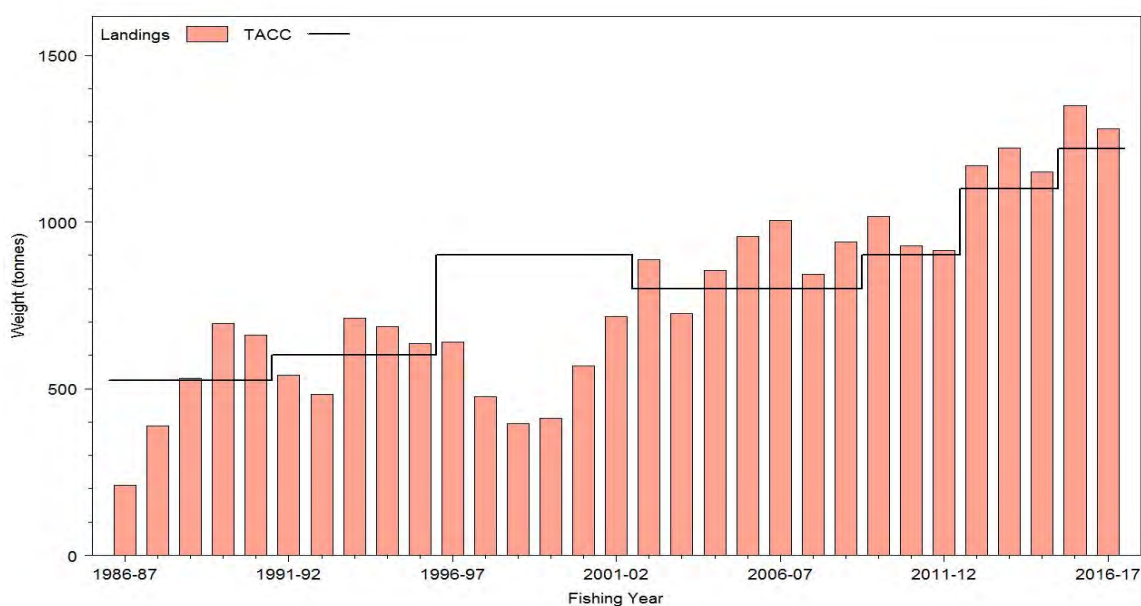


Figure 2: Commercial landings and TACC for GUR 3 from 1986/87 to 2016/17.

2.1.3 Management approach

1810. GUR 3 has a target level set consistent with the Harvest Strategy Standard.³ The Soft Limit was developed based on an average of historical catch rates from 1997/98 to 1999/00 (a period when catches were low but subsequently rebuilt strongly). The Target was then defined as twice the Soft Limit, and the Hard Limit⁴ being half of the Soft Limit.

1811. Fisheries New Zealand monitors the stock status of GUR 3 using CPUE analysis and the biennial east coast South Island inshore trawl survey. The GUR 3 TAC was last reviewed in 2015.

Status of the stock

1812. The CPUE estimate has been updated to the end of the 2013/14⁵ fishing year, and a fishery-independent estimate of relative biomass from the east coast South Island research trawl survey is available for 2018. These show the biomass of GUR 3 is above the target level, and likely to remain so under current catch.

1813. CPUE indications suggest that the status of GUR 3 in relation to the reference point target was likely (> 60% probability) to be above the target in 2013/14, and east coast South Island trawl survey data indicate the biomass has further increased since then. The current catch is therefore unlikely to pose a risk to fish stock levels and cause overfishing.

1814. The CPUE trend shows a substantial increase in abundance after 2000 (Figure 3), and this level of abundance continues to be reflected in the results of the fishery independent east coast South Island trawl survey (Figure 4), as well as the recent reporting landings for the fishery.

³ Harvest Strategy Standard for New Zealand Fisheries, October 2008, accessible at: <http://fs.fish.govt.nz/Page.aspx?pk=113&dk=16543>
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).

⁴ The Soft Limit is the biomass limit below which a requirement for a management review is triggered. The Hard Limit is the biomass limit where consideration would be given to closing the fishery.

⁵ The accepted CPUE indices were updated in 2018 to include data to 30 September 2017. However, the working group concluded that a full update of CPUE indices, including a binomial component, was required and the new CPUE was not accepted.

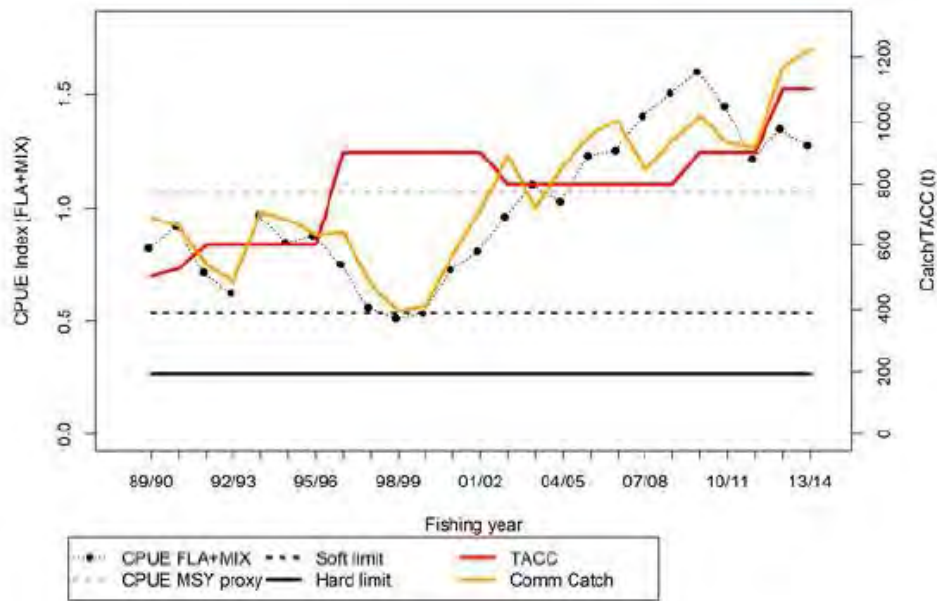


Figure 3: Catch per unit effort (CPUE) indices and TACCs for GUR 3 from 1989/90 to 2013/14. Dashed grey line: B_{MSY} proxy; dashed black line: soft limit; and solid black line: hard limit.

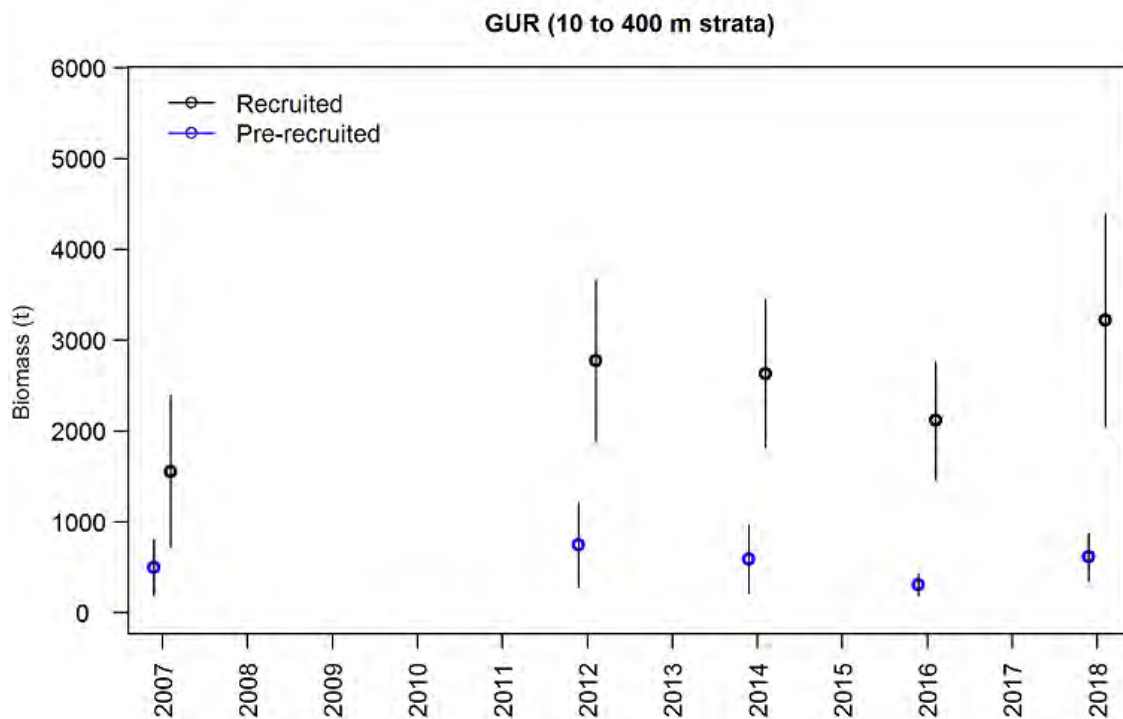


Figure 4: Red gurnard total biomass for all east coast South Island winter surveys (10–400 m) from 2007 to 2018. Error bars are \pm two standard deviations.

2.1.4 Environmental principles (s.9) and sustainability measures (s.11)

1815. Red gurnard are substantially a bycatch of other target fisheries in the South East mixed trawl fishery. Proposed TAC increases are equivalent to the current landings of the fishery. Therefore, it is unlikely there will be any increase in fishing effort or increased

interaction with seabirds or marine mammals, or negative impacts on environmental biodiversity. Particular considerations under sections 9 and 11 of the Act are set out below.

1816. When exercising powers in relation to the utilisation of fisheries resources or ensuring sustainability, Section 9 of the Act requires you to take into account three environmental principles (refer to section 1.4 of *Part 2: Statutory Considerations* section for a full description). The likely impacts of the options in terms of associated or dependant species, the biological diversity of the aquatic environment and habitats of particular significance for fisheries management, are set out below.

1817. Section 11 of the Act sets out various matters that you must take into account or have regard to when setting or varying any sustainability measures (such as a TAC). These include any effects of fishing on the stock and the aquatic environment as well as any relevant fisheries plan (refer to section 1.6 of *Part 2: Statutory Considerations* section for a full description).

1818. The key environmental interactions associated with the GUR 3 fishery are discussed below with reference to the likely impacts of the proposed management options.

Seabirds

1819. The 'National Plan of Action – 2013 to Reduce the Incidental Catch of Seabirds in New Zealand Fisheries' (NPOA Seabirds 2013) which is currently under review, is the driver for all actions to reduce the incidental mortality of seabirds from fishing. It puts in place a risk-based approach to managing fishing interactions with seabirds, targeting mitigation on those species most at risk but also aiming to reduce captures overall.

1820. The most recent seabird risk assessment was published in 2017. It is a primary input to the NPOA Seabirds. The risk assessment calculates a species-level risk broken down by fishery group. Fishery groups are assigned on the basis of target species, vessel size and for trawl vessels targeting middle-depth species, whether or not the vessel is a factory vessel. Vessels in the same fishery group are assumed to attract and capture birds in a similar way.

1821. In this review the greatest risk of set nets to sea birds was highlighted as entanglement and potential drowning when diving for food and striking trawl warps. This is heightened during trawl retrieval.

1822. Fisheries New Zealand considers the proposed options are unlikely to see an increase in interactions with seabirds as no increase in fishing effort is expected. Fisheries New Zealand will continue to monitor seabird captures, and instigate further management action to protect these species where necessary.

Marine mammals

1823. The endemic Hector's dolphin is declared as a threatened species under the provisions of the Marine Mammals Protection Act 1978. Fishing is the greatest known human threat to Hector's dolphin, in particular set nets. Hector's dolphins have also been caught in trawl nets, but this happens less often. The Department of Conservation and the Ministry of Fisheries developed a Hector's and Māui dolphin Threat Management Plan in 2007 which is currently being reviewed.

Benthic impacts

1824. Research has characterised 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. The environmental impacts of fishing are summarised annually by Fisheries New Zealand. Fisheries New Zealand will continue to monitor the bottom trawl footprint of fisheries.

2.2 OPTIONS CONSULTED ON

1825. The options proposed for GUR 3 are given in Table 3 and discussed below.

Table 3: Proposed management settings (in tonnes) for GUR 3 from 1 October 2018, with the percentage change relative to the status quo in brackets.

Option	Total Allowable Catch (TAC)	Total Allowable Commercial Catch (TACC)	Allowances		
			Māori Customary	Recreational	All other mortality to the stock caused by fishing
Option 1 (<i>Status quo</i>)	1290	1220	3	6	61
Option 2	1395 ↑ (8%)	1320 ↑ (8%)	3	6	66 ↑ (8%)

2.3 VIEWS OF SUBMITTERS

1826. Section 12 of the Act requires Fisheries New Zealand to consult on any proposed management changes. Fisheries New Zealand has consulted on your behalf and this section outlines the views of submitters and issues they raised.

2.3.1 Submissions received

1827. Fisheries New Zealand received 7 submissions, these were from Ocean Fisheries Ltd, Nyhon Fishing Ltd, Fisheries Inshore New Zealand (Fisheries Inshore), Southern Inshore Fisheries Management Company Ltd (Southern Inshore), New Zealand Sport Fishing Council, and Environment and Conservation Organisations of New Zealand and Te Ohu Kaimoana.

1828. Four commercial submissions and Te Ohu Kaimoana supported Option 2, while the New Zealand Sport Fishing Council submitted a modified Option 2. ECO supported Option 1.

Commercial

1829. Commercial submitters (Ocean Fisheries Ltd and Nyhon Fishing Ltd, Fisheries Inshore and Southern Inshore) were in support of Option 2. These submitters also believe, however, that Option 2 does not adequately reflect the high levels of current abundance and the bycatch it produces and support a larger increase than the proposed 8% increase to the TAC.

1830. Southern Inshore considered that fisher experiences and the results of the east coast South Island trawl survey make it clearly evident a TACC of 1450 tonnes would be appropriate. Southern Inshore submit indications from fishers are that the limit on this stock is constraining fishing, as to avoid red gurnard they can’t fish for other species. Southern

Inshore submit fishers are accruing deemed value penalties and this should not be the case in such an abundant fishery.

1831. The commercial sector has not requested a reduction in the deemed value for GUR 3, but rather that an increase in the TACC would provide additional ACE to better reflect the gurnard abundance they are seeing and to cover current landings. The previous TAC review in 2015/16 resulted in the TACC being increased by 120 tonnes.

Recreational

1832. One submission was received from recreational interests group, the New Zealand Sport Fishing Council, supporting an increase but with the following conditions:

- a) No further TACC increases are given until systems are in place to increase compliance;
- b) No further TACC increases are given until research is carried out to better understand the extent and effects of dumping and misreporting in this fishery; and
- c) The recreational allowance is reviewed when the new recreational harvest estimates are obtained from the current National Panel Survey.

1833. Fisheries New Zealand notes that the increase to the TAC proposed would provide for the current over-catch in the fishery, which is incurring deemed value payments. Given most gurnard is taken as a bycatch, the increased TACC will not lead to significantly increased fishing effort.

1834. Fisheries New Zealand considers these conditions can all be addressed as part of the on-going monitoring and management of the fishery, and are not in themselves reasons not to change management settings for the fishery.

1835. The New Zealand Sport Fishing Council also raise historical concerns based on “Operation Achilles” and “Hippocamp” that dumping and non-reporting were occurring in the GUR 3 fishery and, therefore, the all other sources of fishing related mortality estimates should be increased considerably.

1836. Fisheries New Zealand notes that decisions are being made on the implementation of digital monitoring, and on appropriate policies associated with landings and return of fish to sea. Better information on the level of fishing related mortality will be available as a result of this work to guide the setting of allowances.

1837. In the interim, while there may be uncertainty associated with the estimates of other sources of fishing related mortality, there is evidence of increased abundance in the fishery.

Non-Governmental Organisations (NGOs)

1838. Environment and Conservation Organisations of New Zealand does not support an increase in the GUR 3 fishery at this stage. Environment and Conservation Organisations of New Zealand notes catch rates have declined in the last two years and there is no obvious big increase in recruitment from the trawl series. Environment and Conservation Organisations of New Zealand is concerned that:

- a) Benthic impacts of bottom trawl fishing are occurring with no strategy to avoid, remedy or mitigate the impacts of bottom fishing;
- b) Habitat of particular significance for fisheries management has not been identified.

- c) Maintenance of biological diversity has not been given effect; and
- d) Fisheries New Zealand should work towards a full assessment of this fishery.

1839. Fisheries New Zealand notes that an increase to the TAC would provide for the current over-catch in the fishery, which is incurring deemed value payments. Given most gurnard is taken as a bycatch, the increased TACC will not lead to significantly increased fishing effort. The remaining concerns raised are acknowledged, but will be addressed as management improvements to the inshore mixed trawl fishery and the red gurnard fishery occur.

Te Ohu Kaimoana

1840. Te Ohu Kaimoana support Option 2 for the reasons set out in the Discussion Document.

2.3.2 Input and participation of tangata whenua

1841. In addition to the consultation considerations discussed elsewhere, s 12(1)(b) requires that you provide for the input and participation of tangata whenua before setting or varying a TAC.

1842. The proposal to consult on a sustainability review covering a range of South Island stocks was presented in March to the Iwi Fisheries Forum relating to South Island iwi, Te Waka a Māui me Ōna Toka Iwi fisheries Forum (Te Waka a Māui). This forum represents the iwi of the South Island, each holding mana moana and significant interests (both commercial and non-commercial) in South Island fisheries. The forum supports a review of the GUR 3 fishery but did not specify whether they supported an increase to the TAC or not.

1843. The Araiteuru and Murihiku Mahinga Kai Hui held in Karitane and Bluff on 27 May and 7 July respectively agreed that the stock abundance for GUR 3 appears to have increased, and support the proposal to increase the TAC.

1844. The Chatham Island iwi/imi have discussed this proposal as part of a general sustainability round engagement, as a component of wider engagement in March and early June this year. They had no view on a preferred option.

1845. Fisheries New Zealand took the proposed options to the Te Waka a Māui again in July to seek further input. The forum supported a review of the GUR 3 fishery, but provided no preferred option.

Kaitiakitanga

1846. Under Section 12(1)(b), you must also have particular regard to kaitiakitanga before setting or varying a TAC. Under the Act, kaitiakitanga is 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.

1847. Relevant Iwi or Forum Fish Plans provide a view of the objectives and outcomes iwi seek from the management of the fishery and can provide an indication of how iwi exercise

kaitiakitanga over fisheries resources. Iwi views from Forum meetings and submissions received from iwi can also provide an indication.

1848. Red gurnard (kumukumu) is identified as a tāonga species in the Te Waipounamu Iwi Fisheries Plan. This plan contains objectives to support and provide for the interests of South Island iwi. That Forum Fisheries Plan contains three objectives which are relevant to the management options proposed for GUR 3:

- a) Management objective 1: to create thriving customary non-commercial fisheries that support the cultural wellbeing of South Island iwi and our whānau;
- b) Management objective 3: 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; and,
- c) Management objective 5: to restore, maintain and enhance the mauri and wairua of fisheries throughout the South Island.

1849. Fisheries New Zealand considers that the management options presented in this advice paper will contribute towards the achievement of these three management objectives in ensuring that appropriate allowances are made for customary non-commercial fishing, the fishery remains sustainable, and that environmental impacts are minimised.

2.4 SETTING THE TAC

1850. The GUR 3 TAC was last reviewed in 2015. The best available information (as set out above) suggests that the biomass level of red gurnard in GUR 3 is likely to be above the management target, and likely to remain so under current catch. Consequently, there is an opportunity to increase utilisation while ensuring stock remains at or above target levels.

1851. In cases such as GUR 3, where the level of biomass that can produce the maximum sustainable yield (B_{MSY}) is not known, s 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.

2.4.1 Option 1 (*Status quo*)

1852. Option 1 proposes no change to the *status quo*.

1853. Environment and Conservation Organisations of New Zealand support this option because the impact of any increase on benthic impacts of bottom trawl fishing on benthic habitats, when there is no strategy to avoid, remedy or mitigate the impacts, habitat of particular significance for fisheries management, has not been identified and the maintenance of biological diversity has not been given effect to. They submit that Fisheries New Zealand should work towards a full assessment of the fishery.

1854. Under this option the existing TAC would be retained. As the stock is considered to be likely above target biomass, this is a cautious approach that unnecessarily constrains utilisation. It does not take into account the likely large fluctuations in stock biomass of this fishery due to the fast growth rate and short lifespan, resulting in variation in

recruitment and stocks fluctuating year to year. Given GUR 3 is largely a bycatch fishery, there is not expected to be a significant increase in fishing as a result of increasing the TAC.

2.4.2 Option 2 (Fisheries New Zealand Recommended)

1855. Option 2 is an increase to the TAC of 106 tonnes, or 8%. Estimates of the total biomass from the fishery-independent east coast South Island trawl survey suggest that there is an opportunity to increase sustainable utilisation in this fishery to take advantage of a pulse of recruitment. A further indication of abundance is that the current TACC is consistently being over-caught, despite GUR 3 being predominantly (60%) a bycatch of the east coast South Island mixed trawl fishery.
1856. Commercial submitters, Te Ohu Kaimoana and recreational submitters support this option. Southern Inshore assert that, based on the increasing catch trend and fisher experiences, backed by the ECSI trawl survey results, the TACC should be increased by 230 tonnes or by 8%
1857. The 8% increase to the TAC includes an increase of 100 tonnes to the TACC. This increase is considered to be sustainable, and supported by the best available information. In terms of requests for a larger increase our preference is to continue to monitor the stock using CPUE analysis and trawl surveys (the next survey is in 2020) to enable responsive management and appropriate adjustments, including utilisation opportunities in two years' time.
1858. Fisheries New Zealand notes an increase in catch limits and allowances will cover the increased bycatch of gurnard, rather than provide for additional targeted fishing effort. Therefore, the proposed increase under Option 2 is unlikely to result in increased benthic impacts, or interactions with protected species, which are potential considerations for this fishery under section 9 and 11 of the Act (refer to section 1.4 and 1.6 of *Part 2: Statutory Considerations* section for a full description of these principles).

2.5 ALLOCATING THE TAC

1859. The TAC sets the total quantity of a stock that can be sustainably harvested each year, consistent with the objective of maintaining the stock at or above a level that can produce the maximum sustainable yield.
1860. After setting or varying the TAC for a stock, a separate decision arises in respect of allocating the TAC. This involves deciding what portion of the TAC is available for Māori customary non-commercial fishing interests, recreational interests, all other mortality to that stock caused by fishing, and commercial fishers (the TACC). You have considerable discretion in determining the allocation.
1861. Having set the TAC, you must allow for Māori customary non-commercial fishing interests, recreational fishing interests, and all other mortality to the stock caused by fishing (s 20 & 21).

2.5.1 Māori customary allowance

1862. The best available information suggests that current settings will provide for current and foreseeable levels of customary harvest of gurnard in GUR 3. Therefore, there is no proposal to change what is currently allowed for Māori customary non-commercial harvest of GUR 3. There were no submissions on this matter.

1863. When allowing for Māori customary non-commercial interests you must take into account any mātaihai reserve within the relevant QMA. While there are a number of mātaihai, and taiāpure within GUR 3, Fisheries New Zealand notes that the proposals in this paper are unlikely to impact on these taiāpure and mātaihai reserves, because they are generally parts of the coastline with rocky reef habitat supporting species such as paua.

2.5.2 Recreational allowance

1864. The 2011/12 National Panel Survey estimated recreational catch of 2.01 tonnes in GUR 3 during the 2011/12 fishing year. Despite the survey being six years old, this estimate remains the best available information and indicates that current settings will provide for both present levels of catch and any increased recreational harvest of gurnard in GUR 3 as a result of increased abundance. Therefore, it is proposed to not change what is currently allowed for recreational harvest of GUR 3.

2.5.3 Allowance for other sources of mortality caused by fishing

1865. Information to support setting an allowance for other sources of fishing-related mortality in GUR 3 is lacking. The current allowance is set at 5% of the TACC, being 61 tonnes. Option 2 proposes an increase to this allowance to 5% of the proposed increased TACC as was used in the *Status quo* estimate (66 tonnes). This approach using 5% of the TACC is used across the inshore trawl fisheries where specific information is not available.

1866. New Zealand Sport Fishing Council have put forward a revision of Option 2 in their submission, which proposes a significant increase in the estimate for other sources of fishing related mortality. They are basing this on the reports from “Operation Achilles” and “Hippocamp”.

1867. Fisheries New Zealand notes that better information on the level of unreported fishing related mortality will be available as part of digital monitoring to guide the setting of allowances. Fisheries New Zealand observes that, despite any uncertainty about total catch, there are good indications of increased abundance as shown in the recent fishery-independent east coast South Island trawl survey. In the interim, available information suggests that a proportional increase to this allowance, as proposed in Option 2, is appropriate.

2.5.4 TACC

Option 1 (Status quo)

1868. Option 1 proposes no change to the *status quo*. The existing TACC would be retained.

1869. Environment and Conservation Organisations of New Zealand supports this option.

1870. Retaining the current TACC would result in lost utilisation (\$241 000 under Option 2) for the commercial sector, and additional costs through the payment of deemed values for over-catch in this predominantly bycatch fishery. Option 1 will also not allow fishers to

access the value available from other target species they are currently avoiding because of the current high abundance of GUR 3.

Option 2

1871. Option 2 proposes an increase to the TACC from 1220 to 1320 tonnes, which aligns closely with commercial landings since 2015/16.

1872. All submitters, with the exception of ECO, support this option. Commercial fishers note that they are having to carefully avoid gurnard in GUR 3 when fishing for other species, as there is insufficient ACE within the fishery to cover the quantity of bycatch.

1873. The increase to the TACC is supported by the best available information, which suggests that abundance in GUR 3 is at historically high levels and is unlikely to decline in the next 3–5 years. By increasing the TACC, fishers are more likely to be able to cover GUR 3 catch with ACE and, therefore, in addition to increased revenue from catches, will be less likely to incur deemed value payments to cover the current gurnard bycatch when targeting other fish species.

1874. The economic implications of the proposed increase in TACC are outlined in Table 4.

Table 4: Predicted changes to commercial revenue of the proposed options, based on the price to the fisher of \$2.41/kg for GUR 3 in 2017/18.

	TACC	Change from status quo (t)	Predicted revenue change (\$ p.a.)
Option 1 (<i>Status quo</i>)	1 220 t		
Option 2	1 320 t	100 t ↑	\$241 000 ↑

2.6 OTHER MANAGEMENT CONTROLS

2.6.1 Recreational controls

1875. The main methods used to manage recreational harvest of red gurnard are minimum legal size limits and daily bag limits. Fishers in GUR 3 can take up to 30 red gurnard as part of their combined daily bag limit, and the minimum legal size limit is 25cm. 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.

2.6.2 Deemed value rates

1876. There are no proposed changes to the deemed value rates for GUR 3 for the 2018/19 fishing year (see Table 2 above).

3 Conclusion and Recommendation

1877. Best available information on the status of GUR 3 suggests that the stock is experiencing an increase in abundance. By increasing the TAC and TACC to match this increased abundance, the social economic and cultural benefits that can be obtained from the fishery will also increase.

1878. Commercial and recreational submitters support an increase for the TAC in GUR 3. Environment and Conservation Organisations of New Zealand hold concerns about aspects of the impacts of fishing. Fisheries New Zealand note that a TAC increase as proposed is likely to cover existing fishing effort, and is unlikely to cause the further impacts of concern to Environment and Conservation Organisations of New Zealand.
1879. Fisheries New Zealand recommends that you implement Option 2. We consider that this option will not result in sustainability concerns for the fishery in the short to intermediate term, reflecting the current abundance of red gurnard in GUR 3 while also providing for future utilisation opportunities.
1880. Fisheries New Zealand will continue to monitor the status of GUR 3 with CPUE analysis and the biennial east coast South Island inshore trawl survey.
1881. Fisheries New Zealand notes you have discretion in choosing an option, and may use your own independent assessment of the information presented to you in making this decision. You are not bound to choose the option recommended by Fisheries New Zealand. Fisheries New Zealand considers both options are consistent with your statutory obligations.

Option 1 (Status quo)

Agree to retain the GUR 3 TAC of 1290 tonnes and within the TAC:

- i. Retain the allowance of 3 tonnes for Māori customary non-commercial fishing interests;
- ii. Retain the allowance of 6 tonnes for recreational fishing interests;
- iii. Retain the allowance of 61 tonnes for all other sources of mortality to the stock caused by fishing;
- iv. Retain the GUR 3 TACC at 1220 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 2 (Recommended)

Agree to increase the GUR 3 TAC from 1290 to 1395 tonnes and within the TAC:

- i. Retain the allowance of 3 tonnes for Māori customary non-commercial fishing interests;
- ii. Retain the allowance of 6 tonnes for recreational fishing interests;
- iii. Increase the allowance for all other sources of mortality to the stock caused by fishing from 61 to 66 tonnes;
- iv. Increase the GUR 3 TACC from 1220 to 1320 tonnes.

Agreed / Agreed as Amended / Not Agreed

Option 3

TAC = 1593 tonnes
TACC = 1320 tonnes
Māori = 3 tonnes
Recreational = 6 tonnes
OSFRM = 264 tonnes

Stuart Nash

Hon Stuart Nash
Minister of Fisheries

13/9/2018

←
Agreed

Rig (SPO 7)

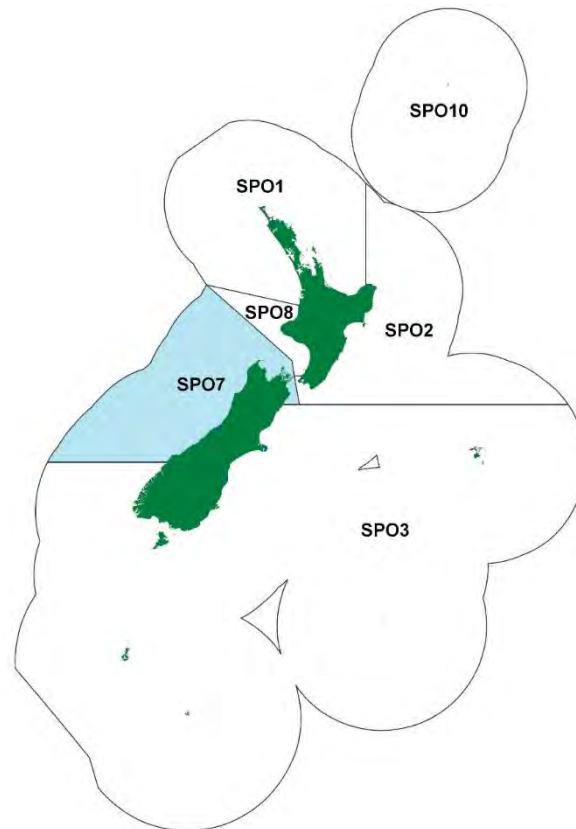


Figure 1: Quota Management Areas (QMAs) for rig (SPO), with SPO 7 highlighted in blue.

1 Summary

1882. Fisheries New Zealand consulted on three options for management settings for rig (*Mustelus lenticulatus*; pioke; makō; mango) in quota management area (QMA) SPO 7, which covers the Challenger area and the west coast of the South Island (see Figure 1). These options are set out in Table 1.

Table 1: Proposed management settings (in tonnes) for SPO 7 from 1 October 2018, with the percentage change relative to the *status quo* in brackets.

Option	Total Allowable Catch (TAC)	Total Allowable Commercial Catch (TACC)	Allowances		
			Customary Māori	Recreational	All other mortality to the stock caused by fishing
Option 1 (<i>Status quo</i>)	306	246	15	33	12
Option 2 (<i>Recommended</i>)	332 ↑ (8%)	271 ↑ (10%)	15	33	13 ↑ (10%)
Option 3	357 ↑ (17%)	295 ↑ (20%)	15	33	14 ↑ (20%)

1883. The abundance of rig in SPO 7 has increased and is likely to be at or above the target level. There is an opportunity to increase utilisation (increase the Total Allowable Catch (TAC)) while ensuring sustainability of rig within SPO 7.

1884. Option 1 proposes no change to the *status quo*. Option 2 proposes an 8% increase to the TAC, 10% increases to both the Total Allowable Catch (TACC) and the allowance for other fishing-related mortality, and no changes to the other allowances. Option 3 proposes a 17% increase to the TAC, 20% increases to both the TACC and the allowance for other fishing-related mortality, and no changes to the other allowances.

1885. No changes are proposed to the deemed value rates for SPO 7. The interim deemed value rate for SPO 7 is currently set at 90% of the annual deemed value rate and as the current interim and annual deemed value rates are consistent with the Deemed Value Guidelines,¹ Fisheries New Zealand recommends no change as outlined in Table 2.

Table 2: Standard deemed value rates (\$/kg) for SPO 7

	Interim Rate (\$/kg)	Annual Differential Rates (\$/kg) for excess catch (% of ACE)					
		100-120%	120-140%	140-160%	160-180%	180-200%	200%+
<i>Status quo</i>	2.70	3.00	3.60	4.20	4.80	5.40	6.00

1886. Eight submissions were received on the proposed options. Three submitters (two environmental organisations and one individual) supported Option 1 (*status quo*) on the grounds of protecting the environment and protected species. Te Waka a Māui me Ōna Toka Iwi Forum (the Iwi Fisheries Forum that represents South Island iwi) note that any increase should be accompanied by close monitoring and research to ensure it is sustainable. One recreational organisation supported Option 2 as a conservative increase, one commercial organisation supported Option 2, noting it would allow increased utilisation while allowing the stock to increase, and two commercial organisations supported Option 3, noting it was too conservative. An alternative proposal was provided by the commercial organisations for a higher TACC of 350 tonnes.

1887. Fisheries New Zealand considers that an increase to the TAC of SPO 7 is justified given the utilisation opportunity of the increased rig biomass that is not expected to compromise the sustainability of the stock. Fisheries New Zealand recommends Option 2 on the grounds that it is a more cautious approach to the signal of increased abundance of rig in SPO 7, and poses comparatively reduced risk to threatened and protected species such as Hector's dolphins and seabirds in SPO 7 compared to Option 3, which is the greater increase to the TAC and TACC.

2 Need for review

1888. The best available information indicates that the abundance of rig in SPO 7 is continuing to increase, and that the biomass is likely to be at or above the target level. Therefore, Fisheries New Zealand considers that there is an opportunity to increase utilisation (increase the TAC) while ensuring sustainability of rig within SPO 7.

¹ Available at www.mpi.govt.nz/document-vault/3663

2.1 CONTEXT

2.1.1 Biological characteristics of rig

1890. Rig are elasmobranchs (cartilaginous fish, including sharks, skates, and rays). They can live for 20 years or longer and mature late, with female rig reaching maturity at 5-6 years. Rig give birth to young during spring and summer following a 10-11 month gestation period. Most females begin a new pregnancy soon after the birth of the previous litter, and therefore breed every year. The number of young increases exponentially with the length of the mother, and can range from 2 to 37 pups per litter (mean of approximately 11 pups). Within SPO 7, large numbers of pregnant females are found in the Farewell Spit area over the summer months.

1891. Rig make extensive coastal migrations, with one tagged female moving at least 1160 km. Over half of recaptured tagged rig had moved over 50 km, and over half of the females had moved more than 200 km. Females travel further than males, and mature females travel further than immature females.²

1892. Information relevant to determining rig stock structure in New Zealand was reviewed in 2009. This concluded that the boundaries between biological rig stocks are poorly defined, especially in the Cook Strait region. Biological links between the current management stocks will be investigated further in a project scheduled for later 2018.

2.1.2 Fishery characterisation

Customary Māori fishery

1893. Rig (pioke, makō, and mango) is an important species for customary fishers, as it is widely distributed in shallow, easily accessible coastal waters. Mango is identified by the Te Waka a Māui me Ōna Toka Iwi Forum (Te Waka a Māui) as a taonga species in the Te Waipounamu Iwi Fisheries Plan. This plan contains objectives to support and provide for the interests of South Island iwi.

1894. Information currently held by Fisheries New Zealand on Māori customary catch, where SPO 7 was authorised to be taken, shows that there have been 43 confirmed customary permits since 1999, and seven permits between 2008 and 2016 where 'finfish' are authorised to be taken in FMA 7, which could include SPO 7.

1895. The SPO 7 QMA is under two different sets of regulations for customary catch, the Fisheries (South Island Customary Fishing) Regulations 1999 (the South Island Regulations) and regulations 50 and 51 of the Fisheries (Amateur Fishing) Regulations 2013 (the Amateur Regulations). The South Island Regulations apply south of the Kahurangi River down the west coast of the South Island, while the Amateur Regulations apply for the remainder of SPO 7 along the top of the South Island.

1896. For tangata whenua groups in SPO 7 under the South Island Regulations, there is a requirement for Tangata Kaitiaki/Tiaki to provide information on Māori customary harvest of fish. However, for those tangata whenua groups still operating under

² Francis, M P (1988) Movement patterns of rig (*Mustelus lenticulatus*) tagged in southern New Zealand. *New Zealand Journal of Marine and Freshwater Research* 22: 259–272.

regulations 50 and 51 of the Amateur Regulations it is not mandatory to report on permits issued or catch taken.

1897. There are low levels of customary take of rig in SPO 7, with the majority of customary take of rig likely to be within the recreational rig catch allowance. There have been few customary authorisations for SPO 7 reported to Fisheries New Zealand in recent years (discussed above), with less than half a tonne of customary take of rig each year from 2008/09 to 2014/15 under the South Island Regulations. This may reflect that tangata whenua in the Tasman/Golden Bay and Marlborough Sounds area are still operating under the Amateur Regulations.

1898. The taiāpure of Whakapuaka (Delaware Bay), and the mātaītai reserves of Okuru/Mussel Point, Tauperikaka, Mahitahi/Bruce Bay, Manakiaiaua/Hunts Beach, Okarito Lagoon, Te Tai Tapu (Anatori), and Te Tai Tapu (Kaihoka) are all within the SPO 7 quota management area. Fisheries New Zealand notes that the proposals in this paper are unlikely to impact on these taiāpure and mātaītai reserves.

Recreational fishery

1899. Rig is an important recreational species across New Zealand. The main recreational fishing method is rod and line, and the recreational daily bag limit for rig is 20 per person per day as part of a mixed species daily bag limit.

1900. There is support from recreational fishers for the compulsory attendance of set nets in some areas of FMA 7, but recreational fishers have indicated that set net restrictions implemented to protect Hector's and Māui dolphins are preventing them from catching rig and other typical set net caught species. These same restrictions do not apply to commercial fishers in some of these areas, and recreational fishers have advocated for the same opportunity to catch rig by set net as for commercial fishers.

1901. Fisheries New Zealand is not proposing to change recreational set net restrictions at this time.

1902. The National Panel Survey of Marine Recreational Fishers in 2011/12³ (National Panel Survey) provides the best available information on recreational harvest of rig in SPO 7. This survey estimated 20.8 tonnes of rig were caught in SPO 7 in the 2011/12 fishing year, the seventh highest species harvested (by number) in FMA 7. Fisheries New Zealand acknowledges that recreational harvest can fluctuate from year to year due to weather and other factors. While this estimate is uncertain, because of the relatively small numbers of events and fishers it was derived from, it is well within the current recreational allowance of 33 tonnes.

1903. A repeat of the National Panel Survey is currently underway in 2017/18, and updated estimates of recreational catch in SPO 7, expected to become available in 2019, will be used to inform future management.

Commercial fishery

1904. Before the introduction of the QMS in 1986, 80% of the commercial catch was taken by set net, with the majority of the remainder taken by targeted trawl fishing. Total reported

³ 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. Accessible at: <https://www.mpi.govt.nz/dmsdocument/4719/send>

landings of rig increased rapidly during the 1970s and early 1980s, but since then targeted trawling for other species has led to rig being principally caught as bycatch in other fisheries.

1905. From 1989/90 to 2014/15 the fishing methods that have caught the majority of rig in SPO 7 are set netting (56% of rig landed in SPO 7) and bottom trawling (42% of rig landed in SPO 7).⁴ Bottom trawl catch of rig in SPO 7 has been larger than set net catch since 2008/09. Since 2008/09, rig in SPO 7 has been principally caught in the mixed inshore bottom trawl fishery mainly targeting flatfish, red gurnard, barracouta, and tarakihi.
1906. Rig in SPO 7 is also caught in a targeted set net fishery, especially in the spring and summer period, with the set net fishery being historically localised to the Tasman and Golden Bay. Before 2007/08, the majority of rig landed in SPO 7 was caught via set netting, though bottom-trawling is now the method used to land the majority of rig in SPO 7. Reduction in set net catch is likely largely the result of set net restrictions on the west coast South Island, which closed some set net fisheries.
1907. Rig are caught in coastal waters throughout New Zealand in set nets. Rig are mostly caught in waters less than 50 m deep when they aggregate inshore during spring and summer. The set net fishery also includes other shark species such as school shark and spiny dogfish. Over the last five years, an average of 222 commercial set nets per year land rig in SPO 7, representing an average of 472 km of net per year total (0.76 tonnes of rig per set, or 0.36 tonnes of rig per km of net).
1908. In more recent years, commercial set net fishing activity targeting rig and other shark species has reduced relative to other fishing methods as a result of set net area restrictions implemented to protect Hector's dolphins. Since these restrictions, there has been a decline in the number of commercial set net specific vessels on the west coast of the South Island as much of the targeted rig fishery was within the restricted boundary during the summer months.
1909. Annual catches and the TACC for SPO 7 since 1986/87 are shown in Figure 2. Following the introduction of rig to the QMS in 1986, and in response to the lower TACC, landings declined to less than half of those observed in the decade prior. The SPO 7 TACC was reduced from 350 to 221 tonnes for the 2006/07 fishing year when assessments indicated the stock was below target B_{MSY} . Following the west coast South Island trawl survey in 2015, and indications of increasing abundance of rig in SPO 7, the TACC was increased to 246 tonnes.
1910. Since the TACC reduction in 2006/07 to support a SPO 7 stock rebuild, the reported landings of SPO 7 have consistently exceeded the TACC, although by relatively small volumes. Fisheries New Zealand notes that under Schedule 6 of the Fisheries Act, commercial fishers are permitted to return trawl-caught rig in SPO 7 to the water, if the rig are likely to survive.

⁴ Starr, P.J.; Kendrick, T.H. (2017). SPO 1, 2, 3, 7 and 8 Fishery Characterisation and CPUE Report. *New Zealand Fisheries Assessment Report 2017/62*. 244 p.

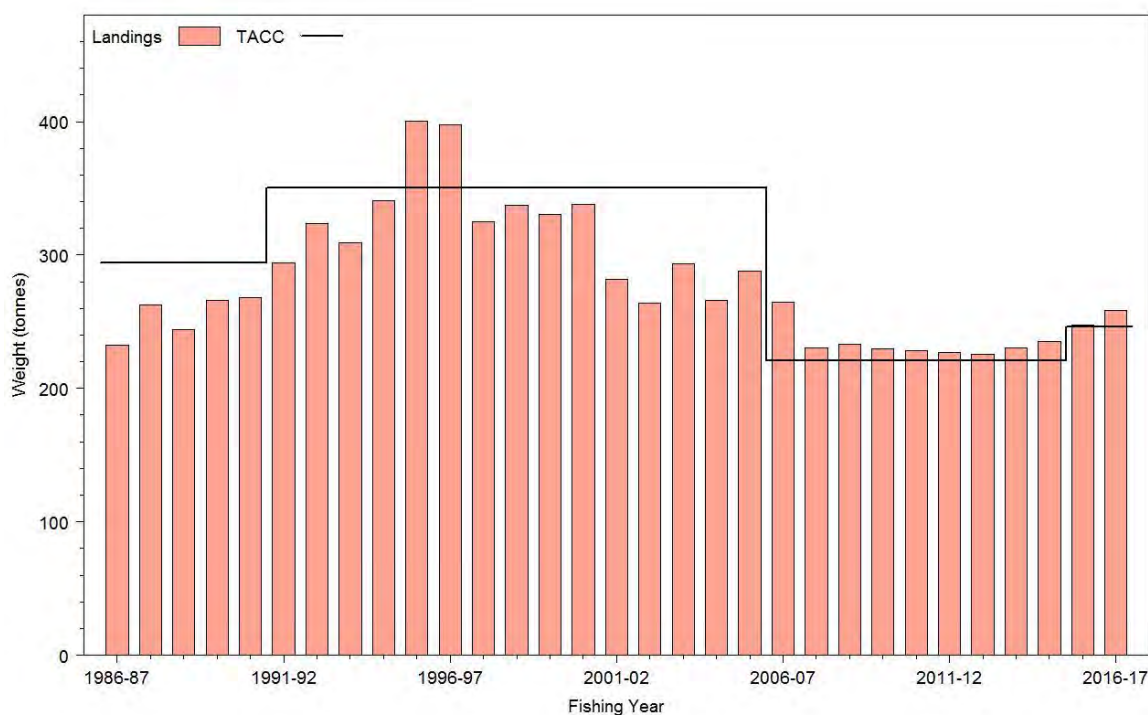


Figure 2: Landings vs Total Allowable Commercial Catch (TACC) in tonnes for SPO 7 from 1986/87 to 2016/17.

1911. Currently, the commercial fishery appears to be constrained by the TACC. There are indications that the SPO 7 stock is rebuilding since the TACC was reduced from 350 to 221 tonnes in 2006/07. SPO 7 catch has exceeded the TACC each year since it was increased for 2015/16, incurring deemed value costs of up to \$33,467 in 2016/17 when the TACC was over caught by approximately 5%.

1912. The majority of commercially caught rig in New Zealand is exported. Over the last five calendar years, an average of 69% of commercially caught rig has been exported. According to Seafood New Zealand export figures, the majority of this (94%) is exported to Australia as frozen or chilled fillets.⁵

2.1.3 Management approach

Management target

1913. The current management target for rig in SPO 7 is based on the relative biomass series from the west coast South Island research trawl survey⁶ (Figure 3). The Fisheries Assessment Working Group considers the B_{MSY} proxy from this survey to represent the level of biomass that produces the maximum sustainable yield (MSY), and it has been accepted as a management target for SPO 7.

1914. The Fisheries Assessment Working Group agreed that the average of the biomass estimates for 2003 and 2005 survey estimates (148.6 tonnes) is the soft limit for SPO 7.

⁵ New Zealand Seafood Exports – Report 10a, Seafood exports by species by country, Calendar year to December 2017 (final). Prepared by Seafood New Zealand. 193 pp.

⁶ The west coast South Island trawl survey biomass data series has been accepted by the Fisheries Assessment Working Group as a reliable index of relative abundance for males and younger females in SPO 7. The Fisheries Assessment Working Group notes that larger females are not well represented by the survey.

This is doubled to give the B_{MSY} proxy (297.2 tonnes), which is used as a target reference point for SPO 7. The Harvest Strategy Standard⁷ defaults are used for the stock, where the soft limit is 50% and the hard limit is 25% of the B_{MSY} proxy.

1915. The catch limits for rig in SPO 7 were last reviewed in 2015/16 when, based on the evidence of an increasing index of abundance from the 2015 west coast South Island research trawl survey, the TAC was increased from 270 to 306 tonnes and the TACC was increased from 221 to 246 tonnes. The customary non-commercial allowance (15 tonnes) remained unchanged, the recreational allowance was increased from 29 to 33 tonnes, and the allowance for all other mortality to the stock caused by fishing was increased from 5 to 12 tonnes. The biomass of rig in SPO 7 appears to have remained above the management target since this review, and an opportunity for greater sustainable utilisation now exists.

Status of the stock

1916. The west coast South Island trawl survey relative biomass in 2017 was well above the target level (Figures 3 and 4). The 2017 west coast South Island Relative Index (trawl survey biomass) for SPO 7 of 506 tonnes (Figure 2) is 1.7 times the target reference point of 297.2 tonnes (Figure 2 and 3; twice the soft limit of 148.6 tonnes). This corroborates the 2015 trawl survey biomass, which was the highest ever recorded in the series for both west coast South Island and Tasman/Golden Bays. The estimated biomass of rig in SPO 7 was the second highest for any survey in the series, down slightly from the time series high in 2015 (Figure 3).

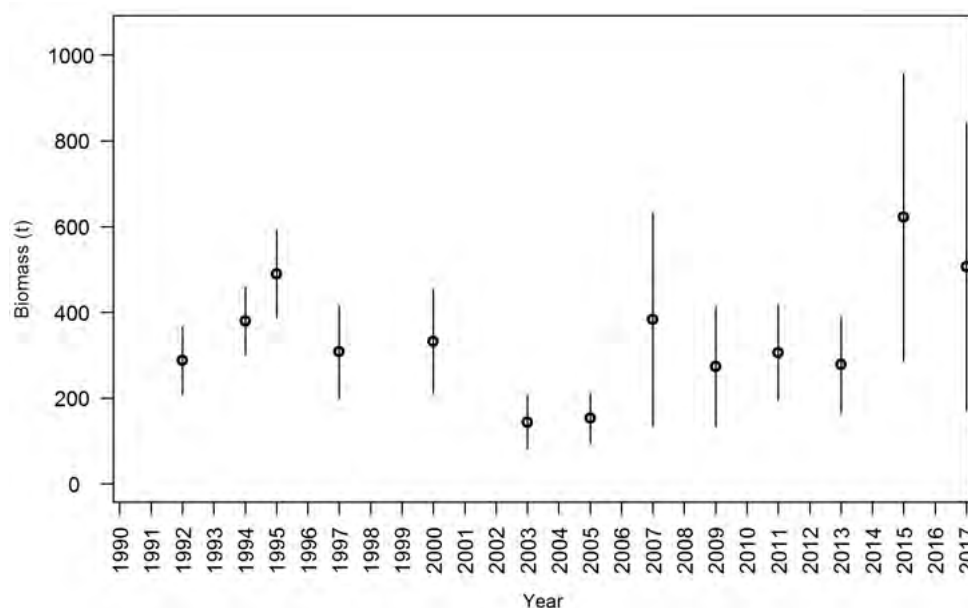


Figure 3: Plots of biomass estimates (tonnes) for rig from the west coast South Island trawl survey by year.⁸

1917. Two standardised catch per unit effort (CPUE) series are used to index the abundance of rig in SPO 7. One is the set net fishery in Statistical Area 038 (Tasman and Golden Bays) targeting rig, spiny dogfish and school shark (SN(038)). The second is the bottom trawl

⁷ Harvest Strategy Standard for New Zealand Fisheries, October 2008, accessible at: <http://fs.fish.govt.nz/Page.aspx?pk=113&dk=16543>
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).

⁸ Stevenson, M.L.; MacGibbon, D.J. (2018). Inshore trawl survey of the west coast South Island and Tasman and Golden Bays, March-April 2017 (KAH1703). *New Zealand Fisheries Assessment Report 2018/18*. 93 p

fishery in Statistical Areas 016–018, 032–037, 038, 039 and 040 (Cook Strait and West Coast South Island) targeting flatfish, red cod, rig, barracouta, tarakihi, gurnard, snapper, blue warehou, and trevally (BT(ALL)).

1918. These two CPUE series demonstrate differing trends of relative abundance of rig in SPO 7 (Figure 4). The SN(038) CPUE of SPO 7 (Figure 4; red dashed line) increased from the mid-2000s, peaking in 2010/11 and decreasing since then. The reducing CPUE series for set net may be an outcome of netting restrictions in the region put in place to protect against capture of Hector’s or Maui’s dolphin in 2008, discussed below.

1919. In contrast, the BT(ALL) CPUE of SPO 7 (Figure 4; blue dash-and-dot line) shows an increasing trend since the mid-2000s, and since low points in 2004/05 and 2007/08 has increased by more than two times to reach the highest point in the series in 2014/15. This indicates current abundance of rig in SPO 7 is high, corroborating the west coast South Island trawl survey biomass estimates to 2015.

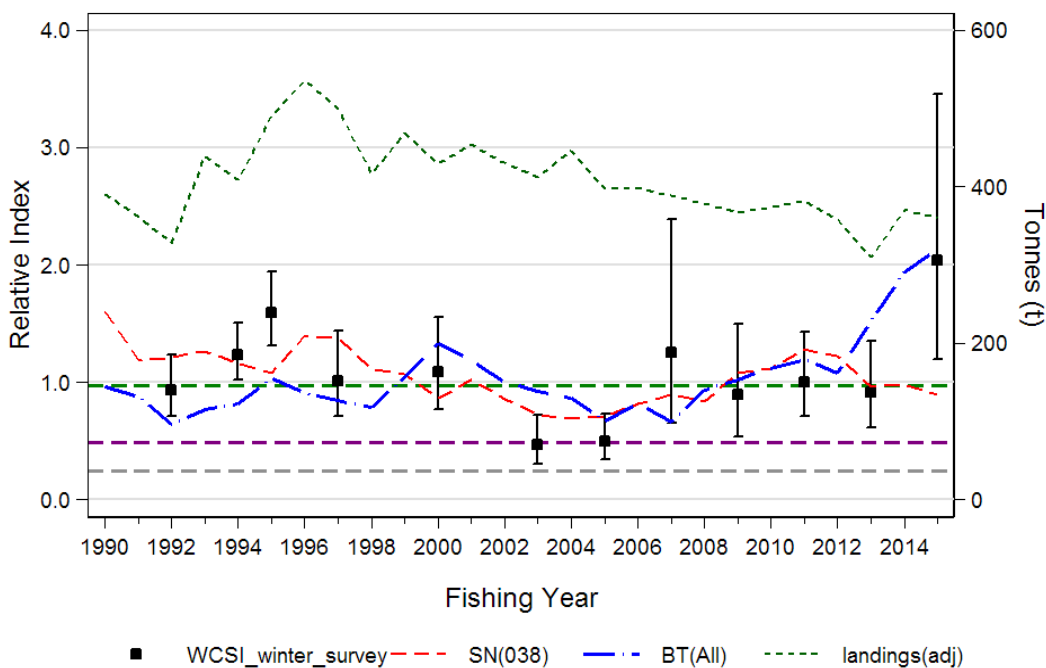


Figure 4: Comparison of the west coast South Island trawl survey and two accepted CPUE indices BT(All) and SN(038) with the adjusted landings for SPO 7. The dashed green line represents the B_{MSY} proxy, and the dashed purple and grey lines represent the soft and hard limits, respectively.

2.1.4 Fisheries management plan for rig in SPO 7 (SPO 7 Management Plan)

1920. Fishing for rig in SPO 7 is managed under a stakeholder-led Fisheries Plan for the Management of Rig (*Mustelus lenticulatus*) in Quota Management Area 7 (SPO 7), (the SPO 7 Management Plan). The Plan was produced by the Challenger Finfisheries Management Company Ltd, approved by Hon Jim Anderton, the then Minister of Fisheries, under section 11A of the Act in 2006, and is still in force today.

1921. The SPO 7 Management Plan contains a number of strategies to increase the abundance of rig in SPO 7 and rebuild the fishery to support increased TACCs in future. The strategies of the plan include spatial closures for SPO 7, which are discussed in more detail below. The specific objectives of the plan are to:

- a. Increase the productivity of the SPO 7 fishery by increasing female rig survival; and
- b. Accelerate stock rebuilding by managing commercial extraction.

1922. Fisheries New Zealand considers that this review of the SPO 7 fishery complies with and builds on the objectives of the SPO 7 Management Plan, which indicates that a review to increase the TACC is a result of its long term plan for the fishery. The range of measures (some regulatory and some non-regulatory) that have been implemented since the plan's implementation in 2006, particularly the west coast South Island set net restrictions that have been in place since 2008, may have at least partially contributed to the rebuild of the SPO 7 stock and its current high levels of abundance.

2.1.5 National Plan of Action for Sharks (NPOA Sharks) 2013

1923. In reviewing the available indices of relative biomass and reviewing the catch limits and allowances of rig in SPO 7 to ensure sustainable utilisation, Fisheries New Zealand is fulfilling several objectives of the National Plan of Action for Sharks (NPOA Sharks) 2013.⁹ As an elasmobranch (cartilaginous fish, including sharks, skates, and rays), rig is included in the plan, which takes into account the biological characteristics of rig in terms of its vulnerability to fishing pressure and the connectivity of rig stocks.

1924. One of the goals of the NPOA Sharks 2013 is to maintain the biodiversity and long-term viability of New Zealand shark populations based on a risk assessment framework. The risk assessment framework evaluates stock status, measures to ensure any mortality is at appropriate levels, and protection of critical habitat. The objectives of this NPOA goal that are met by the current review of rig in SPO 7 are:

- a) For shark species managed under the quota management system (QMS), undertake an assessment to determine the stock size in relation to B_{MSY} or other accepted management targets and on that basis review catch limits to maintain the stock at or above these targets;
- b) Mortality of all sharks from fishing is at or below a level that allows for the maintenance at, or recovery to, a favourable stock and/or conservation status giving priority to protected species and high risk species; and
- c) Ensure adequate monitoring and data collection for all sectors (including commercial, recreational, customary fishers, and non-extractive users) and that all users actively contribute to the management and conservation of shark populations.

2.1.6 Environmental principles and sustainability measures

1925. The key environmental interactions associated with the SPO 7 fishery are discussed below with reference to the likely impacts of the proposed management options.

Marine mammals and protected species

1926. Fisheries New Zealand monitors and responds to marine mammal captures as required and works closely with the fishing industry to increase awareness amongst the fleet of the

⁹ The NPOA Sharks is accessible at: <https://www.mpi.govt.nz/dmsdocument/1138-national-plan-of-action-for-the-conservation-and-management-of-sharks-2013>. For more information on how Fisheries New Zealand manages sharks, see: <https://www.mpi.govt.nz/protection-and-response/sustainable-fisheries/managing-our-impact-on-marine-life/sharks/>

risk of interactions with marine mammals, and emphasises the importance of reducing the risk of interactions with marine mammals by:

- i. minimising the length of time fishing trawl gear is on the surface;
- ii. removing all dead fish from the trawl net before shooting the gear;
- iii. steaming away from any congregations of marine mammals before shooting the gear;
- iv. appointing a crew member to watch for marine mammal interactions when the gear is shot or hauled; and
- v. collecting and reporting information to further improve the mitigation of marine mammal interactions.

1927. The endemic Hector's dolphin is declared as a threatened species under the provisions of the Marine Mammals Protection Act 1978. Fishing is the greatest known human threat to Hector's dolphin, in particular set nets. Rig in SPO 7 is caught by set netting, though less so than by trawling. Hector's dolphins have also been caught in trawl nets, but this happens only rarely.

1928. The Department of Conservation and the Ministry of Fisheries developed a Hector's and Māui dolphin Threat Management Plan in 2007, which is currently being reviewed. Under this Plan in SPO 7, both commercial and recreational set netting is prohibited within two nautical miles offshore from Awarua Point north of Fiordland to the tip of Cape Farewell at the top of the South Island. This was done as a part of a suite of regulations intended to protect Hector's dolphins, implemented from 1 October 2008. The commercial closure is restricted to the period 1 December to end of February, which is the highest risk period for Hector's dolphins. The recreational closure is effective for the entire year.

1929. Rig in SPO 7 is currently predominantly caught by mixed species inshore trawl fisheries. Hector's dolphin captures in trawl nets include the capture of three Hector's dolphins in a trawl net in Cloudy Bay in 2006. The lack of information on the depth and position of commercial trawl effort and low observer coverage precludes any estimation of the total number of Hector's dolphins caught in trawl nets. In the 21 years between 1995 and 2016, observer coverage of inshore trawl tows in areas of Hector's dolphin overlap with trawling effort was only 4.7%. While the level of observer coverage in inshore trawl fisheries is increasing, it remains low. In order to mitigate the potential capture of Hector's dolphin, trawling was prohibited within two nautical miles offshore from Clarence Point to Cape Jackson from 1 October 2008.¹⁰

1930. Best available information indicates that the risk to west coast South Island Hector's dolphin is low for set netting and trawling along the west coast South Island, as effort and overlap is low in this area (trawling and set netting fishing effort does not overlap significantly with areas where Hector's populations are found). While distinct and potentially threatened populations of Hector's dolphin are believed to reside in Tasman and Golden Bay and in Cloudy Bay, the risk to Hector's dolphin due to set netting and trawling has not yet been assessed at that scale.

1931. The risk assessment for marine mammals is currently being updated as part of the review of the Hector's and Māui dolphin Threat Management Plan. Fisheries New Zealand will continue to monitor marine mammal and protected species captures, and instigate further

¹⁰ Detailed descriptions of the restrictions can be found at: Ministry for Primary Industries. Protecting Hector's and Māui dolphins. Retrieved from <https://www.mpi.govt.nz/protection-and-response/sustainable-fisheries/managing-our-impact-on-marine-life/protecting-hectors-and-maui-dolphins/>

management action to protect these species where necessary. Fisheries New Zealand intends to incorporate the results of the updated risk assessment into future management. Spatial management may be required in future, should you consider it necessary to reduce risk of fishing to Hector's dolphin in particular areas. Fisheries New Zealand's advice to you on this matter will be developed as the risk assessment is updated.

Seabirds

1932. The 'National Plan of Action – 2013 to Reduce the Incidental Catch of Seabirds in New Zealand Fisheries' (NPOA Seabirds) 2013, which is currently under review, is the driver for all actions to reduce the incidental mortality of seabirds from fishing.¹¹ It puts in place a risk-based approach to managing fishing interactions with seabirds, targeting mitigation on those species most at risk but also aiming to reduce captures overall.

1933. The most recent seabird risk assessment was published in 2017.¹² It is a primary input to the NPOA Seabirds. The risk assessment calculates a species-level risk broken down by fishery group. Fishery groups were assigned on the basis of target species, vessel size and for trawl vessels targeting middle-depth species, whether or not the vessel was a factory vessel. Vessels in the same fishery group are assumed to attract and capture birds in a similar way.

1934. Seabird captures in set nets occur when birds are caught in nets during deployment, soaking, or retrieval. Seabird captures in trawl fisheries occur in two main ways. Seabirds either collide with or are struck by the moving trawl warps (usually larger seabirds) or are caught in the net when it is on the surface during deployment and retrieval (usually smaller seabirds). Fisheries New Zealand observers monitor vessel performance and the Director-General has the option of imposing vessel-specific regulations to better control management practices. Observer coverage of inshore trawl vessels that catch SPO 7 has been low and is an area identified for progress by the NPOA Seabirds 2013.

1935. There have been six reported shag deaths in set net captures in statistical area 017 (Marlborough Sounds) in the last 10 years, 4 of which have occurred within the last 12 months. The species of these shag captures was not specified.

1936. Fisheries New Zealand will continue to monitor seabird captures, and instigate further management action to protect these species where necessary. Fisheries New Zealand will incorporate the results of the updated NPOA Seabirds into future management.

1937. New Zealand king shags (*Leucocarbo carunculatus*) are an endemic species of shag found only in the Marlborough Sounds. King shag populations have recently declined by 24% from 2015 to 2018, with outer Sounds populations declining and two inner Sounds populations increasing.¹³ While information on king shag's ecology and feeding behaviour is uncertain, due in part to the relatively remote and inaccessible locations of their breeding colonies, they are believed to feed on benthic fish in the Sounds, particularly witch flounder.

¹¹ Accessible at: <https://www.mpi.govt.nz/dmsdocument/3962-national-plan-of-action-2013-to-reduce-the-incidental-catch-of-seabirds-in-new-zealand-fisheries>

¹² Accessible at: <http://www.mpi.govt.nz/dmsdocument/27531-aebr-191-assessment-of-the-risk-of-commercial-fisheries-to-nz-seabirds-2006-07-to-2014-15>

¹³ Report on king shag census February 2018 and population trend. Rob Schukard. Prepared for The New Zealand King Salmon Co. Limited May 2018. 16pp.

Benthic impacts

1938. Research has characterised both New Zealand’s benthic environment and the level of benthic impact from fisheries activity.¹⁴ 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. The environmental impacts of fishing are summarised annually by Fisheries New Zealand. Fisheries New Zealand will continue to monitor the bottom trawl footprint of fisheries.

2.2 OPTIONS CONSULTED ON

1939. Fisheries New Zealand consulted on the following options (Table 3):

Table 3: Proposed management settings (in tonnes) for SPO 7 from 1 October 2018, with the percentage change relative to the *status quo* in brackets.

Option	Total Allowable Catch (TAC)	Total Allowable Commercial Catch (TACC)	Allowances		
			Customary Māori	Recreational	All other mortality to the stock caused by fishing
Option 1 (<i>Status quo</i>)	306	246	15	33	12
Option 2	332 ↑ (8%)	271 ↑ (10%)	15	33	13 ↑ (10%)
Option 3	357 ↑ (17%)	295 ↑ (20%)	15	33	14 ↑ (20%)

2.3 VIEWS OF SUBMITTERS

1940. Section 12 of the Act requires you to consult on any proposed management changes. Fisheries New Zealand has consulted on your behalf and this section outlines the views of submitters and issues they raised.

2.3.1 Submissions received

1941. Eight submissions were received on the SPO 7 proposals from the following six individuals and organisations:

- a) Environment and Conservation Organisations of New Zealand
- b) Mr Don Mead
- c) Fisheries Inshore New Zealand (Fisheries Inshore)
- d) The Royal Forest and Bird Protection Society of New Zealand Ltd (Forest & Bird)
- e) New Zealand Sport Fishing Council
- f) Southern Inshore Fisheries Management Company Ltd (Southern Inshore)
- g) Te Waka a Māui me Ōna Toka Iwi Forum (Te Waka a Māui)
- h) Te Ohu Kaimoana

1942. Four submitters (two environmental organisations, one Iwi Fisheries Forum, and one individual) supported Option 1 (*status quo*) on the grounds of protecting the environment

¹⁴ Aquatic Environment and Biodiversity Annual Review 2017, available here: <https://www.mpi.govt.nz/news-and-resources/open-data-and-forecasting/fisheries/>

and protected species and allowing the rig stock to increase in abundance. One recreational organisation supported Option 2 as a conservative increase, and one commercial organisation supported Option 2. Two other commercial organisations supported Option 3, noting it was too conservative.

1943. Te Waka a Māui prefers Option 1 to support the continued increase in rig abundance in SPO 7.
1944. The Environment and Conservation Organisations of New Zealand does not support an increase in the TAC. They are concerned at the impact of any increase on benthic impacts of bottom trawl fishing when there is no strategy to avoid, remedy or mitigate the impacts, habitat of particular significance for fisheries management has not been identified and the maintenance of biological diversity has not been given effect to. They submit that Fisheries New Zealand should work towards a full assessment of the fishery, including a review of the appropriateness of the target biomass and harvest strategy default levels for sharks in line with the NPOA Sharks 2013.
1945. The Royal Forest and Bird Protection Society of New Zealand (Forest & Bird) do not support the proposed increases for SPO 7 until adequate monitoring of the set net fishery in Tasman and Golden Bay has taken place. Forest & Bird highlight the risk set netting poses to Hector's dolphins and seabirds including shags, penguins, petrels and shearwaters. Forest & Bird note that there are currently no set net restrictions in Tasman and Golden Bay, where Hector's dolphin remains at risk.
1946. Forest & Bird support Option 1 (*status quo*), provided there is increased monitoring of the fishery through electronic or at sea monitoring to ensure no protected or threatened seabird or marine mammals are caught and killed and that any best practice mitigation is applied.
1947. Mr Don Mead supports Option 1 (*status quo*). Mr Mead is concerned about the potential risk commercial trawling and set netting for rig in Golden Bay poses for dolphins in the area. Mr Mead also considers that trawling disturbs the sea floor and could impact the productivity of Golden Bay, potentially contributing to low scallop abundance.
1948. The New Zealand Sport Fishing Council supports Option 2 and considers a conservative increase appropriate for SPO 7. The New Zealand Sport Fishing Council consider that the information used to propose an increase must be treated with caution, particularly in light of the NPOA Sharks 2013. The New Zealand Sport Fishing Council also recommend increasing the allowance for other sources of mortality to the stock caused by fishing, and recommend that the allowance for recreational fishing be reviewed when the updated National Panel Survey results are available.
1949. Te Ohu Kaimoana support Option 2, on the grounds that it allows increased use of the stock while promoting a further increase in stock abundance.
1950. Southern Inshore Fisheries (Southern Inshore) support Option 3 to increase the TACC by 49 tonnes from 246 tonnes to 295 tonnes. However, they prefer a higher increase of 104 tonnes to a TACC of 350 tonnes to allow for utilisation without incurring deemed value costs. Southern Inshore note that the SN(038) CPUE series may have flattened since 2006/07 due to any combination of: increased quantities of rig caught by trawl; increased rig ACE availability for trawl fishers; a decreasing number of set net vessels in the fishery; and set net measures introduced for the protection of Hector's dolphin.

1951. Southern Inshore also note that the voluntary set net closure around Farewell Spit, the inclusion of rig into Schedule 6 of the Act, and the west coast South Island set net closures have all contributed to the SPO 7 stock rebuild, which has occurred more rapidly than expected.

1952. Fisheries Inshore New Zealand (Fisheries Inshore) is the Sector Representative Entity for inshore finfish, pelagic and tuna fisheries in New Zealand. They endorse Southern Inshore Fisheries' submission.

2.3.2 Input and participation of tangata whenua

1953. The proposal to consult on SPO 7 was first presented to the Te Waka a Māui me Ōna Toka Iwi Forum (Te Waka a Māui) in March 2018. Te Waka a Māui represents the nine iwi of the South Island, each holding mana moana and significant interests (both commercial and non-commercial) in South Island fisheries. Te Waka a Māui supported a review of the SPO 7 fishery. The options consulted on for SPO 7 were presented to Te Waka a Māui in July 2018, and its input and views have been incorporated into this advice to you.

2.3.2 Kaitiakitanga

1954. Under Section 12(1)(b) you must also have particular regard to kaitiakitanga before setting or varying a TAC. Under the Act, kaitiakitanga is 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.

1955. Relevant Iwi or Forum Fish Plans provide a view of the objectives and outcomes iwi seek from the management of the fishery and can provide an indication of how iwi exercise kaitiakitanga over fisheries resources. Iwi views from Forum meetings and submissions received from iwi can also provide an indication.

1956. Rig (mango) is identified as a taonga species in the Te Waipounamu Iwi Fisheries Plan. This plan contains objectives to support and provide for the interests of South Island iwi. That Forum Fisheries Plan contains three objectives which are relevant to the management options proposed for SPO 7:

- a) Management objective 1: to create thriving customary non-commercial fisheries that support the cultural wellbeing of South Island iwi and our whānau;
- b) Management objective 3: 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; and
- c) Management objective 5: to restore, maintain and enhance the mauri and wairua of fisheries throughout the South Island.

1957. Fisheries New Zealand considers that the management options presented in this advice paper will contribute towards the achievement of these three management objectives in ensuring that appropriate allowances are made for customary non-commercial fishing, the fishery remains sustainable, and that environmental impacts are minimised.

2.4 SETTING THE TAC

1958. In cases such as SPO 7, where the level of biomass that can produce the maximum sustainable yield (B_{MSY}) is not known, s 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.
1959. The current management target for SPO 7 is based on the relative biomass series from the west coast South Island research trawl survey, which has been accepted by the Fisheries Assessment Working Group as an appropriate target for SPO 7. As explained in 2.1.3 *Management approach* above, the target for SPO 7 is double the “soft limit” for SPO 7. This target is intended to keep the biomass of SPO 7 stock well above the soft limit.
1960. The biomass estimate for the SPO 7 stock is currently 1.7 times the target biomass level, and nearly four times the soft limit, and is likely to remain above the management target at least in the short term, as a result of high biomass levels predicted by the 2017 west coast South Island trawl survey. The survey estimated biomass was at the second highest level for SPO 7 in the 25-year time survey series. Consequently, there is an opportunity to increase utilisation (increase the TAC) while ensuring sustainability, in a manner that is not inconsistent with the objectives of s 13.
1961. In the 2016/17 year, rig in SPO 7 was taken mainly as bycatch in the mixed target trawl fishery (55% of rig landed in SPO 7) and the target rig and school shark fishery (40% of rig landed in SPO 7). In a mixed-species trawl fishery such as this, an increase in TACC for rig also is expected to cover an increase in bycatch of rig when targeting other fish species.
1962. Along with the *status quo*, two different options to increase the TAC are proposed which give different weight to uncertainty in information and associated risk of stock decline.
1963. The proposed increases are not expected to significantly change the environmental impacts and interactions of the SPO 7 fishery (s 9 of the Act). They will provide for likely additional catch of rig resulting from greater abundance of rig in SPO 7, and while some additional targeted fishing effort for SPO 7 is expected, it is likely to occur in areas that are already trawled. Therefore any additional impacts on bycatch species, protected species, and the benthic environment are likely to be relatively minor. This is discussed for Options 2 and 3 below.
1964. The proposals are considered to adequately address the requirements of s 11 of the Act. Sections 11(2)(a) and (b) require you to take into account the 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 applies to the coastal marine area and that you consider relevant. Fisheries New Zealand has taken into account any strategies under the Conservation Act 1987 relating to rig.
1965. For the rig stock being reviewed, there are policy statements and plans under the Resource Management Act 1991 and the Conservation Act 1987 relating to the marine environment in which rig is fished, but not specifically to the activity of fishing. These statements and

plans include provisions that generally limit the activities that can occur in many bodies of water, including fishing.

1966. The Fisheries Management Plan for rig in SPO 7 is discussed above in 2.1.3 *Management approach*.

1967. Fisheries New Zealand notes that the Marlborough District Council has included in its coastal plan measures to exclude trawling and dredging from specified areas within the Marlborough Sounds, which is within SPO 7.

1968. The Proposed Marlborough Environment Plan, which is currently under development, acknowledges that “The waters of the Marlborough Sounds are important for fisheries for a number of reasons, including:

- a) An ongoing source of traditional food for Marlborough’s tangata whenua iwi;
- b) Providing a livelihood for commercial fishers;
- c) Being a significant factor in many recreational and tourism activities; and •
- d) Contributing to a range of species present in the Sounds and therefore the health of marine ecosystems.”

1969. Fisheries New Zealand considers that this review complies with the objectives of the Proposed Marlborough Environment Plan, particularly Objective 13.4 – “The sustainable management of fisheries in the Marlborough Sounds”.

1970. Rig are principally caught by trawl and set net in SPO 7. Set netting is considered unlikely to impact on seabed habitat, however, the use of set nets can potentially impact on species diversity, because set nets can unintentionally catch a range of inshore species. Many harbour areas where rig are targeted are important nurseries for a wide range of inshore species. There is no indication that set netting for rig adversely affects the value of the harbours as nurseries.

1971. There have been instances on the west and east coast of the South Island where endangered Hector’s dolphin have been caught in commercial and non-commercial set nets. To manage this risk, a range of commercial and non-commercial set netting restrictions have been put in place around much of the coast in FMA 7.

2.4.1 Option 1 (*Status quo*)

1972. No change to current settings are proposed under this option. As the stock is considered to be likely above target biomass, the level that the current TAC is set is consistent with the objective of maintaining the stock at or above, a level that can produce the maximum sustainable yield.

1973. Retaining the current TAC settings will result in an opportunity cost to users of the resource through constrained catch. The stock assessment indicates that utilisation can be increased while ensuring sustainability.

1974. Te Ohu Kaimoana rejected Option 1 as it would result in lost value and lost benefits for quota owners and iwi. Te Ohu Kaimoana considered that maintaining the *status quo* for SPO 7, when best available information indicates an opportunity for sustainable utilisation, would reduce the value of iwi-owned quota.

1975. Environmental sector and public submissions supported Option 1. Forest & Bird supported Option 1 with increased observer coverage, noting the need to address risks to threatened and protected species such as dolphins and seabirds. ECO do not support an increase of the TAC for SPO 7. Mr Mead supports Option 1, on the basis that commercial set netting and trawling for rig represents a threat to dolphin populations and general ecological health of Tasman and Golden Bay.

1976. Fisheries New Zealand is currently reviewing the marine mammal risk assessment as part of its review of the Hector's and Māui dolphin Threat Management Plan, and will readdress management measures that are recommended by that Plan to protect Hector's and Māui dolphins. Fisheries New Zealand notes that potential areas of higher risk are Tasman and Golden Bay and Cloudy Bay, and risk to Hector's dolphin on the west coast of the South Island is low for set netting and trawling as effort and overlap are low. This is discussed above in section 2.1.6 *Environmental principles and sustainability measures*.

1977. Under Option 1, no additional effort to target rig would occur. The amount of bycatch is anticipated to remain relatively constant under the *status quo*, and as such no additional catch of species taken in association with rig is expected under Option 1. There would be no increase in the current threat to marine mammals (such as Hector's dolphin), seabird species (such as king shag), or associated impacts on other species, as fishing effort, method, and location are all expected to stay reasonably consistent under the *status quo*.

2.4.2 Option 2 (Fisheries New Zealand Recommended)

1978. Option 2 increases the TAC by 26 tonnes from 306 to 332 tonnes (an 8% increase to the current TAC). This is considered to be a relatively conservative increase in catch, and is considered to pose a low risk to sustainability.

1979. A 25 tonne (10%) increase in the TACC (Option 2) from 246 to 271 tonnes is likely to be a cautious response to the increase in SPO 7 biomass available for commercial fishers.

1980. Increasing the TACC and allowances would allow fishers the opportunity to take advantage of increased abundance of rig. Fisheries New Zealand estimates that if the increased TACC were to be fully caught it could generate an additional \$97,500 in revenue per annum for the commercial sector, or up to \$168,100 per annum for the wider economy, approximately half of the increased revenue predicted for Option 3 (Table 4). An additional benefit for commercial fishers is that an increased TACC would reduce the amount of deemed value payments incurred, provided fishers constrain their catch within the commercial catch limit.

1981. The New Zealand Sport Fishing Council supports Option 2, notes that a conservative approach is needed to properly meet the goals of the NPOA Sharks 2013, and considers that you should treat the CPUE indices and west coast South Island trawl survey index with caution.

1982. Te Ohu Kaimoana also supports Option 2, on the grounds that it allows increased use of the stock while promoting a further increase in stock abundance.

1983. Te Waka a Māui note that any increase should be accompanied by close monitoring and research to ensure it continues to be sustainable.

1984. Forest & Bird do not support Option 2, on the grounds of the longer term impact the increased TACC could have on seabirds and protected and endangered dolphins.
1985. Fisheries New Zealand notes that these indices are accepted by the Fisheries Assessment Working Group's robust and transparent peer review process as the best available information for monitoring the relative abundance of SPO 7. The Fisheries Assessment Working Group acknowledges that the west coast South Island trawl survey and BT(ALL) CPUE series do not capture abundance of large females,¹⁵ and Fisheries New Zealand considers this uncertainty when interpreting the biomass survey results.
1986. Fisheries New Zealand considers that an increase in the SPO 7 TACC, as proposed under this option, may lead to some increased targeting of rig in SPO 7 by trawling, but that this would likely occur in areas that are already trawled. Moreover, the proposed increase in TACC for rig under Option 2 will mainly cover the additional catch of SPO 7 taken as bycatch, noting that most rig in SPO 7 is taken as bycatch in trawl fisheries targeting flatfish, barracouta, tarakihi and red gurnard. Given the lower TAC proposed under Option 2 any impacts to the benthic environment or associated and protected species would be smaller under this option than for Option 3.
1987. Fisheries New Zealand considers that the proposed TAC under Option 2 may result in an increase in set net effort in areas where Hector's dolphin and seabirds (such as king shags) may be found. Fisheries New Zealand considers this increase in effort to be relatively minor, and smaller for Option 2 than Option 3. Under Option 2, if the TACC were to be fully caught by set netting, it could result in up to 33 additional sets, and an additional 69 km of nets in the water, per year.
1988. Overall, any additional impacts on bycatch species, protected species, and the benthic environment are likely to be relatively minor under Option 2.
1989. As noted above, Fisheries New Zealand is currently reviewing marine mammal risk assessment as part of the review of the Hector's and Māui dolphin Threat Management Plan, and will readdress management measures that are recommended by that Plan to protect Hector's and Māui dolphins. Fisheries New Zealand notes that potential areas of higher risk are Tasman and Golden Bay and Cloudy Bay, and risk to Hector's dolphin on the west coast of the South Island is low for set netting and trawling as effort and overlap are low.
1990. The NPOA Seabirds 2013 is currently being reviewed, and Fisheries New Zealand will readdress management measures that are recommended by that new NPOA Seabirds to protect seabirds in SPO 7. Fisheries New Zealand does not anticipate a small increased risk of mortality to seabird species as a result of Option 2. The increases to catch limits proposed are modest and will likely cover existing levels of catch only, with a relatively minor increase in targeted fishing effort expected.
1991. Fisheries New Zealand recommends Option 2 as it is a comparatively cautious increase that allows for increased utilisation of rig in SPO 7 while ensuring the increased sustainability of the stock and minimal increased risk to bycatch, associated species, or the benthic environment.

¹⁵ Starr, P.J.; Kendrick, T.H. (2017). SPO 1, 2, 3, 7 and 8 Fishery Characterisation and CPUE Report. *New Zealand Fisheries Assessment Report 2017/62*. 244 p.

2.4.3 Option 3

1992. Option 3 increases the TAC by 51 tonnes from 306 to 357 tonnes (a 17% increase to the current TAC). This is considered to provide for a higher level of catch, with a comparatively greater (but still low) risk to sustainability.
1993. A 49 tonne (20%) increase in the TACC (Option 3) places greater weight on the information showing increased abundance and further opportunities for sustainable utilisation.
1994. As indicated in Option 2, increasing the TACC and allowances will allow fishers the opportunity to take advantage of increased abundance of rig. Fisheries New Zealand estimates that if the increased TACC were to be fully caught it could generate an additional \$191,100 in revenue per annum for the commercial sector, or \$329,500 per annum for the wider economy, approximately double the increased revenue predicted for Option 2 (Table 4). As stated for Option 2, an increased TACC could reduce the amount of deemed value payments incurred, provided fishers constrain their catch within the commercial catch limit.
1995. Te Waka a Māui considers that substantial changes to the TAC and/or TACC (eg. 20% or more) need to be accompanied by scientific recommendations that the changes proposed are sustainable for at least the next five years to ensure the long-term sustainability of the stock. Fisheries New Zealand considers that all options are likely to maintain the stock above the target (proxy B_{MSY}) level. In each case, ongoing monitoring of the stock using trawl surveys will enable responsive management and appropriate adjustments to address risk and possible opportunity in future. An updated trawl survey is scheduled for 2019.
1996. Forest & Bird do not support Option 3 on the grounds of the longer term impact the increased TACC could have on seabirds and protected and endangered dolphins.
1997. The New Zealand Sport Fishing Council considers that Option 3 is an excessive increase. As indicated in Option 2, an increase in the SPO 7 TACC may lead to increased targeting of rig in SPO 7 or bycatch of rig in other fisheries. Fisheries New Zealand recognises the objective under the NPOA Sharks 2013 to cautiously set catch allowances for stocks such as rig in SPO 7, and acknowledges that Option 3 presents a less cautious approach to providing for increased utilisation of SPO 7 than Option 2. Fisheries New Zealand considers that greater catch allowances under this option would still ensure the long-term sustainability of the SPO 7 stock.
1998. Southern Inshore and Fisheries Inshore both support Option 3 on the grounds of increased biomass in the stock. Both submitters supported an additional increase to the TACC of 104 tonnes, to 350 tonnes to fully allow for commercial catch while avoiding deemed value costs.
1999. Fisheries New Zealand does not support the 350 tonne TACC proposed by Southern Inshore and Fisheries Inshore, as it poses a comparatively greater risk to the sustainability of the SPO 7 stock. Fisheries New Zealand notes that deemed value payments are intended to encourage fishers to constrain their catch within their ACE, and that the TACC is not intended to provide enough ACE to avoid deemed value payments.

2000. Fisheries New Zealand considers that an increase in the SPO 7 TACC may lead to some increased targeting of rig in SPO 7 relative to Options 1 and 2, given that 40% of rig was caught in a targeted rig and school shark fishery in 2016/17. However, it will mainly cover the additional catch of SPO 7 taken as bycatch, noting that most rig in SPO 7 is taken as bycatch in trawl fisheries targeting flatfish, barracouta, tarakihi and red gurnard. An increase to the TACC may translate to an increase in trawl fishing effort, but this is not expected to be significant, with relatively minor associated impacts expected on other species, trawl footprint, or associated impacts on benthic habitat classes that have been assessed.
2001. Fisheries New Zealand considers that the proposed TAC under Option 3 could result in an increase in set net effort in areas where Hector's dolphin may be found. Fisheries New Zealand considers this increase in effort to be relatively minor, though larger for Option 3 than Option 2. Under Option 3, if the TACC were to be fully caught by set netting, it could result in up to 64 additional sets, and an additional 136 km of nets in the water, per year.
2002. As noted above and for Option 2, Fisheries New Zealand is currently reviewing the marine mammal risk assessment as part of the review of the Hector's and Māui dolphin Threat Management Plan. Fisheries New Zealand intends to address any management measures that are recommended as a result of these reviews.
2003. The NPOA Seabirds 2013 is also currently being reviewed, and Fisheries New Zealand will readdress management measures recommended by that new NPOA Seabirds to protect seabirds in SPO 7. Fisheries New Zealand anticipates some elevated risk of mortality to seabird species under Option 3 (relative to Options 1 and 2), while noting the proposed catch limit increase under Option 3 remains modest and would mainly cover existing levels of catch, with relatively minor increases in targeted fishing effort expected.

2.5 ALLOCATING THE TAC

2004. Under section 21 of the Act, when varying the TACC of any stock, you are required to take into account Māori customary fishing interests, recreational fishing interests and all other sources of fishing related mortality.
2005. Fisheries New Zealand is proposing an increase to the TAC for SPO 7 because the abundance of rig in SPO 7 is increasing, and there is a utilisation opportunity for the stock without compromising its long-term sustainability. The allocation of the TAC under the proposed options is discussed below.
2006. No increase is proposed for customary and recreational allowances because best available information suggests that current customary and recreational allowances adequately cover current catch and expected increases in abundance and availability of rig in SPO 7. The proportion of the TACC that is used to set the allowance for all other sources of mortality to the stock caused by fishing (5%) is proposed to stay constant, as it is still the most appropriate, given the biological characteristics of the stock and mortality caused by trawling, set net, and non-commercial methods.
2007. Considering this, the TACC is increasing the most for SPO 7 under Options 2 and 3. As with customary and recreational fishers, commercial fishers value rig highly, but catch information indicates that they are currently fully catching the TACC and could catch

more, in excess of their current allowance, as a result of observed increases in abundance. Increasing the TACC would allow fishers to increase their profits (with associated gains for the wider economy) and decrease the deemed value payments they currently make (provided they keep their catch within the TACC).

2.5.1 Māori customary allowance

2008. Fisheries New Zealand considers that the current allowance (15 tonnes) adequately provides for current levels of customary take of rig (less than half a tonne in the area that is under the South Island Regulations) in SPO 7, and is proposing to retain the current customary allowance.

2009. Te Ohu Kaimoana supports retaining the current customary allowance.

2010. Te Waka a Māui considers that the data on the customary allowance is inaccurate, and that customary take is regulated by iwi and is based on need. Fisheries New Zealand considers that while there is uncertainty in the customary allowance, this is likely to have minimal impact on the overall sustainability of the stock, as the customary allowance is a small proportion of the SPO 7 TAC (4.9% of the TAC for Option 1, 4.5% for Option 2, and 4.2% for Option 3).

2011. Te Waka a Māui notes that customary use of rig in SPO 7 is likely to increase in future, as Māori population size increases, rig abundance increases, and as new harvest arrangements are put in place, and supports the customary allowance being reviewed in the future.

2012. Fisheries New Zealand regularly analyses the reported customary catch of rig in SPO 7, and reviews the customary allowance whenever it reviews the TAC. If customary authorisations of rig were to increase in future as predicted by Te Waka a Māui, Fisheries New Zealand would propose an increase to the customary allowance to reflect customary catch.

2.5.2 Recreational allowance

2013. Fisheries New Zealand considers that the current allowance (33 tonnes) adequately provides for current levels of recreational take (most recently estimated at 20.8 tonnes) of rig in SPO 7, and is proposing to retain the current recreational allowance for all options.

2014. Te Ohu Kaimoana supports retaining the current recreational allowance.

2015. Fisheries New Zealand notes that there is uncertainty in the recreational allowance, this is likely to have minimal impact on the overall sustainability of the stock, as the recreational allowance is a comparatively small proportion of the SPO 7 TAC (10.8% of the TAC for Option 1, 9.9% for Option 2, and 9.2% for Option 3).

2016. A repeat of the 2011/12 National Panel Survey is currently underway in 2017/18, and updated estimates of recreational catch in SPO 7 will be used to inform future management.

2.5.3 Allowance for other sources of mortality caused by fishing

2017. While there is no information available to quantify all other mortality to the stock caused by fishing, the available evidence suggests that an allowance of 5% of the TACC is appropriate given the biological characteristics of the stock and mortality caused by trawling, set net, and non-commercial methods, including the fact that rig caught in trawls can be released alive if they are likely to survive under Schedule 6 of the Act.

2018. An allowance for all other sources of mortality caused by fishing of 5% of the TACC is proposed for all options. For Option 1 (retaining the *status quo*) the allowance remains unchanged at 12 tonnes. For Option 2, a one-tonne increase to 13 tonnes is proposed, and for Option 3, a two-tonne increase to 14 tonnes is proposed.

2019. Te Ohu Kaimoana supports retaining the current allowance for other sources of mortality.

2020. The New Zealand Sport Fishing Council proposes that the allowance for other sources of mortality to the stock caused by fishing be increased, to allow for mortality of rig caught in trawls and set nets. They consider that an allowance of less than 5% of the TACC is unlikely to accurately reflect other sources of mortality caused by fishing.

2021. Fisheries New Zealand notes that while there is uncertainty in the allowance for all other sources of mortality caused by fishing, this is likely to have minimal impact on the overall sustainability of the stock, as other mortality is thought to be a comparatively small proportion of the SPO 7 TAC (3.9% of the TAC for all options).

2.5.4 TACC

2022. The predicted economic revenues from the options are outlined in Table 4. Port price is the price paid to the fisher upon landing their catch, and represents an estimation of the profit commercial operators receive from landing rig. Free on Board (FOB) is the value of export goods, including raw material, processing, packaging, storage and transportation up to the point where the goods are about to leave the country as exports,¹⁶ and represents an estimation of the profit the wider New Zealand economy receives from rig exports.

Table 4: Indicative predicted changes to commercial revenue of the proposed options, based on port price of \$3.90/kg for SPO 7 in the 2016/17 fishing year, and free on board (FOB) price of \$6.72/kg greenweight for SPO 7 in the 2017 calendar year.

	TACC	Change from <i>status quo</i> (t)	Predicted revenue change (\$ p.a.) based on port price	Predicted revenue change (\$ p.a.) based on FOB price
Option 1 (<i>Status quo</i>)	246			
Option 2	271	25 ↑ (10%)	\$97,500 ↑	\$168,100 ↑
Option 3	295	49 ↑ (20%)	\$191,100 ↑	\$329,500 ↑

2023. The two options proposed for the SPO 7 TACC (Table 1), a 10% increase (Option 2) and a 20% increase (Option 3), are intended to provide an opportunity for increased sustainable utilisation of rig in SPO 7. The options are higher than the current TACC, or levels of landings, in SPO 7 over the past 11 years (Figure 5). This increase is proposed because of the strong signal from the west coast South Island trawl survey and the BT(ALL) CPUE series that the fishery is experiencing a trend of increased relative

¹⁶ FOB does not include storage, export transport or insurance cost to get the goods to the export market.

abundance, and is above the target level, indicating that additional catch could be taken while maintaining the stock above the target.

2024. Option 2 (Figure 5, dashed green line) provides for a level of commercial catch last seen in 2006/07, and Option 3 (Figure 5, dashed blue line) provides for a level of commercial catch last seen in 2003/04. While all accepted indices of relative abundance of rig in SPO 7 (west coast South Island trawl survey, SN(038) CPUE series, and BT(ALL) CPUE series) show a decline in relative abundance of rig at the level of catch from 2000 to 2006 (i.e., at the proposed new levels of catch under Options 2 and 3) (Figure 4), the west coast South Island trawl survey and BT(ALL) CPUE indicate that relative abundance of rig in SPO 7 has increased substantially since this period, and is currently at or near an all-time high.

2025. Given that the TACC accounts for a comparatively large part of the total SPO 7 TAC (80.4% of the TAC for Option 1, 81.6% for Option 2, and 82.6% for Option 3), any changes to the TACC are likely to have the biggest impact on the overall sustainability of the stock. As discussed above, Fisheries New Zealand considers that the rig stock in SPO 7 is able to support the proposed increases to the SPO 7 TACC, allowances and TACC without a risk to the long-term sustainability of the fish stock.

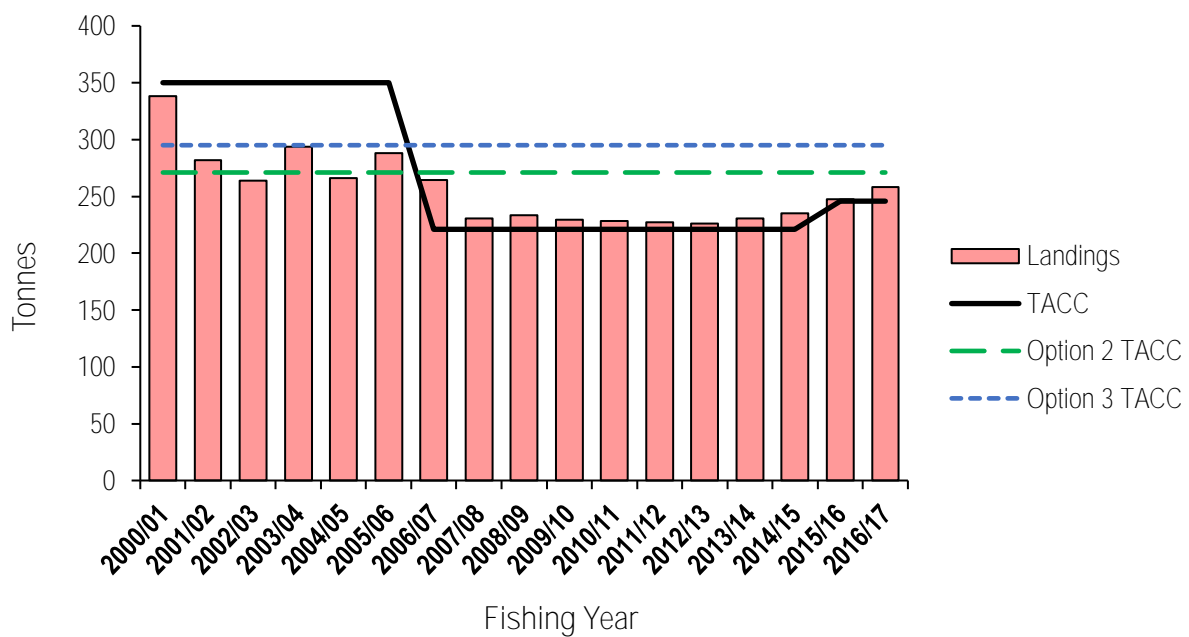


Figure 5: Annual commercial landings vs TACC for SPO 7 between 2000/01 and 2016/17, including TACC levels proposed for Options 2 and 3.

2.6 OTHER MANAGEMENT CONTROLS

2.6.1 Recreational controls

2026. No changes are proposed to the recreational controls for rig in SPO 7. The recreational daily bag limit for rig is 20 per person per day as part of a mixed species daily bag limit.

2027. Fisheries New Zealand is not currently proposing to change recreational set net restrictions

2.6.2 Deemed value rates

2028. The Deemed Values Guidelines and the reasons for the deemed value rate decisions are given in the Deemed Value Rates part of this document. There are no proposed changes to the deemed value rates for SPO 7 for the 2018/19 fishing year (see Table 2 above).

3 Conclusion and Recommendation

2029. Best available information suggests that the abundance of rig in SPO 7 is increasing, and that rig biomass is increasing and above the management target in SPO 7. This suggests that there is an opportunity to increase the utilisation (increase the TAC) of SPO 7 without compromising the sustainability of the stock.

2030. Three options were consulted on: Option 1 (the *status quo*), Option 2 (an 8% increase to the TAC and a 10% increase to the TACC and other mortality allowance), and Option 3 (a 17% increase to the TAC and a 20% increase to the TACC and other mortality allowance). Both Options 2 and 3 provide for increased utilisation of SPO 7, and in doing so are both considered to be sustainable for the fishery. Option 2 provides for a level of commercial catch last seen in 2006/07, and Option 3 provides for a level of commercial catch last seen in 2003/04.

2031. Future assessments, reviews, and updated information will be incorporated into the future management of SPO 7. Updated estimates of recreational harvest are expected in 2019, and these will be incorporated into the next review of SPO 7. An updated trawl survey is scheduled for 2019, the results of which will be considered along with updated CPUE information.

2032. Fisheries New Zealand is currently reviewing the marine mammal risk assessment as part of the review of the Hector's and Māui dolphin Threat Management Plan, and the NPOA Seabirds 2013 is also being reviewed. Fisheries New Zealand intends to address any management measures that are recommended as a result of these reviews in future, and will incorporate them into future reviews of the SPO 7 stock.

2033. Fisheries New Zealand considers that an increase to the TAC of SPO 7 is justified given the utilisation opportunity of the increased rig biomass that is not expected to compromise the sustainability of the stock. Fisheries New Zealand recommends Option 2 on the grounds that it is a more cautious approach to the signal of increased abundance of rig in SPO 7, and poses comparatively reduced risk to threatened and protected species such as Hector's dolphins and seabirds in SPO 7 compared to Option 3, which is the greater increase to the TAC and TACC.

Option 1

Agree to retain the SPO 7 TAC at 306 tonnes and within the TAC:

- i. Retain the allowance of 15 tonnes for Māori customary non-commercial fishing interests;
- ii. Retain the allowance of 33 tonnes for recreational fishing interests;
- iii. Retain the allowance of 12 tonnes for all other sources of mortality to the stock caused by fishing;
- iv. Retain the SPO 7 TACC at 246 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 2 (Fisheries New Zealand recommended)

346 tonnes

Agree to increase the SPO 7 TAC from 306 to ~~332~~ tonnes and within the TAC:

- i. Retain the allowance of 15 tonnes for Māori customary non-commercial fishing interests;
- ii. Retain the allowance of 33 tonnes for recreational fishing interests;
- iii. Increase the allowance for all other sources of mortality to the stock caused by fishing from 12 to ~~13~~ tonnes; *27 tonnes*
- iv. Increase the SPO 7 TACC from 246 to 271 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 3

Agree to increase the SPO 7 TAC from 306 to 357 tonnes and within the TAC:

- i. Retain the allowance of 15 tonnes for Māori customary non-commercial fishing interests;
- ii. Retain the allowance of 33 tonnes for recreational fishing interests;
- iii. Increase the allowance for all other sources of mortality to the stock caused by fishing from 12 to 14 tonnes;
- iv. Increase the SPO 7 TACC from 246 to 295 tonnes.

Agreed / Agreed as Amended / Not Agreed

Stuart Nash

Hon Stuart Nash
Minister of Fisheries

13 / 9 / 2018

Tarakihi (TAR 1, 2, 3, 7)

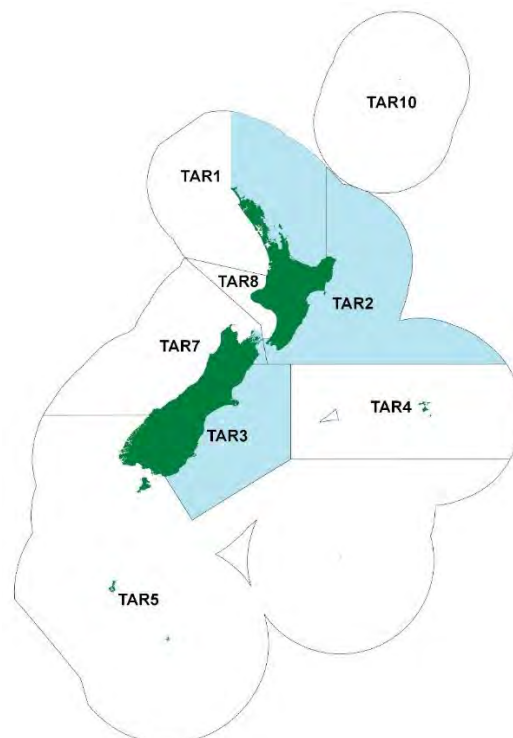


Figure 1: Quota Management Areas (QMAs) for the tarakihi (TAR) fishery, with TAR stocks under review (TAR 1 (east), 2, 3, and 7 (Cook Strait)) highlighted in blue.

1 Summary

2034. Tarakihi (*Nemadactylus macropterus*; tiki) is currently the third highest value inshore finfish species, behind snapper and blue cod. While caught primarily by commercial trawl vessels for supply within New Zealand, tarakihi is also a species of high value to customary and recreational fishers.
2035. Fisheries New Zealand has been targeting research over the last six years to improve the level of information on tarakihi and this has included a focus on developing a stock assessment for the east coast stock.
2036. Tarakihi on the East Coast (TAR 1, TAR 2, TAR 3 and the Cook Strait portion of TAR 7) is considered a single biological stock based on tagging and other information that suggests tarakihi travel large distances and are connected biologically on the East Coast of both Islands. Abundance across this stock is estimated at 17% SB_0 , which is below the level that would support the maximum sustainable yield (B_{MSY}). The assessment indicates that the stock has been near the current abundance level since the early 2000's and has been declining slowly under current catches since the mid 1970's.

Management response

2037. Fisheries New Zealand considers that where a sustainability concern has arisen, setting (or in this case varying) the TAC is the primary tool to ensure sustainability and to rebuild the stock at a “way and rate” that you consider appropriate. Fisheries New Zealand therefore considers it important that a management target for stock level be identified.

This does not prevent the target from being revisited in future reviews, following further discussion or new information. [See 1.8 “sections 13 and 14-Setting and Variation of the Total Allowable Catch (TAC).]

2038. In line with these requirements, Fisheries New Zealand considers it important that a management target for the stock level is identified. This does not prevent the target from being revisited in future reviews, following further discussion or new information.

2039. Fisheries New Zealand proposes that the current reference point for B_{MSY} (40% SB_0) is used as a management target to inform this review. This target represents the best available estimate of the biomass level that will produce the maximum sustainable yield, taking into account the species characteristics, the variability in productivity, uncertainty in assessments and environmental variability.

2040. Fisheries New Zealand expects that restoring the east coast tarakihi stock will:

- a) Increase the resilience of tarakihi to years of poor or below average recruitment and to the negative effects of climate change;
- b) Improve catch rates, which will reduce the costs of fishing for the commercial sector;
- c) Result in tarakihi becoming more widespread in key commercial fishing grounds and areas accessible to customary and recreational fishers; and
- d) Reduce environmental impacts associated with fishing.

2041. The Act also identifies the need to consider timeframe for rebuild, and includes a number of factors to be taken into account, including:

- a) *Biological characteristics of the stock and any relevant environmental conditions.*
 - i. The Harvest Strategy Standard provides guidance for the rebuild timeframes of stocks based on productivity and stock status. For a low productivity stock that is at or below half of B_{MSY} (also known as the soft limit) the timeframe for rebuild should be up to twice the period of time ($2 \cdot T_{min}$) that the stock could be restored under a scenario without any fishing (T_{min}). The Harvest Strategy Standard has been consistently applied to the rebuild strategies of other stocks such as bluenose ($T_{min} = 10-13$ years and rebuild strategy timeframe is 26 years).
 - ii. Tarakihi are long-lived, reaching a maximum age of 40+ years, but grow relatively rapidly in their first eight years. This means there is potential, from a biological perspective, to rebuild the stock in a shorter timeframe than for example bluenose. Projections suggest the east coast tarakihi stock could reach 40% SB_0 within five years in the absence of fishing. Applying the default approach of the Harvest Strategy Standard would suggest a rebuild period of up to ten years.
- b) *The way and rate to rebuild, having regard to the social, cultural and economic factors you consider relevant.*
 - i. While there will be social, cultural and economic benefits from a rebuilt stock, the level of catch reduction required to achieve 40% SB_0 in ten years would be significant (55%) and have immediate, substantial impacts, on the commercial fisheries on the East Coast. Approximately 50 inshore trawl

vessels reported tarakihi as one of their top three species caught while fishing on the East Coast in 2016/17. Many of these vessels target tarakihi as their primary catch. Operations across the fishery will need to change significantly, although the level of individual impact will vary depending on how important tarakihi is within the mix of catch, access to Annual Catch Entitlement (ACE), and ability to adjust to other targets.

- ii. The ability of industry to adjust to catch limit reductions in TAR is unknown. It will vary considerably between fishers, depending on their access to ACE for TAR and other inshore species. It is therefore difficult to know whether adjustment to the TAR TACC could result in significant increased pressure on other inshore fisheries, as has been submitted. The environmental and other impacts of any spatial displacement of fishing methods should be monitored, alongside ongoing work to understand and address the impacts of these fishing methods on the benthic environment, protected species and recreational fishing experience.

Options consulted on

2042. Following pre-consultation discussions, Fisheries New Zealand consulted on three options for TACs, allowances and TACCs. The three options were based on:

- a) Reducing commercial catch by 55%, which is projected to achieve the rebuild in ten years with 50% probability;
- b) Reducing commercial catch by 55%, implemented through three annual steps; and
- c) Reducing commercial catch by 35%, which is projected to achieve the rebuild in twenty years with 50% probability.

2043. Fisheries New Zealand also sought views on a proposal by Fisheries Inshore New Zealand and Southern Inshore for the industry to voluntarily reduce catches by 20%, and to support a package of research which is part of a Tarakihi Management Strategy.

Input and submissions

2044. Feedback from tangata whenua and the majority of submitters was generally divided between:

- a) Support (largely from recreational and environmental interests) for the reductions necessary to ensure rebuild in a ten-year timeframe, with a number of submitters seeking reductions to meet objectives of the rebuild plan with 70% probability; or
- b) Support for the Fisheries New Zealand/Southern Inshore proposal, which was re-submitted during consultation with additional detail including a variable split across areas for the proposed voluntary catch reductions.

2045. A key exception was a number of commercial fishers in TAR 1 who support a reduction to the Total Allowable Commercial Catch (TACC) in TAR 1, but sought to comment only on settings for this area.

Recommendations

2046. Fisheries New Zealand proposes you consider a range of approaches, with a focus on reducing commercial catch of east coast tarakihi.

2047. The options outlined in Table 1 below represent three points on a continuum, but you could also choose a general approach somewhere in between these.

Table 1: Overview of options for TAR 1, 2, 3 & 7

	Option 1		Option 2		Option 3	
Rebuild timeframe	10 years, or 2*T _{min}		20 years, or 4*T _{min}		To be determined in further review in 2021	
Catch Reduction	55% reduction in catch		35% reduction in catch		20% reduction in catch	
	Current total TACC	New total TACC	Current total TACC	New total TACC	Current total TACC	New total TACC
	5734	3249	5734	4031	5734	4616
Implementation	Option to implement in stages, with a minimum of 25% in first year eg 25% year one, further 10% year two				Industry has sought to implement through a voluntary agreement (shelving ACE)	

2048. Likewise, Table 2 provides stock-specific settings based on the approaches above, but is only a guide as to how these settings could be apportioned. Your final decisions are not required to match these. Your views on the range of topics within this document, including how to spread TAC reductions across QMAs and allocating allowances and the TACC, can be used to formulate a final option.

Table 2: Final proposed management settings (in tonnes) for TAR 1, 2, 3, & 7 from 1 October 2018, with the percentage change relative to the current settings in brackets.

Stock	Option	Total Allowable Catch	Total Allowable Commercial Catch	Allowances		
				Customary Māori	Recreational	All other mortality to the stock caused by fishing
TAR 1 ¹	Current settings	2029	1447	73	487	22
	Option 1	1221 ↓ (40%)	983 ↓ (32%)	73	110 ↓ (77%)	55 ↑ (150%)
	Option 2	1384 ↓ (32%)	1131 ↓ (22%)	73	110 ↓ (77%)	70 ↑ (218%)
	Option 3 -	1506 ↓ (26%)	1242 ↓ (14%)	73	110 ↓ (77%)	81 ↑* (268%)
TAR 2	Current settings	2082	1796	100	150	36
	Option 1	1017 ↓ (51%)	735 ↓ (59%)	100	73 ↓ (51%)	109 ↑ (203%)
	Option 2	1376 ↓ (34%)	1061 ↓ (41%)	100	73 ↓ (51%)	142 ↑ (294%)
	Option 3 -	1646 ↓ (21%)	1306 ↓ (27%)	100	73 ↓ (51%)	167 ↑* (360%)
TAR 3	Current settings	1503	1403	15	15	70
	Option 1	737 ↓ (51%)	579 ↓ (59%)	15	15	128 ↑ (83%)
	Option 2	1010 ↓ (33%)	837 ↓ (40%)	15	15	143 ↑ (104%)
	Option 3 -	1221 ↓ (19%)	1030 ↓ (27%)	15	15	161 ↑ (130%)
TAR 7 ²	Current settings	1088	1088	-	-	-
	Option 1	990 ↓	952 ↓ (13%)	5	23	10
	Option 2	1045 ↓	1002 ↓ (8%)	5	23	15
	Option 3 -	1083 ↓	1038 ↓ (5%)	5	23	17

¹ Settings for TAR 1 are for the entire QMA, including the sub-area TAR 1 (east) and the rest of TAR 1.

² Settings for TAR 7 are for the entire QMA, including the sub-area TAR 7 (Cook Strait) and the rest of TAR 7.

2049. Fisheries New Zealand consider that, given the status of the stock, current catches need to be reduced. The key element of your decision is around the way and rate of rebuild.
2050. You have a range of options to reduce the TAC for the East Coast tarakihi stock. The options range from a 20% to a 55% catch reduction. All of the options could be implemented in one year (2018/19) or, in the case of Options 1 and 2, phased in over a number of years. In the case of a multi-year phased approach, separate decisions on the TAC, allowances, and TACC would need to be made prior to the start of each fishing year for each year of the phased approach. This would include public consultation. In general terms, the larger the reduction in catch, the quicker the stock will rebuild to the target level, but the higher the initial socio-economic impact.
2051. Fisheries New Zealand notes that, while the stock is well below the target level, the decline in biomass has been gradual and prolonged. The stock is projected to decline to 15% SB_0 in the next three years under current catches. Further, the socio-economic impacts of options to rebuild the stock over short time periods, like that suggested by the Harvest Strategy Standard, will be significant for the inshore trawl fishery.
2052. In this context, Fisheries New Zealand considers that you could give more weight to the level of socio-economic impact in deciding on the appropriate balance between sustainability and use, and the way and rate of rebuild.
2053. The option to reduce the catch by 20% would have the least socio-economic impact, but would only result in a slow rebuild of the stock (it would remain below 20% SB_0 by 2021). Fisheries New Zealand considers that this could only be an interim option while additional information was gathered to increase certainty about stock status. Further management action would be required to rebuild the population to desired levels.
2054. Fisheries New Zealand note that the stock assessment, on which proposed management options are based, was reviewed and accepted by the Fisheries New Zealand Science Working Group and the Fisheries Assessment Plenary³. Importantly, the stock assessment was given a 'high quality' ranking of 1 by the Fisheries Assessment Plenary.
2055. There are some uncertainties around the stock structure and other assumptions in the assessment model. However, the uncertainty is unlikely to have a significant effect on the assessment outcome. More importantly, Fisheries New Zealand notes that uncertainty can go in both directions; i.e. stock status is equally as likely to be worse than what the assessment indicates, as it is to be better. There is a greater level of uncertainty associated with the forward projections of biomass because future recruitment levels are uncertain.
2056. We consider that a phased approach, for example implementing Option 2 over two years, provides the best balance between rate of rebuild and socio-economic impact. The phased approach will allow industry some time to adjust their businesses, compared to a large one off reduction to catches. However, it should be noted that each step in a phased approach would be subject to consultation and fresh decisions. As a minimum we consider that the level of reduction in 2018/19 should be sufficient to ensure the stock begins to rebuild. Best available information suggests a reduction of 25% to current catch is necessary to ensure a biomass increase with a high degree of probability.

³ Fisheries New Zealand (2018). Fisheries Assessment Plenary, May 2018: stock assessments and stock status. Compiled by the Fisheries Science and Information Group, Fisheries New Zealand, Wellington, New Zealand.

2057. The options presented in this advice apply the same percentage reduction to each QMA irrespective of differences in volume of catch or differences in CPUE, this is based on the east coast tarakihi being a single biological stock and that there is evidence of significant spawning in TAR 3 and to a lesser extent in TAR 2 that supports the entire east coast stock.

2058. Fisheries Inshore New Zealand/ Southern Inshore/ Te Ohu Kaimoana have submitted that applying differential catch reductions to reflect catch history, trends in CPUE, and to ensure equity between fishers in different QMAs, would be a better way to apportion the reductions. The split proposed in Table 3 below was put forward in the context of a 20% reduction in catch.

Table 3: Spread of catch reduction for TAR 1, 2, 3 & 7 proposed by Fisheries Inshore New Zealand/ Southern Inshore/ Te Ohu Kaimoana

Stock	Spread of the catch reduction (informed by current catch)	Spread of the catch reduction (proposed by Fisheries Inshore New Zealand/ Southern Inshore/ Te Ohu Kaimoana)
TAR1	19%	33%
TAR 2	43%	28%
TAR 3	33%	35%
TAR 7	5%	4%

Other matters

2059. Fisheries New Zealand also sought views on changes to management boundaries to better align with biological information, and changes to the daily bag limit for recreational fishing. Support was received for further work on both these matters. Initial feedback is described in further detail within this document.

2060. In the short-term it is proposed that commercial catches within TAR 1 and TAR 7 are monitored and, if reductions do not occur in the Eastern part of the stock as intended, then spatial closures or a further review of TAC settings be considered.

2061. Under all options the current research programme for tarakihi will continue. This research plan includes a national catch sampling project, programmed trawl surveys and an update to the stock assessment in 2021. Fisheries New Zealand agrees with the Fisheries Inshore New Zealand/ Southern Inshore / Te Ohu Kaimoana proposal that a management strategy evaluation could be beneficial to support future management, and would seek to programme this alongside the next east coast stock assessment in 2021. This would include the updated estimate of recreational harvest of tarakihi from the National Panel Survey of Marine Recreational Fishers, which will be available in 2019.

1 Need for review

2062. The best available information suggests that there is a sustainability risk associated with current catch levels of tarakihi, from the eastern stocks off the North and South Islands.

2063. The accepted 2018 tarakihi stock assessment indicates that the east coast stock is at 17 percent of unfished levels (17% SB_0^4), which is below estimates of the B_{MSY} level (40%

⁴ B_0 is the virgin biomass or unfished biomass of a stock. This is the theoretical average of the natural biomass of a stock that would be able to be supported by the environment in the absence of fishing.

SB_0). The stock will likely continue to decline under current catch limits (TAC/TACCs) which have been set in TAR 1, 2, 3, and 7 (see Figure 1).

1.1 CONTEXT

2.1.1 Biological characteristics of east coast tarakihi

2064. Tarakihi is a relatively long-lived species, with a maximum age of 40+ years, reaching sexual maturity, on average, at 6 years of age and 33 cm in length. Tarakihi reach minimum legal size (25 cm fork length) at 3-4 years; the first 8 years is a period of rapid growth. The biological characteristics and natural mortality rate of tarakihi indicate that it is a low productivity species (according to the Harvest Strategy Standard policy guidelines), which means that it is less resilient to high levels of fishing pressure than high productivity species.
2065. Two main spawning grounds have been identified, one from Cape Runaway to East Cape (North Island), and the other from Cape Campbell to Pegasus Bay (South Island). However, some spawning is likely to occur throughout the distributional range. Tarakihi have a long pelagic phase, where larvae and juveniles are pelagic for up to 9 months before settling. Several juvenile nursery areas have been identified in shallower inshore waters, including near Kaikōura, northern Pegasus Bay, Canterbury, and Otago. Juveniles move out to deeper water at about 3-5 years of age, which is when they enter the fishery. The long pelagic phase may have implications for connectivity among subpopulations within the broader east coast biological stock.
2066. In TAR 3, a high proportion of the bottom trawl catch is composed of immature fish. In contrast, the seasonal Kaikōura set net fishery is composed mainly of mature fish. Tagging studies indicate that adults and juveniles can move significant distances. Results of tagging data, and the analysis of age composition of commercial bottom trawl and survey catches along the east coast of New Zealand, suggest that juvenile tarakihi move progressively northward from the Canterbury Bight to East Northland. The level of connectivity between sub-populations and the differential fishing pressure may have implications for the rebuilding of the stock.

2.1.2 Fishery characterisation

Overview

2067. Tarakihi are caught in coastal waters of the North and South Islands in depths from 30 m to 250 m. Tarakihi is an important species to the recreational and customary fishing sectors, however, more than 80% of the current east coast TAC is taken in commercial bottom trawl fisheries and a targeted set net fishery off Kaikōura.

Customary Māori fishery

2068. Tarakihi (tiki) is an important species for customary fishing and is identified as a Taonga species in the Te Waka a Māui me Ōna Toka, Mai I Ngā Kuri a Whārei ki Tihirau, Ngā Hapū o Te Uru, and Te Hiku o te Ika Iwi Fisheries Plans (Iwi Forum Fisheries Plans) that apply to the management areas included within this review. These plans contain objectives to support and provide for the interests of Tāngata Whēnua. Further discussion of customary Māori fishing is provided in the stock descriptions within this section.

Recreational fishery

2069. Tarakihi is one of the top five inshore recreational finfish species (based on numbers caught in the National Panel Survey of Marine Recreational Fishers in 2011/12 (National Panel Survey⁵)). However, the recreational harvest accounts for only approximately 5% of the total recreational catch. Recreational fishing of tarakihi is mostly from boats, and is managed through specific or combined inshore finfish species daily bag limits (see below) and a minimum legal size of 25 cm fork length. Estimates of catch in 2011/12 from the National Panel Survey are provided in the stock descriptions. An updated National Panel Survey is currently underway and will provide estimates for catches in 2017/18. These will be available in 2019.

2070. Recreational daily bag limits for tarakihi in TAR 1, 2, 3, and 7 are given in Table 4 below.

Table 4: Recreational daily bag limits for tarakihi in TAR 1, 2, 3, and 7

Stock	Area	Recreational daily bag limit (daily maximum per individual as part of a combined mixed species finfish bag limit)
TAR 1	Auckland and Kermadec	20
TAR 2	Central	20
TAR 3	South-East	30
	Kaikōura	10
TAR 5	Fiordland	15
	Southland	15
TAR 7	Challenger	20

Other sources of mortality from fishing

2071. Tarakihi are taken mostly by trawl and Danish seine, so a level of incidental mortality is likely as a result of fish escaping the gear or being ‘meshed’ and subsequently dying. There is also a minimum legal size for tarakihi, and fish smaller than this size cannot be retained. The stock assessment factored in a 10% allowance for unreported catch. Information to estimate other sources of mortality from fishing is lacking, and the approach used to determine allowances is based on the best available estimate for general trawl fisheries, as well as guidance from the Science Working Group on accounting for unreported catch.

Commercial fishery

2072. Nationally, tarakihi is the third most valuable inshore commercial finfish fishery, following snapper and blue cod. Tarakihi is taken as a target species, and as a bycatch. Most tarakihi is sold on the domestic market, while approximately 11% is exported.

2073. The commercial fishery developed with the introduction of steam trawlers in the 1890s, and by the mid-1930s, annual catches had increased to about 2000 tonnes.

2074. For the eastern tarakihi stock, catches peaked from the 1940s to 1980 at around 5000 to 6000 tonnes per annum. Since 1989/90, the total annual catches from the east coast stock have been around 3500 to 4000 tonnes per annum, of which 20-30% was landed in TAR 1 (east), 40-45% in TAR 2, 20-25% in TAR 3, and 5-10% in TAR 7 (Cook Strait)

⁵ 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. Accessible at: <https://www.mpi.govt.nz/dmsdocument/4719/send>

2075. In the 2016/17 fishing year, the number of vessels targeting tarakihi was 44 in TAR 1 (east), 24 in TAR 2 and 23 in TAR 3.

2076. Across the East Coast stock, approximately 50 (of the 100 inshore trawl vessels that fished this coast in 2016/17) reported tarakihi as one of their top three species caught that year. For 20 of the vessels, tarakihi was the highest reported catch.

TAR 1

Customary Māori fishery

2077. The allowance for Māori customary harvest is currently set at 73 tonnes in TAR 1.

2078. Fisheries New Zealand has records of 31 authorisations for customary harvest in TAR 1 since 2005, totalling approximately 1.123 tonnes.

2079. This information is likely to be incomplete, as only some areas of the coastline are gazetted under the Fisheries (Kaimoana Fishing) Regulations 1999, which requires reporting of customary fishing authorisations. Other areas operate under regulations 50 and 51 of the Fisheries (Amateur Fishing) Regulations 2013 (the Amateur Regulations), where it is not mandatory to report on permits issued or catch taken. However, based on reporting information available, Fisheries New Zealand considers the current allowance for Māori customary harvest provides for current and foreseeable levels of Māori customary harvest in TAR 1 in the medium term.

Recreational fishery

2080. The current allowance for recreational fishing in TAR 1 is 487 tonnes. The best available information on catch comes from the National Panel Survey estimate in 2011/12, which estimated 110 tonnes catch in that year. However, it is noted that recreational catches are likely to vary from year to year due to factors such as weather and availability, in addition to being influenced by the overall biomass.

Commercial fishery

2081. In TAR 1 (east), the tarakihi target fishery accounts for about 60% of the annual catch. Most of the remainder of the catch is taken as bycatch from bottom trawl fisheries targeting snapper, John dory, and gemfish. A small percentage of the catch is taken by the Danish seine, set net, and bottom long line methods (<10% collectively). Catches in the Bay of Plenty region are dominated by 4 to 8 year old fish, while further north in East Northland there is a broader age range of fish with a higher proportion of relatively older fish (17 to 22 year old fish) compared to all other QMAs.

2082. Based on the last 10 years of commercial catch data, the annual catch from the west coast part of TAR 1 accounts for 33% of the total TAR 1 catch. The west coast catch has increased in the last 4 years to reach 40% of the total TAR 1 catch (average annual catch for last 4 years was 510 tonnes). In 2007, the TACC for TAR 1 (includes east and west coasts) was increased from 1399 to 1447 tonnes (Figure 2). The allowances for Māori customary fishing, recreational fishing, and other sources of mortality were increased to 73 tonnes, 487 tonnes and 22 tonnes respectively. Since the increase, the TACC has only been fully caught once.

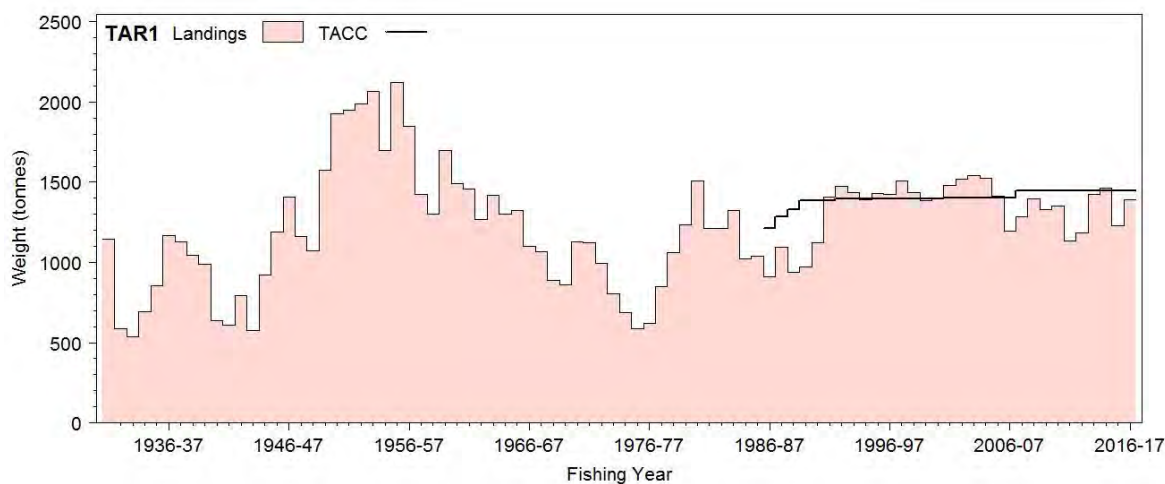


Figure 2: Commercial landings vs Total Allowable Commercial Catch (TACC) for TAR 1 (includes all of TAR 1 - not restricted to the east) from 1931/32 to 2016/17.

TAR 2

Customary Māori fishery

2083. The allowance for Māori customary harvest is currently set at 100 tonnes in TAR 2.

2084. Fisheries New Zealand has records of 11 authorisations for customary harvest in TAR 2 since 2003, totalling approximately 283 kg.

2085. However, this information is likely to be incomplete, as only some areas of the coastline are gazetted under the Fisheries (Kaimoana Fishing) Regulations 1999, which requires reporting of customary fishing authorisations. Other areas operate under regulations 50 and 51 of the Fisheries (Amateur Fishing) Regulations 2013 (the Amateur Regulations), where it is not mandatory to report on permits issued or catch taken. However, based on reporting information available, Fisheries New Zealand considers the current allowance for Māori customary harvest provides for current and foreseeable levels of Māori customary harvest in TAR 2 in the medium term.

Recreational fishery

2086. The current allowance for recreational fishing in TAR 2 is 150 tonnes. The best available information on catch comes from the National Panel Survey estimate in 2011/12, which estimated 73 tonnes of catch that year. However, it is noted that recreational catches are likely to vary from year to year due to factors such as weather and availability, in addition to being influenced by the overall level of biomass.

Commercial fishery

2087. In TAR 2, the target trawl fishery has consistently accounted for about 84% of the annual catch, with a small proportion of the catch taken as bycatch of the red gurnard trawl fishery. TAR 2 catch is taken throughout the QMA, although catches are largest from East Cape to Mahia Peninsula. Catches are dominated by 4- to 7-year old fish. In 2004, the TACC for TAR 2 was increased to 1796 tonnes (Figure 3). Since the increase, the TACC has been over-caught by 1-10% in 8 of the 13 years.

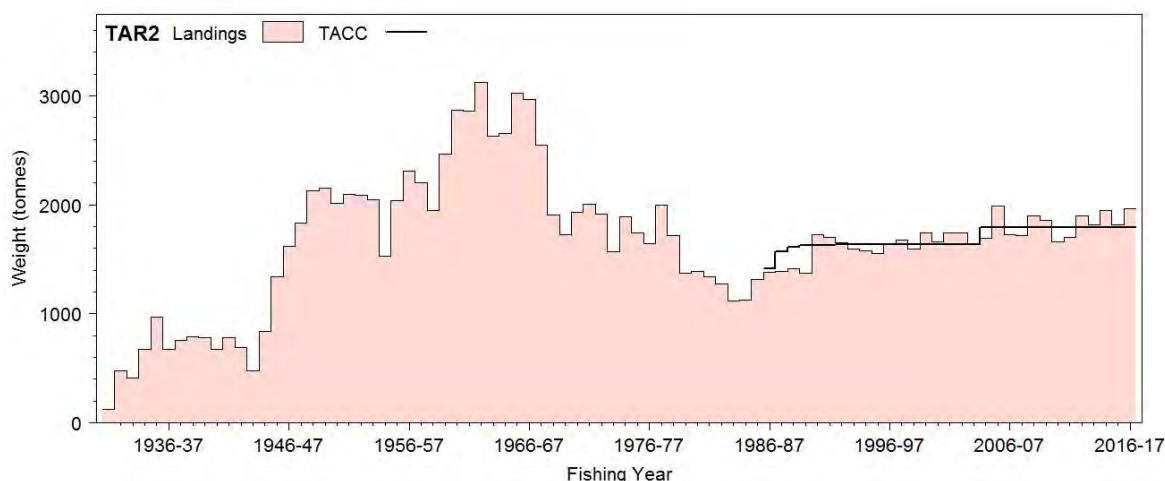


Figure 3: Commercial landings vs TACC for TAR 2 from 1931/32 to 2016/17.

TAR 3

Customary Māori fishery

2088. The allowance for Māori customary harvest is currently set at 15 tonnes in TAR 3.

2089. Fisheries New Zealand has records of three authorisations for customary harvest in TAR 3 since 2001, totalling approximately 101 kg. Based on reporting information available, Fisheries New Zealand considers the current allowance for Māori customary harvest provides for current and foreseeable levels of Māori customary harvest in TAR 1 in the medium term.

Recreational fishery

2090. The current allowance for recreational fishing in TAR 3 is 15 tonnes. The best available information on catch comes from the National Panel Survey estimate in 2011/12, which estimated 3 tonnes of catch that year. However, it is noted that the survey was not optimised to gather information on tarakihi from this area of New Zealand. In addition, recreational catches are likely to vary from year to year due to factors such as weather and availability, in addition to being influenced by the overall level of biomass.

Commercial fishery

2091. In TAR 3 approximately 55% of the catch is taken by the target trawl fishery; 10-15% is taken by a small target set net fishery operating off Kaikōura. The set net fishery is seasonal, with peak catches from December to February and April to May. The remainder of tarakihi is taken by the target barracouta, red cod, and flatfish bottom trawl fisheries. Catches in the bottom trawl fishery are dominated by 4-5 year old fish, compared to larger fish (broader age range of 5 to 8 year old fish) being targeted in the seasonal set net

fishery. In 2004, the TACC for TAR 3 was increased to 1403 tonnes. Since the increase the TACC has been significantly under caught (Figure 4).

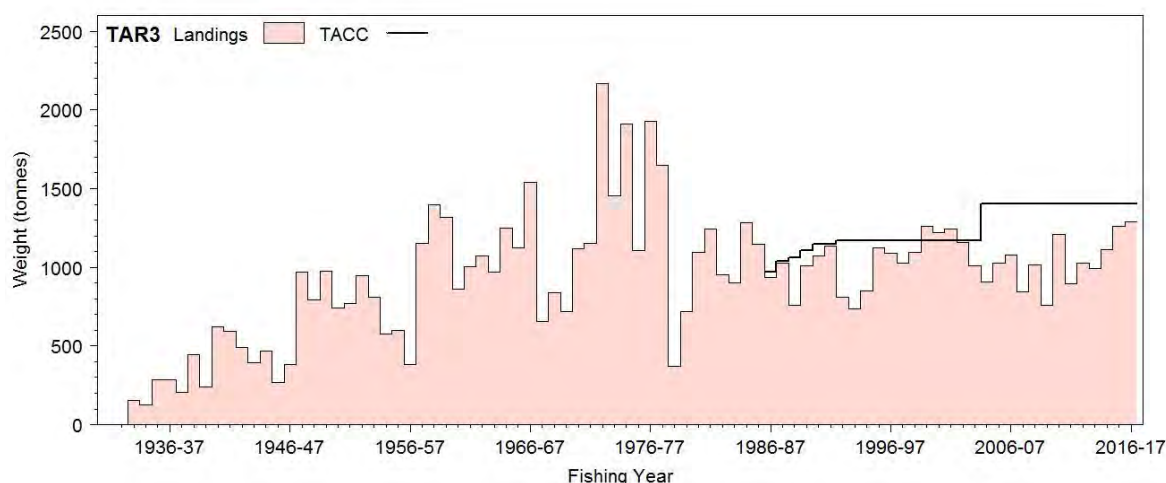


Figure 4: Commercial landings vs TACC for TAR 3 from 1931/32 to 2016/17.

TAR 7

Customary Māori fishery

2092. An allowance for Māori customary harvest is not currently set in TAR 7.

2093. Fisheries New Zealand has records of 41 authorisations for customary harvest in TAR 7 since 1999, totalling approximately 700 kg. There have also been seven customary authorisations for “wetfish” in FMA 7 since 2008, totalling 280 fish, which could include tarakihi as one of the species.

2094. However, this information is likely to be incomplete, as only some areas of the coastline are gazetted under the Fisheries (South Island Customary Fishing) Regulations 1999, which requires reporting of customary fishing authorisations. Other areas operate under regulations 50 and 51 of the Fisheries (Amateur Fishing) Regulations 2013 (the Amateur Regulations), where it is not mandatory to report on permits issued or catch taken.

2095. Consultation with Te Waka a Māui me Ōna Toka Iwi Forum (the Iwi Fisheries Forum that represents South Island iwi) indicates that at least 1 tonne of tarakihi is harvested under these regulations.

Recreational fishery

2096. There is currently no allowance for recreational fishing set in TAR 7. The best available information on catch comes from the National Panel Survey estimate in 2011/12 which estimated 23 tonnes. However, it is noted that recreational catches are likely to vary from year to year due to factors such as weather and availability, in addition to being influenced by the overall level of biomass.

Commercial fishery

2097. Catches from TAR 7 are mainly from the trawl fisheries targeting tarakihi, blue warehou, red cod, and giant stargazer. Catches in the Cook Strait area of TAR 7 are dominated by 5-7 year old fish. The TACC for TAR 7 is set at 1088 tonnes (Figure 5), and

approximately 15% of the total catch in recent years has been taken in the Cook Strait area.

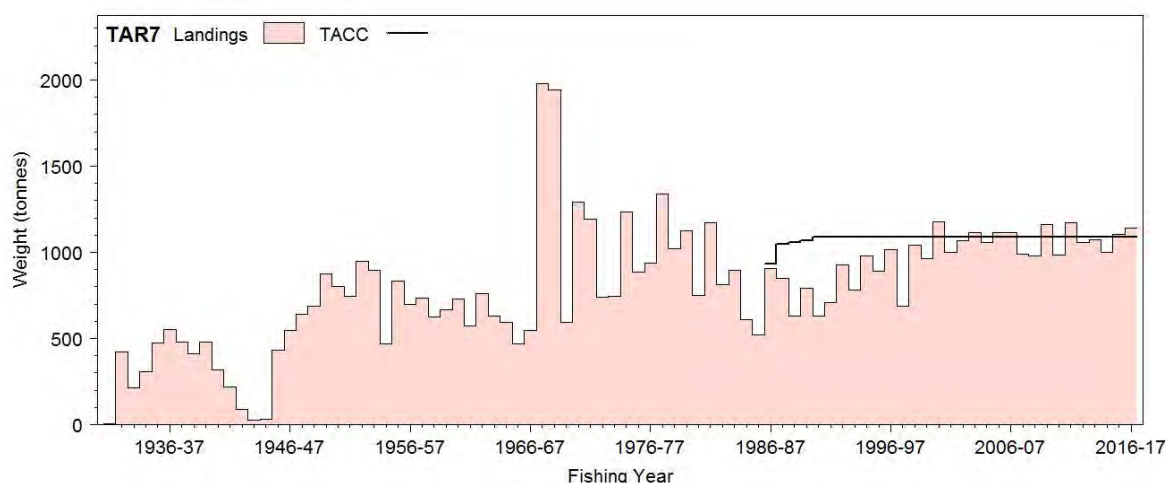


Figure 5: Commercial landings vs TACC for TAR 7⁶ (includes all of TAR 7 - not restricted to Cook Strait) from 1931/32 to 2016/17.

2.1.3 Environmental interactions

2098. The options proposed are not expected to significantly change the environmental impacts and interactions of the TAR 1, 2, 3, or 7 fishery (s 9 of the Act). The proposals will reduce fishing effort on tarakihi, which may result in an overall reduction in trawl effort in some areas of the target bottom trawl fishery. However there are some unknown factors in respect of whether inshore trawl effort will be reduced, or displaced elsewhere and likewise with set net fishing. While it is unlikely that there will be additional impacts on the benthic environment and species caught in association with tarakihi, and protected species, the changes in the fishery should be monitored as part of a rebuild plan. Further discussion of key considerations are provided below.

Benthic impacts

2099. Tarakihi are principally caught by bottom trawl. Research has characterised 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. The environmental impacts of fishing are summarised annually by Fisheries New Zealand. Fisheries New Zealand has a project programmed for this year to further support monitoring of the bottom trawl footprint of fisheries.

2100. Tarakihi are also targeted in a small set net fishery, specifically in TAR 3 off Kaikōura. Set netting is considered unlikely to impact on seabed habitat.

Hector's and Māui dolphins

2101. There have been instances on the east coast of the South Island where penguins and endangered Hector's dolphins have been caught in commercial and non-commercial set nets. To manage this risk there are extensive areas within TAR 3 that are closed to set

⁶ Note that, on average, the Cook Strait region represents approximately 15% of the total catch from TAR 7.

netting (and trawling). The risk assessment for Hector's and Māui dolphin is being updated as part of the review of the Hector's and Māui dolphin Threat Management Plan that is currently in progress. Amongst other matters, the risk assessment considers the spatial overlap between trawling and set netting and best available information on the distribution of the dolphins. When finalised, Fisheries New Zealand and the Department of Conservation will be incorporating this information into advice to you and the Minister of Conservation on whether further measures are required to meet any revised Threat Management Plan objectives.

Seabirds

2102. The 'National Plan of Action – 2013 to Reduce the Incidental Catch of Seabirds in New Zealand Fisheries' (NPOA Seabirds 2013), which is currently under review, is the driver for all actions to reduce the incidental mortality of seabirds from fishing.⁷ It puts in place a risk-based approach to managing fishing interactions with seabirds, targeting mitigation on those species most at risk but also aiming to reduce captures overall.
2103. The most recent seabird risk assessment was published in 2017.⁸ It is a primary input to the NPOA Seabirds. The risk assessment calculates a species-level risk broken down by fishery group. Fishery groups were assigned on the basis of target species, vessel size and for trawl vessels targeting middle-depth species, whether or not the vessel was a factory vessel. Vessels in the same fishery group are assumed to attract and capture birds in a similar way.
2104. The species at highest risk are the black petrel and flesh-footed shearwater in FMA 1 in the bottom longline and trawl fisheries. As part of the review of the NPOA Seabirds, the mitigation devices and guidelines for deployment in both fisheries are being revised to minimise/reduce the risk of seabird capture.
2105. Seabird captures in trawl fisheries occur in two main ways. Seabirds either collide with or are struck by the moving trawl warps or are caught in the net when it is on the surface during deployment and retrieval. Fisheries New Zealand observers monitor each vessel's performance and the Director-General has the option of imposing vessel-specific regulations to better control management practices. Observer coverage of inshore trawl vessels that catch tarakihi has been highest in TAR 1 due to coverage targeted to increase information on interactions with Māui dolphin on the West Coast and to observe snapper target vessels on the east coast. Coverage of the inshore trawl fleet in other areas has been relatively low and is an area identified for progress by the NPOA Seabirds 2013. Seabird captures in set nets occur when birds are caught in nets during deployment, soaking, or retrieval.
2106. When finalised, Fisheries New Zealand and the Department of Conservation will be incorporating this information into advice to you and the Minister of Conservation on whether further measures are required to meet any revised NPOA Seabirds objectives.

⁷ Accessible at: <https://www.mpi.govt.nz/dmsdocument/3962-national-plan-of-action-2013-to-reduce-the-incident-catch-of-seabirds-in-new-zealand-fisheries>

⁸ Accessible at: <http://www.mpi.govt.nz/dmsdocument/27531-aebr-191-assessment-of-the-risk-of-commercial-fisheries-to-nz-seabirds-2006-07-to-2014-15>

2.1.4 Current management approach

Management target

2107. Tarakihi is a relatively long-lived, low-productivity stock, and the Harvest Strategy Standard and policy guidelines recommend that the appropriate default proxy for the biomass that will produce the MSY is 40% of the unfished biomass B_0 (40% SB_0); stocks should be managed to fluctuate around this target with at least a 50% probability. This target represents the best available estimate of the biomass level that will produce the MSY, taking into account the species characteristics, the variability in productivity, uncertainty in assessments and environmental variability. Fisheries New Zealand notes you have discretion to choose a management target above B_{MSY} .

2.1.5 Current status of the stock

2108. The 2018 stock assessment indicates that the eastern tarakihi stock is currently depleted and less than half the target of 40% SB_0 . The assessment has determined that the stock has been below the soft limit of 20% SB_0 since the early 2000's and is currently estimated at 17% SB_0 . There is a low probability (12%) of being above the soft limit (Figure 6a). If current catch levels are maintained, the assessment projections suggest that the stock may not recover and may continue to decline. Figure 6b shows the annual trend in spawning biomass; the tarakihi stock has been fished down significantly during the 1950's to 1960's during a period of relatively high catches of 5000 to 6000 tonnes.

2109. According to the Harvest Strategy Standard, a stock that is below the soft limit of 20% SB_0 , triggers a formal, time-constrained, rebuilding plan, where the stock should be rebuilt back to at least the target level of biomass within a timeframe of between T_{min} (minimum timeframe to achieve rebuild to target), and $2 * T_{min}$ (twice the minimum timeframe), with an acceptable level of probability. T_{min} is the number of years required to rebuild a stock to the target in the absence of fishing. For tarakihi, T_{min} has been determined by the stock assessment model to be 5 years.

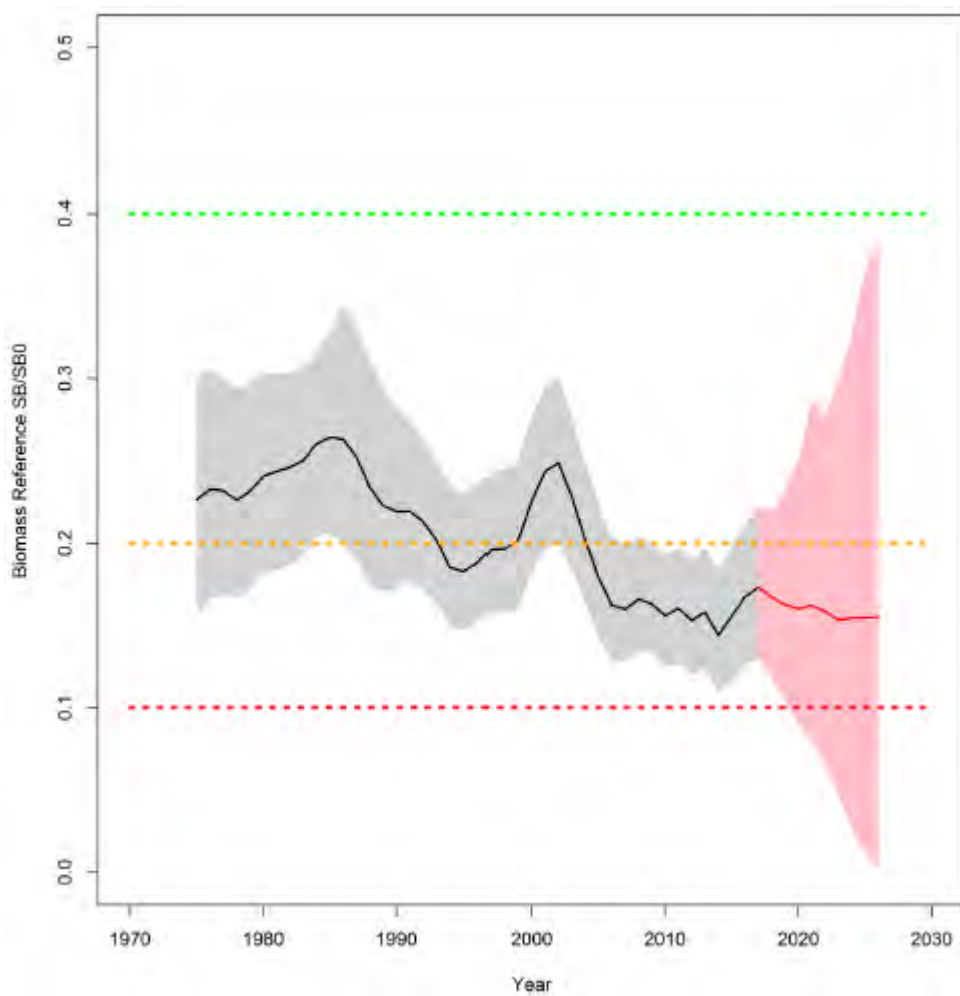


Figure 6a: Annual trend (from 1975 to 2017) in spawning biomass relative to 40% SB_0 target biomass level (green dashed line), the 20% SB_0 soft limit (orange dashed line), and the 10% SB_0 hard limit (red dashed line). The uncertainty in the projections from 2017 forward (pink line) are due to uncertainties in recent and future recruitment.

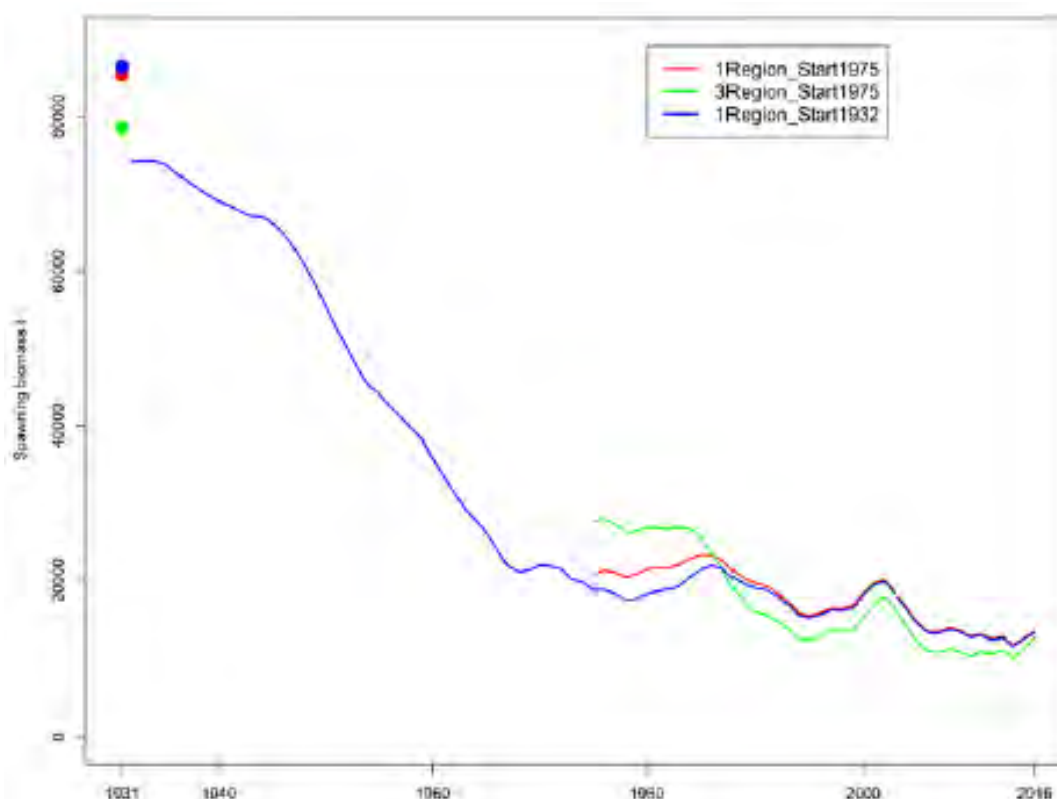


Figure 6b: Annual trend (from 1931 to 2017) in spawning biomass. A comparison of the biomass trajectories from the three original model options and the corresponding estimates of the equilibrium, unexploited biomass SB_0 (blue, red and green lines) plotted (arbitrarily) at 1931. The accepted base case model (shown in Figure 6a) is 1Region_Start 1975 (red line) (Plenary 2018).

2110. The 2017 stock assessment and the 2018 update represents the first fully quantitative stock assessment that has been done for east coast tarakihi. The assessment integrates all available commercial catch and catch rates (CPUE), commercial catch-at-age data, recreational catch estimates, and relative biomass estimates and catch and age data from fishery-independent surveys from the east coast of the South Island.

2111. The stock assessment was completed in late 2017 and then reviewed and accepted by the Fisheries New Zealand Science Working Group and the Fisheries Assessment Plenary⁹. Importantly, the stock assessment was given a ‘high quality’ ranking of 1 by the Fisheries Assessment Plenary. Fisheries Inshore New Zealand, in late 2017, commissioned a rapid update of the assessment to include the most recent (2016/17) catch and CPUE data from the commercial fishery. The results were reviewed and accepted by the Science Working Group in April 2018; the biomass trajectories from the initial 2017 assessment and the updated 2018 assessment were virtually identical.

2112. The assessment is based on the assumption of a single biological stock for the east coast of New Zealand, including TAR 1 (east of Cape Reinga), TAR 2, TAR 3, and the Cook Strait area of TAR 7. The boundary of the biological stock assumed in the stock assessment was determined through a detailed analysis of all the available data on the

⁹ Fisheries New Zealand (2018). Fisheries Assessment Plenary, May 2018: stock assessments and stock status. Compiled by the Fisheries Science and Information Group, Fisheries New Zealand, Wellington, New Zealand.

distribution of spawning and juvenile fish, patterns in the age composition of sub-populations between QMAs over time, recent trends in CPUE indices, and movement data from tagging studies. The resulting assumption of a single biological stock (refer Figure 1) was reviewed and accepted by the Fisheries New Zealand Science Working Group and November 2017 Fisheries Assessment Plenary. Sub-populations of tarakihi within this area are considered to be part of the one biological stock.

2113. There are some uncertainties around the stock structure and other assumptions in the assessment model. However, the uncertainty is unlikely to have a significant effect on the assessment outcome. More importantly, Fisheries New Zealand notes that uncertainty can go in both directions; i.e. stock status is equally as likely to be worse than what the assessment indicates, as it is to be better. There is a greater level of uncertainty associated with the forward projections of biomass because future recruitment levels are uncertain.

2.2 PRELIMINARY CONSULTATION

2.2.1 Input and participation of tangata whenua

2114. 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.

2115. The review of the management arrangements for tarakihi TAR 1, 2, 3, and 7 stocks was presented to Iwi Fisheries Forums relating to TAR 1, 2, 3, and 7.

2116. The Murihiku Mahinga Kai Hui (Southland) expressed a general view that the proposals for TAR 3 need to be based on good science. Otherwise, they expressed no significant concerns.

2117. Te Waka a Māui me Ōna Toka Fisheries Forum (Te Waka a Māui) (TAR 3 & 7): this forum represents the nine iwi of the South Island, each holding mana moana and significant interests (both commercial and non-commercial) in South Island fisheries. The forum supported a review of the TAR 3 and TAR 7 fisheries. As the South Island customary regulations, which require reporting of customary catch, are not yet in place across all of TAR 7, the forum did not support setting a customary allowance for TAR 7 based on reported catch as this does not account for all the harvest.

2118. Te Hiku o te Ika Fisheries Forum in the far North (TAR 1): there was no quorum at the meeting held in May. As a result the information relating to the review of tarakihi was presented but no positions or views were recorded.

2119. Nga Hapu o Te Uru (Waikato/Tainui) (TAR 1) acknowledged the research and evidence supporting the status of tarakihi stock and supported the highest reduction in TACC. The forum expressed support for a species-specific bag limit for tarakihi, however does not support any reduction in customary allowance.

2120. Mai I Ngā Kuri a Whārei ki Tihirau (Bay of Plenty) (TAR 1) noted the need to be sure of science in decision-making, particularly given the potentially substantial impacts of measures being proposed. The Forum also supported a species-specific bag limit for tarakihi.

2.2.2 Other meetings

2121. Before the formal consultation process began, Fisheries New Zealand also undertook preliminary consultation with representatives from the commercial, recreational, and conservation (i.e. environmental non-governmental organisations) sectors.

2122. The conservation and recreational sectors accepted the outcomes of the stock assessment and strongly support significant reductions in fishing pressure to rebuild the tarakihi stock. There was a general view that a species-specific bag limit for tarakihi taken by recreational fishers was appropriate.

2123. Te Ohu Kaimoana was critical of the stock assessment and did not support reductions in the TAC/TACCs.

2124. In general, the commercial fishing industry has questioned the defining of a single east coast biological stock and the robustness of the stock assessment. There is a general view that additional data needs to be collected (e.g. age data) and genetic research conducted to re-evaluate the boundaries of the stock and reduce the uncertainty of the stock assessment.

2125. There was some concern expressed by fishers operating in TAR 1 that there was a sustainability issue with the tarakihi stock that needed to be addressed. This was based on a number of years of declining catch rates. There has been a general declining trend in CPUE since 2004 in both East Northland and the Bay of Plenty (Figure 7).

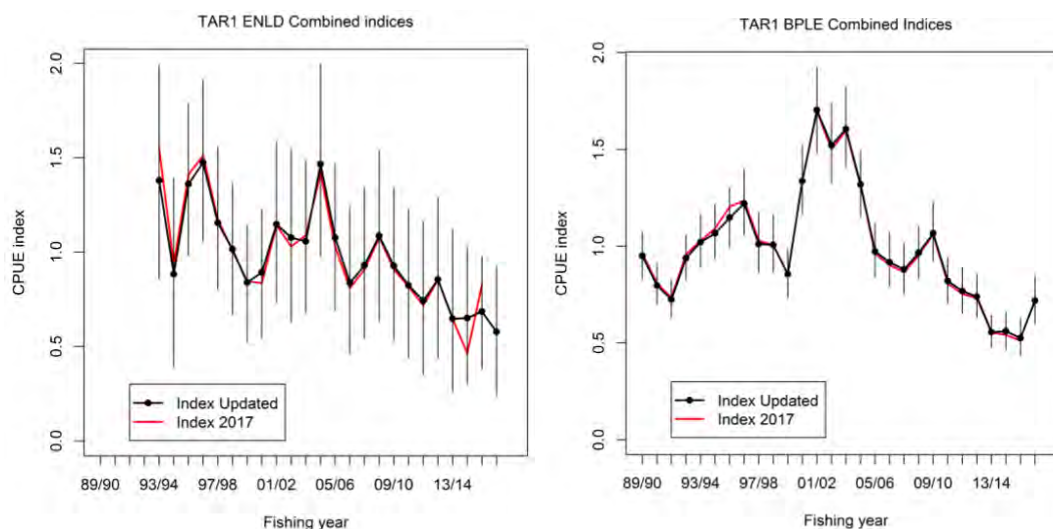


Figure 7: Standardised catch per unit effort (CPUE) for the East Northland and Bay of Plenty areas in TAR 1.

2126. Commercial fishers and quota holders operating, or with business interests, in TAR 2 and 3, referenced the increasing catch rates fishers have been experiencing for the last 4 years. The recent increase in CPUE is likely due to several years of good recruitment in 2007, 2011 and 2012 (Langley 2017,¹⁰ Langley 2018¹¹). Prior to this increase, CPUE had declined significantly from 2001/02 to 2006/07 (Figure 8). The good recruitment in 2011-12 was followed by below average recruitment in 2013 and 2014. Given that the fishery

¹⁰ Langley, A D (2017) Fishery characterisation and Catch-Per-Unit-Effort indices for tarakihi in TAR 1, TAR 2 and TAR 3. *New Zealand Fisheries Assessment Report 2017/44*.

¹¹ Langley, A D (2018) Stock assessment of tarakihi off the east coast of mainland New Zealand. *New Zealand Fisheries Assessment Report 2018/05*.

in TAR 3 is based on 4-5 year old fish, and in TAR 2, 4-7 year old fish, the availability of fish to the fishery is significantly influenced by recruitment events. The positive effect of higher than average recruitment is currently being experienced by the fishery.

2127. The CPUE indices were key inputs (i.e. highly informative) to the stock assessment.

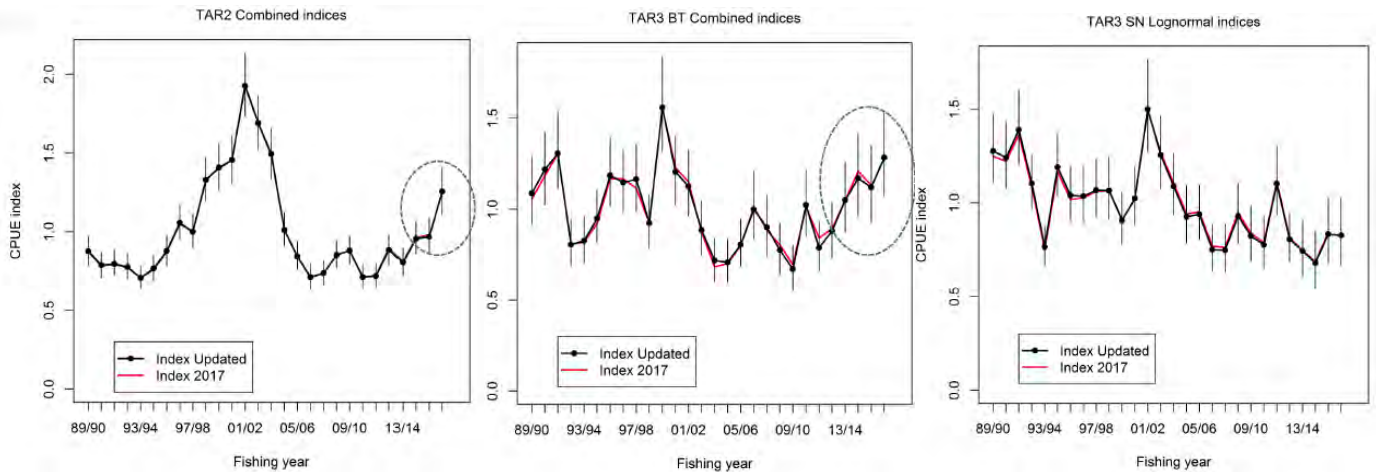


Figure 8. Standardised catch per unit effort (CPUE) for TAR 2 and TAR 3 (bottom trawl and setnet). The CPUE indices were important inputs to the integrated age-structured population model.

2128. Prior to the release of the consultation paper, Fisheries New Zealand received a joint proposal from Fisheries Inshore New Zealand (Fisheries Inshore) and Southern Inshore Fisheries Management Company Ltd (Southern Inshore) that outlined industry's proposed Management Strategy for tarakihi (refer to Appendix 2). The strategy aims to increase the biomass of the east coast tarakihi stock to about 20% SB_0 within 3 years, and supports a research programme that delivers information that the strategy has identified is necessary in order to address the uncertainties associated with the stock assessment model.

2129. It is important to note that the industry proposal involves the shelving of ACE, as an alternative to TACC reductions.

2.3 OPTIONS CONSULTED ON

2130. Fisheries New Zealand used the approach outlined in Table 5 to guide the development of stock specific options (Table 6):

Table 5: Proposed rebuilding options for TAR 1 (east), 2, 3, and 7 (Cook Strait) to 40% SB_0 .

	Option 1	Option 2	Option 3	Fisheries Inshore/ Southern Inshore Proposal
Rebuild rate (years)	10 years, or $2 \times T_{min}$	10 years, or $2 \times T_{min}$	20 years, or $4 \times T_{min}$	Not determined
Catch Reduction	55% reduction in catch; implemented in 2018/19	55% (same as Option 1 but applied over the first 3 consecutive years (i.e. a 3-year phased reduction: 25% year 1; 26% year 2; and 28% year 3.))	35% reduction in catch; implemented in 2018/19	20% reduction in catch; implemented through shelving

Table 6: Proposed management settings (in tonnes) for TAR 1, 2, 3, & 7 from 1 October 2018, with the percentage change relative to the current settings in brackets.

Stock	Option	Total Allowable Catch	Total Allowable Commercial Catch	Allowances		
				Customary Māori	Recreational	All other mortality to the stock caused by fishing
TAR 1 ¹²	Current settings	2029	1447	73	487	22
	Option 1	1221 ↓ (40%)	983 ↓ (32%)	73	110 ↓ (77%)	55 ↑ (250%)
	Option 2 (year 1)	1466 ↓ (28%)	1205 ↓ (17%)			78 ↑ (355%)
	(year 2)	1307 ↓ (36%)	1061 ↓ (27%)	73	110 ↓ (77%)	63 ↑ (286%)
	(year 3)	1181 ↓ (42%)	946 ↓ (35%)			52 ↑ (236%)
	Option 3	1384 ↓ (32%)	1131 ↓ (22%)	73	110 ↓ (77%)	70 ↑ (318%)
TAR 2	Current settings	2082	1796	100	150	36
	Option 1	1017 ↓ (51%)	735 ↓ (59%)	100	73 ↓ (51%)	109 ↑ (303%)
	Option 2 (year 1)	1556 ↓ (25%)	1225 ↓ (32%)			158 ↑ (439%)
	(year 2)	1206 ↓ (42%)	906 ↓ (50%)	100	73 ↓ (51%)	127 ↑ (353%)
	(year 3)	926 ↓ (56%)	652 ↓ (64%)			101 ↑ (281%)
	Option 3	1376 ↓ (34%)	1061 ↓ (41%)	100	73 ↓ (51%)	142 ↑ (394%)
TAR 3	Current settings	1503	1403	15	15	70
	Option 1	725 ↓ (52%)	579 ↓ (59%)	15	3 ↓ (80%)	128 ↑ (183%)
	Option 2 (year 1)	1150 ↓ (23%)	965 ↓ (31%)			167 ↑ (239%)
	(year 2)	873 ↓ (42%)	714 ↓ (49%)	15	3 ↓ (80%)	141 ↑ (201%)
	(year 3)	653 ↓ (57%)	514 ↓ (63%)			121 ↑ (173%)
	Option 3	998 ↓ (34%)	837 ↓ (40%)	15	3 ↓ (80%)	143 ↑ (204%)
TAR 7 ¹³	Current settings	1088	1088	-	-	-
	Option 1	986 ↓ (9%)	952 ↓ (13%)	1	23	10
	Option 2 (year 1)	1067 ↓ (2%)	1026 ↓ (6%)			17
	(year 2)	1014 ↓ (7%)	978 ↓ (10%)	1	23	12
	(year 3)	973 ↓ (11%)	940 ↓ (14%)			9
	Option 3	1041 ↓ (4%)	1002 ↓ (8%)	1	23	15

2131. Due to the boundary of the biological stock not aligning with the boundaries of the QMAs, catch constraints were proposed for areas within TAR 1 and 7. The catch constraints are referred to as area-based catch constraints (Table 7). The ‘East’ catch constraint for TAR

¹² Settings for TAR 1 are for the entire QMA, including the sub-area TAR 1 (east) and the rest of TAR 1.

¹³ Settings for TAR 7 are for the entire QMA, including the sub-area TAR 7 (Cook Strait) and the rest of TAR 7.

1, and the ‘Cook Strait’ catch constraint for TAR 7, are the catch levels from each region that will ensure the rebuild under each option. For example, under Option 1 in TAR 1, the TACC is proposed to be set at 983 tonnes of which a maximum of 333 tonnes can be taken in the East sub-area; if there was no catch in the East sub-area all 983 tonnes could be landed from the western area of TAR 1.

Table 7: Proposed TAR 1 & 7 TACCs and relevant area-based catch constraints in tonnes.

Stock	Area-based catch constraint/TACC	Option 1	Option 2			Option 3
			Year 1	Year 2	Year 3	
TAR 1	East sub-area	333	555	410	296	481
	TACC	983	1205	1061	946	1131
TAR 7	Cook Strait sub-area	111	185	137	99	161
	TACC	952	1026	978	940	1002

2132. Fisheries New Zealand also sought feedback on the proposed tarakihi management strategy provided by Fisheries Inshore New Zealand (Fisheries Inshore) and Southern Inshore Fisheries Management Company Ltd (Southern Inshore) prior to consultation.

2.4 VIEWS OF SUBMITTERS

2.4.1 Submissions received

2133. 101 submissions were received in response to the proposals for management of tarakihi. A list of submitters, and their full submissions, is provided in Appendix 2. Feedback was also received during meetings with tangata whenua and stakeholders prior to and during consultation. Fisheries New Zealand is also aware that over 7000 people signed a petition “Time out for Tarakihi”, discussed later in this section.

2134. The feedback and submissions are divided on the urgency and timeframe for rebuilding the east coast tarakihi stock, and the measures and approach that should be adopted. These views are further summarised below.

2.4.2 Summary of Submissions

2135. While there are a number of complex matters associated with the management of east coast tarakihi, submissions can broadly be characterised as falling within two groups:

- a) Those supporting management intervention now at a level that will support a rebuild to 40% SB_0 in ten years; and
- b) Those supporting a package of measures including voluntary catch reductions, research and catch spreading, intended to increase the stock to circa 20% SB_0 by 2020/21, at which point an updated assessment could inform a further review of management.

2136. Five submissions were also received specific to commercial fishing in TAR 1 and are summarised separately, as are some other key themes (the recreational daily bag limit, deemed values and environmental effects of trawling).

2137. The majority of submitters identifying an environmental or recreational interest in the management of fishing supported a rebuild that aligns with the most direct application of the Fisheries New Zealand Harvest Strategy Standard; a rebuild plan with a management target of 40% SB₀ to be achieved in ten years.
2138. The New Zealand Sport Fishing Council, the New Zealand Anglers & Casting Association, Zone 5 New Zealand Sport Fishing Council, LegaSea Hawke Bay, and Forest & Bird all proposed that a 65% reduction in catch would achieve the rebuild plan with a more acceptable level of certainty.
2139. The New Zealand Sport Fishing Council and the New Zealand Anglers & Casting Association note specifically that they do not support Fisheries New Zealand's options, because of the reduced certainty of reaching the target. The New Zealand Sport Fishing Council and the New Zealand Anglers & Casting Association specifically asks you to note their view, that the short-term cost of rebuilding the eastern tarakihi stock is outweighed by the long-term benefits of having well managed fish stocks thriving in a healthy marine ecosystem. The New Zealand Sport Fishing Council and the New Zealand Anglers & Casting Association also submit that proportional reductions to TACCs should be based on recent catch within the TACC; this includes the reduction applying to TAR 7.
2140. Fisheries New Zealand is aware that LegaSea will be providing you information about their public outreach, "Time out for Tarakihi", in September. In mid-August Fisheries New Zealand requested an interim update and were advised:
- LegaSea initiated the Time Out for Tarakihi petition in mid-July 2018, to raise public awareness of the tarakihi management review and facilitate public participation. In less than a month over 7000 individuals had signed the petition and the campaign video had sparked some lively online discussion. Final results of the petition will be delivered to the Minister in September.*
- In the actual petition people were asked to support the statement, "I want the Minister of Fisheries to make a bold decision by October 2018 to reduce the environmental impacts of trawling and rebuild our tarakihi stocks within 10 years, or less."*
2141. The Environmental Defence Society supported Option 1 of the consultation paper, and emphasised the importance of a TAC reduction as opposed to voluntary "shelving", to provide the public and other stakeholders with certainty.
2142. Nga Hapu o te Uru Fisheries Forum also support Option 1.
2143. Spearfishing New Zealand stated the importance of tarakihi for spear fishing and supported the target and timeframe for rebuild, but supported Option 2 to allow the fishing industry more opportunity to transition to the new catch levels. Ngati Whatua Fisheries Limited, who holds quota in TAR 1, also submitted support for Option 2.
2144. The Marlborough Recreational Fishers Association, Peter Chapman, Rod Littlefield and Tony Orman all supported reductions to commercial catch, but did not specify an option.

2145. Nga Tirairaka o Ngati Hine Environmental Organisation and Te Runanga o Ngati Hine support tangata whenua of the respective regions relevant to TAR 1, 2, 3, and 7 and their choices. Their understanding of tangata whenua preference is a decrease in TACC with no change to customary or recreational take, however if certain iwi or hapū have indicated otherwise, Ngāti Hine supports their choice.

2146. A number of the submitters who support the rebuild to 40% SB_0 in ten years also commented on commercial fishing methods and the recreational daily bag limit. The submissions on these topics are summarised in the other management controls section of this advice.

Initiate strategy to increase the stock to 20% SB_0 by 2020/21, at which point an updated assessment could inform a review

2147. The Fisheries Inshore New Zealand, Southern Inshore and Te Ohu Kaimoana submission characterises the information from the stock assessment as indicating that the biomass of the east coast tarakihi stock is reasonably stable, with a moderate declining trend over the last forty years. The submission notes that if no immediate action was taken the stock is projected to decrease from approximately 17% SB_0 to 15.5% SB_0 in the next two years.

2148. Fisheries Inshore New Zealand, Southern Inshore and Te Ohu Kaimoana don't support a ten-year rebuild to 40% SB_0 at this time, because they are concerned that the information available is not robust enough to inform intervention of the proposed scale and the potential social, cultural and economic impact. In particular, concerns are raised that:

- a) The proposed proxy for B_{MSY} of 40% SB_0 has not been evaluated specifically for tarakihi; and
- b) The error bars surrounding the biomass projections are relatively wide and the utility of these projections in guiding future management is being over-emphasised by Fisheries New Zealand.

2149. The combined Fisheries Inshore New Zealand, Southern Inshore and Te Ohu Kaimoana submission asserts that the Fisheries New Zealand proposals lack sophistication and inadequately address the complexities associated with managing tarakihi. They have put forward a plan for the next three years with a primary focus on gathering information, supported by voluntary catch reductions of approximately 20% (split differently across management areas) which could be revisited when more robust information is available.

2150. The combined Fisheries Inshore New Zealand, Southern Inshore and Te Ohu Kaimoana submission notes that tarakihi is “the economic backbone of the many inshore vessels’ annual catch plan” and reductions to commercial catch of the magnitude described in Option 1 and Option 2 will mean significant reductions in the fleet and potential displacement of effort to other fisheries. However, it is noted that most nearby fisheries are already constrained by current management settings.

2151. This position, and the associated Tarakihi Strategy circulated during consultation, has been supported by a number of submitters including Sealord, Te Ohu o Rangitaane te Ika Maui Trust, the Kahungunu Asset Holding Company, the Iwi Collective Partnership, Foodstuffs, and Our Fishing Future, as outlined below.

2152. Key differences between the version of the strategy circulated during consultation and the updated version submitted during consultation include:

- a) A broadening of the commitment to establish voluntary closures in areas important to juvenile fish to a wider commitment to improving selectivity;
- b) More details on the difference in levels of voluntary reduction between the four quota management areas, with the lowest relative level of reduction from catches to occur in TAR 2 and highest in the eastern part of TAR 1; and
- c) Details were also provided about plans to use the service provider FishServe to support the implementation of catch spreading and shelving of Annual Catch Entitlement (ACE).

Te Ohu Kaimoana

2153. In Te Ohu Kaimoana's individual submission they describe the combined strategy as being one of reduce-research-reassess.

2154. Te Ohu Kaimoana, overall, supports the strategy developed by iwi and industry (Industry's proposal), on behalf of all Iwi with Settlement interests in TAR 1, 2, 3 and 7. Because of this, Te Ohu Kaimoana support shelving as a legitimate management tool, and catch spreading between the east and west coast ACE of TAR 1 and 7.

2155. Te Ohu Kaimoana believes that a management target for stock management is a matter for people to decide in accordance with the definition of utilisation under the Act, rather than using a default target set by Fisheries New Zealand at 40%, as this does not identify economic and ecological drivers behind this choice of a target level. They therefore support industry conducting a Management Strategy Evaluation (MSE) that will calculate the optimum biomass target.

2156. Te Ohu Kaimoana has emphasised the need for further genetic work on the east coast tarakihi fisheries to investigate stock boundary hypotheses further. They claim that the assessment is heavily reliant on trends in CPUE; therefore any significant change to the industry may compromise the capacity to collect further information to inform fisheries management (i.e. compromise the CPUE analysis). That industry have been working on gear to ensure greater selectivity. Te Ohu Kaimoana state that industry will identify areas where juvenile tarakihi are present to protect them. Te Ohu Kaimoana note that they would be willing to work with Fisheries New Zealand/you regarding finer scale management of tarakihi on the east coast; however they note that their preliminary analysis indicates that it would not benefit stock recovery but could result in significant additional cost.

2157. Te Ohu Kaimoana notes that any significant TACC reductions will have adverse economic effects on industry that would likely result in reductions in the fleet, or redeployment of that effort. Given the science underpinning the east coast TAR assessment, Te Ohu Kaimoana also wishes to choose management strategies that will not invoke 28N rights while a more permanent solution is being developed.

Other submissions in support

2158. Sealord states that they support the tarakihi management strategy 2018-2021 as prepared by Industry. Sealord believes this option provides management and research measures to assist the recovery of the eastern tarakihi fish stocks.
2159. John Maurice Takarangi, on behalf of Te Ohu Tiaki o Rangitaane Te Ika a Maui Trust and Rangitaane Te Ika a Maui Limited, submitted that on behalf of their MIO and ACE Holding Company, that they support the Industry proposal.
2160. The Kahungunu Asset Holding Company's 100% shareholder is Ngāti Kahungunu Iwi Incorporated, the Mandated Iwi Organisation (MIO) for Ngāti Kahungunu. Ngāti Kahungunu Iwi Incorporated holds the mana for the tribal rohe from Paritu north of Wairoa, to Turakirae in the south Wairarapa.
2161. The Kahungunu Asset Holding Company rejects the proposed options for TAR 2, as they believe they will cause a significant socio-economic impact on Ngāti Kahungunu and will cause significant disruption to their commercial fishing interests. Ngāti Kahungunu contests the use of the virgin biomass standard as an acceptable target, given no international research corroborates this as an acceptable standard.
2162. The Kahungunu Asset Holding Company supports the Industry submission relating to the voluntary shelving of Kahungunu ACE, and has filed documentation with FishServe to shelve 15 238 kg of TAR 2 ACE held by the Company. Ngāti Kahungunu has criteria in place which requires those who lease Kahungunu Inshore ACE to use suitable trawl innovation measures which contribute to the release of non-target juvenile fish.
2163. Lastly, the Kahungunu Asset Holding Company does not support the deemed value increases associated with TAR 2, as they believe there is a lack of available science to corroborate the need for significant cuts to the TACC in TAR 2. The Company supports the approach of Industry, which provides the opportunity for industry-led management measures to rebuild the TAR 2 fishery without the need to change the TACC.
2164. The Iwi Collective Partnership supports the Fisheries Inshore/ Southern Inshore/ Te Ohu Kaimoana joint proposal, which was developed in consultation with the Partnership and its Iwi Members. The Iwi Collective Partnership is a fisheries seafood collective of 15 North Island based Iwi Members who are owners of Settlement Quota allocated under the Fisheries Treaty Settlement. The Iwi Collective Partnership agrees that the stock needs to be increased from its current state, but does not support the use of the 40% SB_0 target on which the Fisheries New Zealand options are based. On this basis, all of the Fisheries New options are rejected by the Iwi Collective Partnership. There is agreement among members to a multi-year (for at least the first 3 years) reduction, even though the mechanics mean quota owners would need to formally agree to do this every year. Consideration is also being given to differential catch reductions among the various stocks, with likely the highest reduction in TAR 1 East and the least in TAR 2.
2165. Foodstuffs North Island Limited is a New Zealand owned and operated grocery distributor in New Zealand. They have a strong seafood business, specialising in fresh New Zealand seafood. They cover PAK'n'SAVE, New World, Four Square, and Gilmour's brands, and have been quota owners since 2001. They state that customer demand for tarakihi has proven it to be their number one fresh fish product, with customers consuming 950 tonnes per year across all outlets. Tarakihi makes up nearly

20% of their total fish supply, and they note that because of lower supply volumes in other fish species, it would be extremely difficult for them to transition customers away from tarakihi.

2166. Overall Foodstuffs North Island support the Industry proposal, as it is a measured approach and will not turn customers off buying fresh fish for when the stock levels build back and TACC increases again, compared to other options which will result in major loss of sales as customers move to other proteins, job losses in stores, factories, and on vessels. Their key request is that the TACC is reduced steadily to allow transition to other species, to prevent long-term damage to the New Zealand market and industry.
2167. Our Fishing Future is an incorporated society whose purpose is to promote responsible management of New Zealand's recreational fisheries. They believe decreasing TACCs may potentially undermine the treaty settlement. They believe the Fisheries New Zealand approach is blunt, and may result in poor fishing practices such as dumping and trucking. Our Fishing Future ultimately wants a finer scale management solution. Our Fishing Future support the Industry proposal, with a caveat that they have reservations regarding the voluntary nature of some of Industry's measures, and that if it fails, tougher and more appropriate measures than those currently proposed by Fisheries New Zealand will be implemented in the future.

Submission in opposition

2168. Spearfishing New Zealand oppose the industry proposal, as they believe we as Fisheries New Zealand are using the proper adjustment procedure as in the Act, which they prefer. They believe shelving is not appropriate here, considering the correct TACC measures are being proposed, and that the stock has been below the soft limit since the early 2000s and the industry is only now suggesting shelving. They note that the industry proposal does not comply with the Harvest Strategy Standard, because it does not set a plan and timeframe for reaching the 40% target biomass, and that industry waiting on more refined information is inconsistent with section 10 of the Act, which warns against such reasoning in subsection (d) and requires information to be made based on information presently available.

2.4.3 Submissions specific to TAR 1

2169. Five submissions were received from commercial fishers who operate in TAR 1 and sought only to comment on this part of the tarakihi fishery.
2170. Andrew Turnwald states that tarakihi stocks have been taking a lot more pressure in the last decade from rapidly improving technology in fish finding and position, better weather forecasting, and better vessels and marketing. He states that large licensed fish receivers (LFRs) are now demanding a higher percentage of mixed species to snapper ratio in order that the fisher maintains, at least, his snapper package. Snapper is caught mainly during daytime operations, so tarakihi operations being traditionally at night complements this.
2171. Phil Clow submitted on behalf of the Whitianga and Coromandel Peninsula Commercial Fishermen's Association and his own views. This association currently has 35 members. The Association noted that most of their members that catch tarakihi mainly fish in the Bay of Plenty or East Northland, and agree that there needs to be a TACC cut in these areas.

2172. Southern Cross Fishing is a family-run commercial fishing business, operating in FMA 1, targeting inshore species with longline catching 200-300 tonnes of wet fish per annum. Southern Cross supports more stock assessments for inshore species overall and considers that for TAR 1, more science is needed before decisions are made, especially assuming that fish are said to originate from TAR 3. Southern Cross believes TAR 1 east is in definite need of a reduction, but as they have no experience in TAR 2 or 3, feel they are unqualified to comment on the sustainability of these stocks. In the last 10 years they have noticed a significant decrease in a catch of TAR 1, with a massive increase in effort. Overall, Southern Cross supports a reduction in TACC for TAR 1 east, but strongly advocates for more scientific research before final decisions are made on other areas.
2173. Stephen Lines is the owner of Lines Fishing Ltd, and skippers the FV Da Vinci in Auckland. He operates in TAR 1, and is a Danish seiner working in the Hauraki Gulf whose main species is SNA 1. Stephen is concerned that the TAR 1 cuts proposed will have a major impact on the SNA 1 fishery, as vessels that have been catching TAR 1 will move inshore to the SNA 1 fishery. If this happens, it could mean three of his staff will be out of work, and it is not only his business that may be affected. He is also concerned about the larger vessels moving inshore because of these changes. Mr Lines states he has been trying to work on a better perception of his fishing methods with the public, and that the public seeing these larger boats in close will be detrimental to public perception.
2174. Ben Turner is a commercial fisherman in TAR 1. He does not support industry's proposal because he feels it affects TAR 1 too strongly compared to the other areas. Additionally, he believes the industry proposal may not do enough to protect the stock, and as he catches mostly in TAR 1 west, that it would disadvantage him more. He does not have a preferred Fisheries New Zealand proposal, and acknowledges that they all have advantages and disadvantages. He supports the cutting back of recreational catch. Mr Turner states that 95% of what he catches is King tarakihi, and asks why he is receiving a cut.

Research

2175. The combined Fisheries Inshore New Zealand, Southern Inshore and Te Ohu Kaimoana submission included a number of research projects that are or should be undertaken to support development of a management strategy. The submission also notes that significant changes to catch limits could undermine the ability to track abundance of the fishery using commercial catch trends, which will be influenced by management rather than fisheries abundance.
2176. The New Zealand Sport Fishing Council and the New Zealand Anglers & Casting Association submitted that you should direct research to concurrently collect high quality catch at age data from all tarakihi stocks.
2177. Whitianga and Coromandel Peninsula Commercial Fishermen's Association submitted support for East Coast North Island inshore trawl surveys.
- 2.4.4 Input and participation of tangata whenua
2178. Further engagement with tangata whenua was conducted during the consultation process.
2179. The formal consultation documents were presented in person to Te Hiku o Te Ika Fisheries Forum and Ngā Hapu o Te Uru Fisheries Forum for discussion, and these groups

were able to put forward their views on the proposals, and were also encouraged to make their own submissions.

2180. Nga Hapu o Te Uru had two key concerns after discussions during the consultation process. Their first concern was regarding localised depletion, and how Fisheries New Zealand was going to control where commercial fishing would occur if TACCs were decreased as proposed. Nga Hapu o Te Uru represent multiple coastal hapū ranging from between Te Puaha ki Manuka and Waipingao situated on the west coast of the North Island, and are therefore concerned about harbours in their rohe being targeted. Nga Hapu o Te Uru's second issue was regarding industry proposals being included with Fisheries New Zealand's consultation package. As a customary-focused forum, they believe that Industry papers being included in a consultation document is not appropriate. Overall, Nga Hapu o Te Uru still have the same view as during preliminary consultation, which is support the highest reduction in TACC, a species-specific bag limit for tarakihi, and no reduction in customary allowance.

2181. The Te Hiku o Te Ika hui during the consultation period was attended by representatives from three groups: Te Runanga o Te Rarawa, Te Runanganui o Te Aupouri, and Te Runanga o Whaingaroa. They made no specific comment regarding tarakihi, stating that they would provide additional comments in submissions as they required. Their concern was regarding customary rights. They want to ensure that their rights as tangata whenua are upheld, through the changes that may occur.

2182. In addition, iwi and hapu from the mid-Northland were met with in person. This included Ngati Hine, Te Uri o Hau, Ngati Wai, and Ngati Whatua. A representative from Te Ohu Kaimoana was also present. Because of the nature of this meeting and that these groups are not aligned in a forum, a consensus was not sought. However, the representatives were encouraged to discuss the information presented with their people and to place submissions.

2.4.5 Kaitiakitanga

2183. Under Section 12(1)(b), you must also have particular regard to kaitiakitanga before setting or varying any sustainability measure. Under the Act, kaitiakitanga is 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.

2184. Relevant Iwi or Forum Fish Plans provide a view of the objectives and outcomes iwi seek from the management of the tarakihi fishery, and can provide an indication of how iwi exercise kaitiakitanga over fisheries resources. Iwi views from Forum meetings and submissions received from iwi can also provide an indication.

2185. Tarakihi (tiki) is identified as a taonga species for Te Waka a Māui me Ōna Toka, Mai I Ngā Kuri a Whārei ki Tihirau, Nga Hapu o Te Uru, and Te Hiku o te Ika.

2186. Te Waka a Māui me Ōna Toka Iwi Fisheries Plan contains objectives to support and provide for the interests of South Island iwi. The Forum Fisheries Plan contains three objectives which are relevant to the management options proposed for TAR 3 and TAR 7:

- a) Management objective 1: to create thriving customary non-commercial fisheries that support the cultural wellbeing of South Island iwi and our whānau;

- b) Management objective 3: 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; and
- c) Management objective 5: to restore, maintain and enhance the mauri and wairua of fisheries throughout the South Island.

2187. The Mai I Ngā Kuri a Whārei ki Tihirau Iwi Fisheries Plan contains three objectives which are relevant to the management options proposed for tarakihi (i.e. in TAR 1):

- a) Management objective 1: Iwi fisheries management activities support the growth and wellbeing of our people;
- b) Iwi are actively engaged with others to increase their potential within environmental limits; and
- c) The fisheries environment is healthy and supports a sustainable fishery.

2188. The Nga Hapu o Te Uru o Tainui Iwi Fisheries Plan contains objectives to support and provide for the interests of iwi. The management options proposed for tarakihi support and help deliver the fisheries plan's vision to 'preserve, sustain and enhance the fisheries me ona tikanga', and deliver a key outcome/objective which is to ensure that the 'Fishery and its environment is healthy and sustainable'.

2189. Te Hiku o te Ika Iwi Fisheries Plan contains objectives to support and provide for the interests of iwi in the far north. The management options proposed for tarakihi support and help deliver the fisheries plan's objectives.

2190. Fisheries New Zealand considers that the management options presented in this advice paper will contribute towards the achievement of the objectives of the iwi fisheries forums in ensuring that appropriate allowances are made for customary non-commercial fishing, the fishery remains sustainable, and that environmental impacts are minimised.

2191. Fisheries New Zealand considers that the rebuild options presented in this advice paper will contribute towards maintaining kaitiakitanga for Te Waka a Māui me Ōna Toka, Te Hiku o te Ika, Nga Hapu o Te Uru o Tainui, and Mai I Ngā Kuri a Whārei ki Tihirau.

2.5 SETTING AND VARYING THE TAC

2192. This section discusses statutory considerations in relation to TAC setting and variation, a discussion of the key components – target, timeframe, and relevant biological, social, cultural and economic factors, and an evaluation of the options.

2.5.1 Statutory considerations

2193. The purpose of the Act is to provide for the utilisation of fisheries resources while ensuring sustainability. When exercising powers under the Act, including setting or varying sustainability measures such as the TAC, you are required to take into account or have regard to certain matters set out below.

Section 9, 10, and 11 considerations

2194. Section 9 of the Act prescribes three environmental principles that you must take into account when exercising your powers under the Act: that associated or dependent species should be maintained above a level that ensures their long-term viability; that biological diversity of the aquatic environment should be maintained; and that habitat of particular significance for fisheries management should be protected.
2195. Fisheries New Zealand considers that all proposals to reduce catch and catch limits for TAR 1, 2, 3 and 7 adequately address s 9 of the Act. Reduced catch limits are likely to reduce fishing effort and trawl footprint, and so reduce impacts on benthic habitats and communities. The significant levels of catch reduction under Options 1 and 2 combined with the existing spatial closures in place to protect sensitive habitats such as bryozoan beds and sponge-dominated fauna (Tasman Bays and far Northland – north of Spirits Bay), will provide for increased protection to benthic habitats in general. Furthermore, a significant benefit of rebuilding the stock will be higher Catch per Unit Effort (CPUE), which effectively means less trawling effort (less benthic impacts) to take the TACC and lower emissions. However, there are unknown impacts in respect to how effort may be displaced into other fisheries and this would require ongoing monitoring.
2196. Section 10 requires that when exercising power under the Act you take into account the information principles, including that you consider any uncertainties in the available information. Specific areas of uncertainty are noted in the options and evaluation sections below so that you can consider the weight to give those matters in your decision making.
2197. Section 11 says that you may set or vary any sustainability measures after taking into account various matters (see section 1.6 in *Part 2: Statutory Considerations* for details). Section 11(1)(a) requires that you take into account any effects of fishing on the stock and aquatic environment. The previous effects of fishing have included the reduction of stock biomass to below the B_{MSY} level, which is a primary reason for the measures proposed. Given that tarakihi are taken mostly by trawling, it is possible that fishing has impacted the benthic environment in heavily fished areas. However, the proposed measures seek to reduce catch and effort and hence are likely to reduce environmental impacts.
2198. In addition, s 11(1)(b) requires you to take into account any existing controls that apply to tarakihi stocks. The current controls are summarised in Table 4, and are supported by a range of other measures, including net mesh restrictions, area closures to protect Hector's dolphins (specifically in TAR 3) from set nets, a minimum legal size of 25 mm fork length, and a recreational daily bag limit of a maximum of 20 tarakihi as part of the combined species limit.
2199. Section 11(1)(c) relates to the natural variability of the stock. Tarakihi is a relatively long-lived species, meaning that several age classes are present in the population. Tarakihi are not considered to have high natural variability, but there is evidence of increases in CPUE likely related to episodes of stronger than average recruitment.
2200. Sections 11(2)(a) and (b) require you have regard to take the 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 applies to the coastal marine area and that you consider relevant.

2201. Fisheries New Zealand notes that the Marlborough District Council has included in its coastal plan measures to exclude trawling and dredging from specified areas within the Marlborough Sounds, which is within TAR 7. Similarly, the Bay of Plenty Regional Council has included measures to exclude some types of fishing from inshore areas in the Bay of Plenty, which includes TAR 1. Given that these measures are generally outside the areas where tarakihi are targeted, Fisheries New Zealand does not consider these measures to affect your decisions.
2202. Section 11(2)(c) requires that you have regard to any provisions of the Hauraki Gulf Marine Park Act 2000. While the boundaries of the park intersect with TAR 1, there is little fishing for tarakihi within the park area. Fisheries New Zealand considers that the proposals to rebuild the biomass of the eastern tarakihi stocks is consistent with the objectives of the Hauraki Gulf Marine Park Act.

Section 13 considerations

2203. Tarakihi is managed under Section 13 of the Fisheries Act 1996 (the Act). Section 13(4) says you may from time to time vary any TAC and when considering any variation you are to have regard to the matters specified in subsections (2), (2A) if applicable, and (3). Section 13(2) of the Act (and in particular s 13 (2)(b)) is the appropriate subsection for you to have regard to for eastern TAR stocks because a reliable estimate of the current biomass of the stock is known and the level of biomass that can produce the maximum sustainable yield (MSY) are known. Section 13(2b) of the Act specifies your obligations in setting the total allowable catch (see section 1.8 in *Part 2: Statutory Considerations* for details). Furthermore, in considering the way and rate at which a stock is moved towards or above a level that can produce the maximum sustainable yield (MSY), regard should be given to relevant social, cultural and economic factors (s13(3) of the Act).

2.5.2 Setting a rebuild target

2204. The Harvest Strategy Standard provides guidance on managing, monitoring and rebuilding depleted stocks. For low productivity species such as tarakihi, the proxy for the biomass that produces the maximum sustainable yield is 40% of unfished levels (40% SB_0). Submitters from the recreational sector and environmental sector generally supported using this as the management target.
2205. Fisheries Inshore/ Southern Inshore/Te Ohu Kaimoana do not support the use of the Harvest Strategy Standard guideline for a low productivity stock and instead recommend that a Management Strategy Evaluation be undertaken to determine the B_{MSY} specific for the eastern tarakihi stock which can be used to inform the setting of a target.
2206. Fisheries New Zealand advises that the 40% SB_0 in the Harvest Strategy Standard is based on the results of many stock assessments and management strategy evaluations that have been done for finfish stocks globally, that vary from low-medium-high productivity. 40% SB_0 is a typical target for the biomass that supports the maximum sustainable yield in low productivity stocks, and tarakihi is in this low productivity category based on its biology. The MSE is unlikely to produce markedly different results; in fact the appropriate target may be greater than 40% SB_0 . An MSE conducted with similar objectives for SNA 1,

which has a productivity level similar to tarakihi, resulted in an estimate of B_{MSY} of 43.3% based on the average of 54 feasible scenarios.¹⁴

2207. Fisheries New Zealand considers that the current status of 17% SB_0 suggests meaningful rebuilding efforts are needed and should therefore begin as soon as possible, although the specific target could be refined over time as new information becomes available.

2.5.3 Way and rate

2208. The Act identifies the need to consider the timeframe and approach for rebuilding the stock to its management target, and includes a number of factors to be taken into account, including:

Biological characteristics of the stock and any relevant environmental conditions.

2209. Tarakihi are long-lived, reaching a maximum age of 40+ years, but grow relatively rapidly in their first eight years. This means there is potential, from a biological perspective, to rebuild the stock in a shorter timeframe than the stocks mentioned above. Projections suggest the east coast tarakihi stock could reach 40% SB_0 within five years in the absence of fishing, which suggests a rebuild period of up to ten years if the default approach in the Harvest Strategy Standard were to be applied.

The way and rate to rebuild, having regard to the social, cultural and economic factors you consider relevant.

2210. There are costs and benefits associated with rebuilding the tarakihi stock. Fisheries New Zealand expects that restoring the east coast tarakihi stock will bring the following benefits:

- a) Increase the resilience of tarakihi to years of poor or below average recruitment and to the negative effects of climate change;
- b) Improve catch rates in the long term, which will reduce the costs of fishing for the commercial sector;
- c) Result in tarakihi becoming more widespread in key commercial fishing grounds and areas accessible to customary and recreational fishers; and
- d) Reduce environmental impacts associated with fishing.

2211. We note in particular the improved resilience to environmental impacts and periods of poor recruitment that would come from a rebuilding and rebuilt stock. The projections of changes in biomass as a result of the options outlined in this paper rely on assumptions about recruitment, which are uncertain. As noted, future recruitment depends on a variety of factors, each of which have considerable variability. If recruitment is worse than average, then the projections may underestimate the decline in the stock. Given that the stock is at low levels currently, this creates risk of the stock declining significantly to more concerning levels of abundance.

2212. However, there are varying costs associated with the way and rate of rebuild. All of the commercial submitters, Foodstuffs Limited and Spear Fishing New Zealand noted concerns about the socio-economic impacts of the large reductions in catch consulted on. Tarakihi (tiki) is an important species for commercial and recreational fishers, and a

¹⁴ Francis, C. 2012. Snapper harvest strategy simulations. Unpublished report available from Fisheries New Zealand.

taonga for tangata whenua. It is the third most important commercial inshore finfish species and one of the top 5 recreational finfish. Approximately 90% of the total catch is sold on the domestic market, with a current estimated value of \$191 million (annual maximum total consumer spend based on retail price per kg and volume of catch; BERL 2018, Appendix 1).

2213. As a result, all of the proposed options are likely to have significant impacts on the commercial fishing industry and affiliated support industries. The larger reductions (e.g. Option 1, the most rapid rebuild), are likely to have the greatest immediate socio-economic impact compared to a phased or protracted rebuild. However, the benefits of a rebuilt stock will also be realised the soonest.

2214. Tarakihi is taken as a target and as a bycatch in a number of fisheries. Therefore any significant decrease in the TAC and TACC for tarakihi may have impacts on other bycatch and target species. Industry has raised concerns about the risk of tarakihi becoming a choke species; i.e. there may be a risk of the catch of other co-caught species being constrained due to the reduction in the tarakihi TACC, increasing the overall economic impact on the fishing industry.

2215. In TAR 1, tarakihi is landed in the snapper, John dory, and gemfish targeted bottom trawl fisheries. In TAR 3, tarakihi is taken in the trawl fisheries targeting barracouta, red cod, and flatfish. In TAR 2, about 84% of the catch is taken in the tarakihi target trawl fishery. Any reduction in TAR 2 TAC and TACC is going to significantly impact the availability of ACE and potentially increase fishing effort on other inshore finfish species such as red gurnard, snapper and trevally, although this will also be influenced by the availability of ACE for those species.

2216. There is also a risk that significant reductions in tarakihi ACE may lead to increased illegal discarding of tarakihi, whilst fishers continue to target the other species. However, given that tarakihi is a target fishery, there is capacity in some areas for industry to shift from those fishing grounds to areas where other species such as gurnard and trevally can be caught. It is a legislative requirement that all QMS species caught are landed and accounted for with ACE; or a deemed value cost will be incurred.

2217. Further discussion of economic impacts of options are provided under the discussion of allocations, later in this paper.

2.5.4 Revised options for your consideration

2218. After consideration of the best available information, views of submitters and the information on target and way and rate noted above, Fisheries New Zealand proposes the options outlined in table 8 for your consideration

2219. Fisheries New Zealand considers that, given the status of the stock, you are obliged to reduce current catches. The key element of your decision is around the way and rate of rebuild.

2220. You have a range of options to reduce the TAC for the East Coast tarakihi stock. The options range from a 20% to a 55% reduction. All of the options could be implemented in either one year (2018/19) or, in the case of Options 1 and 2, phased in over a number of years. In the case of a multi-year phased approach, separate decisions on the TAC, allowances, and TACC would need to be made prior to the start of each fishing year for

each year of the phased approach. In general terms, the larger the reduction in catch, the quicker the stock will rebuild to the target level, but the higher the initial socio-economic impact.

Table 8. The final 3 options for consideration. * The TAC reductions proposed in Option 1 or 2 may be phased in over a 3-year period i.e. for Option 1: 30% year 1; 15% year 2; and 10% in year 3.

	Option 1		Option 2		Option 3	
Rebuild timeframe	10 years, or $2 \cdot T_{\min}$		20 years, or $4 \cdot T_{\min}$		To be determined in further review 2021	
Catch Reduction	55% reduction in catch		35% reduction in catch		20% reduction in catch	
	Current total TACC	New total TACC	Current total TACC	New total TACC	Current total TACC	New total TACC
	5734	3249	5734	4031	5734	4616
Implementation	Option to implement in stages, with a minimum of 25% in first year eg 25% year one, further 10% year two				Industry has sought to implement through a voluntary agreement (shelving ACE)	

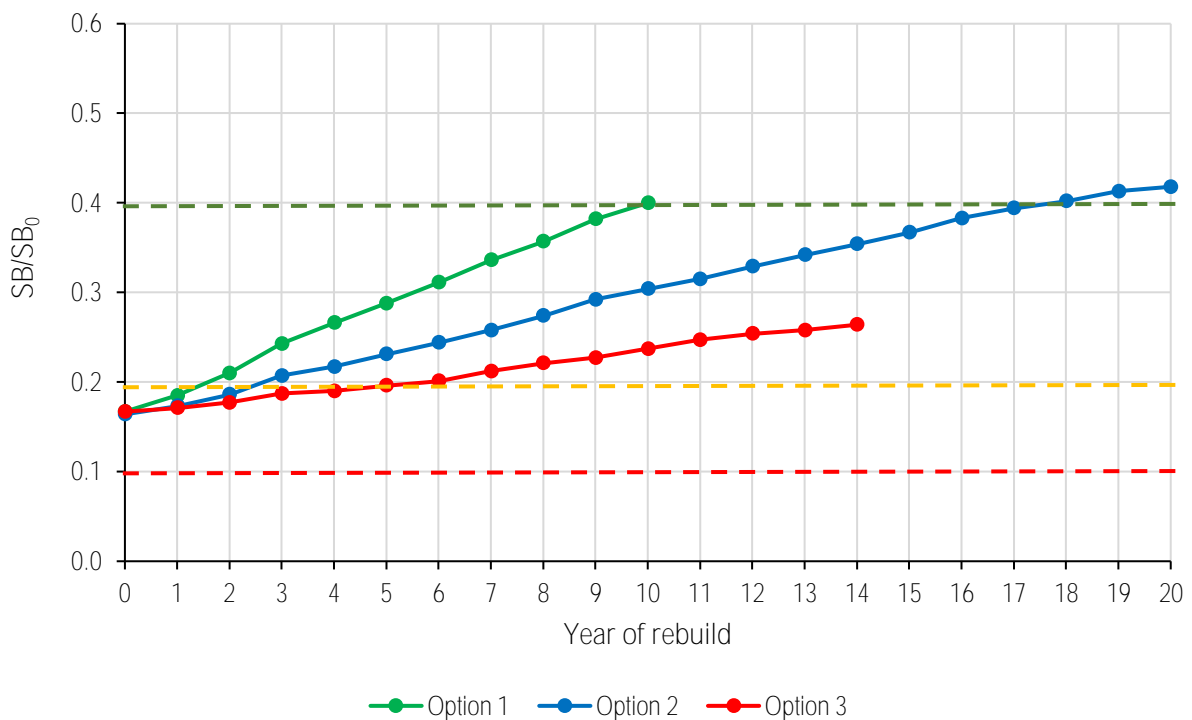


Figure 9: A comparison of the rate at which the options are projected to rebuild the stock. The ratio of spawning biomass (in any given year) to unfished biomass is projected over 20 years. Options 1 and 2 (Fisheries New Zealand) aim to rebuild the stock to target (40% SB_0 target reference point; green dashed line) with 50% probability. Orange dashed line is the 20% SB_0 soft limit reference point. Red dashed line is the 10% SB_0 hard limit reference point.

2.5.5 Evaluation of options

2221. Environmental submitters generally supported Option 1. Some recreational submitters also supported option one. Those in support of Option 1 considered that the fishery was significantly depleted and should be rebuilt as quickly as possible (in some cases, faster than the options consulted on, as outlined below). These groups considered there were significant benefits in a rebuilt stock and that you should carefully consider those relative to socio-economic cost.
2222. One recreational submitter supported option three. Fisheries Inshore, Southern Inshore, Te Ohu Kaimoana and Foodstuff limited supported option three (with shelving). The groups that supported option three were concerned about uncertainty in the assessment information and, in that context, the very significant socio-economic impact that would come from the large catch reductions proposed. They proposed an alternative package of measures linked to shelving of commercial catch, and targeted information gathering to improve our understanding of the stock relationships between QMAs and stock status overall.
2223. Fisheries New Zealand note that the stock assessment, on which proposed management options are based, was reviewed and accepted by the Fisheries New Zealand Science Working Group and the Fisheries Assessment Plenary¹⁵. Importantly, the stock assessment was given a 'high quality' ranking of 1 by the Fisheries Assessment Plenary.
2224. There are some uncertainties around the stock structure and other assumptions in the assessment model. However, the uncertainty is unlikely to have a significant effect on the assessment outcome. More importantly, Fisheries New Zealand notes that uncertainty can go in both directions; i.e. stock status is equally as likely to be worse than what the assessment indicates, as it is to be better. There is a greater level of uncertainty associated with the forward projections of biomass because future recruitment levels are uncertain.
2225. Fisheries New Zealand notes that while the stock is well below the target level, the decline in biomass is gradual. The stock is projected to decline to 15% SB_0 in the next three years under current catches. Further, the socio economic impacts of options to rebuild the stock over short time periods, like that suggested by the Harvest Strategy Standard, will be significant for the inshore trawl fishery.
2226. In this context, Fisheries New Zealand considers that you could give more weight to the level of socio-economic impact relative to current stock status in deciding on the appropriate balance between sustainability and use, and the way and rate of rebuild.
2227. The option to reduce the catch by 20% would have the least socio-economic impact, but would only result in a slow rebuild of the stock (it would remain below 20% SB_0 by 2021). This reduction would not rebuild the stock within the timeframe modelled (20 years). Fisheries New Zealand considers that this option should be seen as the first step in moving the TAC to levels that would ensure rebuild of the stock over an acceptable period while further information is gathered. Further management action would be required to rebuild the population to desired levels over an acceptable timeframe based on the current stock assessment.

¹⁵ Fisheries New Zealand (2018). Fisheries Assessment Plenary, May 2018: stock assessments and stock status. Compiled by the Fisheries Science and Information Group, Fisheries New Zealand, Wellington, New Zealand.

2228. We consider that a phased approach (over two to three years) to implementing either Option 1 or Option 2 provides a reasonable balance between rate of rebuild and socio-economic impact. A phased approach would allow industry time to adjust their businesses when compared to a large one-off reduction to catches. However, it should be noted that each step in a phased approach would be subject to consultation and fresh decisions. As a minimum we consider that the level of reduction in 2018/19 should be sufficient to ensure the stock begins to rebuild. Best available information suggests a reduction of 25% to current catch is necessary to ensure a biomass increase with a high degree of probability.
2229. Some submitters expressed concern about a phased reduction approach, noting that future changes to catch limits require new consultation. They were concerned that recent history of these types of approaches has suggested they are open to delay in these future decisions as a result of intensive lobbying.
2230. Fisheries New Zealand recognises this risk, and agrees that ongoing consultation and discussion around large fisheries like tarakihi is resource intensive for Government and stakeholders. However, we also note the particular circumstances of this stock noted earlier in this section. We consider that a phased approach remains the best way to reduce the socio-economic impact on industry while also rebuilding the stock within a reasonable time period. All future decisions are required to be based on best available information at the time, including any new information that may support a different view of stock status and different management approach.

Alternative proposal by The New Zealand Sport Fishing Council and the New Zealand Anglers & Casting Association

2231. Fisheries New Zealand notes the proposal from the New Zealand Sport Fishing Council and the New Zealand Anglers & Casting Association to rebuild the stock to target of 40% SB_0 within 10 years ($2 \cdot T_{\min}$), with a 70% probability *rather than* the 50% probability applied in options 1 and 2. The New Zealand Sport Fishing Council and the New Zealand Anglers & Casting Association option proposes an (approximate) 65% reduction in current catch to rebuild the stock to target.
2232. The New Zealand Sport Fishing Council and the New Zealand Anglers & Casting Association specifically asked you to note their view, that the short-term cost of rebuilding the eastern tarakihi stock is outweighed by the long-term benefits of having well managed fish stocks thriving in a healthy marine ecosystem.
2233. The New Zealand Sport Fishing Council and the New Zealand Anglers & Casting Association note that applying a 70% probability is consistent with the Harvest Strategy Standard, which recommends that a higher level of probability (i.e. greater certainty of being at target) should be used when rebuilding a stock that is below the soft limit. Once a stock has reached target, the Harvest Strategy Standard recommends applying a probability of 50% to ensure the stock is maintained at or around target.
2234. Fisheries New Zealand notes that the objective of the rebuilding plan under Options 1 and 2 is to move the stocks towards the target within an appropriate timeframe. Although the Harvest Strategy Standard deems a stock to have reached its target when there is at least a 70% probability the stock is at or above the target, the acceptable level of probability that has been adopted to initiate the rebuild is 50%. The stock assessment will be updated regularly to evaluate and monitor the performance of the rebuild strategy. Therefore, the

rebuild strategy in terms of the way, rate and appropriate level of probability used, can be reviewed when considering results of updated stock assessments.

2235. Fisheries New Zealand considers the benefits of implementing a 65% reduction in catch are not significantly higher than Option 1, and should be weighed against the additional economic impact. Fisheries New Zealand did not consult on a catch reduction of 65% and therefore, if you consider this additional level of caution appropriate, would recommend that this option be considered in the context of a staged review and incorporated into future consultations.

Spreading reductions between Quota Management Areas

2236. You have discretion in choosing the way that the total catch reduction is apportioned to the four quota management areas discussed in this advice. There is no scientific information available to suggest that spreading the catch in a certain way would have particular benefits for a rebuild. However, there will be varying utilisation benefits associated with different apportionment depending on which QMAs receive a lesser or greater reduction in current catch.

2237. The options presented in this advice spread the total reduction proportionally across QMAs, based on the share of current east coast catch.

2238. Fisheries Inshore New Zealand/ Southern Inshore/ Te Ohu Kaimoana have submitted that applying differential catch reductions to commercial catch across the four areas to reflect catch history, trends in CPUE, and to ensure equity among QMAs, would be a better way to apportion the reductions. The split proposed in Table 9 below was put forward in the context of a 20% reduction in catch.

Table 9: Spread of catch reduction for TAR 1, 2, 3 & 7 proposed by Fisheries Inshore New Zealand/ Southern Inshore/ Te Ohu Kaimoana

Stock	Spread of the catch reduction (informed by current catch)	Spread of the catch reduction (proposed by Fisheries Inshore New Zealand/ Southern Inshore/ Te Ohu Kaimoana)
TAR1	19%	33%
TAR 2	43%	28%
TAR 3	33%	35%
TAR 7	5%	4%

2239. If you were to use the submitted proportions to calculate spreading of the catch reduction, the key difference would be a higher relative reduction for TAR 1 and a lower relative reduction for TAR 2. The detail of how these catch reductions translate into TACCs is provided later in this paper.

2.6 ALLOCATING THE TAC

2240. Having set or varied a TAC, you are required to decide what portion of the TAC is to be available for Māori customary interests, recreational fishing interests, and to make allowance for all other mortality to the stock caused by fishing. See section 1.9 of *Part 2: Statutory Considerations* for details of your obligations under section 21 of the Act.

2241. Table 11 provides a summary of the allocations proposed under each of the three options provided for your consideration.

2242. The options do not propose to constrain current customary or recreational catches; the proposed changes to allowances and the setting of new allowances in TAR 7 are to provide for current best estimates of harvest.

Table 10: A summary of the TAC and allowances (in tonnes) proposed under each of the three options for TAR 1, 2, 3 & 7 from 1 October 2018, with the percentage change relative to the current settings in brackets.

Stock	Option	Total Allowable Catch	Total Allowable Commercial Catch	Allowances		
				Customary Māori	Recreational	All other mortality to the stock caused by fishing
TAR 1 ¹⁶	Current settings	2029	1447	73	487	22
	Option 1	1221 ↓ (40%)	983 ↓ (32%)	73	110 ↓ (77%)	55 ↑ (150%)
	Option 2	1384 ↓ (32%)	1131 ↓ (22%)	73	110 ↓ (77%)	70 ↑ (218%)
	Option 3 -	1506 ↓ (26%)	1242 ↓ (14%)	73	110 ↓ (77%)	81 ↑*(268%)
TAR 2	Current settings	2082	1796	100	150	36
	Option 1	1017 ↓ (51%)	735 ↓ (59%)	100	73 ↓ (51%)	109 ↑ (203%)
	Option 2	1376 ↓ (34%)	1061 ↓ (41%)	100	73 ↓ (51%)	142 ↑ (294%)
	Option 3 -	1646 ↓ (21%)	1306 ↓ (27%)	100	73 ↓ (51%)	167 ↑*(360%)
TAR 3	Current settings	1503	1403	15	15	70
	Option 1	737 ↓ (51%)	579 ↓ (59%)	15	15	128 ↑ (83%)
	Option 2	1010 ↓ (33%)	837 ↓ (40%)	15	15	143 ↑ (104%)
	Option 3 -	1221 ↓ (19%)	1030 ↓ (27%)	15	15	161 ↑(130%)
TAR 7 ¹⁷	Current settings	1088	1088	-	-	-
	Option 1	990 ↓	952 ↓ (13%)	5	23	10
	Option 2	1045 ↓	1002 ↓ (8%)	5	23	15
	Option 3 -	1083 ↓	1038 ↓ (5%)	5	23	17

2.6.1 Māori customary allowance

2243. The customary allowances for TAR 1, 2, and 3 are currently 73 tonnes, 100 tonnes, and 15 tonnes respectively (Table 11). There is no proposal to change the customary allowance for TAR 1, 2, or 3 under either of the 3 options.

2244. The best available information suggests that current customary allowances will provide for customary harvest of tarakihi. There has been limited take of tarakihi reported under customary fishing permits. Records indicate that in TAR 1, approximately 1.123 tonnes have been landed since 2005; in TAR 2, approximately 282 kg landed since 2003; in TAR 3, approximately 101 kg landed since 2001. However, since customary take in some areas is not required to be reported, it is possible that greater amounts of TAR are being taken.

2245. There is currently no customary allowance set for TAR 7. Fisheries New Zealand has some harvest information from customary permits in TAR 7. Since 1999 there has been a total reported harvest of approximately 700 kg; the maximum annual catch since 1999 was 350 kg in 2010. However, the South Island customary regulations which require

¹⁶ Settings for TAR 1 are for the entire QMA, including the sub-area TAR 1 (east) and the rest of TAR 1.

¹⁷ Settings for TAR 7 are for the entire QMA, including the sub-area TAR 7 (Cook Strait) and the rest of TAR 7.

reporting of customary catch are not yet in place across all of TAR 7, for example, in the Nelson/Marlborough area.

2246. The position of the Te Waka a Māui me Ōna Toka (Te Waka a Māui) Iwi Forum (South Island) indicated that the 1 tonne would not provide for all harvest that is considered taken for customary use. The Te Waka a Māui view was that the data on the customary allowance is inaccurate and that customary take is regulated by iwi and is based on need. No recommendation on an appropriate alternative allowance was provided.

2247. Submitters who commented on customary allowances generally supported setting the customary allowance at levels that best represent actual harvest (notably the Iwi Forums, the New Zealand Sports Fishing Council, Ngati Whatua Fisheries Ltd and Forest & Bird). Five online submissions specifically opposed retaining the current customary allowances and that reductions should be applied; one proposal was that the reductions should be proportional to the cuts being proposed to the TACCs.

2248. Fisheries New Zealand' consider that the allowance for customary fishing should meet the current needs of tangata whenua and that the level of the allowance is supported by evidence of harvest levels. The harvest under customary permits provides important input to setting these levels.

2249. Fisheries New Zealand proposes setting the customary allowance at 5 tonnes in TAR 7. Based on information provided at the Te Waka a Māui, 5 tonnes would allow for the reported harvest and the catch that is potentially taken outside the permitting system.

2250. Mātaitai reserves, (traditional fishing grounds that are managed by tangata whenua) help ensure fisheries resources are available for customary food gathering purposes. Mātaitai reserves occur within the tarakihi fishery area in coastal regions. However, given that tarakihi are commercially fished in more offshore waters in depths of 30 to 250 m, any spatial shifts in effort as a result of commercial catch reductions is unlikely to impact on the availability of fin fish stocks in mātaitai reserves. In contrast, tarakihi may become more available in coastal-nearshore fishing grounds once the stock has rebuilt.

2.6.2 Recreational allowance

2251. The proposed recreational allowances are the same for each of the rebuild options (see Table 11)

2252. Fisheries New Zealand proposes to adjust the recreational allowance for TAR 1 from 487 to 110 tonnes, for TAR 2 from 150 to 73 tonnes, and retain TAR 3 allowance at 15 tonnes. The proposed allowances are intended to reflect the recent best estimates of harvest from the 2011/12 National Panel Survey; they are not intended to constrain or reduce recreational catch below current levels.

2253. For TAR 7, no recreational allowance was set previously. Fisheries New Zealand proposes to set an allowance at 23 tonnes to reflect the harvest estimated from the 2011/12 National Panel Survey.

2254. Submitters who commented on recreational allowances generally supported reducing the allowances. New Zealand Sports Fishing Council (& LegaSea), New Zealand Angling and Casting Association, Spearfishing New Zealand and Forest & Bird specifically

recommended re-setting the allowances at levels based on the 2011/12 National Panel Survey. The New Zealand Sport Fishing Council and the New Zealand Anglers & Casting Association submitted that resetting the recreational allowance for TAR 1, TAR 2, and TAR 7 based on the 2011/12 National Panel Survey was a reasonable approach at the current time, given low availability and abundance of tarakihi in most areas. The New Zealand Sport Fishing Council and the New Zealand Anglers & Casting Association submit that the existing allowance of 15 tonnes for TAR 3 be retained because the National Panel Survey estimates are based on an inadequate sample size.

2255. Fisheries New Zealand is not proposing to constrain recreational catch because it makes up less than 10% of the total catch of the East Coast Tarakihi stock.

2256. Updated harvest estimates from the 2017/18 National Panel Survey will be available in early 2019. Preliminary analysis indicates that the recommended allowances for recreational harvest will provide for the 2017/18 estimated harvest. The 2017/18 recreational harvest data will be incorporated into the next tarakihi stock assessment.

2.6.3 Allowance for other sources of mortality caused by fishing

2257. The tarakihi stock assessment model adjusted the total commercial catch by adding 10% for unreported commercial catch. The Science Working Group considered that 10% of the commercial catch needed to be added ensure that all sources of mortality were appropriately accounted for in the assessment.

2258. Fisheries New Zealand recommends that the 10% for unreported commercial catch used in the stock assessment is added to the current allowance made for other sources of mortality. The proposed allowance account for the likely cryptic mortality from fishing (i.e. extrusion from trawl nets), as well as any unreported or discarded catch. The 'other sources of mortality' allowances for each stock are shown in Table 1 and 11.

2259. The New Zealand Sport Fishing Council and the New Zealand Anglers & Casting Association submitted that the proposed allowances for other sources of fishing mortality are variable and confusing. They support a standard other mortality allowance set at 10% of the TACC.

2260. Fisheries New Zealand advises that 10% of the total catch was used as the basis to provide an estimate of unreported catch, and this was added to the existing allowances for other mortality. This has resulted in the new allowances proposed under Options 1 and 2.

2.6.4 TACC

2261. Commercial catch represents approximately 95% of the total recorded harvest of tarakihi, therefore the rebuild options are designed to effectively constrain commercial catch.

2262. This section provides information about the immediate loss in revenue based on port price, and a more quantitative assessment of the relative impacts on key factors such as catch volumes and revenue for tarakihi and co-caught species, regional GDP and employment, ACE holdings, and retail markets of the 3 options to reduce the TAC (Tables 11 and 12).

2263. Loss in revenue based on port price is a simple calculation using the average price per kg paid to the fisher, multiplied by the tonnage being removed from the TACC. The metric provides an indication only of the immediate loss in revenue to the fisher.

Table 11: predicated commercial revenue change.

Option	Stock	TACC	Change from status quo (t)	Predicted revenue change (\$ p.a.)
Current settings	TAR 1	1447		
	TAR 2	1796		
	TAR 3	1403		
	TAR 7	1088		
Option 1	TAR 1	983	464 ↓	\$1,115,326 ↓
	TAR 2	735	1061 ↓	\$3,712,763 ↓
	TAR 3	579	824 ↓	\$1,643,721 ↓
	TAR 7	952	136 ↓	\$276,060 ↓
	TOTAL			\$6,747,870 ↓
Option 2	TAR 1	1131	316 ↓	\$759,575 ↓
	TAR 2	1061	735 ↓	\$2,570,374 ↓
	TAR 3	837	566 ↓	\$1,129,979 ↓
	TAR 7	1002	86 ↓	\$175,675 ↓
	TOTAL			\$4,635,604 ↓
Option 3	TAR 1	1242	205 ↓	\$492,763 ↓
	TAR 2	1306	490 ↓	\$1,713,583 ↓
	TAR 3	1030	373 ↓	\$744,672 ↓
	TAR 7	1039	49 ↓	\$100,386 ↓
	TOTAL			\$3,051,404 ↓

2264. Given the status of the stock and the commercial, recreational, and customary importance of this fishery, Fisheries New Zealand commissioned Business and Economic Research Limited (BERL) to carry out an independent assessment of the economic impacts of a range of catch reductions in order to provide you with as comprehensive advice as possible (BERL 2018: see Appendix 1 for full report). Fisheries New Zealand discusses the key results of the BERL report below and recommends that you refer to the full report.

2265. To explore different tarakihi rebuild strategies, 5 different rebuild scenarios were developed to project the impact on the stock and the industry over a 20-year period. The 5 scenarios span the breadth of catch reductions that were consulted on, and the 3 options that are now presented to you for consideration. In the BERL report, scenario 1 is Option 1, scenario 4 is Option 2, and scenario 5 is Option 3 (implemented by reducing the TAC/TACC).

2266. There are a number of key assumptions used to analyse the economic impact that are outlined in the front of the BERL report. In summary the key assumptions are:

- That the price any fish species caught by a fisher in FMA 1, FMA 2, or FMA 3 would not change across the 20 year time period. This assumption has been made to ensure that all values are in current dollar, and therefore enable values calculated in future years to be compared to earlier values.

- That for any year in which there is a reduction in tarakihi TACC, fishers will catch the maximum allowed amount of tarakihi.
- That for those scenarios which see an end of TACC reduction prior to the end of the 20 year period, that fishers will catch the total of 4,175 tonnes of tarakihi split across the three FMAs.
- That if the tarakihi catch was 10 percent or more of the catch of a targeted species in the 2016-17 base year, in each FMA, the targeted species catch in future years would be affected by the reduction in tarakihi catch.
- That the pattern of fishing in each FMA seen in the 2016-17 base year will continue across the 20 year period. That is the percentage share of fish caught when targeting a particular fish in an FMA will hold constant. For example in FMA 3 112.5 tonnes of gurnard was caught in 2016-17, at the same time the fishers targeting gurnard also caught 28 tonnes of elephant fish, therefore under this assumption for every 10 tonnes of gurnard caught by fishers targeting gurnard, 2.5 tonnes of elephant fish will also be caught.

Table 12. A comparison of options.

Evaluation Metric	Option 1	Option 2	Option 3
Rebuild rate (years)	10 years, or $2 \cdot T_{\min}$	20 years, or $4 \cdot T_{\min}$	Not specified
Catch Reduction	55%	35%	20%
Consistent with Fisheries Act (uses known B_{MSY})	✓	✓	✓ If implemented through adjustment to TAC, moves the stock towards B_{MSY} but with less certainty in respect of appropriate timeframe
Consistent with Harvest Strategy Standard	✓	✓ Length of rebuild twice that recommended in the Harvest Strategy Standard	✗
Loss in revenue – based on port price (FNZ)	-\$6.75 million	-\$4.64 million	-\$3.05 million
Tarakihi – catch (t) (annual average over 20 years) ¹⁸ (brackets: change from 2016-17)	2910 t (-1730 t) ↓	2380 t (-2270 t) ↓	2950 t (-1710 t) ↓
All co-caught species – catch (t) (annual average over 20 years) (brackets: change from 2016-17)	141,820 t (-820 t) ↓	140,820 t (-1810 t) ↓	141,910 t (-730 t) ↓
Tarakihi - catch revenue (annual average over 20 years) (brackets: loss in revenue i.e. change from 2016-17)	\$11.55 million (-\$6.88 million) ↓	\$9.44 million (-\$8.99 million) ↓	\$11.66 million (-\$6.77 million) ↓
All co-caught species - catch revenue (annual average over 20 years) (brackets: loss in revenue i.e. change from 2016-17)	\$272.25 million (-\$1.45 million) ↓	\$269.35 million (-\$4.35 million) ↓	\$272.33 million (-\$1.37 million) ↓
Economic impact on regions – loss of annual GDP	-\$5.26 million	-\$8.37 million	-\$5.06 million
Economic impact on regions – average annual Employment (FTE) impact over 20 years (brackets: fishing industry FTE losses)	-48 FTE (-22 FTE)	-75 FTE (-35 FTE)	-45 FTE (-21 FTE)

2267. You should note that there is significant uncertainty associated with this analysis. The ability to assess industry ability to adapt can only be fully determined at the individual fisher or company level as each will have different costs and revenue. The most certain information from the analysis is the calculation of the reduction in annual revenue from the

¹⁸ Business and Economic Research Limited (BERL) 2018. Tarakihi Total Allowable Catch Reduction Scenarios. Report for the Ministry for Primary Industries.

options. You should consider the uncertainty in this information when determining the weight to place on the wider analysis in your decision making.

2268. The smallest total economic impact occurs under option three because current catch is only reduced by 20% and fishers are able to harvest the remaining TACC for the twenty year period of the analysis. T

2269. The largest total economic impact occurs under a phased approach to implementing Option 2. This is because there is a greater reduction in total catch than under Option 3, and the stock takes longer to rebuild (20 year rebuild) with an associated return to current catch levels than under Option 1 (10 year rebuild).

2270. Option 1 has less total economic impact than option two because the stock rebuilds more quickly under this option which means total catch remains below current levels for a shorter period of time.

2271. Overall, MPI consider that despite the total economic impact of option two, it mitigates the significant disruption to industry that would be caused by the 55% single year reduction proposed under option one. The phased reduction allows industry further time to adjust business operations which may allow shift of labour and capital that might otherwise be lost to the sector under the severe impacts associated with option one. It also provides a more certain rebuild of the stock compared to option three. We also note that the analysis does not attempt to quantify the benefits in overall catch or reduced fishing cost associated with a rebuilt TAR stock

2.6.5 Implementation

Area-based catch constraints

2272. To ensure the effective implementation of the rebuilding strategy in TAR 1 and TAR 7, the catch reductions need to be implemented in specific areas of the QMAs. These are referred to as area-based catch constraints. The purpose of the area-based catch constraint is to minimise the risk of localised depletion and to ensure that the fishing pressure is reduced to the level needed to allow the sub-populations of tarakihi in TAR 1 and TAR 7 to rebuild. If these catch constraints are not implemented effectively, there is a significant risk for TAR 1 (though not for TAR 7) that the stock will not rebuild in the timeframes specified. This will result in the delay in benefits of a rebuilt stock to the recreational, customary and commercial fisheries.

2273. The proposed area-based catch constraints under each of the options are shown in Table 7. The area-based catch constraints apply to TAR 1 (east) and TAR 7 (Cook Strait) only. Effective monitoring of catch within the QMA and timely response by industry to cease targeting tarakihi once the catches exceed the catch constraint in these areas of the QNAs is essential. Industry have outlined a mechanism for monitoring catch and spreading catch within a QMA (refer to section on 'catch spreading', Fisheries Inshore/ Southern Inshore/ Te Ohu Kaimoana submission). The implementation of electronic reporting of catch will improve the efficacy of the industry catch spreading strategy.

2274. Catch constraints within TAR 1 (east) and TAR 7 (Cook Strait) provide a mechanism for reducing the fishing pressure in the specific areas of the QMA where it is needed.

2275. The Tarakihi Management Strategy put forward in the Fisheries Inshore/ Southern Inshore/ Te Ohu Kaimoana submission outlines an industry-led process for the monitoring of catch within a QMA, and managing the use of ACE that may effectively constrain catch. If this approach was supported, Fisheries New Zealand would monitor catch and implement a closure under s 11 of the Act, if the catch constraint is exceeded within a season.

Shelving

2276. The Fisheries Inshore/ Southern Inshore/ Te Ohu Kaimoana view is that you are not obliged to reduce the TAC as proposed by Fisheries New Zealand, and that you should consider all other aspects of the management of tarakihi, including the option for ACE shelving, in determining whether or not a TAC reduction is necessary.

2277. The Fisheries Inshore/ Southern Inshore/ Te Ohu Kaimoana proposal (Option 3) relies on the voluntary shelving of ACE to ensure the 20% reduction in catch, and proposes that a TAC/TACC reduction is not necessary.

2278. Fisheries New Zealand has received confirmation from Fisheries Inshore that 96% of the ACE needed for the catch reduction has been shelved. This means that the shelving proposed by Fisheries Inshore/ Southern Inshore/ Te Ohu Kaimoana is effectively now in place, and the catch reductions have been confirmed for the upcoming 2018/19 fishing year. Fisheries Inshore are confident that they will increase the percentage of ACE shelved (currently 1013 of the 1055 tonnes proposed).

2279. Fisheries New Zealand considers that shelving can be used as part of a rebuilding plan including a TAC adjustment, as a voluntary measure, to change the way and rate a stock moves toward the target level. However, you must be satisfied in the first instance that the TAC you set meets the requirements of section 13 (discussed in section 1.8 of *Part 2: Statutory Considerations*)

28N Rights

2280. There are 1.915 tonnes of preferential allocation rights (28N rights) in TAR 2. These rights would be discharged only on a future increase to the TACC of the TAR 2 stock, so have no effect under the options proposed (see section 1.4 of *Part 3: Key issues raised in submissions*).

2.7 OTHER MANAGEMENT CONTROLS

2.7.1 Recreational fishery

2281. Fisheries New Zealand sought views on the setting of an appropriate species-specific bag limit for tarakihi which would remove tarakihi from the current combined-species bag limits (tarakihi bag limits within the combined limits range from 10 to 20 depending on region, see below), and whether changes to the minimum legal size were appropriate to support the rebuilding of the stock.

2282. To assist stakeholders, information on the proportion of trips and the number of tarakihi landed (per trip or fishing event) was provided (Table 13) as part of consultation. On more than 90% of the trips (or harvest events), 10 fish or fewer were taken, and on more than 50% of the trips, 4 or fewer fish were landed. Views on the appropriateness of a bag limit of 10 were sought. Table 13 shows that a bag limit of 10 tarakihi would provide for more than 90% of trips.

Table 13: Summary of the number of tarakihi landed (bag size) per harvest event or trip (percentage of trips) in each of the QMAs, from the 2011/12 National Panel Survey.

QMA	Frequency of bag size (% of trips)											
	<1	1	2	3	4	5	6	7	8	9	10	11+
TAR 1	0.2	27.2	18.3	9.7	8.3	6.9	8.7	3.3	3.6	2.9	3	8.0
TAR 2	0.9	20.7	18.2	9.3	10.7	9.0	8.1	3.0	3.5	1.8	7.2	7.5
TAR 3	0.0	83.4	12.3	2.5	0.0	0.0	0.0	1.8	0.0	0.0	0.0	0.0
TAR 7	0.0	37.8	22.8	9.7	10.5	8.4	2.1	3.4	2.6	0.0	1.7	1.2

2283. There was general support from recreational fishers for setting a specific daily bag limit for tarakihi less than the current maximum (within current combined species bag limits), in conjunction with a rebuild plan. Three submissions from Marlborough did not support removing tarakihi from the combined finfish bag limit.

2284. Fisheries New Zealand notes that recreational catch only makes up a small proportion of total catches of tarakihi; however a specific daily bag limit could also support sharing of catches between recreational fishers in a local area. Fisheries New Zealand recommends additional, targeted consultation to support development of options for the recreational daily bag limit in the coming year, following updated information on recreational catches from the National Panel Survey of recreational fishers expected in early 2019. The National Panel Survey can also provide updated information to inform future reviews of the recreational allowance.

2285. Any changes to the bag limit and for minimum legal size could not be implemented as part of the 1 October 2018 sustainability round, but can be considered for inclusion in amendments to the Regulation in 2019. We consider further assessment and consultation on both matters is required.

2.7.3 Minimum legal size

2286. The Environmental Defence Society submits that the minimum legal size needs to increase to the size when tarakihi are mature and are able to spawn before being harvested. They note that tarakihi reach sexual maturity at around 6 years, but the minimum legal size is reached at 4-3 years of age, so juvenile fish are being legally harvested.

2287. The combined Fisheries Inshore New Zealand/ Southern Inshore/ Te Ohu Kaimoana submission supports a review of the minimum legal size to determine why the limit is not aligned with age at first maturity, and the impacts of a change to the minimum legal size on commercial fishing.

2288. Fisheries New Zealand agrees that further analysis of the minimum legal size could occur at as part of a management plan.

2.7.4 Deemed value rates

2289. The Deemed Values Guidelines, and the reasons for the deemed value rate decisions, are provided in the Deemed Value Rates part of this document. In conjunction with setting tarakihi commercial catch limits, Fisheries New Zealand is proposing that the deemed value rates be adjusted to encourage commercial fishers to constrain catches to within the available ACE (for recommended deemed value rates, see *Part 6: Deemed Value Rates*).

2.8 FUTURE MANAGEMENT

2290. Fisheries New Zealand note that tarakihi is taken mainly by trawl vessels as part of a multi-species complex that varies in species composition to some extent, depending on where on the East Coast the stock is harvested. Changing management settings for this stock will have implications for harvesting of other species taken in association. There is uncertainty in our understanding of these impacts because we do not consider these complexes together in terms of research information and changes in management settings. A key project for inshore fisheries management is development of a complex based fisheries plan that, working with stakeholders and tangata whenua, will set out multi-species based approaches to management including research planning, stakeholder engagement, objective setting and performance monitoring. We propose to begin discussion with stakeholders using an initial “straw man” in October.

2291. A number of environmental submitters raised the issue of management of impacts of fishing on the seafloor from trawling activity in inshore fisheries like tarakihi. Developing and implementing a management approach to benthic impacts and identifying and protecting habitats of significance to fisheries management, most particularly in inshore fisheries, will be a core focus for Fisheries New Zealand over the coming year.

2.7 QMA boundaries

2292. Fisheries New Zealand notes that the 2018 stock assessment assumes a single biological stock of tarakihi along the east coast of North and South Islands, suggesting that the current QMA boundaries do not align well with the biological stocks. The boundary of the single east coast biological stock was determined through a comprehensive analysis of all the available biological, commercial fishery, and fishery-independent data. Sub-populations of tarakihi within this area are considered to be part of the one biological stock.

2293. Fisheries New Zealand sought tangata whenua and stakeholder views on the value of a future review of QMA boundaries for tarakihi to better align with biological stocks. There is general support for such a review.

2294. New Zealand Sport Fishing Council and the New Zealand Anglers & Casting Association submit that TAR 1 should be split into separate east and west coast management areas, and notes that it is becoming increasingly apparent that the QMAs for a number of species in the northern fishery of New Zealand are too large.
2295. Ben Turner, a commercial fisherman in FMA 9 asks to try to continue using the existing framework, as the bookwork for commercial fishers is already complex enough, and he believes that changes to make TAR 1 west and east will make this worse. Overall, he doesn't support a split to TAR 1 west, and TAR 1 east.
2296. Fisheries New Zealand recommends that the QMA boundaries be reviewed following the 2021 update to the stock assessment, which will include national catch at age data and will allow a further evaluation of the biological stock boundary. This would require agreement of 75% of quota owners, or you could implement changes if you considered it were necessary to ensure sustainability. Although there is general support for the review of QMA boundaries, it would be premature to review boundaries prior to the 2021 stock assessment. Therefore, this would be for a future process and does not require your decision now.

3 Conclusion

2297. Tarakihi is currently the third highest value inshore finfish species, behind snapper and blue cod. Abundance across the East Coast stock is estimated at 17% SB_0 , which is below the level that would support the maximum sustainable yield (B_{MSY}). The assessment indicates that the stock has been near the current abundance level since the early 2000's and has been declining slowly under current catches since the mid 1970's.
2298. You have a range of options to reduce the TAC for the East Coast tarakihi stock. The options range from a 20% to a 55% catch reduction. All of the options could be implemented in one year (2018/19) or, in the case of Options 1 and 2, phased in over a number of years. In the case of a multi-year phased approach, separate decisions on the TAC, allowances, and TACC would need to be made prior to the start of each fishing year for each year of the phased approach. This would include public consultation. In general terms, the larger the reduction in catch, the quicker the stock will rebuild to the target level, but the higher the initial socio-economic impact.
2299. Fisheries New Zealand notes that, while the stock is well below the target level, the decline in biomass has been gradual and prolonged. The stock is projected to decline to 15% SB_0 in the next three years under current catches. Further, the socio-economic impacts of options to rebuild the stock over short time periods, like that suggested by the Harvest Strategy Standard, will be significant for the inshore trawl fishery.
2300. In this context, Fisheries New Zealand considers that you could give more weight to the level of socio-economic impact in deciding on the appropriate balance between sustainability and use, and the way and rate of rebuild.
2301. We consider that a phased approach (over two years) to implementing Option 2 provides the best balance between rate of rebuild and socio-economic impact. The phased approach will allow industry some time to adjust their businesses, compared to a larger one off reduction to catches. However, it should be noted that each step in a phased approach would be subject to consultation and fresh decisions. As a minimum we

consider that the level of reduction in 2018/19 should be sufficient to ensure the stock begins to rebuild. Best available information suggests a reduction of 25% to current catch is necessary to ensure a biomass increase with a high degree of probability.

2302. The options presented in this advice apply the same percentage reduction to each QMA irrespective of differences in volume of catch or differences in CPUE, this is based on the east coast tarakihi being a single biological stock and that there is evidence of significant spawning in TAR 3 and to a lesser extent in TAR 2 that supports the entire east coast stock.
2303. Fisheries Inshore New Zealand/ Southern Inshore/ Te Ohu Kaimoana have submitted that applying differential catch reductions to reflect catch history, trends in CPUE, and to ensure equity between fishers in different QMAs, would be a better way to apportion the reductions.

4 Recommendations

2304. Fisheries New Zealand recommends that you decide on one of the options below, to be implemented from 1 October 2018:

Option 1

Agree to decrease the TAR 1 TAC from 2029 tonnes to 1221 tonnes and within the TAC:

- i. Retain the allowance of 73 tonnes for Māori customary non-commercial fishing interests;
- ii. Decrease the allowance for recreational fishing interests from 487 to 110 tonnes;
- iii. Increase the allowance for other sources of fishing-related mortality from 22 to 55 tonnes;
- iv. Decrease the TAR 1 TACC from 1447 tonnes to 983 tonnes.

Agreed / Agreed as Amended / Not Agreed

AND

Agree to decrease the TAR 2 TAC from 2082 tonnes to 1017 tonnes and within the TAC:

- i. Retain the allowance of 100 tonnes for Māori customary non-commercial fishing interests;
- ii. Decrease the allowance for recreational fishing interests from 150 to 73 tonnes;
- iii. Increase the allowance for other sources of fishing-related mortality from 36 to 109 tonnes;
- iv. Decrease the TAR 2 TACC from 1796 tonnes to 735 tonnes.

Agreed / Agreed as Amended / Not Agreed

AND

Agree to decrease the TAR 3 TAC from 1503 tonnes to 737 tonnes and within the TAC:

- i. Retain the allowance of 15 tonnes for Māori customary non-commercial fishing interests;
- ii. Retain the allowance of 15 tonnes for recreational fishing interests;
- iii. Increase the allowance for other sources of fishing-related mortality from 70 to 128 tonnes;
- iv. Decrease the TAR 3 TACC from 1403 tonnes to 579 tonnes.

Agreed / Agreed as Amended / Not Agreed

AND

Agree to decrease the TAR 7 TAC from 1088 tonnes to 990 tonnes and within the TAC:

- i. Set an allowance of 5 tonnes for Māori customary non-commercial fishing interests;
- ii. Set an allowance of 23 tonnes for recreational fishing interests;
- iii. Set an allowance of 10 tonnes for other sources of fishing-related mortality;

- iv. Decrease the TAR 7 TACC from 1088 tonnes to 952 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 2

Agree to increase/decrease the TAR 1 TAC from 2029 to 1384 tonnes and within the TAC:

- i. Retain the allowance of 73 tonnes for Māori customary non-commercial fishing interests;
- ii. Decrease the allowance for recreational fishing interests from 487 to 110 tonnes;
- iii. Increase the allowance for other sources of fishing-related mortality from 22 to 70 tonnes;
- iv. Decrease the TAR 1 TACC from 1447 to 1384 tonnes.

Agreed / Agreed as Amended / Not Agreed

AND

Agree to decrease the TAR 2 TAC from 2082 to 1376 tonnes and within the TAC:

- i. Retain the allowance of 100 tonnes for Māori customary non-commercial fishing interests;
- ii. Decrease the allowance for recreational fishing interests from 150 to 73 tonnes;
- iii. Increase the allowance for other sources of fishing-related mortality from 36 to 142 tonnes;
- iv. Decrease the TAR 2 TACC from 1796 to 1061 tonnes.

Agreed / Agreed as Amended / Not Agreed

AND

Agree to decrease the TAR 3 TAC from 1503 to 1010 tonnes and within the TAC, make allowances of:

- i. Retain the allowance of 15 tonnes for Māori customary non-commercial fishing interests;
- ii. Retain the allowance of 15 tonnes for recreational fishing interests;
- iii. Increase the allowance for other sources of fishing-related mortality from 70 to 142 tonnes;
- iv. Decrease the TAR 3 TACC from 1403 to 837 tonnes.

Agreed / Agreed as Amended / Not Agreed

AND

Agree to decrease the TAR 7 TAC from 1088 to 1045 tonnes and within the TAC:

- i. Set an allowance of 5 tonnes for Māori customary non-commercial fishing interests;

- ii. Set an allowance of 23 tonnes for recreational fishing interests;
- iii. Set an allowance of 15 tonnes for all other mortality caused by fishing;
- iv. Decrease the TAR 7 TACC from 1088 to 1002 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Implement Option 2 over two years, starting with a 25% catch reduction

Agree to decrease the TAR 1 TAC from 2029 tonnes to 1205 tonnes and within the TAC:

- i. Retain the allowance of 73 tonnes for Māori customary non-commercial fishing interests;
- ii. Decrease the allowance for recreational fishing interests from 487 to 110 tonnes;
- iii. Increase the allowance for other sources of fishing-related mortality from 22 to 55 tonnes;
- iv. Decrease the TAR 1 TACC from 2029 tonnes to 1205 tonnes.

Agreed / Agreed as Amended / Not Agreed

AND

Agree to decrease the TAR 2 TAC from 2082 tonnes to 1225 tonnes and within the TAC:

- i. Retain the allowance of 100 tonnes for Māori customary non-commercial fishing interests;
- ii. Decrease the allowance for recreational fishing interests from 150 to 73 tonnes;
- iii. Increase the allowance for other sources of fishing-related mortality from 36 to 109 tonnes;
- iv. Decrease the TAR 2 TACC from 1796 tonnes to 735 tonnes.

Agreed / Agreed as Amended / Not Agreed

AND

Agree to decrease the TAR 3 TAC from 1503 tonnes to 1150 tonnes and within the TAC:

- i. Retain the allowance of 15 tonnes for Māori customary non-commercial fishing interests;
- ii. Retain the allowance of 15 tonnes for recreational fishing interests;
- iii. Increase the allowance for other sources of fishing-related mortality from 70 to 128 tonnes;
- iv. Decrease the TAR 3 TACC from 1403 tonnes to 966 tonnes.

Agreed / Agreed as Amended / Not Agreed

AND

Agree to decrease the TAR 7 TAC from 1088 tonnes to 1067 tonnes and within the TAC:

- i. Set an allowance of 5 tonnes for Māori customary non-commercial fishing interests;
- ii. Set an allowance of 23 tonnes for recreational fishing interests;
- iii. Set an allowance of 10 tonnes for other sources of fishing-related mortality;
- iv. Decrease the TAR 7 TACC from 1088 tonnes to 952 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 2

Agree to increase/decrease the TAR 1 TAC from 2029 to 1384 tonnes and within the TAC:

- i. Retain the allowance of 73 tonnes for Māori customary non-commercial fishing interests;
- ii. Decrease the allowance for recreational fishing interests from 487 to 110 tonnes;
- iii. Increase the allowance for other sources of fishing-related mortality from 22 to 70 tonnes;
- iv. Decrease the TAR 1 TACC from 1447 to 1384 tonnes.

Agreed / Agreed as Amended / Not Agreed

AND

Agree to decrease the TAR 2 TAC from 2082 to 1376 tonnes and within the TAC:

- i. Retain the allowance of 100 tonnes for Māori customary non-commercial fishing interests;
- ii. Decrease the allowance for recreational fishing interests from 150 to 73 tonnes;
- iii. Increase the allowance for other sources of fishing-related mortality from 36 to 142 tonnes;
- iv. Decrease the TAR 2 TACC from 1796 to 1061 tonnes.

Agreed / Agreed as Amended / Not Agreed

AND

Agree to decrease the TAR 3 TAC from 1503 to 1010 tonnes and within the TAC, make allowances of:

- i. Retain the allowance of 15 tonnes for Māori customary non-commercial fishing interests;
- ii. Retain the allowance of 15 tonnes for recreational fishing interests;
- iii. Increase the allowance for other sources of fishing-related mortality from 70 to 142 tonnes;
- iv. Decrease the TAR 3 TACC from 1403 to 837 tonnes.

Agreed / Agreed as Amended / Not Agreed

AND

Agree to decrease the TAR 7 TAC from 1088 to 1045 tonnes and within the TAC:

- i. Set an allowance of 5 tonnes for Māori customary non-commercial fishing interests;
- ii. Set an allowance of 23 tonnes for recreational fishing interests;
- iii. Set an allowance of 15 tonnes for all other mortality caused by fishing;
- iv. Decrease the TAR 7 TACC from 1088 to 1002 tonnes.

OR

Agree to increase/decrease the TAR 1 TAC from 2029 to 1384 tonnes and within the TAC:

- i. Retain the allowance of 73 tonnes for Māori customary non-commercial fishing interests;
- ii. Decrease the allowance for recreational fishing interests from 487 to 110 tonnes;
- iii. Increase the allowance for other sources of fishing-related mortality from 22 to 70 tonnes;
- iv. Decrease the TAR 1 TACC from 1447 to 1384 tonnes.

Agreed / Agreed as Amended / Not Agreed

AND

Agree to decrease the TAR 2 TAC from 2082 to 1376 tonnes and within the TAC:

- i. Retain the allowance of 100 tonnes for Māori customary non-commercial fishing interests;
- ii. Decrease the allowance for recreational fishing interests from 150 to 73 tonnes;
- iii. Increase the allowance for other sources of fishing-related mortality from 36 to 142 tonnes;
- iv. Decrease the TAR 2 TACC from 1796 to 1061 tonnes.

Agreed / Agreed as Amended / Not Agreed

AND

Agree to decrease the TAR 3 TAC from 1503 to 1010 tonnes and within the TAC, make allowances of:

- i. Retain the allowance of 15 tonnes for Māori customary non-commercial fishing interests;
- ii. Retain the allowance of 15 tonnes for recreational fishing interests;
- iii. Increase the allowance for other sources of fishing-related mortality from 70 to 142 tonnes;
- iv. Decrease the TAR 3 TACC from 1403 to 837 tonnes.

Agreed / Agreed as Amended / Not Agreed

AND

Agree to decrease the TAR 7 TAC from 1088 to 1045 tonnes and within the TAC:

- i. Set an allowance of 5 tonnes for Māori customary non-commercial fishing interests;
- ii. Set an allowance of 23 tonnes for recreational fishing interests;
- iii. Set an allowance of 15 tonnes for all other mortality caused by fishing;
- iv. Decrease the TAR 7 TACC from 1088 to 1002 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 3 implemented by changes to the TAC, TACC, and allowances

Agree to decrease the TAR 1 TAC from 2029 to 1506 tonnes and within the TAC:

- i. Retain the allowance of 73 tonnes for Māori customary non-commercial fishing interests;
- ii. Decrease the allowance for recreational fishing interests from 487 to 110 tonnes;
- iii. Increase the allowance for other sources of fishing-related mortality from 22 to 81 tonnes;
- iv. Decrease the TAR 1 TACC from 1447 to 1242 tonnes.

Agreed / Agreed as Amended / Not Agreed

AND

Agree to decrease the TAR 2 TAC from 2082 to 1646 tonnes and within the TAC:

- i. Retain the allowance of 100 tonnes for Māori customary non-commercial fishing interests;
- ii. Decrease the allowance for recreational fishing interests from 150 to 73 tonnes;
- iii. Increase the allowance for other sources of fishing-related mortality from 36 to 167 tonnes;
- iv. Decrease the TAR 2 TACC from 1796 to 1306 tonnes.

Agreed / Agreed as Amended / Not Agreed

AND

Agree to decrease the TAR 3 TAC from 1503 to 1221 tonnes and within the TAC:

- i. Retain the allowance of 15 tonnes for Māori customary non-commercial fishing interests;
- ii. Retain the allowance of 15 tonnes for recreational fishing interests;
- iii. Increase the allowance for other sources of fishing-related mortality from 70 to 161 tonnes;
- iv. Decrease the TAR 3 TACC from 1403 to 1030 tonnes.

Agreed / Agreed as Amended / Not Agreed

AND

Agree to decrease the TAR 7 TAC from 1088 to 1081 tonnes and within the TAC:

- i. Set an allowance of 5 tonnes for Māori customary non-commercial fishing interests;
- ii. Set an allowance of 23 tonnes for recreational fishing interests;
- iii. Set an allowance of 17 tonnes for other sources of fishing-related mortality;
- iv. Decrease the TAR 7 TACC from 1088 to 1039 tonnes.

Agreed / Agreed as Amended / Not Agreed

Option 4 ←

Stuart Nash
Hon Stuart Nash
Minister of Fisheries

13/9 /2018

TAR 1

Oct 18

TAC = 1390 tonnes
TACC = 1097 tonnes
Māori = 73 tonnes
Recreational = 110 tonnes
OSFRM = 110 tonnes

Also note intended changes for 1 October 2019 overleaf

TAR 7

Oct 18 TAC = 1174 tonnes
TACC = 1042 tonnes
Māori = 5 tonnes
Recreational = 23 tonnes
OSFRM = 104 tonnes

TAR 2

Oct 18

TAC = 1823 tonnes
TACC = 1500 tonnes
Māori = 100 tonnes
Recreational = 73 tonnes
OSFRM = 150 tonnes

TAR 3

Oct 18

TAC = 1174 tonnes
TACC = 1040 tonnes
Māori = 15 tonnes
Recreational = 15 tonnes
OSFRM = 104 tonnes

Intended changes on 1 October 2019, subject
to any new information and consultation
undertaken in 2019:

TAR 1

TAC: 871 tonnes
TACC: 625 tonnes
Māori: 73 tonnes
Rec: 110 tonnes
OSFRM: 63 tonnes

TAR 2

TAC: 1383 tonnes
TACC: 1100 tonnes
Māori: 100 tonnes
Rec: 73 tonnes
OSFRM: 110 tonnes

TAR 3

TAC: 623 tonnes
TACC: 539 tonnes
Māori: 15 tonnes
Rec: 15 tonnes
OSFRM: 54 tonnes

TAR 7

TAC: 1112 tonnes
TACC: 985 tonnes
Māori: 5 tonnes
Rec: 23 tonnes
OSFRM: 99 tonnes

Jon Stuart Nash
Minister of Fisheries

Addendum 1: List of Submitters

- a) Phil Appleyard – New Zealand Sport Fishing Council
- b) Spearfishing New Zealand – distinct sub-group of the recreational sector
- c) Affiliated clubs that make up Zone 5 of the New Zealand Sport Fishing Council and LegaSea Hawkes Bay – recreational
- d) The Marlborough Recreational Fishers Association
- e) Our Fishing Future – recreational
- f) Rod Littlefield – recreational
- g) Tony Orman – recreational
- h) Fisheries Inshore New Zealand, Southern Inshore Fisheries New Zealand, and Te Ohu Kaimoana
- i) Te Ohu Kaimoana
- j) Sealord – commercial
- k) Phil Clow – Whitianga and Coromandel Peninsula Commercial Fishermen’s Association
- l) Stephen Lines – Lines Fishing Ltd – commercial
- m) Ocean Fisheries Ltd and Ocean Fisheries Quota Holding Company Ltd
- n) Zac Olsen – South Cross Fishing
- o) Ben Turner – commercial
- p) John Davis – commercial
- q) Jonathan Dick – The Kahungunu Asset Holding Company
- r) Ngati Whatua Fisheries Limited
- s) John Maurice Takarangi – Te Ohu Tiaki o Rangitaane Te Ika a Maui Trust and Rangitaane Te Ika a Maui Limited
- t) Foodstuffs North Island Limited – retail
- u) Environmental Defence Society – environmental
- v) Katrina Goddard – Forest and Bird
- w) Tim Robinson – public
- x) Peter Chapman – public
- y) Nga Tirairaka o Ngati Hine Environmental Organisation
- z) Te Runanga o Ngati Hine

Submissions through online survey

- a) J Imlach
- b) Doug Pile
- c) Dion Oakes
- d) Robert Willoughbh
- e) Mat O’Sullivan
- f) Karen Field
- g) Brigitte Davies
- h) Brian Hawthorne
- i) Simon Mechen
- j) Pat Seymour
- k) Max Lichtenstein
- l) Trevor John Farquhar

- m) Helen Horrocks
- n) Devon
- o) Richard Craig
- p) A J Bunt
- q) Brian Ashley
- r) Rob Millar
- s) Evan Rayner
- t) Sam De Schot
- u) Aaron
- v) Allan Halvorson
- w) Campbell Robertson
- x) Glenn Kipling
- y) Toby Lovell
- z) Adrian Gidlow
- aa) Joe Dennehy
- bb) Andy Burnett
- cc) Jason Tether
- dd) Benno Berghammer
- ee) Jeff brown
- ff) Ollie
- gg) D Johnson
- hh) Mark Denize
- ii) Kent Huntley
- jj) Graham Archer
- kk) Marguerite Paterson
- ll) Michael Jenkins
- mm) Pete Williamson
- nn) Wayne
- oo) Greg Goodall
- pp) Jeremy Clark
- qq) Sean Chandler Callis
- rr) Kris Geurts
- ss) Russ Hawkins
- tt) N Mackay
- uu) Ben Carey
- vv) Jeff Hammond
- ww) Derrick Paull
- xx) Mark Loper
- yy) Elliott Dunn
- zz) Russell G Powell
- aaa) Mark Loper
- bbb) Pauline Yates
- ccc) Ben Roborgh
- ddd) Lennon
- eee) Jason
- fff) Jeremy McKibbin
- ggg) Evan Rayner
- hhh) Gavinscoles

- iii) John Llewellyn
- jjj) Martyn Barlow
- kkk) Tom
- lll) Alec Beaver
- mmm) Denis Callesen
- nnn) Daryl Morris
- ooo) Laurie Bates
- ppp) Andrew Boyes
- qqq) Alistar Wickens
- rrr) Barry Campbell
- sss) Five respondents wished not to be named.

Addendum 2: Summary of the BERL Economic Report “Making Sense of the Numbers”

1. The purpose of the economic assessment is to provide you with information to inform a comparison of the economic implications of a range of reductions in the TACC for this important inshore fishery.
2. Using data including commercial catch data (tarakihi and co-caught species), ACE and quota holdings, ACE and quota trade prices, port and export price, and current seafood retail prices, BERL modelled the impacts of 5 scenarios over a 20-year period to assess both short-term and longer-term impacts (See s 3 of the report for details of methodology and key assumptions). It is important to note that as tarakihi is part of a mixed-species fishery, the secondary impacts on the harvest of co-caught species of reductions in the tarakihi TAC/TACC is likely to be *significantly over-estimated* in the economic analysis. A key assumption is that the reduced fishing effort on tarakihi will result in significant reduction in the catch of bycatch species (trevally, gurnard, and snapper). Tarakihi are targeted in deeper water than are trevally, gurnard and snapper, so avoiding tarakihi is likely to result in more effort inshore and higher catches (not lower catches) of those species. As a result the analysis may substantially overestimate the short-term socio-economic impacts of the various TACC options, in particular Option 1 and Option 2.
3. Furthermore, as part of this sustainability round, there may be increases in the TAC/TACC of other inshore species, such as elephant fish (ELE 3) and gurnard (GUR 3) that may offset some of the impacts of the tarakihi TAC/TACC reductions in those areas.
4. Modelling the relative impacts over the 20-year period allows the comparison between rebuild scenarios that have a 10-year timeframe versus 20 years and longer (or undefined, e.g. Fisheries Inshore/ Southern Inshore/ Te Ohu Kaimoana proposal) timeframes.
5. Fisheries New Zealand has reviewed the methodology and analysis used and advises that it is robust and consistent with other similar published and accepted economic assessments, however the report is not comprehensive and does not for example reflect how the fishing fleet is likely to change behaviours and location of fishing in response to a reduction to the TACC.
6. Fisheries New Zealand advises that the BERL economic assessment included TAR 1, TAR 2 and TAR 3. TAR 7 (Cook Strait region) *was not* included in the assessment, as the small proportion of catch and small area of TAR 7 relevant to the analysis would result in high level of estimation error in relation to the economic metrics such as GDP and employment. Any underestimate of impacts, as a result of TAR 7 not being included will likely be offset by the overestimate of impacts on catch (and revenue) of co-caught species.
7. Provided below is a summary of key results, focusing on comparing the 3 options provided, based on total impacts across all 3 QMAs. The report also contains detailed information of impacts at the QMA and regional level (BERL 2018).

Option 1

8. It is estimated that a 55% reduction in current commercial catch would result in a combined loss in revenue of \$6.75 million for TAR 1, 2, 3, and 7 (Table 8). More than 50% of the total loss in revenue (\$3.7 million) would come from TAR 2 due to the higher current TACC. In 6 of the last 8 years, the TACC in TAR 2 has been over-caught by up to 10 percent. Therefore, the effects of any TACC

reduction will be felt more in TAR 2 than any other OMA, as there is already a tendency for vessels to land more fish than what can be covered by quota (Table 8).

9. The study estimates that, under Option 1, there would be an average annual decrease of 1730 tonnes of tarakihi catch, and an annual average decrease of 820 tonnes of co-caught species such as red gurnard, john dory, snapper, and trevally over 20 years (Table 10 of BERL report). This will result in a 37% average annual loss of (\$6.88 million) in tarakihi catch revenue and a 0.5% average annual loss (\$1.45 million) of co-caught species.
10. The change in revenue to the fishing industry for each region generated the annual change in GDP **and employment (FTE's). The FTE losses are mainly direct from the fishing industry, or affiliated support industries.** The total economic impact on regions in terms of loss in annual GDP is \$5.26 million over the 20 years. The resulting impact on employment is an average annual loss of 48 FTEs, 22 of which are projected to come direct from the fishing industry (Table10).
11. To assess the regional impacts of the catch reduction under Option 1, BERL examined the economic impact in year 3 of the 20-year period (see s 9 of report). In year 3, the impact of Option 1 is predicted to have the highest impact in the Hawkes Bay-Gisborne region. Forty percent of the direct FTE losses (21 of the 52 FTEs from the fishing industry sector) are predicted to occur in this region (Table 9.2 BERL 2018).
12. It is important to note that the acute economic impacts of catch reductions that are estimated at year 3 may reduce over the 20-year period for Option 1 because the industry and the region will realise the benefits of higher catch rates resulting from the stock being rebuilt to target.
13. To determine the potential impact of reduced availability of tarakihi on the retail fish market, BERL ran three retail models (representing different consumer reactions to reduced availability) to test the possible impacts on the price of tarakihi and the demand for close substitute species such as gurnard and trevally. Retail model 1 is where tarakihi consumers continue to spend the same total amount on tarakihi, and will not substitute away from tarakihi to other fish such as gurnard and trevally. Retail model 2 is where tarakihi consumers continue to spend the same total amount on fish, *but will* substitute away from tarakihi once the price has increased to a substantial degree. Retail model 3 is where tarakihi consumers continue to spend the same total amount on fish, *but will* substitute away from tarakihi once the price has increased by more than 5 percent.
14. Under Option 1 the price of tarakihi is predicted to increase by 39% (from \$32.88/kg to \$45.75/kg) if consumers continue to buy tarakihi despite the decrease in supply. If consumers substitute away from tarakihi to gurnard and trevally, this will result in an annual increase in demand of 408 tonnes of gurnard and 580 tonnes of trevally at the current prices (retail model 2). If consumers substitute away from tarakihi as soon as the price increases by more than 5% (i.e. is more than \$34.52/kg) this will result in an annual increase in demand of 711 tonnes of gurnard and 1,013 tonnes of trevally at the current prices (retail model 3).
15. To examine the impacts on fishers BERL assigned current ACE holders to one of 5 fisher profiles (Table 9). The projected changes in catch revenue are assessed at year 3 and at the end of the 20 year rebuild period; year 3 provides for the assessment of acute impacts.

Table 9. Description of the 5 Fisher Profiles used by BERL to model the impacts of tarakihi ACE reduction resulting from the 3 options to reduce commercial catch of tarakihi (see s 7 BERL 2018).

Fisher Profile	Fisher profile 1	Fisher profile 2	Fisher profile 3	Fisher profile 4	Fisher profile 5
Tarakihi as a proportion of total ACE holding	At least 30% (i.e. large ACE holdings)	15% to 30%	5% to 15%	Under 5% but hold at least 100 tonnes of total ACE (High volume)	Under 5% but hold less than 100 tonnes of total ACE (Low volume)

16. Under Option 1 fishers holding ACE in FMA 1 with at least 5% TAR 1 (profiles 1, 2 and 3) see their total revenue decline by around 11.2% by year 3, but then increasing to slightly above their current revenue (Table 7.1 BERL 2018). This increase to above their current revenue is a result of the stock biomass rebuilding to target within 10 years.
17. In FMA 2, however the impact on revenue will be greater. For those fishers who hold 5-15% of TAR 2 ACE (profile 3 fishers) their revenue will decrease by around 16% by year 3, and those that hold at least 15% (profile 1 and 2 fishers) their revenue will decrease by around 35.8% by year 3 (Table 7.6 BERL 2018). The revenue for all fishers will increase to above the current (2017/18) levels as in FMA 1 after to stock has rebuilt.
18. In FMA 3, the impact on revenue is predicted to be similar to that in FMA 1; for those fishers holding at least 5% TAR 3 ACE (profiles 1, 2 and 3) their total revenue will decrease by around 13.6% by year 3, but then increasing to slightly above their current revenue (Table 7.11 BERL 2018).

Option 2

19. The economic assessment indicates that a 35% reduction in catch would result in an immediate loss in revenue to fishers of \$4.64 million in total across all QMAs (Table 8). Under Option 2 there is an average annual decrease of 2270 tonnes of tarakihi, and an annual average decrease of 1810 tonnes of co-caught species such as red gurnard, john dory, snapper, and trevally over 20 years (Table 10; s 4 and 5 of report, BERL 2018). This will result in a 49% average annual loss (\$8.99 million) in tarakihi catch revenue and a 1.7% average annual loss (\$4.35 million) of co-caught species.
20. The total economic impact (GDP and employment) on regions in terms of loss in annual GDP is \$8.37 million over the 20 years. The resulting impact on employment is an average annual loss of 75 FTEs, 35 of which are projected to come direct from the fishing industry (Table 10).
21. Option 2 is predicted to have the highest impact in the Hawkes Bay-Gisborne region in terms of employment. Forty-seven percent of the direct FTE losses (15 of the 32 FTEs from the fishing industry sector) are predicted to occur in this region by year 3 (Table 9.5 BERL 2018).
22. In terms of impacts on the retail market - Under Option 2 the price of tarakihi is predicted to increase by 30% (from \$32.88/kg to \$42.58/kg) if consumers continue to buy tarakihi despite the decrease in supply (see s 10 BERL 2018). If consumers substitute away from tarakihi to gurnard and trevally, this will result in an annual increase in demand of 330 tonnes of gurnard and 470 tonnes of trevally at the current prices. If consumers substitute away from tarakihi as soon as the price increases by more than 5% (i.e. is more than \$34.52/kg) this will result in an annual increase in demand of 549 tonnes of gurnard and 781 tonnes of trevally at the current prices.

23. Under Option 2 fishers holding ACE in FMA 1 with at least 5% TAR 1 (profiles 1, 2 and 3) see their total revenue decline by around 7.5% by year 3, and then hold at this level for the 20-year period (Table 7.4 BERL 2018). There is no increase within the 20-year period as the rebuild is not predicted to be completed until the end of the 20-year period. If the analysis had extended past 20 years the total revenue would be expected to increase as a result of the stock biomass rebuilding to target at 20 years.
24. In FMA 2, the impact on revenue will be slightly greater than FMA 1. For those fishers who hold 5-15% of TAR 2 ACE (profile 3 fishers), their revenue will decrease by around 11% by year 3, and those that hold at least 15% (profile 1 and 2 fishers) their revenue will decrease by around 25% by year 3 (Table 7.9 BERL 2018). As in FMA 1 the revenue for all fishers is expected to increase above the current (2017/18) levels after year 20 when the stock has reached target.
25. In FMA 3, the impact on revenue is predicted to be similar to that in FMA 1; fishers holding at least 5% TAR 3 (profiles 1, 2 and 3) see their total revenue decline by around 8.2% by year 3 (Table 7.14 BERL 2018).

Option 3

26. A 20% reduction in catch would result in an immediate loss in revenue to fishers of \$3.05 million in total across all QMAs (Table 8). The economic assessment assumed a 20% reduction in TACC; this would result in an average annual decrease of 1710 tonnes of tarakihi, and an annual average decrease of 730 tonnes of co-caught species such as red gurnard, john dory, snapper, and trevally over 20 years (Table 10; s 4 and 5 of report BERL 2018). This will result in a 37% average annual loss (\$6.77 million) in tarakihi catch revenue and a relatively small (0.5%) average annual loss (\$1.37 million) of co-caught species.
27. The total economic impact (GDP and employment) on regions in terms of loss in annual GDP is \$5.06 million over the 20 years. The resulting impact on employment is an average annual loss of 45 FTEs, 21 of which are projected to come direct from the fishing industry (Table 10).
28. In terms of regional impacts, Option 3 is predicted to have the highest impact in the Hawkes Bay-Gisborne region in terms of employment. Fifty percent of the direct FTE losses (10 of the 22 FTEs from the fishing industry sector) are predicted to occur in this region by year 3 (Table 9.6 BERL 2018).
29. In terms of impacts on the retail market - Under Option 3 the price of tarakihi is predicted to increase by 16.3% (from \$32.88/kg to \$38.24/kg) if consumers continue to buy tarakihi despite the decrease in supply (see s 10 BERL 2018). If consumers substitute away from tarakihi to gurnard and trevally, this will result in an annual increase in demand of 203 tonnes of gurnard and 290 tonnes of trevally at the current prices. If consumers substitute away from tarakihi as soon as the price increases by more than 5% (i.e. is more than \$34.52/kg) this will result in an annual increase in demand of 282 tonnes of gurnard and 402 tonnes of trevally at the current prices.
30. Under Option 3 fishers holding ACE in FMA 1 with at least 5% TAR 1 (profiles 1, 2 and 3) see their total revenue decline by around 4.7% by year 3, and then hold at this level for the 20-year period (Table 7.5 BERL 2018). There is no increase within the 20-year period, as the rebuild is not predicted to be completed until at least 30+ years.
31. In FMA 2, the impact on revenue will be slightly greater than FMA 1. For those fishers who hold 5-15% of TAR 2 ACE (profile 3 fishers) their revenue will decrease by around 7.4% by year 3, and

those that hold at least 15% (profile 1 and 2 fishers) their revenue will decrease by around 16.8% by year 3 (Table 7.10 BERL 2018). As in FMA 1 the revenue for fishers is not expected to increase/return to current levels.

32. In FMA 3, for those fishers holding at least 5% TAR 3 (profiles 1, 2 and 3) their total revenue will decrease by around 3.9% by year 3 (Table 7.15 BERL 2018), and is not expected to increase/return to current levels.

PART 8: DEEMED VALUE RATES

1 Summary

2305. Fisheries New Zealand recommends that you consider the deemed value rates for the fish stocks identified below. Your decisions will be effective from 1 October 2018.

2306. Thirteen stocks were identified for deemed value rate review. Proposals were developed based on statutory requirements, the Deemed Values Guidelines (the Guidelines; see Addendum 1), and key information. This work was undertaken for one of three reasons:

- a) The Total Allowable Catch (TAC) for the relevant stock is being reviewed in 2018, which may have consequential implications for deemed value rates;
 - b) Catch exceeded Annual Catch Entitlement (ACE) during the 2016/17 fishing year;
- Or
- c) Catch has, or is likely to, exceed available ACE during the 2017/18 fishing year.

2307. The deemed value rates for seven stocks (FLA 1, JDO 1, JDO 7, TAR 1, TAR 2, TAR 3 and TAR 7) were identified for review in conjunction with TAC reviews in 2018. For all other stocks subject to a TAC review in 2018, no criterion (detailed within the Guidelines) was triggered to support a review of deemed value rate settings and no alternative deemed value rates were consulted on.

2308. Two stocks (SKI 7 and BNS 3) were identified for review following catch in excess of the available ACE during the 2016/17 fishing year. Four stocks (PIL 7, PIL 8, SKI 3 and TRE 1) were identified for review due to actual, or likely, catch in excess of the available ACE during the 2017/18 fishing year.

2309. In addition to commentary on individual stock proposals, some industry submissions question the policy guidelines used to implement the legislation providing for deemed values. Fisheries New Zealand considers the proposed deemed value rates and schedules recommended in this paper to have been developed in line with the relevant statutory requirements, best available information, and tangata whenua and stakeholder input. Fisheries New Zealand is not recommending any alternative deemed value rates or schedules other than those consulted on. However, Fisheries New Zealand notes that you can exercise broad discretion when setting deemed value rates and are not obliged to choose the recommended option.

1 Purpose

2.1 THE DEEMED VALUE FRAMEWORK

2310. The Quota Management System (QMS) is the backbone of the New Zealand fisheries management regime, and includes a total of 642 fish stocks representing 98 species or species groups. The system for balancing catch against catching rights is known as the catch balancing regime and is key to ensuring the integrity of the QMS. The deemed value system is one component of the catch balancing regime, which overall provides considerable flexibility for fishers. It is a civil as opposed to a criminal regime (overfishing does not result in prosecution). With some exceptions, ACE is not required before fishing commences, instead fishers are provided flexibility to balance their catch

against ACE during the course of the fishing year by a system of financial incentives. Past experiences of abuse of the regime suggest that, beyond a certain level of flexibility, incentives need to become more onerous to prevent individuals avoiding the need to balance their catch against ACE. If required, there is provision in legislation to set overfishing thresholds which result in automatic exclusion from the fishery, if they are exceeded by more than a predetermined tolerance level.

2311. On the first day of the fishing year, all quota owners are provided with ACE based on their quota share and the current TACC. Under the catch balancing regime, fishers are required to balance their catch with ACE, or pay a deemed value on catch in excess of ACE. Fishers self-report their catch of quota species on a monthly basis. ACE may be freely traded during the course of the fishing year, but the value of ACE may change during the year depending on its availability. Often the fisher is not a quota holder and holds only ACE.
2312. The purpose of the deemed value framework is to encourage commercial fishers to balance their catch with ACE, while not discouraging them from landing and accurately reporting catch. The intent is to protect the long-term value of stocks, and to support kaitiakitanga by providing incentives for the overall commercial catch for each QMS stock to remain within the total available ACE and/or the Total Allowable Commercial Catch (TACC). The effectiveness of this incentive is dependent on individual 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.
2313. Effective deemed value rates contribute to both sustainability and utilisation objectives under the Act. Section 8 of the Act states that the purpose of the Act is to provide for the utilisation of fisheries resources while ensuring sustainability. Sustainability objectives are achieved because appropriate deemed value rates encourage fishers to balance catch with ACE and, in doing so, encourage harvesting to remain within the TACC. Harvesting over the TACC has the effect of undermining the sustainability of the fishery. The deemed value framework also provides flexibility for commercial operators to manage small, unexpected amounts of catch by balancing unintentional catches in excess of ACE.
2314. In general if set too low, deemed value rates will not provide sufficient incentive for fishers to acquire ACE, and will lead to individuals continuing to fish and pay deemed values. In turn this may lead to catches in excess of the TACC which may have negative implications for sustainability and the long-term value of the resource. Likewise, if set too high, deemed value rates may also discourage landing and accurate reporting, (i.e. behaviours such as illegal dumping and misreporting) which can compromise fisheries management.
2315. In order to provide the right balance of financial incentives, the deemed value system does not create a standard deemed value rate, but a set of rates that apply under different circumstances. The base rate is the annual deemed value which is charged at the end of the fishing year on catch in excess of ACE. Interim deemed value rates are charged each month to commercial fishers for every kilogram of fish landed in excess of ACE (\$/kg). Annual deemed value rates must be set higher than the interim rate, and interim rates have historically been set at 50% of the lowest annual rate. 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.

2316. In reviewing deemed value settings, and being consistent with the Deemed Value Guidelines, Fisheries New Zealand recommends that interim deemed value rates for the majority of fish stocks for review be transitioned from the historic 50% of annual rate to 90%. This is to incentivise fishers to cover deemed value payments on a regular basis should targeted or bycatch landings change throughout the fishing year.

2317. For each stock, the Minister sets progressively increased (differential) annual deemed value rates to also be charged at the end of the fishing year if the fisher harvested well in excess of their ACE holdings. This is permitted under section 75(4) of the Act. This results in an escalated schedule of rates as the percentage by which catch exceeds ACE increases. The standard approach increases in 20% increments up to a maximum of 200% of the annual deemed value (see Table 1). Differential rates reflect the increasingly detrimental impact on sustainability of higher levels of over-catch, by providing stronger incentives to avoid over-catch.

Table 1: 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%

2318. For vulnerable or rebuilding fish stocks, or targeted stocks with high selectivity and low vulnerability to bycatch, a more stringent non-standard differential or special annual deemed value schedule (e.g. applying from 5% or 10% over-catch) may be more appropriate than the standard schedule.

2319. The deemed value rate changes proposed in this paper are aimed at protecting the TACC, regardless of the level at which it is set, by encouraging balancing of landings with ACE while avoiding creating incentives to discard and misreport catch.

2.2 THE ACT AND THE DEEMED VALUE GUIDELINES

2320. Section 75(1) of the Act requires you to set deemed value rates for all stocks managed under the QMS. When setting deemed value rates, section 75(2)(a) requires you to take into account the need to provide an incentive for every commercial fisher to acquire or maintain ACE that is not less than the fisher's total catch of each stock taken.

2321. When setting deemed value rates, section 75(2)(b) allows you to have regard to:

- the desirability of commercial fishers to land catch for which they do not have ACE;
- the market value of ACE;
- the market value of the stock;

- the economic benefits obtained by the most efficient fisher, licensed fish receiver, retailer or any other person from the taking, processing or sale of the fish or associated with the fish;
- the extent to which the 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.

2322. The practical application of these statutory criteria is set out in the Guidelines, which are summarised below and in extract form in Addendum 1 at the end of this chapter:

- deemed value rates must generally be set between the ACE price and the reported landed (port) price¹;
- 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;
- deemed value rates must generally be set at twice the port price for high value single species fisheries and species subject to international catch limits;
- deemed value rates for Chatham Island landings may be lower;
- interim deemed value rates must generally be set at 90% of the annual deemed value rate; and
- differential deemed value rates must generally be set.

2323. Deemed value rates are prescribed by Gazette Notice under section 75 of the Fisheries Act 1996 (the Act).

2 Background Information

2.1 IDENTIFYING STOCKS FOR DEEMED VALUE REVIEW

2324. To identify stocks for deemed value review, Fisheries New Zealand:

- a) Considered stocks where TAC settings were being reviewed for 1 October 2018;
- b) Assessed October fishing year stocks against the Performance Measures outlined in the Guidelines for the deemed value framework;
 - i. Catch in excess of the available ACE²
 - ii. The percentage of catch for each stock not balanced with ACE.
- c) Considered whether deemed value rates were consistent with the Guidelines (i.e., interim deemed value rates 90% of annual deemed value rate and how annual deemed value rates relate to ACE and port price); and
- d) Compared 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 ratio is less than 0.1% of the value of quota in any fishing year.

¹ Reported port prices are the average price for greenweight fish of each stock reported to be paid to independent fishers by licensed fish receivers (LFRs). These values ignore differences in size, quality and state of fish landed (i.e. fishing method), location of landings, seasonal price variations, deductions that fishers may pay to LFRs from time to time, and price differentials for vertically integrated fishing companies. Reported port prices are therefore an indicator of limited reliability. In general, real port prices for average size and quality fish landed in the main ports by individual fishers would tend to be higher than the average prices reported by LFRs.

² Catch in excess of ACE as an alternative to catch in excess of the TACC, because a small amount of ACE can be carried over from the previous fishing year.

2325. Table 2 sets out the prioritised stocks for 2018 and their assessment against performance measures listed above.

Table 2: Rationale for fish stocks prioritised for review

Stock	Rationale for review
BNS 3	<ul style="list-style-type: none"> - 112% caught in 2016/17 - Ratio of 2016/17 DV³ payments to QV⁴ of 0.1083, or 10.83% - Current DV rate does not exceed ACE price by transaction costs
FLA 1	<ul style="list-style-type: none"> - Subject to a TAC review in 2018 - Interim DV rate not consistent with Guidelines
JDO 1	<ul style="list-style-type: none"> - Subject to a TAC review in 2018 - Interim DV rate not consistent with Guidelines
JDO 7	<ul style="list-style-type: none"> - Subject to a TAC review in 2018 - Interim DV rate not consistent with Guidelines
PIL 7	<ul style="list-style-type: none"> - 13% caught in 2016/17, but catch well in excess of available ACE at mid-point of 2017/18 - Ratio of predicted 2017/18 DV payments to QV of 0.2892, or 28.92% - Overestimated port price
PIL 8	<ul style="list-style-type: none"> - 52% caught in 2016/17, but catch well in excess of available ACE at mid-point of 2017/18 - Ratio of predicted 2017/18 DV payments to QV of 1.983, or 198.3% - Overestimated port price
SKI 3	<ul style="list-style-type: none"> - 75% caught in 2016/17, but catch well in excess of available ACE at mid-point of 2017/18 - Interim and annual DV rates not consistent with Guidelines
SKI 7	<ul style="list-style-type: none"> - 131% caught 2016/17 - Ratio of 2016/17 DV payments to QV of 0.4884, or 48.84% - Annual DV rate exceeds 2017/18 port price
TAR 1	<ul style="list-style-type: none"> - Subject to a TAC review in 2018 - Interim and annual DV rates not consistent with Guidelines
TAR 2	<ul style="list-style-type: none"> - Subject to a TAC review in 2018 - 107% caught 2016/17 - Interim and annual DV rates not consistent with Guidelines
TAR 3	<ul style="list-style-type: none"> - Subject to a TAC review in 2018 - Interim and annual DV rates and differential schedule not consistent with Guidelines
TAR 7	<ul style="list-style-type: none"> - Subject to a TAC review in 2018 - Interim and annual DV rates not consistent with Guidelines
TRE 1	<ul style="list-style-type: none"> - 85% caught at mid-point of 2017/18 and a predicted catch in excess of available ACE by end of 2017/18 - Interim DV rates and differential schedule not consistent with Guidelines

³ DV = Deemed value

⁴ QV = Quota value

3 Consultation

2326. Before setting any interim or annual deemed value rate, under section 75(A) of the Act you are required to consult with tangata whenua and stakeholders.
2327. Fisheries New Zealand sought input from tangata whenua representatives prior to the formal 2018 consultation period at Iwi Fisheries Forum discussions. These included Te Hiku o Te Ika (Far North), Nga Hapu o Te Uru o Tainui (Waikato-Tainui), Mai I Ngā Kuri a Whārei ki Tihirau (Bay of Plenty-East Coast), Te Tai Hauāuru (Taranaki), Te Tau Ihu (Top of the South) and Te Waka a Māui me Ōna Toka (South Island) Iwi forums. Fisheries New Zealand also sought input from tangata whenua not represented by these iwi forums. No specific feedback on deemed value rate settings was provided at these Iwi Fisheries Forums.
2328. Fisheries New Zealand considers that particular regard to kaitiakitanga has been achieved through input and participation of tangata whenua in Iwi Fisheries forums, and in consideration of respective Iwi Forum Fisheries Plans.
2329. Fisheries New Zealand has also consulted and sought input from tangata whenua on the proposed changes, during the formal consultation process.
2330. Te Waka a Māui me Ōna Toka Iwi Forum Iwi forum (TWAM) represents the nine iwi of the South Island, each holding mana moana and significant interests (both commercial and non-commercial) in South Island fisheries. TWAM commented that they were uncertain why the JDO 7 interim deemed value rate increase was proposed, and consider more information is needed to ensure this increase is appropriate. The forum was comfortable with the other deemed value options proposed.
2331. Fisheries New Zealand also received input on deemed value rate settings from the mid-north North Island hui at which Ngati Hine, Te Uri o Hau, Ngati Wai and Ngati Whatua were in attendance. The groups supported increasing deemed values rates as needed.
2332. Initial proposals are outlined in Table 3 below.

Table 3: Current and proposed deemed value rates (\$/kg) for selected stocks from 1 October 2018. Proposed changes are highlighted in blue.

		Current				Proposed			
Species	Stock	Interim \$/kg	Annual \$/kg	Annual at maximum excess \$/kg	Differential	Interim \$/kg	Annual \$/kg	Annual at maximum excess \$/kg	Differential
Bluenose	BNS 3	2.70	3.00	10.00	Special	3.60	4.00	11.00	Special
	BNS 3 ⁵	0.95	1.05	10.00	Special	1.26	1.40	11.00	Special
Flatfish	FLA 1	0.75	1.50	3.00	Standard	1.35	1.50	3.00	Standard
John dory	JDO 1	1.96	3.92	7.84	Standard	3.53	3.92	7.84	Standard
	JDO 7	2.62	5.25	10.00	Special	4.73	5.25	10.00	Special
Pilchard	PIL 7	0.30	0.60	1.20	Standard	0.30	0.45	0.60	Special
	PIL 8	0.54	0.60	1.20	Standard	0.30	0.45	0.60	Special
Gemfish	SKI 3	0.65	1.29	2.58	Standard	0.65	0.72	1.44	Standard
	SKI 7	0.65	1.29	2.58	Standard	0.65	0.72	1.44	Standard
Tarakihi	TAR 1	1.50	3.00	5.50	Special	3.15	3.50	5.75	Special
	TAR 2	2.48	2.75	5.75	Special	3.15	3.50	5.75	Special
	TAR 3	0.55	1.09	2.18	Standard	3.15	3.50	5.75	Special
	TAR 7	1.25	2.50	5.50	Special	3.15	3.50	5.75	Special
Trevally	TRE 1	0.70	1.25	2.50	Standard	1.13	1.25	5.00	Special

3.1 SUBMISSIONS RECEIVED

2333. Fisheries New Zealand received submissions from 15 organisations or individuals relating to the proposed changes (listed alphabetically below).

- a) Chatham Islands Finfish Association Inc.
- b) Environment and Conservation Organisations of NZ Inc. (ECO)
- c) The Royal Forest & Bird Protection Society (Forest & Bird)
- d) Fisheries Inshore New Zealand
- e) Independent Fisheries Ltd
- f) Iwi Collective Partnership
- g) Kahungunu Asset Holding Company
- h) Ngāti Whatua Fisheries Ltd.
- i) Ocean Fisheries Ltd.
- j) Sealord Group Ltd. (Sealord)
- k) Southern Inshore Fisheries New Zealand Management Company Ltd.
- l) Te Ohu Kaimoana
- m) Mr. Ben Turner
- n) Mr. Andrew Turnwald
- o) Waitangi Seafoods Ltd.

3.2 SUMMARY OF SUBMISSIONS

2334. Submitters' comments on the proposed deemed value rate settings for specific stocks are addressed in the analysis of each species or stock below. Full copies of the submissions are available in Appendix 2.

2335. Other issues raised in submissions centre around the deemed value framework and the process followed when undertaking a review of deemed value settings. While not within the scope of this deemed value review for individual stocks, these views are summarised below. Fisheries New Zealand responses are provided.

⁵ Landed to licenced fish receivers located on the Chatham Islands

2336. A recurrent issue raised by Fisheries Inshore New Zealand, Southern Inshore Fisheries Management Company and Sealord is that adjustments to deemed value rates should not be used as a fisheries management measure in lieu of a correctly set TACC.
2337. Fisheries Inshore New Zealand expressed concern regarding the deemed value framework and the lack of change observed within the deemed value setting process, given previous submissions they have made regarding this matter. In particular, Fisheries Inshore New Zealand submits that deemed value rates act as an incentive to misreport when deemed value rates exceed the port price and that stringent differential schedules act in the interest of quota holders rather than fisheries management. Fisheries Inshore New Zealand argue that the deemed value rates of 159 inshore fish stocks are not consistent with the Guidelines, and recommend a deemed value review for these stocks. FINZ also challenges Fisheries New Zealand regarding the use of port prices within the deemed value setting process given that Fisheries New Zealand asserted that *'port prices are an indicator of limited reliability'* in a footnote on page 244 of the consultation document.
2338. Iwi Collective Partnership, a fisheries seafood collective of 15 North Island Iwi members representing owners of settlement quota, do not express any specific views with respect to the proposed deemed values rates.
2339. Sealord requested that deemed value payments be redirected from the Consolidated Fund into a managed fund that can be drawn on for fisheries research purposes.
2340. Southern Inshore Fisheries Management Company submit that an immediate review of the deemed value setting process is essential. As evidence of a longstanding and continued desire to engage with Fisheries New Zealand over the deemed value setting process, Southern Inshore Fisheries Management Company provided extracts from submissions made regarding this issue over the course of the last three years. A full copy of Southern Inshore Fisheries Management Company's submission is provided in Appendix 2, however, in summary Southern Inshore Fisheries Management Company submit that;
- a) Deemed value rates be set on a regional basis to reflect the port price index in the regions, rather than the average index which can be influenced by North Island port prices or export prices.
 - b) Deemed value policy be adjusted to reflect the purpose of section 75(2)(a) of the Act to encourage individuals to balance his/her individual catch rather than to constrain 'overall' or 'total' catch.
 - c) Fisheries New Zealand consider the relationship between the Act and the Guidelines so that deemed value settings encourage fishers to acquire ACE, and that the incentive to land (not misreport) is the driver behind deemed value policy.
 - d) Changes to deemed value policy require no legislative change.
 - e) Southern Inshore Fisheries Management Company support the re-establishment of a joint working group to be tasked with reviewing current deemed value policy and recommending a revised policy over a time frame of 2-3 months.
2341. The joint Southern Inshore Fisheries Management Company, Te Ohu Kaimoana and Fisheries Inshore New Zealand submission regarding tarakihi expressed concern regarding the setting of deemed values that do not reflect the reality of port prices or market drivers. The joint submission argued that when setting deemed value rates, Fisheries New Zealand should consider the following issues; the difficulties fishers face when attempting to avoid certain species (e.g. tarakihi), the potential constraints of ACE

availability, the need to adequately discourage over-catch and the need to incentivise accurate recording of catches and disposals. The joint submission proposed a review of deemed value settings which reflects differing port prices, differing fish sizes and the need to gain good information on stock abundance whilst ensuring appropriate scaling of annual deemed value rates of catch in excess of available ACE.

2342. Te Ohu Kaimoana submit that the overriding purpose of deemed values is to encourage the reporting of catch, while discouraging the catch of stocks that individual fishers are unable to cover with ACE. Te Ohu Kaimoana state that the current deemed value policy has the potential to increase incentives for discarding catch and recommend that the deemed value rates for particular fish stocks be set at, or scaled up to, a level that removes any profit after harvesting costs are deducted. Under such conditions, Te Ohu Kaimoana consider that fishers will be incentivised to both retain catch for which ACE cannot be obtained, but importantly to report the catch. They consider that this has the potential to increase the quality of information available to support fisheries management.

2343. Mr. Turner, a commercial fisher and quota holder, questioned what the money collected through deemed value payments is used for. Mr. Turner argued that deemed value payments should be credited back to the quota holder via levy reductions for that stock.

2344. Mr. Turnwald, a commercial fisher, suggested that permit holders who regularly catch in excess of available ACE should have their fishing permit suspended until sufficient ACE is acquired.

3.3 FISHERIES NEW ZEALAND RESPONSE

2345. Output control based management regimes, such as the QMS, rely on limiting catch to ensure sustainability of harvesting and maintain value of the harvest and resource. Elsewhere in the world these regimes, where they are enforced, can simply prevent fishing from occurring if catch limits are reached (e.g. closure of a fishery when the TACC is fully caught). The New Zealand catch balancing regime has the advantage that encourages integrity of catch limits, but also provides flexibility to fishers for unexpected catch.

2346. Historically there has been debate about the settings of the deemed value regime and its intent. It has ranged from being used to encourage fluidity in the ACE market by acting as a substitute (and therefore price setter for ACE) through to, as it is currently, a tool aimed more at protecting catch limits.

2347. The current policy has evolved over time, and is a reflection of past problems with the ACE balancing regime. The Minister of Fisheries at the time (Hon Jim Anderton) noted the following in implementing the deemed value standard for the first time in 2007:

“Correct deemed values are absolutely critical to the integrity of the Quota Management System. They are as important to the sustainability of a fishery — and its economic value — as the TAC and TACC. I have therefore decided to make a number of changes across a whole range of fish stocks to better ensure that catch is balanced with a fisher's ACE. I will not tolerate excessive catch in a fishery above the available ACE in that fishery. This general ‘tightening’ of the system is critical to ensure the integrity of the Quota Management System.”

I know this will cause problems for some parts of the industry. But this was a change that was a long time coming. My message is clear: ACE should be used to balance catch, or fishers should change their fishing practices to reduce or eliminate the harvest of stocks for which you cannot balance with ACE.

I am advised that there may be a tendency for some irresponsible fishers to try and avoid deemed values by discarding unwanted fish. This is unacceptable. Under the Fisheries Act, this is a criminal act. When caught, such fishers will be prosecuted and face large fines and potential forfeiture of quota and vessels. I expect that my deemed values decisions will influence where enforcement effort is applied.

I have asked MFish to step up efforts to detect any possible illegal discarding. The new Project Protector vessels, along with helicopters and fixed-wing aircraft, will be deployed to detect possible offending.

Deemed values should be charged a lot more rarely than they are now, and they should be for small and unexpected overruns above ACE holdings. Fishers should not deliberately target species over their ACE holdings, or have insufficient ACE to cover bycatch when harvesting a target species: in all cases, my obligation under section 75(2)(a) of the Act is to ensure that the incentive is to cover that catch with ACE.

I recognise that some believe the TACCs for some stocks are too low, and where this is the case, I agree that these should be reviewed. However, I am not willing to allow TACCs to be substantially exceeded by setting artificially low deemed values. I will not knowingly set deemed values that will allow or encourage catch well in excess of ACE. To do so would be a breach of my obligations under section 75(2)(a) of the Act. I will not make some TACCs 'real' and others 'on paper'."

2348. It is important to note that, in general, the punitive elements of the current policy (i.e. ramped deemed values) only apply when fishers reach or exceed their ACE holding by 20% or more. As a matter of principle, fishers should acquire an appropriate mix of ACE for their fishing operation. The deemed value framework provides for the circumstance of small inadvertent catch without ACE, but is designed to discourage sustained fishing without an appropriate catch mix and ensure that catch is not taken above the TAC, which undermines the sustainability of the fishery. Deemed values provide financial incentives to ensure sustainability. There are also other provisions in the legislation that are used to mitigate small catches of species for which no ACE is held, such as the ability to release specified species listed on the Sixth Schedule of the Act if they are alive and likely to survive.

2349. We are proposing in the draft consultation document on fisheries system improvements that we review the Deemed Value Guidelines. The last review of the Deemed Value Guidelines was in 2012. The review was undertaken by the MFish Chief Economist, and reviewed by external socio-economic research providers and stakeholders (including industry) through the science working group process. It sought to ensure that deemed values were set at a level that did not allow them to be used as a substitute for ACE, and that deemed values were regularly reviewed (rather than only when catch limits were adjusted) to ensure they remained effective at encouraging balancing catch with ACE. Annual deemed value payments reduced substantially from about \$12 million in 2006 to about \$5 million more recently as a result of the change.

2350. The use of deemed values in this way puts greater weight on ensuring the catch limits are set at the right level, otherwise fishers could be unreasonably penalised (by paying deemed values when catches are sustainable). Fisheries New Zealand consider this weighting is appropriate to drive incentives to reduce unwanted bycatch, and also fund research to support evidence-based adjustment to catch limits. Fishers who decide to discard unwanted fish rather than face a deemed value payment are operating illegally, putting at risk the sustainability of fisheries, and undermining the integrity of the QMS.
2351. If there was a reduction in deemed value rates for key species below the price of ACE it would result in increased catches beyond the TACC. It would also lower the price of ACE which would impact on the overall value of the fishery.
2352. Industry have submitted that deemed values should be lower where there is uncertainty in the TACC settings and to encourage reporting and reduce waste. Fisheries New Zealand considers that whether the TAC/TACC is set correctly is an irrelevant consideration when determining the level of deemed values. This view is reinforced by case law⁶.

“The obligations which the Minister has under Part 3 and the TAC and TACC setting mechanisms were not, in my judgment, matters which come into play when the Minister was setting DV rates under s 75. Furthermore, and I here deal with the applicants' submission that set TACs may be suspect in respect of which judicial reservations have been expressed (supra [50]), the mandatory s 75(2)(a) requirement is focused on sufficient ACE grounded as they are in TACs. In my judgment it is not permissible for the Minister, when considering DVs and the s 75(2)(a) requirement, to turn his mind to the possibility that relevant TACs may need revision or have been set faultily”.

4 Deemed Value Rate Options

4.1 ANALYSIS OF OPTIONS

2353. Fisheries New Zealand recommends that you approve changes to the deemed value rates for selected stocks as outlined in Table 3. No input or feedback through consultation suggests that Fisheries New Zealand's initial proposals should change, hence these recommendations are the same as those consulted on and are discussed below.

2354. Fisheries New Zealand considers all recommended deemed value rates are consistent with your statutory obligations under section 75(2)(a) and 75(2)(b) of the Act.

4.2 STOCKS TO BE CONSIDERED IN CONJUNCTION WITH CURRENT TAC DECISIONS

2355. The deemed value rates for seven stocks (FLA 1, JDO 1, JDO 7, TAR 1, TAR 2, TAR 3 and TAR 7) were identified for review in conjunction with TAC decisions in 2018. For all other stocks subject to a TAC review in 2018, no criterion (detailed within the Guidelines) was triggered to instigate a review of deemed value settings, and no alternative deemed value rates were consulted on.

⁶ Pacific Trawling v Minister of Fisheries (CIV-2007-441-1016)

5.2.1 Flatfish (FLA 1) - Northern North Island

2356. FLA 1 is composed of eight species of flatfish, with the flatfish species principally caught in FLA 1 being sand flounder and yellow belly flounder. Flatfish are mainly taken by targeted set net fishing in shallow inshore bays and harbours. The FLA 1 TACC was set at 1,187 tonnes on introduction to the Quota Management System (QMS), and has not been changed since. Landings of FLA 1 have never exceeded the available ACE. For 1 October 2018, options to reduce the FLA 1 TAC were proposed, to set it at a level that reflects stock abundance, FLA 1 recent catch, and to allow for rebuild of the stock.

2357. In consideration of submissions received, Fisheries New Zealand is also proposing an additional more conservative option, as an interim approach to reviewing other management settings for FLA 1.

2358. To encourage fishers to balance catch against ACE regularly throughout the fishing year, Fisheries New Zealand consulted on increasing the interim deemed value rate for FLA 1 from 50% of the annual deemed value rate to 90% (consistent with Principle 7 of the Guidelines). Fisheries New Zealand did not propose adjusting the annual deemed value rate, or differential schedule for FLA 1.

Submissions

2359. Fisheries New Zealand received five submissions regarding the proposed deemed value rates for FLA 1.

2360. ECO, a national alliance of 48 groups with a concern for the environment, support the proposed change to the interim deemed value rate for FLA 1 so as to reduce the incentive for over fishing.

2361. Fisheries Inshore New Zealand, the sector representative entity for inshore finfish, pelagic and tuna fisheries, submit that the proposed adjustment to the interim deemed value rate for FLA 1 will bring no fisheries management benefits and therefore oppose the proposed adjustment.

2362. Forest & Bird, New Zealand's largest independent conservation organisation, support the proposed adjustment to the interim deemed value rate for FLA 1, but did not provide rationale.

2363. Te Ohu Kaimoana, an organisation which works on behalf of 58 Mandated Iwi Organisations to implement and protect the Fisheries Settlement, support the proposed increase to the interim deemed value rate for FLA 1 as it will reduce the prospect of fishers waiting until the end of the year before acquiring ACE. However, Te Ohu Kaimoana do not support the retention of differential deemed value rates set at a level above the market value of the catch.

2364. Mr. Turnwald, a commercial fisher, stated that there was little need to increase the interim deemed value rate for FLA 1, given the concurrent proposals to reduce the TACC for FLA 1.

Fisheries New Zealand Response

2365. Setting the interim deemed value rate below 90% of the annual rate can provide incentives for fishers to delay the balancing of catch with available ACE until the end of the fishing

year. Such behaviour may lead to a race for ACE, inflated ACE prices and a shift in the balance of financial incentives provided by the deemed value regime. As a result, sufficient ACE may not be available to cover catches or fishers may choose to cover over-catch by paying deemed values, impacting on the sustainability of the fishery. To encourage fishers to balance catch with ACE regularly throughout the year, Principle 7 of the Guidelines recommends that interim deemed value rates be set at 90% of the annual rate unless stock-specific reasons suggest otherwise.

2366. Fisheries New Zealand has a policy of aligning stocks with Principle 7 of the Guidelines when conducting TAC reviews, and sees no reason to depart from the Guidelines in this case. Fisheries New Zealand notes a degree of support from some submitters for this approach, and considers that there are fisheries management benefits from its implementation.

2367. To reflect the increasingly detrimental impact of higher levels of over-catch on sustainability and utilisation objectives, Principle 8 of the Guidelines recommends the application of the standard differential deemed value rate schedule to most stocks to mitigate the risk of fishers continuing to fish without ACE (as experienced in the past), particularly in the circumstance of a change in the value of ACE and port price throughout the year. Fisheries New Zealand sees no reason to depart from the Guidelines in this case.

Recommendation

Table 4: Current and recommended deemed value rates (\$/kg) for FLA 1

Stock	Option	Interim deemed value rate (\$/kg)	Standard annual differential rates (\$/kg) for excess catch (% of ACE)					
			100-120%	120-140%	140-160%	160-180%	180-200%	>200%
FLA 1	Current	0.75	1.50	1.80	2.10	2.40	2.70	3.00
	Recommended	1.35	1.50	1.80	2.10	2.40	2.70	3.00

2368. Fisheries New Zealand recommends that the interim deemed value rate for FLA 1 be adjusted as recommended in the shaded portion of Table 4, namely from \$0.75/kg to \$1.35/kg.

2369. Fisheries New Zealand is not recommending a change to the annual deemed value rate, or differential schedule for FLA 1.

5.2.2 John dory (JDO 1) – Northern North Island

2370. John dory in JDO 1 is mainly taken in the targeted mixed inshore trawl and Danish seine fisheries. Because the catch of JDO 1 has shown a long-term decline, a review to reduce the JDO 1 TAC was proposed for the fishing year beginning 1 October 2018.

2371. To encourage fishers to balance catch against ACE regularly throughout the fishing year, Fisheries New Zealand consulted on increasing the interim deemed value rate for JDO 1 from 50% of the annual deemed value rate to 90% (consistent with Principle 7 of the Guidelines). Fisheries New Zealand did not propose adjusting the annual deemed value rate, or differential schedule for JDO 1.

Submissions

2372. Fisheries New Zealand received five submissions regarding the proposed deemed value rates for JDO 1.

2373. ECO support the proposed change to the interim deemed value rate for JDO 1, so as to reduce the incentive for over fishing.
2374. Fisheries Inshore New Zealand submit that the proposed adjustment to the interim deemed value rate for JDO 1 will bring no fisheries management benefits, and therefore oppose the proposed adjustment.
2375. Ngati Whatua Fisheries Ltd., a mandated iwi organisation, submit that the deemed value rate for JDO 1 be set at, or above the port price to discourage over catching and encourage vessels to develop a catch plan before fishing.
2376. Te Ohu Kaimoana support the proposed increase to the interim deemed value rate for JDO 1, as it will reduce the prospect of fishers waiting until the end of the year before acquiring ACE. However, Te Ohu Kaimoana do not support the retention of differential deemed value rates set at a level above the market value of the catch.
2377. Mr. Turnwald submitted that there was little need to increase the interim deemed value rate for JDO 1, given the concurrent proposals to reduce the TACC.

Fisheries New Zealand Response

2378. Principle 1 of the Guidelines states that deemed value rates must generally be set between the ACE price and the landed (port) price. Given that landings of JDO 1 have not exceeded the available ACE during the last 18 years, Fisheries New Zealand does not consider it appropriate to depart from Principle 1 in this case.
2379. Setting the interim deemed value rate below 90% of the annual rate can provide incentives for fishers to delay the balancing of catch with available ACE until the end of the fishing year. Such behaviour may lead to a race for ACE, inflated ACE prices and a shift in the balance of financial incentives provided by the deemed value regime. As a result, sufficient ACE may not be available to cover catches or fishers may choose to cover over-catch by paying deemed values, impacting on the sustainability of the fishery. To encourage fishers to balance catch with ACE regularly throughout the year, Principle 7 of the Guidelines recommends that interim deemed value rates be set at 90% of the annual rate unless stock-specific reasons suggest otherwise.
2380. To reflect the increasingly detrimental impact of higher levels of over-catch on sustainability and utilisation objectives, Principle 8 of the Guidelines recommends the application of the standard differential deemed value rate schedule to most stocks to mitigate the risk of fishers continuing to fish without ACE (an experience in the past) particularly in the circumstance of a change in the value of ACE and port price throughout the year. Fisheries New Zealand sees no reason to depart from the Guidelines in this case.

Recommendation

Table 5: Current and recommended deemed value rates (\$/kg) for JDO 1

Stock	Option	Interim deemed value rate (\$/kg)	Standard annual differential rates (\$/kg) for excess catch (% of ACE)					
			100-120%	120-140%	140-160%	160-180%	180-200%	>200%
JDO 1	Current	1.96	3.92	4.70	5.49	6.27	7.06	7.84
	Recommended	3.53	3.92	4.70	5.49	6.27	7.06	7.84

2381. Fisheries New Zealand recommends that the interim deemed value rate for JDO 1 be adjusted as recommended in the shaded portion of Table 5, namely from \$1.96/kg to \$3.53/kg.

2382. The current annual deemed value rate for JDO 1 (\$3.92) is set between the average ACE transfer price in 2016/17 (\$0.84/kg) and the average port price (\$5.64/kg), therefore Fisheries New Zealand is not recommending any changes to the annual deemed value rate, or differential schedule for JDO 1.

5.2.3 John dory (JDO 7) – West Coast South Island

2383. John dory in JDO 7 is mainly taken in the mixed target inshore trawl fishery. Landings of JDO 7 have not exceeded the available ACE since the TACC was increased to 150 tonnes at the start of the 2012/13 fishing year. Following the results of the 2017 West Coast South Island and Tasman and Golden Bay trawl survey (which estimated the biomass of John dory in JDO 7 to be well above management targets), an increase to the TACC of JDO 7 from 1 October 2018 is proposed.

2384. To encourage fishers to balance catch against ACE regularly throughout the fishing year, Fisheries New Zealand consulted on increasing the interim deemed value rate for JDO 7 from 50% of the annual deemed value rate to 90% (consistent with Principle 7 of the Guidelines). Fisheries New Zealand did not propose adjusting the annual deemed value rate, or differential schedule for JDO 7.

Submissions

2385. Fisheries New Zealand received three submissions regarding the proposed deemed value rates for JDO 7.

2386. ECO support the proposed changes to the interim deemed value rate for JDO 7 so as to reduce the incentive for over fishing.

2387. Fisheries Inshore New Zealand submit that the proposed adjustment to the interim deemed value rate for JDO 7 will bring no fisheries management benefits, and therefore opposes the proposed adjustment.

2388. Te Ohu Kaimoana support the proposed increase to the interim deemed value rate for JDO 7 as it will reduce the prospect of fishers waiting until the end of the year before acquiring ACE. However, Te Ohu Kaimoana do not support the retention of differential deemed value rates set at a level above the market value of the catch.

2389. In addition to the three submissions, the Te Waka a Māui me Ōna Toka Iwi Forum commented that they were uncertain why the JDO 7 interim deemed value rate increase

was proposed, and consider more information is needed to ensure this increase is appropriate.

Fisheries New Zealand Response

2390. Setting the interim deemed value rate below 90% of the annual rate can provide incentives for fishers to delay the balancing of catch with available ACE until the end of the fishing year. Such behaviour may lead to a race for ACE, inflated ACE prices and a shift in the balance of financial incentives provided by the deemed value regime. As a result, sufficient ACE may not be available to cover catches or fishers may choose to cover over-catch by paying deemed values, impacting on the sustainability of the fishery. To encourage fishers to balance catch with ACE regularly throughout the year, Principle 7 of the Guidelines recommends that interim deemed value rates be set at 90% of the annual rate unless stock-specific reasons suggest otherwise.

2391. To reflect the increasingly detrimental impact of higher levels of over-catch on sustainability and utilisation objectives, Principle 8 of the Guidelines recommends the application of the standard differential deemed value rate schedule to most stocks to mitigate the risk of fishers continuing to fish without ACE (as experienced in the past) particularly in the circumstance of a change in the value of ACE and port price throughout the year. Fisheries New Zealand sees no reason to depart from the Guidelines in this case.

Recommendation

Table 6: Current and recommended deemed value rates (\$/kg) for JDO 7

Stock	Option	Interim deemed value rate (\$/kg)	Special annual differential rates (\$/kg) for excess catch (% of ACE)			
			100-120%	120-130%	130-140%	>140%
JDO 7	Current	2.62	5.25	6.00	8.00	10.00
	Recommended	4.73	5.25	6.00	8.00	10.00

2392. Fisheries New Zealand recommends that the interim deemed value rate for JDO 7 be adjusted as recommended in the shaded portion of Table 6, namely from \$2.62/kg to \$4.73/kg.

2393. Fisheries New Zealand is not recommending a change to the annual deemed value rate, or differential schedule for JDO 7.

5.2.4 Tarakihi (TAR 1, 2, 3 & 7) – East Coast North Island and East Coast South Island

2394. In conjunction with setting tarakihi commercial catch allowances as part of a stock rebuilding strategy, Fisheries New Zealand consulted on initial adjustments to the deemed value rates to encourage commercial fishers to constrain catches within the available ACE. As part of the east coast tarakihi rebuild strategy, Fisheries New Zealand considers that providing incentives to balance catch against available ACE under the proposed deemed value rates is critical to achieving stock rebuild objectives.

2395. Fisheries New Zealand generally sets the annual deemed value rates between the ACE transfer price and the port price under Principle 1 of the Guidelines. However, under certain circumstances this approach may be departed from.

2396. The reported port price of tarakihi across the east coast stocks ranges from \$2.00/kg to \$3.50/kg. Given that Fisheries New Zealand intends for fishers to constrain catch of

tarakihi to the available ACE, and that the TAR 1, TAR 2, TAR 3 and TAR 7 stocks are considered contiguous, Fisheries New Zealand proposed setting deemed value rates under Principle 3 of the Guidelines. Principle 3 provides for setting deemed value rates to avoid creating incentives to misreport between adjacent fish stocks.

2397. In order to discourage misreporting and to provide incentives to fishers to constrain catch to within available tarakihi ACE, Fisheries New Zealand proposed setting the annual deemed value rate for all east coast tarakihi stocks (TAR 1, 2, 3, and 7) at the upper bound of the port price indices of the east coast tarakihi stocks (\$3.50/kg).

2398. Consistent with Principle 7 of the Guidelines, Fisheries New Zealand also proposed that the interim deemed value rate for all east coast tarakihi stocks be adjusted from 50% to 90% of the annual deemed value and that the special differential schedule where the maximum deemed value rate applies at 120% of excess catch currently applying to TAR 1, TAR 2 and TAR 7, is extended to TAR 3 and should be set following Principle 8 of the Guidelines. Fisheries New Zealand notes the substantial increase in the recommended deemed value rates for TAR 3, but considers this to be an artefact of TAR 3 deemed value settings not being triggered for review since the deemed value guidelines were introduced, unlike the other stocks.

Submissions

2399. Fisheries New Zealand received seven submissions regarding the proposed deemed value rates of east coast tarakihi stocks.

2400. ECO and Forest & Bird supported the proposed changes to the deemed value rates for TAR 1, TAR 2, TAR 3 and TAR 7 so as to reduce the incentive for over fishing, and to help rebuild the fishstocks.

2401. A joint submission from Southern Inshore Fisheries Management Company (an organisation which represents quota owners for 104 fish stocks throughout the South Island and Taranaki), Te Ohu Kaimoana and Fisheries Inshore New Zealand, opposed the proposed adjustments to the deemed value rates for TAR 1, TAR 2, TAR 3 and TAR 7. Their joint submission proposed an alternative schedule for tarakihi deemed value rates, that retains the current interim and annual rates but commences differentials earlier (at 110% of ACE) up to the current maximum rate of \$5.75 (Table 7).

Table 7: Current, and alternative deemed value rates (\$/kg) for TAR 1, TAR 2, TAR 3 and TAR 7 (Alternative proposed within the joint SIFNZ, TOKM and FINZ submission).

Stock	Option	Interim deemed value rate (\$/kg)	Special annual differential rates (\$/kg) for excess catch (% of ACE)	
			100-110%	>200%
TAR 1	Current	1.50	3.00	5.50
TAR 2	Current	2.48	2.75	5.75
TAR 3	Current	0.55	1.09	2.18
TAR 7	Current	1.25	2.50	5.56
All stocks	Alternative	1.50	3.00	5.75

2402. Kahungunu Asset Holding Company, wholly owned by Ngāti Kahungunu Iwi Incorporated (a mandated iwi organisation), oppose the proposed deemed value rates for TAR 2 as they consider there to be a lack of available science to support the need for a

reduction in the TAC for TAR 2. The Kahungunu Asset Holding Company support the approach of Fisheries Inshore New Zealand for industry-led management measures.

2403. Ngati Whatua Fisheries Ltd. submit that the deemed value rate for TAR 1 be set at, or above the port price to discourage over catching and encourage vessels to develop a catch plan before fishing.
2404. Ocean Fisheries Ltd., a South Island based commercial fishing company, expressed concern regarding the impact the proposed adjustment will have on their operation, particularly the stringent differential rate proposed for the TAR 3 stock. Ocean Fisheries Ltd. also questioned the deemed value framework, and expressed concern at the deemed value rates for school shark in QMA SCH 3.
2405. Mr Turnwald submitted that the deemed value rates for TAR 1, TAR 2, TAR 3 and TAR 7 fish stocks need to be set carefully, but neither opposed, nor supported, the proposed options.

Fisheries New Zealand Response

2406. As an alternative to Fisheries New Zealand's deemed value proposals, industry propose setting interim deemed values at 50% of annual deemed values that vary by fish stock. Fisheries New Zealand considers that this approach risks creating perverse incentives in the fishery, particularly if you agree to reduce the TACs for the stocks involved. Fisheries New Zealand reaffirms its view that the approach to setting deemed values should be standardised across each stock and that interim deemed values should be set at 90% of the annual rates.
2407. Setting the interim deemed value rate below 90% of the annual rate can provide incentives for fishers to delay the balancing of catch with available ACE until the end of the fishing year. Such behaviour may lead to a race for ACE, inflated ACE prices and a shift in the balance of financial incentives provided by the deemed value regime. As a result, sufficient ACE may not be available to cover catches or fishers may choose to cover over-catch by paying deemed values, impacting on the sustainability of the fishery. To encourage fishers to balance catch with ACE regularly throughout the year, Principle 7 of the Guidelines recommends that interim deemed value rates be set at 90% of the annual rate unless stock-specific reasons suggest otherwise.
2408. Given the importance of constraining tarakihi catches to the available ACE as part of the east coast tarakihi rebuild strategy, Fisheries New Zealand sees no reason to depart from Principle 7 of the Guidelines in this case. As the industry proposal does not consistently set the interim rate at 90% of the annual rate, it does not address the risk of catch exceeding the available ACE due to a delay in fishers balancing catch with ACE.
2409. Principle 1 of the Guidelines states that deemed value rates must generally be set between the ACE price and the port price, whilst noting that it may be appropriate to depart from this principle in certain circumstances. Given the importance of constraining tarakihi catches to the available ACE as part of the east coast tarakihi rebuild strategy, Fisheries New Zealand sees no reason to depart from Principle 1 of the Guidelines in this case. By not setting annual deemed value rates at or above the port price, the industry proposal does not provide as strong an incentive for fishers to balance catch with available ACE.

2410. When adjacent QMAs for the same species have 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 (area-misreporting). To address the risk of area-misreporting, Fisheries New Zealand considers it appropriate to have identical deemed value rates for all east coast tarakihi QMAs. By having differing deemed value rates for all east coast tarakihi QMAs, the industry proposal does not adequately address the risk of area-misreporting.

2411. Concerns and proposals from submitters relating to the wider deemed value framework or the deemed value settings of other stocks are not within the scope of this deemed value review.

Recommendation

Table 8: Current and recommended deemed value rates (\$/kg) for TAR 1, 2 & 7

Stock	Option	Interim deemed value rate (\$/kg)	Special annual differential rates (\$/kg) for excess catch (% of ACE)		
			100-110%	110-120%	>120%
TAR 1	Current	1.50	3.00	4.00	5.50
	Recommended	3.15	3.50	4.25	5.75
TAR 2	Current	2.48	2.75	4.25	5.75
	Recommended	3.15	3.50	4.25	5.75
TAR 7	Current	1.25	2.50	4.00	5.50
	Recommended	3.15	3.50	4.25	5.75

2.25 2.50 4.00 5.50

2412. Fisheries New Zealand recommends that the deemed value rates for TAR 1, TAR 2 and TAR 7 be adjusted as recommended in the shaded portion of Table 8.

Table 9: Current and recommended deemed value rates (\$/kg) for TAR 3

Stock	Option	Interim deemed value rate (\$/kg)	Standard annual differential rates (\$/kg) for excess catch (% of ACE)					
			100-120%	120-140%	140-160%	160-180%	180-200%	>200%
TAR 3	Current	0.55	1.09	1.31	1.53	1.74	1.96	2.18
	Recommended	3.15	Special annual differential rates (\$/kg) for excess catch (% of ACE)					
		<i>2.25</i>	100-110%	110-120%	>120%	-	-	-
			3.50	4.25	5.75	-	-	-

2.50 4.00 5.50

2413. Fisheries New Zealand recommends that the deemed value rates for TAR 3 be adjusted as per the shaded portion of Table 9.

5.3 STOCKS TO BE CONSIDERED DUE TO OVER-CATCH IN THE 2016/17 FISHING YEAR

2414. Two stocks (SKI 7 and BNS 3) were identified for review, following catch in excess of the available ACE during the 2016/17 fishing year.

5.3.1 Gemfish (SKI 7) – West Coast South Island

2415. Gemfish in SKI 7 are primarily taken as bycatch within the middle-depth trawl fishery targeting hoki or ling, with smaller quantities taken in a small target trawl fishery or as bycatch by vessels targeting inshore species (mainly tarakihi).

2416. The port price of SKI 7 has decreased over recent years from \$2.42/kg in 2006/07 to \$1.25/kg in 2017/18. The annual deemed value rate for SKI 7 has remained unchanged since 2001 and currently exceeds the port price (\$1.29/kg).

2417. Given the decrease in the port price of SKI 7, Fisheries New Zealand consulted on decreasing the annual deemed value rate for SKI 7 so that the annual rate would lie between the ACE price and the port price (consistent with Principle 1 of the Guidelines). No adjustments were proposed to the differential ratios for SKI 7, although the values change proportionally to the change in the annual rate.

Submissions

2418. Fisheries New Zealand received four submissions regarding the proposed deemed value rates for SKI 7.

2419. ECO support the proposed changes to the deemed value rates for SKI 7 so as to reduce the incentive for over fishing.

2420. Fisheries Inshore New Zealand welcomed the proposal to lower the annual and differential deemed value rates for SKI 7, but questioned why the deemed value review has not been conducted earlier given that the port price for SKI 7 has been declining for some time.

2421. Sealord expressed concern regarding a perceived lack of flexibility regarding the processes followed by Fisheries New Zealand for setting or reviewing TACCs which results in financial detriment to commercial fishers. Sealord submit that Fisheries New Zealand has been too slow to address the increased abundance of gemfish in SKI 7 detected during the 2016 West Coast South Island trawl survey. This has resulted in catch in excess of available ACE, and associated deemed value payments. Whilst Sealord acknowledged that the proposed reduction to deemed value rates may alleviate the issue of high deemed value payments, it would not mitigate against the slow processes followed when addressing changes in fish stock abundance.

2422. Te Ohu Kaimoana support decreasing the annual deemed value rate of SKI 7 but note that, under the proposed differential schedule, the deemed value rate will exceed the port price (and therefore create a disincentive to land catch) when catch exceeds 180% of ACE. Therefore, Te Ohu Kaimoana recommend that the differential rate of SKI 7 be adjusted so that all steps on the differential schedule lie between the ACE price and the port price.

2423. While the port price of SKI 7 has generally declined over time, there has been strong variation in the port price over the last 10 years. Fisheries New Zealand prioritises fish stocks for deemed value rate review on an annual basis based upon the Guidelines and other relevant information.

2424. The proposed differential schedule for SKI 7 is the standard schedule as recommended by Principle 8 of the Guidelines. To ensure consistency with the differential schedule applicable to other gemfish stocks, Fisheries New Zealand sees no reason to depart from the Guidelines in this case.

2425. Concerns and proposals from submitters relating to the wider management of SKI 7 are not within the scope of this deemed value rate review. The processes followed by Fisheries New Zealand when setting deemed value rates are separate to those followed when reviewing TACs. However, Fisheries New Zealand intends to consider SKI 7 for inclusion within the Review of Sustainability Measures for 2019 (October stocks) based on the higher gemfish abundance detected during the 2016 West Coast South Island trawl survey.

Recommendation

Table 10: Current and recommended deemed value rates (\$/kg) for SKI 7

Stock	Option	Interim deemed value rate (\$/kg)	Standard annual differential rates (\$/kg) for excess catch (% of ACE)					
			100-120%	120-140%	140-160%	160-180%	180-200%	>200%
SKI 7	Current	0.65	1.29	1.55	1.81	2.06	2.32	2.58
	Recommended	0.65	0.72	0.86	1.01	1.15	1.30	1.44

2426. Fisheries New Zealand disagrees with the submission to keep differential rates within the bounds of the ACE and port price. Differential rates reflect the increasingly detrimental impact on sustainability of higher levels of over catch and on the long-term value of the resource, providing stronger incentives to avoid over catch. The recommendations proposed are consistent with differential deemed value rates set for other fish stocks in this regard.

2427. Consistent with Principle 1 of the Guidelines, Fisheries New Zealand recommends the annual deemed value rate for SKI 7 be adjusted as recommended in the shaded portion of Table 10, namely from \$1.29/kg to \$0.72/kg. Fisheries New Zealand does not propose adjusting the differential schedule for SKI 7 however the values change in proportion to the change in the annual rate.

2428. The recommended adjustment is consistent with Principles 2 and 7 of the Guidelines, in that the annual rate exceeds the ACE price by transactions costs and the interim rate is set at 90% of the annual rate.

5.3.2 Bluenose (BNS 3) – East Coast and Southern South Island

2429. Only 10% of BNS 3 landings are targeted (primarily by bottom longline), with the majority taken as bycatch within middle depth trawl or bottom longline fisheries targeting a variety of species (e.g. ling, alfonsino, hoki and hapuku).

2430. Landings of BNS 3 have consistently exceeded the available ACE over the last six fishing years by up to 70 tonnes. The annual deemed value rate for BNS 3 has been fixed at \$3.00/kg since the start of the 2008/09 fishing year. The interim deemed value rate increased from \$1.50/kg to \$2.70/kg (consistent with Principle 7 of the Guidelines) at the start of the 2011/12 fishing year. Given the status of the BNS 3 stock (between 17-27% B_0) and the current stock rebuild strategy, the deemed value rates for BNS 3 specify a special (more stringent) differential schedule, consistent with Principle 8 of the Guidelines.
2431. Given the 2016/17 average ACE transfer price of \$2.80/kg, Fisheries New Zealand consulted on increasing the interim and annual deemed value rates for BNS 3 so that the annual rate exceeded the ACE price by transaction costs (Principle 2 of the Guidelines). The proposed adjustment retained the special differential schedule, however the rate at each step on the schedule was adjusted so as to continue to provide a strong incentive for catch to not exceed ACE. The proposed adjustment would make the deemed value rates of BNS 3 consistent with those of BNS 2, as per Principle 3 of the Guidelines (adjacent QMAs should have identical, or very similar deemed value rates, to provide incentives to not misreport).
2432. BNS 3 landed to a licenced fish receiver located on the Chatham Islands is subject to lower deemed value rates than BNS 3 landed elsewhere. This is because the price for fish landed in the Chatham Islands is generally lower than the price for the same species landed since there is a higher cost of transporting fish to markets. To avoid creating an incentive for fishers to land BNS 3 under deemed values to the Chatham Islands, rather than covering catches with BNS 3 ACE, Fisheries New Zealand also consulted on increasing the annual Chatham Island deemed value rate for BNS 3 by the same proportion as that proposed for BNS 3 landed elsewhere.

Submissions

2433. Fisheries New Zealand received six submissions regarding the proposed deemed value rates for BNS 3.
2434. The Chatham Islands Finfish Association dispute the rationale for increasing the deemed value rates for BNS 3 landed to the Chatham Islands, and oppose the proposed adjustment. The Chatham Islands Finfish Association submitted that the unavailability of BNS 3 ACE was a significant impediment to the establishment of an economically viable and locally-based longline fishery, to the detriment of the Chatham Islands' communities. The Chatham Islands Finfish Association also express concerns that their long-standing advocacy for the establishment of a separate BNS 4 QMA (Chatham Islands) has not been addressed. The Chatham Islands Finfish Association state that the contentious issue of vessels that are not locally-based landing BNS 3 to the Chatham Islands, under a lower deemed value rate, could be resolved by applying a more rigorous vessel registration system. This would ensure that only Chatham Island based vessels could utilise this provision of incurring a lower deemed value rate.
2435. ECO support the proposed changes to the deemed value rates for BNS 3 so as to reduce the incentive for over fishing.
2436. Fisheries Inshore New Zealand submit that the deemed value rate settings for BNS 3 does not warrant a review. FINZ consider that as BNS 3 is principally taken as bycatch coupled

with the gradual reduction to the BNS 3 TACC in recent years, the level of BNS 3 over-catch in the most recent 2016/17 fishing year is not abnormal.

2437. Ngati Whatua Fisheries Ltd. submit that the deemed value rate for BNS 3 be set at, or above the port price to discourage over catching and encourage vessels to develop a catch plan before fishing.
2438. Te Ohu Kaimoana support the proposed interim and annual deemed value rates for BNS 3, but do not support the proposed differential schedule. Te Ohu Kaimoana submit that setting a deemed value rate that is higher than the port price (as is the case with the proposed BNS 3 differential schedule) may encourage some fishers to discard fish due to the punitive rate rather than encouraging fishers to land and report catch.
2439. With regard to the proposed deemed value rates for BNS 3 landed to the Chatham Islands, Te Ohu Kaimoana submit that in the long term, deemed values are not the best tool to address the over-catch of the TACC and that a stricter registration regime for Chatham Islands based vessels may be required. TOKM are supportive of further discussions with Fisheries New Zealand regarding the management of the BNS 3 fishery and note that the establishment of a separate BNS 4 QMA (Chatham Islands) would enable the development of a Chatham Islands based longline fishery, which may be required to achieve sustainability objectives.
2440. Waitangi Seafoods, a Chatham Islands based Licensed Fish Receiver and processor, oppose the increase to the deemed value rates for BNS 3 landed to the Chatham Islands and fully support the submission of the Chatham Islands Finfish Association.

Fisheries New Zealand Response

2441. Due to concerns over the status of the BNS 3 stock and the current rebuild strategy in place¹, Fisheries New Zealand considers it important that BNS 3 catch is constrained to the available ACE. Given that a proportion of BNS 3 is landed to the Chatham Islands², the deemed value rate for BNS 3 landed to the Chatham Islands should be set appropriately to avoid creating an incentive for fishers to land BNS 3 to the Chatham Islands in order to avoid the higher deemed value rate that would otherwise apply.
2442. Given the recommendation to increase the deemed value rate for BNS 3 landed elsewhere, the incentive for fishers to land BNS 3 to the Chatham Islands is likely to increase. Therefore, Fisheries New Zealand considers it appropriate that the deemed value rate for BNS 3 landed to the Chatham Islands is increased in proportion. Given that the *status quo* in terms of incentives applicable to the fishery will be maintained and that bluenose landings on the Chatham Islands currently constitute less than 10% of the fishery, Fisheries New Zealand does not consider the benefits of administering a more rigorous form of permitting system, as proposed in submissions, would outweigh the costs.
2443. The setting of deemed value rates for BNS 3 landed to the Chatham Islands will continue to be guided by Principle 6 of the Guidelines, in that the deemed value rates are set lower

¹ The most recent (2016) bluenose stock assessment estimated that all bluenose stocks (including BNS 3) were between 17-27% B_0 and Very Unlikely (<10% probability) to be at or above the management target of 40% of unfished biomass (B_0). The Minister's decisions on the management approach for BNS stocks in 2017 are accessible from <http://www.mpi.govt.nz/dmsdocument/20864-review-of-sustainability-controls-for-the-2017-fishing-year-decision-paper>

² Approximately 9% during the 2015/16 and 2016/17 fishing years

than that of BNS 3 landed elsewhere to reflect the lower price received for fish landed to the Chatham Islands.

2444. Given the status of the stock and current BNS rebuild strategy in place, Fisheries New Zealand considers it appropriate to set a stringent differential deemed value rate schedule for BNS 3, so as to provide a very strong incentive for catch to not exceed the available ACE.

2445. Concerns and proposals from submitters relating to the wider deemed value framework are not within the scope of this BNS 3 deemed value review. However, Fisheries New Zealand notes that it is currently engaged in an approach to modernise the management of fisheries in New Zealand (including a proposed option to review the deemed values guidelines) through the Fisheries Change Programme.

2446. Fisheries New Zealand acknowledges that a lack of BNS 3 ACE may be an impediment to the establishment of an economically viable longline fishery for bluenose on the Chatham Islands. However, constraining catch to the available ACE will best provide for the growth of the stock under the current BNS rebuild strategy, and thus increase the likelihood of future utilisation opportunities.

2447. Regarding the proposal to establish a separate BNS 4 QMA, this can be done if 75% of quota owners agree or alternatively if you were satisfied that it was necessary to ensure sustainability. You are not required to consider this in the current consultation and decision process.

Recommendation

2448. Fisheries New Zealand recommends that the deemed value rates for BNS 3 (excluding BNS 3 landed to the Chatham Islands) be adjusted as recommended in the shaded portion of Table 11.

Table 11: Current and recommended deemed value rates (\$/kg) for BNS 3 (exc. BNS 3 landed to the Chatham Islands)

Stock	Option	Interim deemed value rate (\$/kg)	Special annual differential rates (\$/kg) for excess catch (% of ACE)							
			100-110% 105%	110-115% 110%	120-120%	130-130%	140-140%	150-150%	160-160%	>160%
BNS 3	Current	2.70	3.00	4.00	5.00	6.00	7.00	8.00	9.00	10.00
	Recommended	3.60	4.00	5.00	6.00	7.00	8.00	9.00	10.00	11.00

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2449. Fisheries New Zealand recommends that the deemed value rates for BNS 3 landed to the Chatham Islands be adjusted as recommended in the shaded portion of Table 12.

Table 12: Current and recommended deemed value rates (\$/kg) for BNS 3 landed to the Chatham Islands

Stock	Option	Interim deemed value rate (\$/kg)	Special annual differential rates (\$/kg) for excess catch (% of ACE)						
			100-120%	120-130%	130-140%	140-150%	150-160%	160-220%	>220%
BNS 3	Current	0.95	1.05	3.00	4.00	5.00	6.00	7.00	10.00
	Recommended	1.26	1.40	4.00	5.00	6.00	7.00	8.00	11.00

5.4 STOCKS TO BE CONSIDERED DUE TO ACTUAL, OR LIKELY, OVER-CATCH IN THE 2017/18 FISHING YEAR

2450. Four stocks (PIL 7, PIL 8, SKI 3 and TRE 1) were identified for review due to actual, or likely, catch in excess of available ACE during the 2017/18 fishing year.

5.4.1 Pilchard (PIL 7 and PIL 8) – West Coast North Island and West Coast South Island

2451. Pilchards are a fast growing, low trophic level species that form a key component of marine food webs. The abundance and spatial distribution of pilchard stocks (both in New Zealand and elsewhere) are subject to considerable short-term and long-term fluctuations in response to oceanographic and climatic conditions, which leads to difficulty in estimating a level of catch that would not pose a risk to the sustainability of the stocks¹. No reliable estimates of biomass are available for pilchard stocks in New Zealand, however it is considered likely that pilchards comprise abundant, but localised, coastal populations. When introduced to the QMS in 2002, the TACCs for pilchard stocks were set conservatively (150 tonnes for PIL 7 and 65 tonnes for PIL 8), to reflect the importance of the species within the wider marine system, and the uncertainty of information to estimate the biomass that would support the maximum sustainable yield.

2452. The vast majority (> 99%) of catches in PIL 7 and PIL 8 are taken by large (> 80 m) vessels as bycatch in the western North Island jack mackerel trawl fishery (JMA 7). No target fishing for PIL 7 or PIL 8 occurs. Due to the large volume of jack mackerel caught per fishing event in the JMA 7 fishery, pilchards brought on board are typically in poor condition and therefore not suitable for entry into the frozen bait market (the usual destination for pilchards caught elsewhere in New Zealand). Pilchards are therefore processed into a lower value fishmeal product.

2453. Catches of pilchard by the JMA 7 fleet are likely unavoidable, given that pilchards are caught sporadically but in large quantities (49% of PIL 7 and PIL 8 catches during 2017/18 occurred during only seven fishing events²). Additionally, comparison of the spatial distribution of PIL 7 and PIL 8 catches during 2017/18 indicates that no spatial, temporal or operational changes in the activity of the JMA 7 target fleet are evident in 2017/18³, compared to previous years when there has been much smaller quantities of pilchard bycatch.

2454. Despite fluctuations in the landings of PIL 7 and PIL 8, the current TACCs (which have remained unchanged since the species was introduced to the QMS in 2002) are sufficient to cover landings during most years. However, catches during the 2017/18 year have significantly exceeded the available ACE (Table 13).

Table 13: Current catch and available ACE for PIL 7 and PIL 8 (tonnes)

	2017/18 Available ACE	Catch as of July 2018
PIL 7	165	232
PIL 8	72	162

¹ Paul, L. J.; Taylor, P.R.; Parkinson, D.M. (2001). Pilchard (*Sardinops neopilchardus*) biology and fisheries in New Zealand, and a review of pilchard (*Sardinops*, *Sardina*) biology, fisheries, and research in the main world fisheries. New Zealand Fisheries Assessment Report 2001/37. 44 p.

² For comparison, 681 fishing events targeting JMA 7 were conducted between November 2017 and April 2018 (the time period over which all PIL 7 and PIL 8 catches occurred).

³ 86% of tows targeting JMA 7 between November 2017 and April 2018 (588 out of 681 tows) had fisheries observers monitoring and verifying catches.

2455. The large quantities of pilchards caught during the current fishing year suggests a particularly large year class and/or change in pilchard distribution. This may be due to above-average sea surface temperatures observed in the Tasman Sea during the 2017/18 summer. Given the biological characteristics of pilchards (described above), it is not considered that catch in excess of the available ACE during the 2017/18 fishing year will significantly impact on the stock biomass or the sustainability of PIL 7 and PIL 8 fish stocks.

2456. Consistent with the deemed value guidelines, the level of over-catch in 2017/18 prompted a review of the deemed value rates. However, Fisheries New Zealand notes that adjustments to deemed value rates may not be the most appropriate management tool for these stocks due to the following factors:

- Catch over the TACC is infrequent (it has never occurred in PIL 7, and has not occurred since 2013/14 in PIL 8);
- Pilchard is an important species in marine ecosystems, considered to be a prey species for a number of other predatory fish species; and
- There is a high level of uncertainty in relevant data, including the ability to estimate the maximum sustainable yield and estimates of commercial value.

2457. Fisheries New Zealand consulted on a single option for PIL 7; to maintain the current interim deemed value rate but adjust the differential schedule so as to be consistent with Principle 8 of the Guidelines, which addresses low value/low TACC stocks where occasional unintended bycatch may occur.

2458. Fisheries New Zealand consulted on two options for PIL 8; the first option to reduce the interim rate (consistent with that for PIL 7) and maintain the current differential schedule. The second option would reduce the interim rate consistent with that for PIL 7 and adjust the differential schedule so as to be consistent with Principle 8 of the Guidelines.

Submissions

2459. Fisheries New Zealand received six submissions regarding the deemed value settings of pilchards.

2460. ECO supports the proposed changes to the deemed value rates for PIL 7 and PIL 8 so as to reduce the incentive for over fishing.

2461. Fisheries Inshore New Zealand supports and welcomes the proposed deemed value rates for PIL 7 and PIL 8.

2462. Independent Fisheries Ltd considers the current deemed value rates for PIL 7 and PIL 8 punitive and supports the current review. Independent Fisheries Ltd submit that sufficient rationale (lack of target fishing, limited value of mealed product, annual variability in landings and unavoidable nature of bycatch) exists to set the interim deemed value rate for both stocks at \$0.10/kg and the annual rate (for catch in excess of 200% of ACE) at \$0.30/kg. Independent Fisheries Ltd also note that the TACCs for both PIL 7 and PIL 8 are in need of review. In addition to their submission on PIL 7 and PIL 8, Independent Fisheries Ltd also requested that the deemed value rates for KIN 7 and KIN 8 be reviewed due to consistent catch in excess of ACE and a perceived lack of alignment between deemed value rates and the Guidelines.

2463. Ngati Whatua Fisheries Ltd. submits that the deemed value rate for PIL 8 be set at, or above, the port price to discourage over catching and encourage vessels to develop a catch plan before fishing.

2464. Sealord submit that oceanographic and climatic conditions have contributed to fluctuations in the abundance of PIL 7 and PIL 8 and have resulted in unintentional catches in excess of available ACE (with associated deemed value payments). Sealord request consideration be given to in-season relief (analogous to what farmers receive for drought relief) for catch in excess of ACE (and the resulting deemed value payments) for stocks such as PIL 7 and PIL 8 where it is agreed that abundance is principally driven by environmental influences.

2465. Te Ohu Kaimoana support the proposed adjustments to the deemed value rates and differential schedule of PIL 7 and PIL 8, noting that a TAC review may be the appropriate future response if PIL 7 and PIL 8 landings continue to exceed the available ACE.

Fisheries New Zealand Response

2466. As all pilchards caught in QMAs PIL 7 and PIL 8 are processed into fishmeal, it is highly likely that the current port price of both stocks (\$0.83/kg) is an overestimate of the true market value. Therefore, Fisheries New Zealand considers setting the deemed value rates of both stocks below the port price is appropriate in this case.

2467. While Fisheries New Zealand acknowledges that current catches of PIL 7 and PIL 8 are likely unintentional, the deemed value rates for both stocks must still be set at a level that discourages active targeting of pilchards without available ACE.

2468. Concerns and proposals from submitters relating to the wider deemed value framework or the deemed value settings of other stocks are not within the scope of the PIL 7 and PIL 8 deemed value review.

Recommendation

Table 14: Current and recommended deemed value rates (\$/kg) for PIL 7

Stock	Option	Interim deemed value rate (\$/kg)	Standard annual differential rates (\$/kg) for excess catch (% of ACE)					
			100-120%	120-140%	140-160%	160-180%	180-200%	>200%
PIL 7	Current	0.30	0.60	0.72	0.84	0.96	1.08	1.20
	Recommended	0.30	Special annual differential rates (\$/kg) for excess catch (% of ACE)					
			100-200%+	>200%	-	-	-	-
			0.45	0.60	-	-	-	-

Table 15: Current and recommended deemed value rates (\$/kg) for PIL 8

Stock	Option	Interim deemed value rate (\$/kg)	Standard annual differential rates (\$/kg) for excess catch (% of ACE)					
			100-120%	120-140%	140-160%	160-180%	180-200%	>200%
PIL 8	Current	0.54	0.60	0.72	0.84	0.96	1.08	1.20
	Recommended	0.30	Special annual differential rates (\$/kg) for excess catch (% of ACE)					
			100-200%+	>200%	-	-	-	-
			0.45	0.60	-	-	-	-

2469. Fisheries New Zealand recommends that the deemed value rates for PIL 7 and PIL 8 be adjusted as recommended in Table 14 and 15 respectively.

2470. All recommended options are consistent with Principle 1 of the Guidelines in that the annual deemed value rate is set between the ACE price and the port price. However Fisheries New Zealand notes that information on the ACE price for PIL 7 and PIL 8 is limited (due to infrequent ACE trading) and the port price of PIL 7 and PIL 8 is likely to overestimate the market value of the stocks due to all fish being processed into fish meal.

5.4.2 Gemfish (SKI 3) – East Coast and Southern South Island

2471. Approximately 70% of gemfish in SKI 3 are caught as bycatch by large (> 28 m) trawl vessels targeting squid, with smaller quantities caught by large trawl vessels targeting barracouta and silver warehou. Little target fishing for gemfish occurs in SKI 3. Landings of SKI 3 have noticeably increased over recent years, from 21 tonnes during the 2014/15 fishing year to 381 tonnes in the 2017/18 fishing year, despite squid effort remaining relatively constant over this period. As of June 2018, 119% of available SKI 3 ACE for the 2017/18 fishing year had been caught.

2472. The port price of SKI 3 has decreased over recent years from \$2.42/kg in 2006/07 to \$1.57/kg in 2017/18. The deemed value rates for SKI 3 have remained constant over this time frame. Given the decrease in the port price of SKI 3, Fisheries New Zealand consulted on decreasing the annual deemed value rate for SKI 3 so that the annual rate would lie between the ACE price and the port price (consistent with Principle 1 of the Guidelines). No adjustments were proposed to the differential schedule for SKI 3 although the values change proportional to the change in the annual rate.

Submissions

2473. Fisheries New Zealand received four submissions regarding the proposed deemed value rates for SKI 3.

2474. ECO support the proposed changes to the deemed value rates for SKI 3 so as to reduce the incentive for over-fishing, but notes that a reduction in the level of this depleted stock needs monitoring.

2475. Fisheries Inshore New Zealand support and welcomed the proposed deemed value rates for SKI 3.

2476. Sealord expressed concern regarding a perceived lack of flexibility regarding the processes followed by Fisheries New Zealand when setting or reviewing TACCs resulting in financial detriment to commercial fishers. Sealord submit that increased abundance of SKI 3 is driving catch in excess of available ACE and associated deemed value payments. Whilst Sealord acknowledged that the proposed reduction to deemed value rates may alleviate the issue of high deemed value payments, they would not mitigate against the slow processes followed when addressing changes in abundance.

2477. Te Ohu Kaimoana support the proposed deemed value rates for SKI 3.

Fisheries New Zealand Response

2478. Fisheries New Zealand notes that concerns from submitters regarding the TACC for SKI 3 and proposals relating to the wider management of SKI 3 are not within the scope of this SKI 3 deemed value review. As and when new information on SKI 3 stock abundance becomes available through the Fisheries New Zealand science process, a

review of the TAC/TACC can be considered. Catch in excess of the TACC is in and of itself not sufficient to quantify a change in the stock status

Recommendation

Table 16: Current and recommended deemed value rates (\$/kg) for SKI 3

Stock	Option	Interim deemed value rate	Standard annual differential rates (\$/kg) for excess catch (% of ACE)					
			100-120%	120-140%	140-160%	160-180%	180-200%	>200%
SKI 3	Current	0.65	1.29	1.55	1.81	2.06	2.32	2.58
	Recommended	0.65	0.72	0.86	1.01	1.15	1.30	1.44

2479. Consistent with Principle 1 of the Guidelines, Fisheries New Zealand recommends the annual deemed value rate for SKI 3 be adjusted as recommended in the shaded portion of Table 16, namely from \$1.29/kg to \$0.72/kg. Fisheries New Zealand does not propose adjusting the differential schedule for SKI 3, however the values change in proportion to the change in the annual rate.

2480. The recommended adjustment is consistent with Principles 2 and 7 of the Guidelines in that the annual rate exceeds the ACE price by transaction costs, and the interim rate is set at 90% of the annual rate.

5.4.3 Trevally (TRE 1) – Northeast North Island

2481. Trevally in TRE 1 is both targeted and caught as bycatch within the inshore bottom trawl and purse seine fisheries. As of May 2018, 85% of available TRE 1 ACE for the 2017/18 fishing year had been caught. Given that approximately 30% of TRE 1 landings between the 2014/15 and 2016/17 fishing years occurred between June and the end of the fishing year, Fisheries New Zealand considers it likely that TRE 1 landings will exceed the available ACE for the 2017/18 fishing year.

2482. To encourage fishers to balance catch against ACE regularly throughout the fishing year, Fisheries New Zealand consulted on increasing the interim deemed value rate for TRE 1 from 50% of the annual deemed value rate to 90% (consistent with Principle 7 of the Guidelines) and adjusting the differential schedule.

2483. To further incentivise fishers to balance catch with available ACE, Fisheries New Zealand proposes adjusting the differential schedule for TRE 1 to that shown in the shaded part of Table 17. The proposed adjustments to the interim deemed value rate and the differential schedule of TRE 1 are consistent with Principle 3 of the Guidelines in that the deemed value rates and differential schedule of TRE 1 would be set at the same level as those of TRE 2, to discourage misreporting between adjacent areas.

Submissions

2484. Fisheries New Zealand received four submissions regarding the proposed deemed value rates for TRE 1.

2485. ECO supported the proposed changes to the deemed value rates for TRE 1 so as to reduce the incentive for over-fishing

2486. Fisheries Inshore New Zealand questioned why the same approach followed when considering the deemed value rates of other stocks (namely SKI 3, PIL 7 and PIL 8) has

not been followed with regard to TRE 1. Fisheries Inshore New Zealand submit that catch of TRE 1 during the 2017/18 fishing year has been a one-off occurrence driven by a management error at one company rather than targeted catching. Fisheries Inshore New Zealand state that the company concerned has agreed to not target TRE 1 for the remainder of the fishing year.

2487. Ngati Whatua Fisheries Ltd. submit that the deemed value rate of TRE 1 be set at, or above the port price to discourage over catching and encourage vessels to develop a catch plan before fishing.

2488. Te Ohu Kaimoana oppose the proposed deemed value rates for TRE 1 on the basis that the proposed annual rate is set higher than the port price. Te Ohu Kaimoana submit that setting deemed value rates higher than the market price penalises the fisher and therefore may not encourage landing and reporting of the catch.

Fisheries New Zealand Response

2489. When adjusting deemed value settings, each fish stock is assessed independently with regard to the Guidelines and any relevant information.

2490. Principle 1 of the Guidelines states that deemed value rates must generally be set between the ACE price and the port price, whilst noting that it may be appropriate to depart from this principle in certain circumstances. Fisheries New Zealand sees no reason to depart from the Guidelines in this case, given that landings of TRE 1 have not regularly exceeded available ACE during recent years. Fisheries New Zealand notes the Industry mistake in 2017/18, admitted in a submission, subsequently resulted in catch restraint, once the error was recognized.

2491. Fisheries New Zealand acknowledges that the 2017/18 port price of TRE 1 (\$0.83/kg) is below the current annual deemed value rate (\$1.25/kg). However the 2017/18 port price of TRE 1 is not considered to be reflective of true market value, when compared to the port price of recent years. The 2014/15, 2015/16 and 2016/17 port prices were estimated to be \$1.90, \$1.94 and \$1.79 respectively. As the port price of TRE 1 has historically exceeded the annual deemed value rate (the average port price of TRE 1 between 2007/08 and 2016/17 was \$1.80), Fisheries New Zealand sees no reason to decrease the annual deemed rate of TRE 1 in this case. However, if the port price of TRE 1 is found to consistently exceed the annual rate, Fisheries New Zealand may consider adjusting the annual deemed value rate of TRE 1 in future, so that it lies between the ACE price and the port price (as per Principle 1 of the Guidelines).

Recommendation

2492. Fisheries New Zealand recommends the deemed value settings for TRE 1 be adjusted as recommended in the shaded portion of Table 17, namely increasing the interim deemed value rate from \$0.70/kg to \$1.13/kg and adjusting the differential schedule.

Table 17: Current and recommended deemed value rates (\$/kg) for TRE 1

Stock	Option	Interim deemed value rate	Standard annual differential rates (\$/kg) for excess catch (% of ACE)					
			100-120%	120-140%	140-160%	160-180%	180-200%	>200%
TRE 1	Current	0.70	1.25	1.50	1.75	2.00	2.25	2.50
	Recommended	1.13	Special annual differential rates (\$/kg) for excess catch (% of ACE)					
			100-110%	110-120%	>120%	-	-	-
			1.25	3.50	5.00	-	-	-

2493. The proposed adjustment is consistent with Principle 3 of the Guidelines, in that the deemed value rates and differential schedule for TRE 1 would be set at the same level as those for TRE 2 to discourage misreporting between adjacent areas.

$100-120\% = \$1.25$
 $120-140\% = \$2.00$
 $140-160\% = \$3.00$
 $\geq 160\% = \$5.00$

6 Recommendations

Recommended changes to current deemed value rates are shown in blue

Species	Stock	Current				Recommended			
		Interim \$/kg	Annual \$/kg	Annual at maximum excess \$/kg	Differential	Interim \$/kg	Annual \$/kg	Annual at maximum excess \$/kg	Differential
Bluenose	BNS 3	2.70	3.00	10.00	Special	3.60	4.00	11.00	Special
	BNS 3 ²¹⁶	0.95	1.05	10.00	Special	1.26	1.40	11.00	Special
Flatfish	FLA 1	0.75	1.50	3.00	Standard	1.35	1.50	3.00	Standard
John dory	JDO 1	1.96	3.92	7.84	Standard	3.53	3.92	7.84	Standard
	JDO 7	2.62	5.25	10.00	Special	4.73	5.25	10.00	Special
Pilchard	PIL 7	0.30	0.60	1.20	Standard	0.30	0.45	0.60	Special ²¹⁷
	PIL 8	0.54	0.60	1.20	Standard	0.30	0.45	0.60	Special ²¹⁸
Gemfish	SKI 3	0.65	1.29	2.58	Standard	0.65	0.72	1.44	Standard
	SKI 7	0.65	1.29	2.58	Standard	0.65	0.72	1.44	Standard
Tarakihi	TAR 1	1.50	3.00	5.50	Special	3.15	3.50	5.75	Special
	TAR 2	2.48	2.75	5.75	Special	3.15	3.50	5.75	Special
	TAR 3	0.55	1.09	2.18	Standard	3.15	3.50	5.75	Special ²¹⁹
	TAR 7	1.25	2.50	5.50	Special	3.15	3.50	5.75	Special
Trevally	TRE 1	0.70	1.25	2.50	Standard	1.13	1.25	5.00	Special ²²⁰

- a) **Agree** to change the deemed value rates for bluenose (BNS 3) as outlined in the Table above.

*Agreed as Amended
(pg 462)*

Agreed / Not Agreed

- b) **Agree** to change the deemed value rates for bluenose (BNS 3) landed to Licenced Fish Receivers located on the Chatham Islands as outlined in the Table above.

Agreed / Not Agreed

- c) **Agree** to change the deemed value rates for flatfish (FLA 1) as outlined in the Table above.

Agreed / Not Agreed

- d) **Agree** to change the deemed value rates for John dory (JDO 1) as outlined in the Table above.

Agreed / Not Agreed

- e) **Agree** to change the deemed value rates for John dory (JDO 7) as outlined in the Table above.

Agreed / Not Agreed

²¹⁶ Landed to licenced fish receivers located on the Chatham Islands

²¹⁷ For details on recommended PIL 7 special deemed value differential schedule refer to section 5.4.1 and Table 14

²¹⁸ For details on recommended PIL 8 special deemed value differential schedule refer to section 5.4.1 and Table 15

²¹⁹ For details on recommended TAR 3 special deemed value differential schedule refer to section 5.2.4 and Table 9

²²⁰ For details on recommended TRE 1 special deemed value differential schedule refer to section 5.4.3 and Table 17

f) **Agree** to change the deemed value rates for pilchard (PIL 7) as outlined in the Table above.

(page 465)
Agreed as Amended **Agreed / Not Agreed**

g) **Agree** to change the deemed value rates for pilchard (PIL 8) as outlined in the Table above.

(page 465)
Agreed as Amended **Agreed / Not Agreed**

h) **Agree** to change the deemed value rates for gemfish (SKI 3) as outlined in the Table above.

Agreed / Not Agreed

i) **Agree** to change the deemed value rates for gemfish (SKI 7) as outlined in the Table above.

Agreed / Not Agreed

j) **Agree** to change the deemed value rates for tarakihi (TAR 1) as outlined in the Table above.

Agreed / Not Agreed

k) **Agree** to change the deemed value rates for tarakihi (TAR 2) as outlined in the Table above.

Agreed / Not Agreed

l) **Agree** to change the deemed value rates for tarakihi (TAR 3) as outlined in the Table above.

(page 457)
Agreed as Amended **Agreed / Not Agreed**

m) **Agree** to change the deemed value rates for tarakihi (TAR 7) as outlined in the Table above.

(page 457)
Agreed as Amended **Agreed / Not Agreed**

n) **Agree** to change the deemed value rates for trevally (TRE 1) as outlined in the Table above.

Agreed as Amended **Agreed / Not Agreed**
(page 469)

Hon Stuart Nash
Minister of Fisheries

13 / 9 / 2018