Fisheries New Zealand
Tini a Tangaroa

Review of Sustainability Measures for Sea Cucumber (SCC 7A) for 1 April 2019

Proposal to Alter Total Allowable Catches, Allowances, and Total Allowable Commercial Catches

Fisheries New Zealand Information Paper No: 2019/02

Prepared by Fisheries New Zealand

ISBN No: 978-1-98-859495-8 (online)
ISSN No: 2624-0246 (online)

February 2019

New Zealand Government

Disclaimer

While every effort has been made to ensure the information in this publication is accurate, Fisheries New Zealand does not accept any responsibility or liability for error of fact, omission, interpretation or opinion that may be present, nor for the consequences of any decisions based on this information.

Requests for further copies should be directed to:

Publications Logistics Officer
Fisheries New Zealand
PO Box 2526
WELLINGTON 6140

Email: brand@mpi.govt.nz
Telephone: 0800 00 83 33
Facsimile: 04-894 0300

This publication is also available on the Fisheries New Zealand website at http://www.mpi.govt.nz/news-resources/publications.aspx

Contents

Page

PART 1: INTRODUCTION AND PURPOSE

1. This document seeks your decision on setting the total allowable catch (TAC), allowances for Māori customary non-commercial fishing, recreational fishing, all other sources of mortality from fishing, and total allowable commercial catch (TACC) for the stock discussed in this paper; sea cucumber in Quota Management Area 7A (SCC 7A).

2. Your decision will generally have effect from 1 April 2019.

3. This document is divided into separate parts. Your general statutory considerations are set out in Part 2. Part 3 contains the review aspects of the 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 recommendation.

4. The full submissions that Fisheries New Zealand received on the initial proposal are contained in Appendix 1.

PART 2: STATUTORY CONSIDERATIONS

1 Introduction

5. This section provides an overview of your legal obligations under the Fisheries Act 1996 (the **Act** or the **Fisheries Act**) when setting or varying TACs, TACCs and deemed values for New Zealand fish stocks.

6. 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

7. Section 5(a) says 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.

8. 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 and the United Nations Convention on Biological Diversity 1992. International obligations also derive from New Zealand being a signatory to a number of international conventions. Of particular relevance are regional fisheries management organisations, Convention on International Trade in Endangered Species of Wild Fauna and Flora and the Convention on Migratory Species. While, internationally, some species of sea cucumber are on the CITES list, none of the New Zealand species are on any such lists.

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

9. Section 5(b) says 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.

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

1.3 SECTION 8 – PURPOSE OF THE FISHERIES ACT 1996

11. Section 8 says the purpose of the Act is to provide for the utilisation of fisheries resources while ensuring sustainability.

12. "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."

13. The Supreme Court has stated that the purpose statement incorporates "the two competing social policies reflected in the Act" and that "both policies are to be accommodated as far as is practicable in the administration of fisheries under the quota management system....[I]n the attribution of due weight to each policy, that given to utilisation must not be such as to jeopardise sustainability".[1]

1.4 SECTION 9 – ENVIRONMENTAL PRINCIPLES

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

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

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

16. 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.

17. Where fishing is affecting the viability of associated and dependent species, appropriate measures such as method restrictions, area closures and, potentially, adjustments to the TAC of the target stock should be considered.

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

18. "Biological diversity" is defined in the Act as 'the variability among living organisms, including diversity within species, between species, and of ecosystems'. Determining the level of fishing or the impacts of fishing that can occur requires an assessment of the risk that fishing might cause catastrophic decline in species abundance or cause biodiversity to be reduced to an unacceptable level.

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

19. Habitat is defined in the Oxford Dictionary of English to mean the natural home or environment of an animal, plant or species. Fisheries New Zealand considers habitat to mean 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.

22. The proposals are not expected to significantly change the environmental impacts of the SCC 7A fishery, which are considered to be low (s 9 of the Act). SCC 7A is a hand gathering dive fishery, therefore, there is no bycatch and impacts from fishing on

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

protected species and the benthic environment are unlikely. The proposals are also considered to adequately address the requirements of s 11 of the Act (sustainability measures, discussed below).

23. Localised overfishing of sea cucumber could have impacts on the biological diversity of the marine environment, and on associated or dependent species. However, these risks are mitigated by the cautious TAC increase proposed, and by Fisheries New Zealand working with fishers to ensure catch is spread over a larger area and by implementing fine scale monitoring and reporting.

24. In proposing Option 2, Fisheries New Zealand has taken into account any uncertainty associated with the life cycle and recruitment of sea cucumber and the role that sea cucumber plays in the wider environment.

1.5 SECTION 10 – INFORMATION PRINCIPLES

25. Section 10 prescribes four information principles that you must take into account when exercising powers in relation to the utilisation 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.

26. 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.”[2]

27. 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.

28. 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

29. Section 11(1) allows sustainability measures (such as a TAC) to be set or varied after the following factors are taken into account:
    a) Any effects of fishing on the stock and the aquatic environment;

[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 existing controls that apply to the stock or area concerned; and
c) The natural variability of the stock concerned.

30. These factors are discussed in the section of the decision paper relating to each stock.

31. Section 11 (2) says that before any sustainability measure is set or varied the Minister must have regard to any provision of–

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

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

32. Section 11 (2A) requires the Minister to take into account:

a) Any conservation services or fisheries services;
b) Any relevant fisheries plan approved under this Part-see discussion of section 11A below; and
c) Any decisions not to require conservation services or fisheries services.

33. 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 deep water and highly migratory species.

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

34. Section 12(1) says that before setting or varying any sustainability measure under the Act the Minister is 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.

35. 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.

36. Iwi Fisheries Forums and Forum Fisheries Plans are the main ways in which to provide for input and participation of tangata whenua. Information provided by Forums and iwi views on the management of fisheries resources and fish stocks set out in Iwi

Fisheries Plans express how tangata whenua exercise kaitiakitanga in respect of the stocks and areas in this sustainability round.

37. 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.

38. Te Waka a Maui me Ona Toka Iwi Forum Fisheries 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 SCC 7A:

    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.

39. 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.

40. The proposal to review management measures for SCC 7A was presented to Te Waka a Māui me Ōna Toka Iwi Forum, one of the two Iwi Fisheries Forums relating to South Island iwi. The Te Waka a Māui me Ōna Toka Iwi Forum represents all nine iwi of the South Island, each holding mana moana and significant interests (both commercial and non-commercial) in South Island fisheries. The Forum did not express an opinion about a review of the SCC 7A fishery. Subsequently, Ngāti Rārua Asset Holding Company Limited has submitted in favour of Option 2, to increase the TAC to 18 tonnes.

41. Section 12 (2) says that as soon as practicable after setting or varying any sustainability measure, the Minister shall give the persons consulted under 12(1), the reasons in writing for his or her decisions.

1.8 SECTION 13 - SETTING AND VARIATION OF THE TOTAL ALLOWABLE CATCH

42. The TAC for most stocks in the Quota Management System (QMS) is set under section 13 of the Act.

43. Under section 13 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). That biomass level is abbreviated as B_{MSY}.

44. 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.

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

46. Section 13(2A) says that if the Minister considers 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, he or she must:

- Not use this lack of information as a reason for postponing, or failing to set a TAC for the stock;
- 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.

47. The Minister may set the TAC to achieve the objective in a way and rate which has regard to the interdependence of stocks and within a period appropriate to the stock.

48. 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 (section 13(3)) the Minister may have regard to such social, cultural, and economic factors as he or she considers relevant. This provision applies to TACs set under section 13(2) or section 13(2A) (if applicable).

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

50. 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 bottom-impacting 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. While sea cucumbers do not fit the descriptions above, they are considered to perform an important ecosystem function and are known as the “vacuum cleaners of the sea’ as they feed on organic detritus in the sediments.

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

51. 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.

52. 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).

53. Section 21 of the Act says that, in setting or varying the TACC, the Minister must have regard to the TAC and allow for:

a) Māori customary non-commercial fishing interests;
b) Recreational interests; and

c) All other mortality to that stock caused by fishing.

54. The Courts have in a number of cases considered what is involved in allowing for non-commercial interests. In Snapper 1[4], the Court of Appeal said that the recreational allowance is simply the best estimate of what recreational fishers will catch while being subject to the controls which the Minister decides to impose upon them, e.g. bag limits and minimum lawful sizes. Having set the TAC, the Minister in effect apportions it between the relevant interests.[5]

55. The Supreme Court in Kahawai[6] endorsed this approach and said that the words "allow for" require the Minister both to take into account the interests and make provision for them in the calculation of the TACC.[7] The Supreme Court went on to say that sections 20 and 21 prescribe a framework within which the Minister must operate when setting the TACC. The frame work requires apportionment of the TAC by the Minister among the various interests and other mortality. The sequential nature of the method of allocation provided for in s 21 does not indicate that non-commercial fishing interests are to be given any substantive priority over commercial interests. In particular, the allowance for recreational interests is to be made keeping commercial interests in mind.[8]

56. The Supreme Court further said that in the end, within the limits provided for by the Act, the Minister makes a policy decision as to what allocations are appropriate for non-commercial interests and other mortality and what is to be the TACC. These decisions are interdependent. The Act does not confer priority for any interests over the other. It leaves that to the judgment of the Minister.[9]

57. Under the customary fishing regulations[10] customary take is regulated through the authorisation system which requires that all customary fishing is to be undertaken in accordance with tikanga and the overall sustainability of the fishery. This framework was put in place to give effect to legal obligations in the Settlement Act. [11] In the case of SCC 7A, only Ngai Tahu are actually under the customary fishing regulations Te Tai Ihu runanga (Top of the South) all operate under regulations 50, 51 and 52 of the Fisheries (Amateur Fishing) Regulations 2013.

58. When allowing for Māori customary non-commercial interests, the Minister must take into account:
    a) Any mātaitai 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.

59. You also need to allow for all other mortality to a stock that results from fishing. This includes illegal catch, discards, and incidental mortality from fishing gear.

[4] New Zealand Fishing Industry Association (Inc) v Minister of Fisheries CA 82/97, 22 July 1997 ("Snapper 1").
[5] Snapper 1, p 17.
[6] New Zealand Recreational Fishing Council Inc v Sanford Limited [2009] NZSC 54 ("Kahawai")
[7] Kahawai [55]
[8] Kahawai [61]
[9] Kahawai [65]
[10] Fisheries (South Island Customary Fishing) Regulations 1999
[11] Where the customary regulations don't apply, customary fishing is regulated under regulations 50-52 of the Fisheries (Amateur Fishing) Regulations 2013 and a similar authorisation system applies.

60. Fisheries New Zealand notes there are no Mātaitai, or temporary area closure or temporary fishing method restriction or prohibitions 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.

2 Other Matters

2.1 HARVEST STRATEGY STANDARD (HSS)

61. The Harvest Strategy Standard (HSS) is a policy statement of best practice in relation to the setting of fishery and stock targets and limits for fish stocks in New Zealand's 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.

62. The HSS outlines the 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.

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

PART 3: Sea cucumber (SCC 7A)

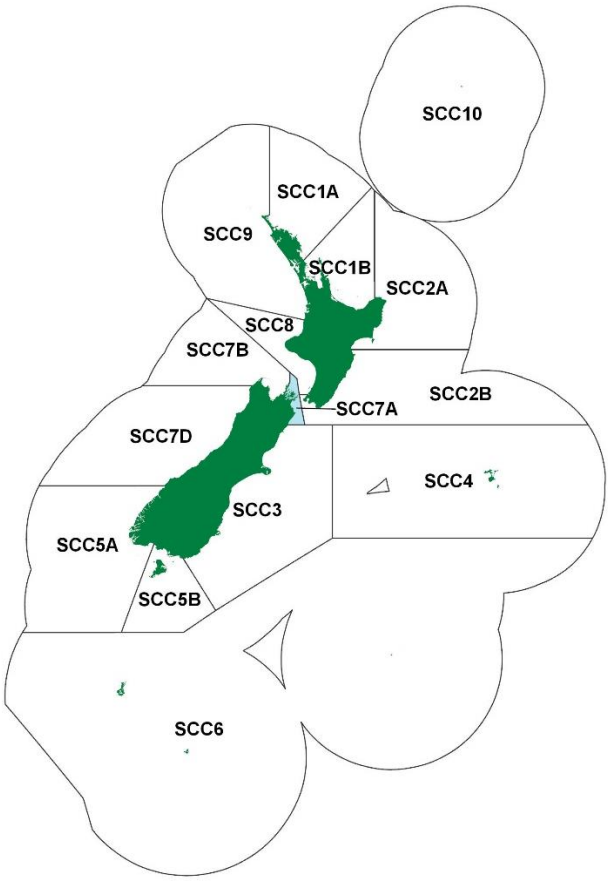

Figure 1: Map of sea cucumber Quota Management Areas, with SCC 7A highlighted in blue.

1 What is proposed?

64. You are being asked to make decisions on sustainability measures for sea cucumber (*Austrostichipus mollis*) in the SCC 7A Quota Management Area (QMA) off the upper east coast of the South Island (Figure 1). The Total Allowable Catch (TAC), allowances and Total Allowable Commercial Catch (TACC) proposals presented in this paper for your decision are given in Table 1 below, and are based on information and views from tangata whenua and stakeholders.

Table 1: Proposed management settings (in tonnes) for SCC 7A from 1 April 2019.

Option	TAC	TACC	Allowances		
			Customary Māori	Recreational	All other mortality to the stock caused by fishing
Option 1 *(Status quo)*	8	5	1	2	0
Option 2	18 ↑	15 ↑	1	2	0

65. Eight submissions were received. Six submissions support Option 1, primarily based on concerns for the ecology of the Marlborough Sounds. Two submissions favoured Option 2 to provide for additional utilisation of this small but potentially valuable fishery.

66. After considering these submissions and input, Fisheries New Zealand recommends Option 2. This option increases the TAC from 8 to 18 tonnes and the TACC from 5 up to 15 tonnes. No changes are proposed for other allowances.

67. Option 2 is a cautious approach that allows for some additional utilisation while ensuring sustainability, and takes into account the uncertainty associated with this relatively new fishery. In terms of the concerns raised regarding potential impacts on the Marlborough Sounds, Fisheries New Zealand has worked with commercial fishers to ensure that any additional catch will be taken outside the areas of concern to submitters.

2 Why the need for change?

68. Sea cucumber was introduced into the Quota Management System (QMS) in 2004, but little was known about the sea cucumber fishery at that time. Given this lack of information, including some aspects of biological information, very small TACs were set for each QMA.

69. The SCC 7A TACC has been consistently caught in recent years and a review of the TAC has been requested by quota holders looking to develop new fisheries and export markets. New biomass information in part of SCC 7A indicates there is sufficient biomass to justify an increase to the current low TAC for this stock.

70. Because of incomplete information on growth rate, reproduction, recruitment, and mortality, it is not possible to determine the biomass that would produce maximum sustainable yield (B_{MSY}). Therefore, Fisheries New Zealand considers that cautious increases are an appropriate approach to develop sea cucumber fisheries. Fisheries New Zealand considers that the increases to the TAC and TACC proposed for SCC 7A would not pose a sustainability risk.

3 Background Information

3.1 BIOLOGICAL CHARACTERISTICS OF SEA CUCUMBERS

71. Sea cucumbers are marine invertebrates with a cylindrical body. They are echinoderms, like sea stars and sea urchins. Sea cucumbers are bottom-feeders that are widely distributed. Commercially fishable concentrations of the only species of sea cucumber of commercial value, *Australostichopus mollis*, typically occur off sheltered coastlines and out to depths between 60 and 140 metres. They inhabit a wide range of substrates, including rocky reefs, biogenic reefs, gravel and sediment.

72. Sea cucumbers are known to vary in abundance in response to environmental and other conditions. They are broadcast spawners; after fertilisation, larvae have a three to four week pelagic larval phase before settling on the seabed. Sea cucumbers can reach a size of 25 cm (300 g wet weight), and live for 5 – 15 years.

73. The New Zealand sea cucumber fishery is very small, especially when compared to overseas sea cucumber fisheries. Recent total New Zealand landings are about 25 tonnes per annum. By comparison, Japan lands 1,000 tonnes of the sea cucumber species *Apostichopus japonicus* annually*;* the Republic of Korea lands 6,000 tonnes of

A. japonicus annually; and around 400 tonnes of the sea cucumber species *Parastichopus californicus* are landed per year in British Columbia.

74. Internationally, sea cucumber fisheries have been prone to boom and bust cycles. Accordingly, Fisheries New Zealand considers it appropriate to take a cautious approach and to monitor how the stock responds to fishing. TACs can be adjusted again in the future if information indicates a utilisation opportunity (capacity to support greater harvest) or a sustainability risk (stock depletion) exists.

75. Sea cucumbers are thought to perform an important ecosystem function. They are sometimes called the "vacuum cleaners of the sea' as they feed on organic detritus in the sediments which can act to maintain sandy habitats.

76. Recently, *A. mollis* has been successfully spawned and grown through to juveniles in the laboratory, opening the door to aquaculture and ocean ranching.

3.2 FISHERY CHARACTERISATION

Māori customary fishing

77. Best available information indicates that there is negligible customary harvest of sea cucumbers (kūkamo te moana) in SCC 7A. The Fisheries (South Island Customary Fishing) Regulations 1999 have not been implemented in this area. Therefore, there is no requirement for documented information on the level of Māori customary non-commercial harvest of this species, nor is there information about its importance to customary fishers. Kūkamo te moana is not referred to in the Te Waipounamu Iwi Fish Plan.

Recreational fishing

78. Best available information indicates that there is little recreational harvest of sea cucumbers in SCC 7A. Recreational fishing surveys indicate that sea cucumber are not caught by recreational fishers, however, it is possible that shore based recreational fishing activity for sea cucumber may not be well-represented in the recreational surveys.

Other mortality

79. No change is proposed for other mortality caused by fishing. This is a hand-gathering dive fishery, and very little mortality is expected.

Commercial fishing

80. The current commercial fishery is located largely in Queen Charlotte Sound and Tory Channel. Sea cucumber are hand gathered by divers - predominantly by free diving. Fishers can use underwater breathing apparatus (UBA), but if they do, they are subject to specific position reporting requirements to show the location of diving events. There is little reported bycatch of sea cucumbers from other fisheries in SCC 7A.

81. Sea cucumbers are listed on Schedule 6 of the Fisheries Act, which means commercial fishers may return sea cucumber to the sea if they are likely to survive and the return takes place as soon as practical after the sea cucumber is taken.

82. Since introduction into the QMS landings have been around or, on occasion, have exceeded the TACC, with deemed values paid (see Figure 2).

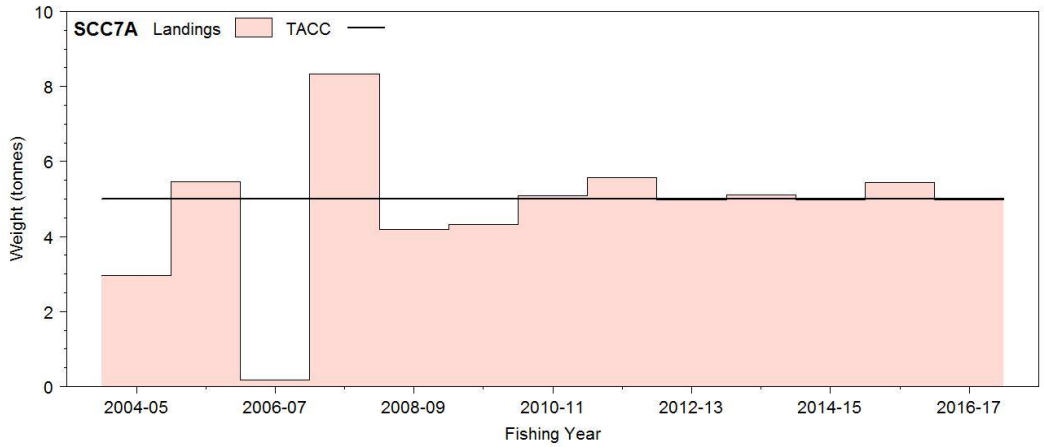

Figure 2. Landings vs TACC for SCC 7A from 2004/05 to 2016/17.

3.3 STATUS OF THE STOCK

Management target

83. In the Fisheries New Zealand Draft National Shellfish Plan, SCC 7A is a Group 4 Stock. Stocks in this Group are sought after by some sectors, but fishing pressure is relatively low. Biological vulnerability of stocks in this Group is variable. The management approach for these stocks provides for development opportunities while minimising sustainability risks, by setting cautious catch limits as information becomes available.

84. While fishing has occurred in Queen Charlotte Sound and Tory Channel, the vast majority of the SCC 7A has not been fished. Given the limited information on this developing fishery, there are no management targets, reference levels or hard and soft limits for this fishery to provide guidance under the Harvest Strategy Standard. These will be determined as the fishery develops and more scientific information becomes available.

Status of the stock

85. Two biomass surveys are available that cover small areas of SCC 7A. The results of both surveys have recently been reviewed through Fisheries New Zealand's science working group process. One survey is based on sea cucumber bycatch data from scallop dredge surveys, and the other is a dive survey undertaken by NIWA within Queen Charlotte Sound and Tory Channel in 2014.

86. Scallop dredge surveys have been collecting sea cucumber biomass data since 2015. The surveys were standardised to cover core commercial scallop beds in the outer Marlborough Sounds, and are optimised for scallops rather than sea cucumber. As a result, the sea cucumber biomass estimates have large confidence intervals, and are likely to be biased low.

87. Combined, these two survey estimates give a green weight biomass estimate of between 485 and 585 tonnes within the areas surveyed.

88. Areas within SCC 7A known to have sea cucumber but not included within these estimates include:

- East coast of D'Urville Island;

- Admiralty Bay;
- Pelorus Sound;
- Kenepuru Sound;
- Forsyth Bay;
- Guards Bay (except the Bank);
- Gore Bay;
- Port Underwood;
- Cloudy Bay; and
- Clifford Bay.

89. There is no information about sea cucumber stocks in the East Coast South Island from Cape Campbell down to the Clarence River, however, there are also areas of suitable habitat for sea cucumber along this coast.

4 Why are these options proposed?

90. The options proposed for SCC 7A are given in Table 2 and discussed below.

Table 2: Proposed management settings in tonnes for SCC 7A from 1 April 2019, 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 *(Status quo)*	8	5	1	2	0
Option 2	18↑ (225%)	15 ↑ (300%)	1	2	0

Total Allowable Catch

91. SCC 7A has only been lightly harvested because the TAC is set low (Figure 2). Growing interest in the fishery is shown by the TACC being consistently caught, and quota holders have requested a review of the TAC/TACC.

92. In cases such as SCC 7A, where B_{MSY} is not able to be estimated, section 13(2A) of the Act provides for the Minister to use the best available information to set a TAC that is not inconsistent with the objective of maintaining the stock at or above, or moving the stock towards or above, the B_{MSY} level. Section 13(4) allows the Minister to vary the TAC and, in doing so, he is required to have regard to the matters specified in subsection (2A).

93. Fisheries New Zealand has proposed two options in this paper. Given the low level of fishing to-date, relative to area and biomass, both options are likely to maintain the stock above the target B_{MSY} level. In each case, ongoing monitoring of the stock will enable adjustments to address risks and opportunities in the future.

94. Option 1 is the *status quo*; this is the most cautious option.

95. Under Option 2, Fisheries New Zealand proposes to apply a similar approach[12] to this fishery as that recently used for setting the TAC in other developing fisheries, including

[12] This approach was originally approved by the Shellfish Working Group for use in Surf Clam fisheries in FMA 8.

in the SCC 3 and SCC 7B fisheries, where you decided to approve modest increases to the TACs for 1 April 2018.

96. Under this approach, a harvest rate of 5% is applied to the lowest greenweight biomass estimate[13] of sea cucumbers. This provides a cautious sustainable yield on which to base the TAC. For SCC 7A the scallop dredge surveys suggest a sustainable yield of 3.4 tonnes for the area that was covered by these surveys, while the Queen Charlotte Sound dive survey suggests a yield of 11.1 tonnes for that area. As they apply to different areas, these estimates can be combined, giving a total of 14.5 tonnes.

97. The area surveyed to obtain the biomass estimates is only a small fraction of the SCC 7A area. Fisheries New Zealand, therefore, considers the whole fishery is likely to support an increase in harvest, based on the biomass of this small area, without a sustainability risk. Fisheries New Zealand is working with fishers to develop harvesting techniques such as rotational fishing, and to ensure that any increased fishing effort does not result in localised overfishing.

98. The increase to catch limits proposed in Option 2 is considered to be sustainable. The best available information suggests that sea cucumber abundance in SCC 7A is able to support a higher TAC than the *status quo*. Fisheries New Zealand will continue to monitor the SCC 7A fishery, and adjust the catch limits and allowances as necessary.

Allowances

99. Having set or varied the TAC, the Minister must make estimates for Māori customary non-commercial fishing interests, recreational fishing interests, all other mortality to the stock caused by fishing and establish the TACC.

Customary Māori fishing

100. Best available information indicates that there is negligible customary harvest of sea cucumbers in SCC 7A. As the area is not under the Fisheries (South Island Customary Fishing) Regulations 1999, there is no documented information on the level of Māori customary non-commercial harvest of this species, nor its importance to customary fishers. No change is proposed to the current customary Māori fishing allowance of 1 tonne. Te Waka a Māui me Ōna Toka Iwi Forum did not comment on the allowance for customary Māori fishing.

Recreational fishing

101. Best available information indicates that there is little recreational harvest of sea cucumbers in SCC 7A. Recreational fishing surveys indicate that sea cucumber are not caught by recreational fishers. However, it is possible that shore-based recreational fishing activity for sea cucumber may not be well represented in the recreational surveys. No change is proposed to the current recreational fishing allowance of 2 tonnes.

Other mortality

102. No change is proposed for other mortality caused by fishing. This is a targeted, hand-gathering dive fishery, and very little mortality is expected. SCC 7A has a high deemed value with ramping, but is also listed on Schedule 6 of the Fisheries Act which allows fishers to return sea cucumber to the sea. There is little reported bycatch of sea cucumber from other fisheries within SCC 7A.

[13] The lower bound of the 95% confidence interval of the greenweight estimated biomass.

Total Allowable Commercial Catch

103. Given there is limited information available on both the biology and the biomass of sea cucumber in SCC 7A, a single cautious option (Option 2) has been proposed in addition to the *status quo* (Option 1). This is an appropriate approach given the information principles of section 10 of the Act.

104. Fisheries New Zealand proposes to use the current biomass estimates, rounded up to 15 tonnes, as the basis for the commercial fishery. This would be an increase from 5 to 15 tonnes. It is cautious because the area surveyed is only a small fraction of all the area of known sea cucumber habitat in SCC 7A, and the biomass estimates are biased low by wide confidence intervals and the assumption of 100% dredge efficiency (where scallop survey data has been used to estimate sea cucumber biomass).

105. Option 2 would provide for an increase in commercial catch, increasing utilisation opportunity, while managing the risk to sustainability. Ongoing catch and effort monitoring at a fine scale will enable responsive management of this developing fishery.

5 Discussion of options

106. Fisheries New Zealand consulted on the options as set out in Table 2:

5.1 VIEWS OF SUBMITTERS

107. Section 12 of the Act requires that you 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 received

108. Eight submissions were received on the SCC 7A proposals from the following individuals and organisations:

    a) Peter Beech;
    b) Ngāti Rārua Asset Holding Company Limited;
    c) Marlborough Recreational Fishers' Association;
    d) Te Ohu Kaimoana;
    e) The Guardians of the Sounds;
    f) John and Judy Hellstrom;
    g) Kenepuru and Central Sounds Residents Association Inc (KCSRA); and
    h) New Zealand Recreational Fishing Council (NZRFC).

109. Six submissions (Peter Beech, the Marlborough Recreational Fishers Association, Guardians of the Sounds, John and Judy Hellstrom, KCSRA and the NZRKC), supported Option 1 (*status quo*) primary due to concern that an increase in the TAC and TACC would detrimentally affect the ecosystem in the Marlborough Sounds. Two submitters (Te Ohu Kaimoana and Ngāti Rārua Asset Holding Company Limited) supported Option 2 on the basis that this is a small fishery with sustainable development potential.

110. Peter Beech submits the ecosystem of Totaranui/Queen Charlotte Sound is at a "tipping Point" and that increasing sea cucumber harvest will contribute to the problem. Mr Beech is concerned that most of the additional sea cucumber fishing effort will go into Totaranui/Queen Charlotte Sound with negative impacts on that ecosystem. He also considers the Marlborough Sounds should be removed from QMA 7, and managed along the lines of the Guardians of Fiordland and the Marine Guardians of Kaikōura.

111. Ngāti Rārua Asset Holding Company Limited supports Option 2. Ngāti Rārua are commercial stakeholders in SCC 7A and the QMA is within their rohe. Iwi pāua divers, familiar with this species, report it is prolific in abundance in the area and, in their opinion, the increase will not have any detrimental harm to the sustainability of the species, or associated species that rely on sea cucumber for a food source.

112. Ngāti Rārua Asset Holding Company Limited caution that regular and correct area catch reporting needs to be adhered to and they rely on Fisheries New Zealand to ensure this happens.

113. The Marlborough Recreational Fishers' Association submits in favour of Option 1, citing the limitations of the available information, accessibility to diving and the ecosystem contributions of sea cucumber as reasons. They also caution against the "boom and bust" of many international sea cucumber fisheries.

114. Te Ohu Kaimoana notes SCC 7A is a relatively high value, small scale fishery in a developmental stage and submits in support of Option 2. Te Ohu Kaimoana acknowledged the lengthy period (6 weeks) provided for consultation.

115. The Guardians of the Sounds is concerned the proposal is inadequately researched with little scientific "evidence" to back up claims. The Guardians request the TAC review be put on hold until a working group can be set up that includes Quota Holders, Fisheries New Zealand, the Marlborough District Council, iwi and groups such as the Guardians and Residents Associations, to properly understand the implications of the proposal to increase quota.

116. John and Judy Hellstrom submit there is insufficient evidence provided to satisfy s9 (environmental principles) or s10 (information principles) and justify the option suggested. In the absence of any verifiable information about stocks, or sustainability of fisheries resources, or the impacts on the whole eco-system and other species, they consider the purposes of the Fisheries Act cannot be met.

117. The KCSRA submits inadequate and inaccurate analysis and insufficient documentation were provided in the Discussion Document. They request regulation changes to ensure the fishery is dive-only and submit that hard and soft limits need to be determined for the fishery. They also raise concern that any increase to the TACC may place undue stress on populations in Totaranui/Queens Charlotte Sound and Tory Channel areas.

118. KCSRA recommend that a multi-sector working group be set up to develop a Fisheries Strategy for this resource in SCC 7A in the Marlborough Sounds.

119. The NZRFC submit they do not support the proposed increase to the TAC based on information that current abundance will support increased utilisation. They do not feel that there is enough information on sustainability measures versus harvest levels. They support a precautionary approach.

Input and participation of tāngata whenua

120. The proposal to review the SCC 7A TAC was presented to the Te Waka a Māui me Ōna Toka Iwi Forum (Te Waka a Māui) in November 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. The Forum did not express an opinion about a review of the SCC 7A fishery at this stage, however, subsequently, Ngāti Rārua Asset Holding Company Limited have submitted in favour of Option 2.

Kaitiakitanga

121. Under Section 12(1)(b) you must also have particular regard to kaitiakitanga before setting or varying a TAC (see Section 1.7). 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.

122. Kaitiakitanga can also be exercised via Mātaitai reserves, Tāiapure and section 186B rahui. There are not any of these customary management mechanisms within the QMA boundaries of SCC 7A.

123. Te Waipounamu Iwi Fisheries Plan does not identify kūkamo te moana as of importance but, as mentioned earlier (section 1.7), the Plan does contain three objectives which are relevant to the management options proposed for SCC 7A:

124. 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.

5.2 EVALUATION OF OPTIONS

125. Option 1 is the *status quo*. The current settings will provide less opportunity for utilisation compared with Option 2, and the benefits from increasing the TAC/TACC will not be available. Maintaining the *status quo* will result in very low sustainability risk for the fishery, and the current high deemed value of $40/kg will likely ensure low levels of harvest are maintained.

126. KCSRA submit the approach used with the data to hand clearly does not support an increased TACC. KCSRA submit that after analysis they arrive at “a figure about half that suggested in the Discussion Document”.

127. In terms of the concerns raised in the submissions by Peter Beech and others in relation to the Marlborough Sounds, Fisheries New Zealand acknowledges the ecological role sea cucumber can perform removing organic detritus from benthic sediments. However, Fisheries New Zealand notes that the proposed increase is cautious. The biomass estimate on which the Option 2 TAC is based applies to a very small fraction of the known sea cucumber habitat in SCC 7A, while the TAC increase applies to the entire SCC 7A QMA. Furthermore the TAC is based on the lower bound of the confidence intervals for the biomass estimates (given the nature of the surveys, the confidence intervals are wide and therefore the lower 95 percentile itself is biased low), and the TAC is based on an exploitation rate of only 5% of that biomass.

128. Given this cautious approach, Fisheries New Zealand considers there is unlikely to be significant change in sea cucumber biomass or ecological impact from this level of fishery removals. The fishery is expected to remain a dive-only fishery as hand gathering ensures the quality of the final product and market reputation. For this reason Quota Holders have given their assurance that they have only employed hand gathering since 2004, when the fishery began, and will continue to only fish in this way into the future.

129. Should you approve an increase the TAC, as set out in the Discussion Document, to address any concerns around localised overfishing of more accessible areas in SCC 7A, Fisheries New Zealand will work with the quota holders to establish a rotational fishery with effort spreading to ensure no increased harvest of sea cucumber occurs in Totaranui/Queens Charlotte Sound. Fisheries New Zealand has already discussed effort spreading with Quota Holders and fishers which will be monitored by fine scale reporting and electronic reporting. This is a similar approach to that which has already been implemented for SCC 7B, following your decision to increase the TAC for that fishery last year.

130. As digital monitoring is introduced into this and other fisheries later this year, precise fine-scale monitoring on where fishing occurs will be available to Fisheries New Zealand.

131. As mentioned, after discussion with fishers and quota holders, given the low TACC, and that any increase in benthic impacting fishing methods would not be desirable within the Marlborough Sounds, the target fishery for sea cucumbers in SCC 7A is expected to remain a dive-only fishery. Because of this, and the other mitigations noted above, any impacts on the sea bed or other sea life (section 9 of the Act) are likely to be minor.

132. Some submitters in favour of Option 1 have also requested the TAC review process be deferred while a multi-sector working group is established to develop a Fisheries Strategy for the resource and the available science further evaluated. Fisheries New Zealand notes that the surveys used in this TAC review have already been reviewed by the Shellfish Science Working Group which contains independent specialist scientists, and that Option 2 is a cautious approach for estimating the proposed TAC that takes into account the uncertainty in the available information.

133. The fishery will continue to be monitored, further surveys undertaken, and any other information assessed which will inform the need for further reviews of the SCC 7A TAC (increases or decreases).

134. Submitters have also requested that the Marlborough Sounds be removed from QMA 7 and manged as an independent ecological unit. This issue is outside the scope of this review, however, Fisheries New Zealand regularly engages with many of these submitters and will discuss this and their wider expectations regarding the Marlborough Sounds .

135. In relation to KCSRA's submission that the data in the Discussion Document does not support an increased TAC (i.e. that they arrive at 'a figure about half that suggested in the Discussion Document'), Fisheries New Zealand notes that the results of both the dive survey and the scallop bycatch survey were presented in 'split weight' while TACs are set in 'greenweight' (as required under the Act). Split weight is an industry

processed state where the abdomen is cut to release internal water and gut contents. Greenweight means the weight before any processing commences and before any part is removed. To convert from split weight to greenweight a factor of 2.41 was used (based on data from wider surveys of sea cucumber in New Zealand), which explains the apparent difference.

136. Ngāti Rārua Asset Holding Company Limited and Te Ohu Kaimoana submitted in favour of Option 2 and state that iwi paua divers, familiar with this species, report it to be prolific within SCC 7A and, in their opinion, the proposed increase to the TACC would be sustainable.

137. Fisheries New Zealand agrees with these submitters that the fishery has been lightly fished and is in a developmental stage, and that the best available information suggests that sea cucumber abundance in SCC 7A is high enough to support an increase in the TAC.

138. Sea cucumber is a potentially valuable fishery. If processed correctly, sea cucumbers are worth up to $40/kg (green weight) to fishers, and 1 kg of dried sea cucumber can be worth up to $1,000. The economic implications of the proposed options are outlined in Table 3.

Table 3: Predicted changes to commercial revenue of the proposed options, based on $40/kg.

	TACC	Change from status quo (t)	Predicted revenue change ($ p.a.)
Option 1 *(Status quo)*	5 t		
Option 2	15 t	10 t ↑	Up to 400,000 ↑

5.3 VARYING THE TAC

139. Option 1 is the *status quo*.

140. Option 2 increases the TAC from 8 to 18 tonnes (an increase to the TAC of 10 tonnes, 125% of the current TAC), which provides for cautious development of the fishery while maintaining a low risk to sustainability.

141. Fisheries New Zealand considers that both options are likely to maintain the stock above the target B_{MSY} level. In each case, ongoing monitoring of the fishery will enable responsive management and appropriate adjustments to address risk and possible opportunity in future.

5.4 VARYING ALLOWANCES AND THE TACC

142. Having set the TAC, you must make estimates for Māori customary non-commercial fishing interests, recreational fishing interests, and all other mortality to the stock caused by fishing.

Allowance for Māori customary fishing

143. Best available information indicates that there is negligible customary harvest of sea cucumbers in SCC 7A. There is no documented information on the level of Māori customary non-commercial harvest of this species, nor its importance to customary fishers. Therefore, no change is proposed to the current customary Māori fishing allowance.

144. No submissions concerning the Māori customary non-commercial allowance were received.

Allowance for recreational fishing

145. Best available information indicates that there is little recreational harvest of sea cucumbers in SCC 7A.

146. No submissions concerning the recreational allowance were received.

Allowance for all other mortality to the stock caused by fishing

147. No change is proposed for other mortality caused by fishing. This is a hand-gathering dive fishery, and very little mortality is expected.

148. No submissions concerning other sources of fishing related mortality were received.

TACC

149. Given the limited extent of the area surveyed and the limited information available, a single cautious option is proposed (as well as Option 1, the *status quo*) to take into account uncertainty in the available information. This is an appropriate approach under the information principles under section 10 of the Act.

150. Option 2 would provide for an increase in catch, increasing utilisation opportunity, while continuing to manage any risk to sustainability. Ongoing monitoring of the stock will enable responsive management of the fishery. Fisheries New Zealand will work with quota holders and fishers to promote sustainable fishing practices.

151. The impacts to the sea bed or other sea life (section 9 of the Act) are expected to be minor. A relatively low TAC and TACC are proposed, and the target fishery for sea cucumbers in SCC 7A is expected to remain a dive-only fishery.

5.5 OTHER MANAGEMENT CONTROLS

Recreational controls

152. No changes are proposed to the recreational controls for sea cucumber in SCC 7A. The recreational daily bag limit for sea cucumber is 50 per person per day as part of a mixed species daily bag limit.

Deemed value rates

153. The fishery is a target fishery, with little over-catch in recent years. Fisheries New Zealand considers the deemed value rates for SCC 7A are set appropriately and there are no proposed changes to them for the 2019/20 fishing year (see Table 4 below).

Table 4: Standard deemed value rates ($/kg) for SCC 7A.

	Interim Rate ($/kg)	Annual Differential Rates ($/kg) for excess catch (% of ACE)					
		100-120%	120-140%	140-160%	160-180%	180-200%	200%+
Status quo	40.00	40.00	48.00	56.00	64.00	72.00	80.00

6 Conclusion and Recommendation

154. The available information on the sea cucumber biomass in SCC 7A shows that an increase in the TAC, TACC for SCC 7A would be sustainable (Option 2).

155. Sea cucumber fisheries around the world have been characterised by overfishing. However, Fisheries New Zealand proposes a cautious approach to this developing fishery. A similar approach to that used in other developing fisheries has been used, using a harvest rate based on the lowest estimate of the biomass. Additional research to estimate biomass, and to understand sea cucumber biology and ecological function, will be needed to accompany any further development of the fishery.

156. 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. Fisheries New Zealand considers all options are consistent with your statutory obligations.

Option 1

Agree to retain the SCC 7A TAC at 8 tonnes and within the TAC:

i. Retain the allowance of 1 tonne for Māori customary non-commercial fishing interests;
ii. Retain the allowance of 2 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 SCC 7A TACC at 5 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 2 (Fisheries New Zealand recommended)

Agree to increase the SCC 7A TAC from 8 to 18 tonnes and within the TAC:

i. Retain the allowance of 1 tonne for Māori customary non-commercial fishing interests;
ii. Retain the allowance of 2 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. Increase the SCC 7A TACC from 5 to 15 tonnes.

Agreed / Agreed as Amended / Not Agreed

Hon Stuart Nash
Minister of Fisheries
17 / 03 /2019