

Appendix Two:

Review of sustainability measures for the 2023 October round

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Contents

Introduction and legal overview

1	Introduction	1
2	Overview of powers and obligations under the Fisheries Act 1996	2
3	Relevant standards, guidelines, and strategies	11
4	Input and participation of tangata whenua	14
5	Public consultation	14
6	General themes	16

18

Deemed value rate reviews for selected stocks

Inshore stocks

Green-lipped mussel (GLM 9)	45
Kina (SUR 1A & SUR 1B)	68
Gemfish (SKI 1 & SKI 2)	95
Trevally (TRE 2)	131
Red gurnard (GUR 3)	159
Monkfish/Stargazer (STA 7)	182

Deepwater stocks

<u>Silver warehou (SWA 3)</u>	207
Orange roughy (ORH 3B)	see separate document
Referenced reports	226
Addendum 1 - Summary of relevant regional plan provisions and policy statements	234
Public submissions received	see separate document

1 Introduction

- 1. This paper seeks your decisions in relation to the October 2023 sustainability round. You are asked to make decisions on sustainability measures and allowances for ten different fish stocks and deemed value rate settings for three different fish stocks, as summarised below.
- 2. The measures you are asked to consider for these stocks are:

Catch limits and allowances

- setting or varying the Total Allowable Catch (TAC);
- setting or varying allowances for Māori customary and recreational fishing;
- allowances for other sources of mortality to stocks from fishing; and
- setting or varying the Total Allowable Commercial Catch (TACC).

Deemed values

- Adjusting interim, annual and differential deemed value rate settings for stocks where needed.
- 3. The fish stocks proposed for changes as part of the October 2023 sustainability round are listed below in Tables 1 and 2.

Table 1: Summary of stocks and measures reviewed for catch limits and allowances as part of the October 2023 sustainability round.

Stock	You are asked to consider
Green-lipped mussel – GLM 9 West coast North Island	Options to set the TAC, allowances, and TACC for the 6-month transitional period from 1 October 2023 to 31 March 2024, to support a change in fishing year. We are also proposing that you retain the full year settings following the transition.
Kina – SUR 1A & SUR 1B East Northland, Auckland, Hauraki Gulf & Bay of Plenty	Options to increase the TACs, customary Māori allowances, and TACCs of both stocks. These changes are proposed to provide for greater utilisation of kina and are part of a suite of management measures aimed at helping to address kina barrens.
Gemfish – SKI 1 & SKI 2 Northland, Auckland, Waikato, Bay of Plenty, Hawkes Bay and Wellington	Options to increase to the TACs, other mortality allowances, and TACCs of both stocks. These changes are proposed to allow for greater utilisation of the stocks in response to recent increases in abundance.
Trevally – TRE 2 Lower east coast North Island	Options to increase the TAC, other mortality allowance, and TACC. These modest changes are proposed to allow for greater utilisation of trevally in response to increased abundance.
Red gurnard – GUR 3 East Coast South Island, Chatham Rise, Sub-Antarctic, Southland, Rakiura, and Fiordland	An option to increase the TAC, other mortality allowance, and TACC. This option is proposed to allow for greater utilisation in response to currently high abundance.
Monkfish/Stargazer – STA 7 West coast and top of the South Island	Options to reduce the TAC, other mortality allowance, and TACC. These options are proposed in response to a recent sustainability concern for the stock, following low estimates of stargazer biomass from trawl surveys.
Silver warehou – SWA 3 East coast South Island	An option to increase the TAC, other mortality allowance, and TACC. These options propose to allow greater utilisation of the stock based on recent trends in the fishery.
Orange roughy – ORH 3B Southland, east coast South Island, Sub-Antarctic, Chatham Islands	Options to reduce the TAC, other mortality allowance, and TACC. These options are proposed in response to a sustainability concern for ORH 3B following the rejection of previous science used to estimate biomass of orange roughy.

Table 2: Summary of stocks being reviewed for standalone deemed value adjustments as part of the 1 October 2023 sustainability round.

Stock	You are asked to consider	
Snapper – SNA 7 & SNA 8 West Coast and top of the South Island, and West Coast North Island	Options to adjust the interim, annual, and differential deemed value rates for both SNA 7 (decrease or maintain) and SNA 8 (increase). The proposed adjustments aim to provide more appropriate incentives for fishers to acquire or maintain sufficient Annual Catch Entitlement (ACE) to cover catch of these stocks. You are also asked to consider aligning the deemed value rates of SNA 7 and SNA 8 to reinforce incentives for fishers who fish across the stock boundaries to report accurately.	
School shark – SCH 5 Southland and Sub-Antarctic	Options to increase the interim, annual, and differential deemed value rates for SCH 5 to increase incentives for fishers to acquire or maintain sufficient ACE to cover catch.	

- 4. Fisheries New Zealand (**FNZ**) has consulted on your behalf on all proposals with representatives of people who have an interest in the stocks or the effects of fishing on the aquatic environment in the areas concerned, including Māori, environmental, commercial, and recreational interests.
- 5. We have provided for input and participation of tangata whenua on these decisions, primarily through lwi Fisheries Forums, which have been set up for this purpose. We have identified species and areas over which these groups have expressed kaitiakitanga,¹ to which you must have particular regard when making these decisions.
- 6. Input and participation and submissions have been summarised where relevant for each stock. However, should you wish to view full submissions on the proposals, these have been provided separately to your office (titled: "*Public Submissions Received for the 2023 October Sustainability Round*").

1.1 Implementation of decisions

7. All stocks in this round (except GLM 9) have an October fishing year. Decisions on their catch limits, allowances, and deemed value rates will therefore take effect from 1 October 2023. The change in fishing year for GLM 9 means the transitional catch settings and allowances will take effect from 1 October 2023 and the full year catch settings and allowances will take effect from 1 April 2024.

1.2 Note regarding the use of citations and references in this document

- 8. Throughout this advice document we have used in-text citations and have compiled a list of the references at the end of the document following the final stock chapter (see '*Referenced Reports*'). FNZ has included these citations and references to show where statements are supported by relevant science and information. Some information presented, such as commercial catch data, does not include citations because the data was sourced internally from FNZ databases.
- 9. All information required for your decision making is presented within this document itself and you are not expected to read any of the references that have been cited.

2 Overview of powers and obligations under the Fisheries Act 1996

2.1 Decisions Ministers may make in relation to sustainability reviews

10. Provisions of the Fisheries Act 1996 (**the Act**) allow you as Minister for Oceans and Fisheries to:

¹ 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.

^{2 •} Review of sustainability measures for the 2023 October round: Introduction and Legal Overview

Part 3: Sustainability measures

• Set and vary sustainability measures such as the TAC.

Part 4: Quota Management System

- Make allowances for Māori customary and recreational fishing and all other mortality to the stock caused by fishing.
- Set and vary the TACC.
- Set deemed value rates to provide an incentive for fishers not to exceed the available annual catch entitlement (**ACE**).
- 11. In making decisions on those matters there are several things you are required to do and take into account. These are outlined below.

2.2 Overarching requirements

2.2.1 Application of the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992 – section 5(b)

- 12. You must act in a manner consistent with the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992. Section 5(b) of the Fisheries Act 1996 requires that the Act be interpreted and people making decisions under the Act to do so in a manner that is consistent with the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992 (**the Settlement Act**). Section 10 of the Settlement Act provides that non-commercial customary fishing rights continue to be subject to the principles of the Treaty of Waitangi and give rise to Treaty obligations on the Crown.
- 13. Section 10 of the Settlement Act also requires you to consult and develop policies and programmes to give effect to the use and management practices of tangata whenua in the exercise of non-commercial fishing. Consistent with this section, FNZ has worked with lwi to develop engagement processes that enable iwi to work together to reach a consensus where possible and to inform FNZ on how tangata whenua wish to exercise kaitiakitanga with respect to fish stocks in which they share rights and interests and how those rights and interests may be affected by sustainability measures proposed by FNZ.

2.2.2 Application of international obligations – section (5(a)

- 14. You must also act in a manner consistent with New Zealand's international obligations relating to fishing. The international obligations FNZ considers most relevant are the United Nations Convention on the Law of the Sea (UNCLOS)² and the United Nations Convention on Biological Diversity (Biodiversity Convention).³
- 15. UNCLOS provides that States have the sovereign right to exploit their natural resources subject to an overriding duty to protect and preserve the marine environment (articles 192 and 193). Articles 61 and 62 of the UNCLOS are particularly relevant. These are set out in Addendum 1. It was recognised that these articles "drive the focus of the Fisheries Act on exploitation of fishery stocks within sustainability limits" by the Court of Appeal in the Sanford case.⁴ The requirements in Article 61, and the general duty to protect and preserve the marine environment in article 192 have the effect of requiring you to consider the effects of fishing on the wider ecosystem. These ecosystem considerations are also acknowledged in the Act (via the requirement for you to consider the interdependence of species in section 13(2) when making a decision as to TAC, as well as through sections 9 and 11 of the Act).⁵
- 16. The Biodiversity Convention is the international legal instrument for "the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilisation of genetic resources". It sets out a range of obligations on its signatories. Although New Zealand gives effect to this convention in a variety of ways (including under other legislation), the Fisheries Act specifically recognises the importance of biodiversity in section 9(b) of the Act and the requirement to ensure the sustainability of the aquatic environment (section 8 of the Act).

² Convention on the Law of the Sea 1833 UNTS 397 (opened for signature 10 December 1982, came into force 16 November 1994).

 ³ Convention on Biological Diversity 1760 UNTS 79 (opened for signature 5 June 1992, came into force 29 December 1993).
 ⁴ Sanford Ltd v New Zealand Recreational Fishing Council Inc [2008] NZCA 160 at [25].

⁵ As stated in The Environmental Law Initiative v Minister for Oceans and Fisheries [2022] NZHC 2969, at [16].

2.2.3 The purpose of the Act – section 8

- 17. The Act's purpose is to "provide for the utilisation of fisheries resources while ensuring sustainability."
 - "*Ensuring sustainability*" is defined as: "maintaining the potential of fisheries resources to meet the reasonably foreseeable needs of future generations; and avoiding, remedying, or mitigating any adverse effects of fishing on the aquatic environment".
 - "*Utilisation*" of fisheries resources is defined as "conserving, using, enhancing, and developing fisheries resources to enable people to provide for their social, economic, and cultural wellbeing."
- 18. The High Court has said the purpose of the Act "is broadly to create an 'environmental bottomline' of sustainability and the key lever in ensuring sustainability is the administration of the QMS, through the setting of the TAC, with sustainability as the "guiding criterion".⁶
- 19. 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". It has also stated "in the attribution of due weight to each policy that [the weight] given to utilisation must not be such as to jeopardise sustainability. Fisheries are to be utilised, but sustainability is to be ensured".⁷
- 20. The practical effect of section 8 is that, when deciding something under a particular section of the Act (such as operating provisions like sections 13 and 20) your powers must be exercised to promote the policy and objectives of the Act. That is, in deciding whether a proposal fits within the scope of the Act, you must keep section 8 in mind and act in a way that promotes the Act's objectives. Subject to this constraint, however, "the nature and scope of [your] powers and the restrictions on them are as is provided for in the operating provisions of the Act".⁸

2.2.4 Environmental principles (section 9 of the Act)

- 21. The environmental principles you must take into account when considering sustainability measures are as follows:
 - 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
 - c) habitats of particular significance for fisheries management should be protected.
- 22. Habitats of particular significance for fisheries management are not defined in the Act. FNZ recently consulted on draft guidelines for identification of habitats of particular significance for fisheries management and the operational proposals to take into account the need for these habitats to be protected. In this context, protection means taking measures that would avoid, remedy, or mitigate the adverse effect of a decision that could undermine the function the habitat providing for the fisheries resource and ecosystem.
- 23. In 2022, FNZ consulted on draft <u>guidance for identifying a habitat of particular significance for</u> <u>fisheries management</u> and the operational proposals to support its application. Submissions have been considered and work is currently underway to finalise the guidance.

2.2.5 Information principles: Uncertainties and unknowns (section 10 of Act)

- 24. Under section 10 of the Act, decision-makers are required to take into account four information principles:
 - a) decisions should be based on the best available information⁹
 - b) decision makers should consider any uncertainty in the information available in any case:
 - c) decision makers should be cautious when information is uncertain, unreliable, or inadequate:
 - 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 this Act.

⁶ The Environmental Law Initiative v Minister for Oceans and Fisheries [2022] NZHC 2969, at [11].

⁷ Recreational Fishing Council Inc v Sanford Limited and Ors [2009] NZSC 54 at [39].

⁸ New Zealand Recreational Fishing Council Inc v Sanford Limited and Ors [2009] NZSC 54 [Kahawai (NZSC)] at [59].

⁹ Section 2(1) of the Act defines "best available information" to mean "the best information that, in the particular circumstances, is available without unreasonable costs, effort, or time".

^{4 •} Review of sustainability measures for the 2023 October round: Introduction and Legal Overview

25. Sections 12, 21, and 75A of the Act require you to consult before making decisions on sustainability measures, the TACC, and deemed value rates, respectively. These sections are set out in Table 3 below.

2.3 Statutory considerations relevant to TAC, TACC, and deemed value rate decisions

26. Table 3 provides an overview of your main statutory considerations for varying TACs, TACCs, and deemed value rates under the Act. The stock-specific details relating to these considerations have been set out within the individual stock chapters of this chapter.

Decisions you	may make	Requirements – things you must do when making decisions
Part 3 Sustainability Measure		S
Section 11 You may set or vary sustainability measures for any stock. Sustainability measures may relate to (but are not limited to):		 (1) you must take into account: (a) effects of fishing on any stock and aquatic environment; and (b) existing controls under this Act that apply to the stock or area concerned; and (c) the natural variability of the stock concerned. (2) you must have regard to:
		 (a) any regional policy statement, regional plan or proposed regional plan under the Resource Management Act 1991; and (b) any management strategy or plan under the Conservation Act 1987; and (c) sections 7-8 of the Hauraki Gulf Marine Park Act 2000; and
Catch limits Size sex o	r hiological	(ca) regulations made under the Exclusive Economic Zone and Continental Shelf (Environmental Effects) Act 2012; and
state	lological	(d) a planning document lodged with you by a customary marine title group under s 91 of the Marine and Coastal Area (Takutai Moana) Act 2011 –
Fishing met	hods	that apply to the coastal marine area and are considered by you to be relevant. (2A) you must take into account:
 Fishing sea 	sons	 (a) any conservation services¹⁰ or fisheries services¹¹; and (b) any relevant fisheries plan approved under section 11A; and (c) any decisions not to require conservation or fisheries services.

Table 3: Information on your key requirements when making decisions under the Act.

(a) the management of fisheries resources, fishing and fish farming,

¹⁰ Conservation services means outputs produced in relation to the adverse effects of commercial fishing on protected species, as agreed between the Minister responsible for the administration of the Conservation Act 1987 and the Director-General of the Department of Conservation, including:

⁽a) research relating to those effects on protected species,

⁽b) research on measures to mitigate the adverse effects of commercial fishing on protected species, or

⁽c) the development of population management plans under the Wildlife Act 1953 and Marine Mammals Protection Act 1978. **Outputs** means the goods and services that are produced by a department, Crown entity, Office of Parliament, or any other person or body.

¹¹ **Fisheries services** means **outputs** produced for the purpose of this Act as agreed between the Minister and the chief executive; and includes:

⁽b) the enforcement of provisions relating to fisheries resources, fishing, and fish farming,

⁽c) research relating to fisheries resources, fishing, and fish farming, including stock assessment and the effects of fishing and fish farming on the aquatic environment,

⁽d) the performance or exercise, by the Minister or the chief executive or any other person, of a function, duty, or power conferred or imposed relating to fisheries resources, fishing, or fish farming (including any observer performing or exercising a function, duty, or power in accordance with the observer programme),

⁽e) the provision, installation, and maintenance of electronic and other equipment on fishing vessels to observe fishing and related activities, including the return, abandonment, processing, or sorting of fish, transportation connected with fishing, measures to avoid, remedy, or mitigate fishing-related mortality and/or the submission, storage, and review of electronic and other data from activities described in paragraph (e).

Decisions you may make	Requirements – things you must do when making decisions
	Fisheries plans may include:
Section 11A	 (a-c) fisheries management objectives, strategies to achieve them, and performance criteria to measure achievement;
	(d) conservation or fisheries services; or
You may approve or revoke fisheries plans	(e) contingency strategies to deal with foreseeable variations in circumstances.
	To date national fisheries plans have been approved for inshore, deepwater and highly migratory species, the Hauraki Gulf fisheries, the Foveaux Strait oyster fishery, PAU 3 (A & B) and PAU 4 (Chatham Islands).
	(a) you must consult with such persons or organisations as the Minister considers are representative of those classes of persons having an interest in the stock or the effects of fishing on the aquatic environment in the area concerned, including Māori, environmental, commercial, and recreational interests; and
Section 12	(b) you must provide for the input and participation of tangata whenua that have:
Before making decisions, you	(i) a non-commercial interest in the stock concerned; or
must consult	 (ii) an interest in the effects of fishing on the aquatic environment in the area concerned—
	and have particular regard to kaitiakitanga.
	(2) you must provide the reasons for your decisions to the people consulted.
	(2) you must set (and may vary – subsection (4)) a TAC that:
	(a) maintains the stock at or above a level that can produce the maximum sustainable yield (MSY), having regard to the interdependence of stocks; or
	(b) enables the level of any stock below a level that can produce MSY to be altered:
	(i) in a way and at a rate that will restore the stock to a level that can produce MSY having regard to the interdependence of stocks; and
	(ii) within a period appropriate to the stock, having regard to the biological characteristics of the stock and environmental conditions affecting it, or
	(c) enables the level of any stock above that which can produce <i>MSY</i> to be altered in a way and at a rate to move the stock toward or above that which can produce <i>MSY</i> having regard to the interdependence of stocks.
Section 13 You must set and may vary, a	(2A) If you consider that the stock level to produce <i>MSY</i> is not able to be estimated reliably using best available information, you must:
TAC for stocks in the Quota	(a) not use this as a reason to postpone or fail to set a TAC; and
Management System (QMS)	(b) have regard to the interdependence of stocks, biological characteristics of the stock and any environmental conditions affecting the stock; and
	(c) set a TAC
	(i) using the best available information; and
	(ii) that is not inconsistent with the objective of maintaining the stock at or above, or moving the stock towards or above a level that can produce <i>MSY</i> .
	(3) In considering the way and rate at which a stock is moved toward or above a level that can produce <i>MSY</i> you must have regard to such social, cultural and economic factors as you consider relevant.
	(4) You may, by notice in the <i>Gazette</i> , vary any total allowable catch set for any quota management stock under this section. When considering any variation, you are to have regard to the matters specified in subsections (2), (2A) (if applicable), and (3).
Part 4 Quota Management System	
Section 20	Section 21
You must set and may yary	(1) you must have regard to the TAC and shall allow for
TACC for quota management	(a)(i) Māori customary interests; and
stocks, unless a TAC has not	(ii) Recreational interests; and
been set for the stock	(b) all other mortality to the stock caused by fishing.

6 • Review of sustainability measures for the 2023 October round: Introduction and Legal Overview

Decisions you may make	Requirements – things you must do when making decisions
	(2-3) you must consult representatives of classes of people that have an interest and give reasons for your decision
	(4) When allowing for Māori customary interests you must take into account
	(a) any mātaitai reserve in the Quota Management Area (QMA) declared under section 186:
	(b) any area closure or method restrictions/prohibitions imposed under section 186A.
	(5) When allowing for recreational interests you must take into account any regulations that prohibit or restrict fishing under section 311.
	(2) In setting an interim deemed value rate or an annual deemed value rate
	(a) you must take into account the need to provide incentive for fishers to acquire or maintain sufficient ACE
	(b) you may have regard to:
	(i) the desirability of fishers landing catch for which they do not have ACE
	(ii) the market value of the ACE for the stock
	(iii) the market value of the stock
	(iv) the economic benefits obtained by (parties involved in commercial fishing, processing, sale)
Section 75	(v) the extent to which catch has exceeded/is likely to exceed TACC for the stock in any year
interim and annual deemed	(vi) any other matters you consider relevant.
value rates for each quota	(3) Annual deemed values must be greater than interim deemed values
management stock	(4) Different deemed values may be set for different levels of excess catch
	(5) Different deemed values may be set for the Chatham Islands
	(6) When setting deemed value rates, you must not:
	(a) have regard to the personal circumstances of any individual or class of person
	(b) set separate deemed values in individual cases.
	Section 75A
	Before setting any interim deemed value rate or annual deemed value rate under section 75, you must consult persons or organisations that the Minister considers represent classes of persons who have an interest in the stock, including Māori, recreational, commercial, and environmental interests.

2.4 The Hauraki Gulf Marine Park Act 2000

- 27. Section 11 of the Fisheries Act (discussed in the table above) requires you to have regard to sections 7 and 8 of the Hauraki Gulf Marine Park Act 2000 (**HGMPA**) when setting or varying a TAC that includes the area of the Hauraki Gulf as defined in that Act. Section 13 of the HGMPA requires that you have particular regard to sections 7 and 8 of the HGMPA when setting or varying TACCs and deemed values.
- 28. Section 7 of the HGMPA recognises the national significance of the Hauraki Gulf and section 8 sets out objectives for management of the Gulf (see Table 4). The HGMPA is discussed in stock chapters of decision documents where this is relevant.

Table 4: Outline of the relevant sections of the Hauraki Gulf Marine Park Act 2000

Section 7: Recognition of national significance of the Hauraki Gulf	Section 8: Management of the Hauraki Gulf
(1) 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.	 To recognise the national significance of the Hauraki Gulf, its islands, and catchments, the objectives of the management of the Hauraki Gulf, its islands, and catchments 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:

Section 7: Recognition of national significance of the Hauraki Gulf	Section 8: Management of the Hauraki Gulf	
 (2) The life-supporting capacity of the environment of the Gulf and its islands includes the capacity— 	 b. the protection and, where appropriate, the enhancement of the natural, historic, and physical resources of the Hauraki Gulf, its islands, and catchments: 	
 a. to provide for— (iii) the historic, traditional, cultural, and spiritual relationship of the tangata whenua of the Gulf with the Gulf and 	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:	
 its islands; and (iv) 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 	 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 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. 	
activities and recreation:c. to maintain the soil, air, water, and ecosystems of the Gulf.		

2.5 Judicial guidance

East Coast Tarakihi decisions

2021 High Court judgment

- 29. In December 2019, Forest and Bird New Zealand filed proceedings seeking judicial review of the 2019 decision on catch limit settings for East Coast tarakihi. Their arguments included that the catch limit reductions were not sufficient to allow the stock to rebuild in a "period appropriate to the stock."
- 30. The judgment¹² was delivered on 16 June 2021, with the following key findings:
 - first cause of action: period appropriate to the stock the Minister erred by not making an assessment of the period appropriate for rebuilding a stock, as required by section 13(2)(b)(ii), before applying social, cultural and economic factors to determine the way and rate of rebuild;
 - **second cause of action: probability of achievement** the Minister was required to identify a probability level at the time of setting the TAC. Her Honour found (by a fine margin) that a probability level of 50 percent was adequately identified in the 2019 decision;
 - third cause of action: failure to consider Harvest Strategy Standard guidance the Harvest Strategy Standard and associated Operational Guidelines advice on probability for achieving a rebuild is a mandatory relevant consideration, which the Minister failed to have regard to; and
 - fourth cause of action: irrelevant consideration the Minister erred by taking into account an Industry Rebuild Plan in setting the TAC, and that, as inferred by her Honour, the Minister had regard to the plan in determining the period appropriate to the stock, as well as the way and rate of rebuild. Doing so had the effect of applying social, cultural and economic factors to the Minister's determination of the period appropriate to the stock. Steps taken by the industry which have the effect of speeding up a rebuild can be considered when determining the way and rate (refer section 13(2)(b)(i)), but not when determining the period approach to the stock.

2023 Court of Appeal judgment

31. The High Court judgment was subsequently appealed by Fisheries Inshore New Zealand Ltd. With the Crown cross appealing on a technical point. On 10 August 2023 the New Zealand

¹² Royal Forest and Bird Protection Society of New Zealand Incorporated v Minister of Fisheries [2021] NZHC 1427.

Court of Appeal released a judgment with the majority dismissing the appeal and cross-appeal.¹³

- 32. The issues on appeal were:
 - Is the "appropriate period" within which the rebuild must occur under section 13(2)(b)(ii) to be determined separately from the "way and rate" of rebuild under section 13(2)(b)(i), and can social, cultural and economic factors be taken into account in determining the "appropriate period"?
 - The 70 per cent probability of achieving rebuild plan as a relevant consideration
- 33. On issue 1, the majority agreed with the High Court's decision and concluded (at [151]) that:
 - When setting the TAC under section 13, the Minister is required to determine the "period appropriate to the stock" by reference solely to the scientific factors specified in section 13(2)(b)(ii), and separately from the way and rate of rebuild. It is, however, not necessary for the Minister to decide on the "period appropriate to the stock" before determining the "way in which and rate at which" the stock is moved towards MSY, though doing so is likely to be more practical.
 - In deciding the "period appropriate to the stock" under section 13(2)(b)(ii), the Minister is not entitled to take social, cultural or economic factors into account. Those factors are relevant only to the way and rate of the rebuild.
 - The Industry Rebuild Plan was an irrelevant consideration in identifying the "period appropriate to the stock" under section 13(2)(b)(ii).
- 34. On issue 2, the majority found the Harvest Strategy Standard does specify a default ¹⁴ probability standard for rebuild of 70 per cent and this standard, and the reasons for it, were implied mandatory considerations in setting the 2019 TAC.
- 35. The Court accepted the Harvest Strategy Standard qualifies as "best available information" under section 10(a) of the Act. As a consequence, it did not consider it necessary to determine the status of the Operational Guidelines.
- 36. These decisions have implications for what matters you must, and must not, consider when deciding to set or vary a stock's TAC. More specifically, the judgment has provided direction on the application of section 13(2)(b) which pertains to any stock whose current level is below that which can produce Maximum Sustainable Yield (*MSY*).¹⁵
- 37. In this sustainability round, section 13(2)(b) of the Act applies to your decision making for one fish stock: stargazer (STA 7). FNZ has reflected the findings of the Judgments within our advice to you for this stock.

Allocation decisions under section 21

- 38. Relevant judicial findings provide useful guidance in terms of your allocation decisions under section 21 of the Act.
- 39. 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 interests, recreational fishing interests, and all other sources of fishing-related mortality, the remainder constitutes the TACC.¹⁶ 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.¹⁷ That does not, however, mandate any particular outcome.¹⁸

¹³ Fisheries Inshore New Zealand Ltd v Royal Forest and Bird Protection Society of New Zealand Incorporated [2023] NZCA 359.

¹⁴ the majority emphasised (at [149]) that this does not mean the Minister is bound to apply that probability (it is only a default).

¹⁵ Refer to section 3.1 below for an explanation of Maximum Sustainable Yield.

¹⁶ New Zealand Recreational Fishing Council Inc v Sanford Limited and Ors (Supreme Court, SC 40/2008, 29 May 2009) at [53].

¹⁷ Above n 5 at [55].

¹⁸ Sanford Limited and Ors v New Zealand Recreational Fishing Council Inc and Anor (Court of Appeal, CA 163/07, 11 June 2008) at [57].

- 40. Importantly, the Act does not confer priority for any interest over the other¹⁹ and does not limit the relative weight which you may give to the interests of competing sectors.²⁰ It leaves that judgement to you.
- 41. 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.²¹ The requirement to "allow for" the recreational interest can be construed as meaning to "allow for in whole or part".²² 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.²³
- 42. Section 21 is concerned with allocation of a limited resource and that what is allowed for noncommercial fishing interests will impact on the total allowable commercial catch.²⁴ 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.²⁵
- 43. 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".²⁶
- 44. 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.²⁷ 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." ²⁸

"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."²⁹

45. The High Court said earlier 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."*³⁰

46. 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

¹⁹ New Zealand Recreational Fishing Council Inc v Sanford Limited and Ors (Supreme Court, SC 40/2008, 29 May 2009) at [65].

²⁰ Sanford Limited and Ors v New Zealand Recreational Fishing Council Inc and Anor (Court of Appeal, CA 163/07, 11 June 2008) at [61].

²¹ Roach v Minister of Fisheries (HC, Wellington CP715/91, 12/10/92, McGechan J) at [16].

²² New Zealand Federation of Commercial Fishermen (Inc) & Ors v Minister of Fisheries & Ors (HC, Wellington CP237/95, 24/4/97) at [150].

 ²³ New Zealand Recreational Fishing Council Inc v Sanford Limited and Ors (Supreme Court, SC 40/2008, 29 May 2009) at [65].

²⁴ Above n 12 at [53].

²⁵ Sanford Limited and Ors v New Zealand Recreational Fishing Council Inc and Anor (Court of Appeal, CA 163/07, 11 June 2008) at [61].

²⁶ New Zealand Recreational Fishing Council Inc v Sanford Limited and Ors (Supreme Court, SC 40/2008, 29 May 2009) at [56].

²⁷ New Zealand Federation of Commercial Fishermen (Inc) & Ors v Minister of Fisheries & Ors (HC, Wellington CP237/95, 24/4/97, McGechan J) at [18].

²⁸ New Zealand Fishing Industry Association (Inc) and Ors v Minister of Fisheries and Ors (Court of Appeal, CA82/97, 22/7/97) at [17]-[18].

²⁹ Above n 17 at [18].

³⁰ New Zealand Federation of Commercial Fishermen (Inc) & Ors v Minister of Fisheries & Ors (HC, Wellington CP237/95, 24/4/97, McGechan J) at [89].

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."³¹

- 47. 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.³²
- 48. With respect to quota granted to iwi under the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992 and the Māori Fisheries Act 1989, in the Snapper 1 case the Court of Appeal said:

"Under the settlement Māori became holders of quota along with all other holders. Their rights were in our view no more and no less than those of non-Māori quota holders."³³

"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 Māori quota be reduced, is unpersuasive. An asset which Māori 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."³⁴

49. 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.

3 Relevant standards, guidelines, and strategies

3.1 Maximum sustainable yield (MSY)

- 50. As noted above in Table 3, section 13 of the Act requires you to set a stock's TAC at a level that maintains the stock at or above a level that can produce the *MSY*.
- 51. *MSY* is defined under the Act as 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. There are a number of factors that contribute to the determination of a stock's *MSY*, including how fast the species grows, when and how they reproduce, and the pattern of harvesting in the fishery. Typically, *MSY* for a fish stock is also variable over time, because of changes in productivity and environmental factors.
- 52. In general, scientific working groups will estimate *MSY*-compatible reference points for stocks based on the best available information, and management working groups will set fishery or stock targets that consider these estimates as an input.
- 53. In the context of this review there are a number of stocks for which *MSY* is not able to be estimated due to a lack of available scientific information. In addition to their interdependence, biological characteristics, and environmental conditions, proposals for changes in catch limits have been based on best available information (which is often an assessment of trends in catch) and are considered to be consistent with the objective of maintaining the stock at or above levels that can produce *MSY* as provided for by section 13(2A) of the Act.

3.2 Overview of the Harvest Strategy Standard

54. 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 Quota Management System (**QMS**). It is intended to provide guidance as to how fisheries law will be applied in practice, by establishing a consistent and transparent framework for decision-making

³⁴ Above n 22, at [21].

³¹ New Zealand Federation of Commercial Fishermen (Inc) & Ors v Minister of Fisheries & Ors (HC, Wellington CP237/95, 24/4/97, McGechan J) at [102].

³² New Zealand Recreational Fishing Council Inc & Anor v Minister of Fisheries (HC, Auckland CIV 2005-404-4495, 21 March 2007, Harrison J) at [110]-[126].

³³ New Zealand Fishing Industry Association (Inc) and Ors v Minister of Fisheries and Ors (Court of Appeal, CA82/97, 22/7/97) at [20].

to achieve the objective of providing for utilisation of New Zealand's QMS species while ensuring sustainability.

- 55. It is important to note that a minimum requirement for satisfying the HSS is that fishery or stock targets will be set at the level of *MSY*-compatible reference points (however, they may also exceed this minimum requirement).
- 56. The HSS outlines FNZ's approach to relevant sections of the Act and, as such, forms a core input to FNZ's advice to you on the management of fisheries, particularly the setting of TACs under section 13.
- 57. The High Court (as confirmed by the Court of Appeal) has held that the HSS is a mandatory relevant consideration that you must have regard to when setting a TAC under section 13 of the Act. In addition, the Court concluded that the HSS is the "best available information" in terms of section 10(a) of the Act in relation to acceptable default probability levels for rebuilding stocks (as well as for other matters relevant to the interpretation of section 13).
- 58. The HSS assists us to decide when a review of sustainability and related settings for a stock may be warranted, by establishing reference points and guidance for the fisheries management responses when stocks are at those reference points. The HSS establishes default targets and limits as a minimum standard (Table 5):

Reference point	Default	Management response
Management target	Differs depending on productivity of the stock 40% unfished biomass (B ₀) is the default target for low-productivity stocks	Stock permitted to fluctuate around this management target. TAC/TACC changes will be employed to keep the stock around the target (with at least a 50% probability of being at the target).
Soft limit	¹ / ₂ B _{MSY³⁵} or 20% B ₀ , whichever is higher	A formal, time-constrained rebuilding plan will be implemented if this limit is reached.
Hard limit	¹ ⁄ ₄ <i>B</i> _{MSY} or 10% <i>B</i> ₀ , whichever is higher	The limit below which fisheries will be considered for closure.
		Stocks that have fallen below the soft limit should be rebuilt back to at least the target level in a time frame between T_{min} and 2^*T_{min} with an acceptable probability.
Rebuild strategy		Stocks will be considered to have been fully rebuilt when it can be demonstrated that there is at least 70% probability that the target has been achieved and there is at least 50% probability that the stock is above the soft limit ³⁶ .
		T_{min} is the number of years to rebuild a stock to the target, in the absence of fishing.

Table 5: Guidelines on default targets as set out in the Harvest Strategy Standard.

3.2.1 Categories used to describe stock status in relation to the target and limits

59. In cases where a fish stock's status is known in relation to its management target and/or hard or soft limit,³⁷ we use probability categories to define the status and surrounding uncertainty. These categories relate to the probability of stocks being 'at or above' biomass targets, below biomass limits, and above overfishing thresholds. Categorisations are derived from our Fisheries Assessment Plenary.³⁸ Table 6 below provides a summary of the category descriptions and their associated probabilities.

 $^{^{35}}$ **B**_{MSY} is the biomass that enables a fish stock to deliver the maximum sustainable yield.

³⁶ A stock that has a probability of 70% of having achieved the target must have more than a 50% probability of being above the soft limit. Fisheries New Zealand notes this was an error and that the 50% should have been a higher number, such as 80% or 90%.

³⁷ This is the case for fish stocks in which TACs are being set or varied under section 13(2)(a), (b), or (c) of the Act.

³⁸ Fisheries Assessment Plenaries summarise fisheries, biological, environmental, and stock assessment information for NZ's commercial fish species and groups. The Plenaries provide our best available information on stock status for QMS fish stocks. The Plenary documents are updated by FNZ on an annual basis to incorporate new research and information, and are released annually in May and November (two different versions covering different stocks).

Table 6: Descriptions of stock status and their represented probabilities.

Description	Probability
Virtually Certain	> 99 %
Very Likely	> 90 %
Likely	> 60 %
About as Likely as Not	40–60 %
Unlikely	< 40 %
Very Unlikely	< 10 %
Exceptionally Unlikely	< 1 %

- 60. For example, if a fish stock is described as 'Very Likely' to be at or above management target, this means that there is a more than 90% probability that the fish stock is at or above its management target (in this case the stock is most likely well above its target). Note that the designations reflect both the model-based estimates and the level of robustness of the models as determined by FNZ's peer review processes.
- 61. Fish stocks fluctuate due to environmental variation and can never be maintained 'at' a particular level: fisheries managers aim to ensure that stocks fluctuate around their management targets, and TAC/TACC changes are employed to keep the stocks near those management targets. Generally, this means that FNZ attempts to manage fisheries so that stocks are at least About as Likely as Not (40-60% probability) to be at or above their management targets.
- 62. Within our advice to you, we have used these categories where applicable and included the associated probabilities within parentheses.

3.3 Relevant strategies and plans

- 63. In our advice to you on different fish stocks we have highlighted which strategies and plans are important to consider for those stocks and their proposed sustainability measures (including those plans which you must take into account or have regard to under the Act).
- 64. Te Mana o te Taiao (the Aotearoa New Zealand Biodiversity Strategy) is also broadly relevant to the proposed changes for all stocks in this round.³⁹ Te Mana o te Taiao sets a strategic direction for the protection, restoration and sustainable use of biodiversity, particularly indigenous biodiversity in New Zealand. The strategy sets a number of objectives and goals across three timeframes. The most relevant to setting sustainability measures for fish stocks are Objectives 10 and 12:
- 65. **Objective 10:** Ecosystems and species are protected, restored, resilient and connected from mountain tops to ocean depths. Relevant goals within Objective 10 include:
 - **10.1.1** Prioritised research is improving baseline information and knowledge of species and ecosystems.
 - **10.4.1** Significant progress has been made in identifying, mapping and protecting coastal ecosystems and identifying and mapping marine ecosystems of high biodiversity value.
 - **10.5.1** A framework has been established to promote ecosystem-based management, protect and enhance the health of marine and coastal ecosystems, and manage them within clear environmental limits.
 - **10.6.1** A protection standard for coastal and marine ecosystems established and implementation underway.
- 66. **Objective 12:** Natural resources are managed sustainably. Relevant goals within Objective 12 include:
 - **12.1.1** Environmental limits for the sustainable use of resources from marine ecosystems have been agreed on and are being implemented.

³⁹ Te Mana o te Taiao is not a mandatory consideration under section 11 of the Act. However, the strategy is intended to guide in maintaining biodiversity, consistent with the purpose of the Act and the environmental principle under section 9(b) that biological diversity of the aquatic environment should be maintained.

- **12.1.2** Marine fisheries are being managed within sustainable limits using an ecosystembased approach.
- **12.1.3** Marine fisheries resources are abundant, resilient and managed sustainably to preserve ecosystem integrity.
- **12.2.1** The number of fishing-related deaths of protected marine species is decreasing towards zero for all species.
- **12.2.2** The direct effects of fishing do not threaten protected marine species populations or their recovery.
- **12.2.3** The mortality of non-target species from marine fisheries has been reduced to zero.
- 67. FNZ is working with the Department of Conservation and other agencies on implementation plans for the strategy. As part of those plans, we have identified areas of focus and actions for FNZ in delivering Government biodiversity objectives including progression to a more integrated ecosystem-based approach to managing fisheries. In that context, this advice contains information on potential biodiversity impacts, ecosystem function and habitat protection associated with adjustments to sustainability measures, consistent with your legislative obligations and the intent of Te Mana o te Taiao.

4 Input and participation of tangata whenua

- Section 10 of the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992 (the Settlement Act) requires you to develop policies and programmes to give effect to the use and management practices of tangata whenua.
- 69. The Ministry has worked with lwi to develop engagement processes that enable lwi to work together to reach a consensus where possible and to inform the Ministry on how tangata whenua wish to exercise kaitiakitanga with respect to fish stocks in which they share rights and interests, and how those rights and interests may be affected by sustainability measures proposed by the Ministry.

4.1 Input and participation in the October 2023 sustainability round

- 70. As noted above in Table 3, section 12 (1)(b) of the Act requires that before undertaking any sustainability process you shall provide for the input and participation of tangata whenua who have a non-commercial interest in the stock or an interest in the effects of fishing on the stock. In considering the views of tangata whenua, you are required to have particular regard to kaitiakitanga.
- 71. Input and participation of tangata whenua into the sustainability decision-making process is provided mainly through lwi Fisheries Forums, which have been established for that purpose.
- 72. Each lwi Fisheries Forum can develop an lwi Fisheries Forum Plan that describes how the iwi in the Forum exercise kaitiakitanga over the fisheries of importance to them, and their objectives for the management of their interest in fisheries. Iwi Fisheries Forums may also be used as entities to consult iwi with an interest in fisheries.⁴⁰
- 73. For input and participation into this sustainability round, lwi Fisheries Forums were invited to have input into the selection of stocks for review and to provide feedback on the various proposals to set or vary sustainability measures. The main pathway used by Forums to provide feedback on proposals was through scheduled hui attended by FNZ representatives.
- 74. The stock-specific advice chapters within this decision document provide specific information about input and participation of tangata whenua and kaitiakitanga in relation to those stocks, including what feedback (if any) was provided by Forums on those proposals.

5 Public consultation

75. Public consultation on proposed changes for all stocks except orange roughy began on 7 June 2023. Consultation on proposed changes for orange roughy fishery (ORH 3B) commenced later, on 26 June 2023.

⁴⁰ However, FNZ also engages directly with Iwi (outside of Forums) on matters that affect their fisheries interests in their takiwa and consults with any affected Mandated Iwi Organisations and Iwi Governance Entities where needed.

^{14 •} Review of sustainability measures for the 2023 October round: Introduction and Legal Overview

- 76. Upon commencement of consultation, FNZ notified Treaty Partners and stakeholders that consultation documents were available for the stocks under review and directed them to a relevant consultation page on FNZ's website. The consultation page had links to each of the consultation papers, and an invitation to provide written submissions on any or all of the proposed changes.
- 77. Submissions officially closed for all stocks except orange roughy at 5.00 pm on 17 July 2023 (after approximately five working weeks). Consultation closed for the orange roughy proposals at 5.00 pm on 24 July 2023 (approximately four working weeks).⁴¹
- 78. Table 7 below provides a summary of the submissions received during consultation, with a breakdown of how many submissions were received from different interest groups on each proposal.

		Submissions by main interest group of submitters ¹								
Fish stock(s) reviewed	Total submissions	Commercial fishing	Recreational fishing	Conservation/ Environmental	Tangata whenua and iwi representatives	Other ²				
Red gurnard (GUR 3)	8	3	1	-	2	2				
Gemfish (SKI 1 & SKI 2)	10	4	-	-	4	2				
Stargazer (STA 7)	5	2	-	-	3	2				
Kina (SUR 1A & SUR 1B)	20	11	1	-	4	4				
Trevally (TRE 2)	9	2	1	-	4	2				
Green-lipped mussel (GLM 9)	8	2	-	1	2	3				
Silver warehou (SWA 3)	16	10	-	-	4	2				
Orange roughy (ORH 3B)	31	11	-	6	3	11				
Deemed value reviews	5	3	1	-	-	1				

Table 7: Summary of submissions received on proposals included in the October 2023 sustainability round.

¹ Main interest group was derived by how submitters identified themselves, but some submitters may fit within multiple categories (for example, there are tangata whenua and iwi representatives who also represent commercial fishers and quota holders).

² Other includes science-related groups, groups or people not involved in the fishing industry and unspecified interests.

³ This is the total number of submissions from each interest group. Some submitters commented on multiple proposals.

- 79. Submissions and responses were received from stakeholders on behalf of large representative bodies and organisations:
 - Te Ohu Kaimoana,⁴² lwi Collective Partnership (**ICP**), and several other mandated iwi organisations responded in relation to Māori commercial and customary interests.
 - Several quota owner and commercial representative groups submitted, including Seafood New Zealand (Inshore and Deepwater Councils), Southern Inshore Fisheries, Aquaculture New Zealand, Pāua Industry Council, Kina Industry Council, and Rock Lobster Industry Council.
 - The NZ Sport Fishing Council and New Zealand Angling and Casting Association Several large recreational representative groups submitted, including.
 - Several large environmental NGOs responded to consultation on orange roughy, including Greenpeace, Forest & Bird, Deep Sea Conservation Coalition (DSCC), Environmental Defence Society (EDS), Environmental Law Initiative (ELI), and Environment and Conservation Organisations (ECO).

⁴¹ Extensions were provided for submitters upon request and within reason. FNZ also continued to accept and consider submissions on all stocks (except orange roughy) received after the deadline until 5.00 pm on 20 July 2023.

⁴² Te Ohu Kaimoana is a charitable trust established through the Māori Fisheries Act 2004. It represents the collective interests in fishing and fisheries-related activities of the recognised 58 Mandated Iwi Organisations.

6 General themes

6.1 Ecosystem-based fisheries management

- 80. Submissions from across various interest groups emphasised the need for ecosystem-based fisheries management to be clearly reflected in our approach to managing fisheries. FNZ understands this need and is taking steps towards better reflecting an ecosystem-based approach in sustainability rounds.
- 81. In recent rounds, FNZ has tried to provide clearer links between reviews of interdependent stocks (where relevant) so that decisions on their settings are better informed and take the wider ecosystem into account. FNZ has also expanded the discussions in advice papers around ecosystem considerations, particularly in relation to how proposed changes might impact the stocks' wider ecosystem and environment.

6.2 Concerns about bottom trawling

- 82. Recently there has been considerable attention from stakeholders and the public on the effects of bottom trawling on our fisheries and the benthic (associated with the seafloor) environment. Submissions on this sustainability round from environmental non-government organisations (eNGOs), the Royal NZ Society for the Prevention of Cruelty to Animals (RNZSPCA), and some individual submitters emphasised their concerns over the impacts of bottom trawling in relation to the review of orange roughy.
- 83. The impacts of bottom trawling on the marine environment are closely monitored as part of our management regime. FNZ recognises the need to ensure the marine environment is adequately managed to mitigate fishing impacts. Management measures to address the effects of trawl activity have focused on avoiding seabed impacts.
- 84. A multi-stakeholder forum consisting of members from environmental NGOs, the fishing industry, and the National Iwi Chairs Forum met throughout 2022 to recommend further measures to manage the effects of bottom trawling. The forum concluded in 2022 when members submitted separate recommendations for further measures. You recently considered advice on next steps for this work and agreed for FNZ and the Department of Conservation to draft a consultation package that is informed by further engagement.
- 85. Within our advice we have outlined what is known about the impacts of bottom trawling as it relates to species targeted using this fishing method. Where relevant, we have also responded to submitters' specific concerns about bottom trawling and provided our analysis for you to consider.

6.3 Stock prioritisation

- 86. Submissions from several commercial fishing stakeholders voiced concerns regarding the stocks prioritised for review in this sustainability round. Submitters including Seafood NZ Deepwater Council, Sealord Group Ltd., and Southern Inshore Fisheries cited previous requests for stocks to be reviewed for catch limits and allowances, which were not included for review in this round.
- 87. With over 600 fish stocks in the QMS, priority is given to those with the greatest rationale for review. This includes consideration of a number of factors including legal requirements, strength of science and other information to support change, risk to sustainability, intensity of utilisation, commercial value, public perception or concern, and associated environmental impacts.
- 88. FNZ regularly engages with tangata whenua and stakeholders for input regarding which stocks should be considered for review, which is useful for informing prioritisation of stocks. The final prioritisation is decided by FNZ, based on the factors noted above.
- 89. Where stocks are considered but not prioritised for review in a sustainability round, they are, if warranted, carried over for consideration in further sustainability rounds. We note that some of the stocks suggested by stakeholders during consultation fall into this category

6.4 Animal welfare

- 90. Submissions from the RNZSPCA raised concerns regarding the effects of fishing on the welfare of target species and bycatch species and suggested a range of measures for reducing the impact of fishing on individual animals.
- 91. FNZ acknowledges the concerns detailed in the submission from RNZSPCA but notes that animal welfare considerations are generally outside the scope of the proposals consulted on. You are not required under the Act to take animal welfare into account when making TAC or deemed value rate decisions. FNZ notes that data on animal welfare concerns is collected from fisheries observer and camera verification and this data is used to determine appropriate follow-up action by Fisheries Compliance and MPI Animal Welfare.

6.5 Concerns about the effectiveness of the deemed values framework

92. Submissions from across various interest groups commented on effectiveness of the deemed values regime. We have responded to this general feedback within our advice on deemed value adjustments in the following chapter.

1 Why are we proposing a review?

- 93. Deemed values are charges that commercial fishers must pay for every unprocessed kilogram of fish⁴³ landed in excess of their Annual Catch Entitlement (**ACE**) holdings (\$/kg).⁴⁴ They are a key component of New Zealand's system for balancing fisheries catch against catching rights, which helps to ensure the integrity of the Quota Management System (**QMS**). Commercial catch of many fish stocks can be hard to accurately predict, and the deemed values regime must be sufficiently flexible to provide fishers with a mechanism to deal with unintended and accidental catch in excess of ACE, whilst providing incentives that discourage catch in excess of ACE.
- 94. Fisheries New Zealand (**FNZ**) regularly reviews deemed value rates for different fish stocks to help ensure that the rates provide appropriate incentives for individual fishers to acquire or maintain sufficient ACE to cover catch they take during the fishing year.
- 95. FNZ is proposing deemed value adjustments for three fish stocks as part of the October 2023 sustainability round. These include:
 - Snapper along the West Coast of the North Island (SNA 8); and
 - Snapper along the top and West Coast of the South Island (SNA 7); and
 - School shark across Southland and the Sub-Antarctic (SCH 5).
- 96. We have undertaken public consultation on your behalf on proposed deemed value rate changes for these stocks and you are now being asked to consider our final advice on these changes and make decisions on their deemed value rates under section 75 of the Fisheries Act 1996 (**the Act**).⁴⁵
- 97. Your decisions on these settings will be implemented via *Gazette* Notice and come into effect from 1 October 2023.

1.1 How this advice is structured

- 98. This chapter of advice on deemed value settings has a different structure from other chapters within this decision paper. This is because there are differences in what you must consider when setting deemed value rates compared with setting catch limits and allowances.
- 99. In sections 2 and 3 below we have provided general guidance for you on deemed value setting, including information on the different types of deemed value rate and relevant legal context and background. The remainder of the paper sets out the following:
 - **Section 4**: An outline of changes proposed to the deemed value rates of SNA 8, SNA 7, and SCH 5 from the 1 October 2023 fishing year, including rationale for the changes;
 - **Sections 5-6:** An overview of the feedback we received on the proposals through input and participation of tangata whenua and public consultation;
 - **Section 7:** Analyses of the proposed options to adjust the deemed value rates of SNA 8, SNA 7, and SCH 5, and our recommendations;
 - Section 8: Pages for you to record your decisions on the deemed value settings for SNA 8, SNA 7, and SCH 5.

2 The deemed values regime

100. The QMS is the backbone of New Zealand's fisheries management regime and includes a total of 642 fish stocks representing 98 species or species groups. Balancing catch against catching rights is key to ensuring the integrity of the QMS.

⁴³ Fish being those managed under the Quota Management System.

⁴⁴ Annual catch entitlement (ACE) is the right to catch a certain amount of a fish stock during a fishing year.

⁴⁵ We have provided further information and guidance around your requirements for setting deemed values under the section 75 of the Act in section 3 of this chapter. Further information on the specific deemed value adjustments proposed for SNA 8, SNA 7 and SCH 5 is provided in section 4 of this chapter.

^{18 •} Review of deemed value rates for selected stocks for the 2023 October round

- 101. On the first day of each fishing year,⁴⁶ all quota owners are allocated ACE, based on their share of quota and the current Total Allowable Commercial Catch (**TACC**) for each stock. ACE may be freely traded between fishers to balance against catch.
- 102. As noted above, deemed values are charges that commercial fishers must pay for every unprocessed kilogram of QMS fish landed in excess of their ACE holdings (\$/kg). The purpose of the deemed values regime is to provide incentives for individual fishers to acquire or maintain sufficient ACE to cover catch taken over the course of the year while also allowing flexibility in the timing of balancing, promoting efficiency, and encouraging accurate catch reporting. By achieving this purpose, deemed values act to protect the long-term value of stocks and support kaitiakitanga⁴⁷ by providing incentives for the overall commercial catch for each QMS stock to remain within the total available ACE.
- 103. The deemed value regime consists of a set of rates that apply under different circumstances:
 - Interim deemed value rates are invoiced each month for every kilogram of unprocessed fish landed in excess of ACE. If the fisher subsequently sources ACE to cover their catch, the interim deemed value payments are remitted. All interim deemed value rates are currently set at 90% of the basic annual deemed value rate⁴⁸ in line with the recommendations in FNZ's Deemed Value Guidelines (2020).⁴⁹ Permits are suspended if deemed value debt remains above \$1,000 to incentivise fishers to cover deemed value invoices promptly, rather than delay balancing.
 - Annual deemed value rates are invoiced at the end of the fishing year on all catch in excess of ACE. If the fisher has not sourced ACE by the end of the fishing year, the difference between the interim and annual deemed value rates is invoiced for all catch in excess of ACE.
 - Differential deemed value rates (also known as ramping) are the progressivelyincreased annual deemed value rates that apply to some stocks as the percentage by which a fisher's catch in excess of ACE also increases. The standard approach, which is set out in our Deemed Value Guidelines (2020), is to increase the annual rate in 20% increments, up to a maximum of 200% of the annual deemed value rate. However, more or less stringent schedules may be applied depending on the specific circumstances of the stock.⁵⁰ Differential rates provide fishers with a stronger incentive to remain within their ACE holding and reflect the increasingly detrimental impact of higher levels of over-catch on sustainability and the long-term value of the resource.
- 104. The effectiveness of the incentive to balance catch against ACE is dependent on individual fishers' compliance with landing and reporting requirements, their responses to the incentives provided, and the impact of other incentives such as those created by market conditions.
- 105. The operation of the deemed value framework is described further within the 'Deemed values supplemental information', which is appended at the end of this chapter on pages 42-43.

3 Legal context

- 106. Section 75(1) of the Act requires you to set interim and annual deemed value rates for all stocks managed under the QMS.
- 107. 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 sufficient ACE that is not less than the fisher's total catch of each stock taken.

⁴⁶ Depending on the stock, fishing years commence 1 October, 1 April, and 1 February.

⁴⁷ 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.

⁴⁸ The term 'basic annual deemed value rate' refers to the lowest annual deemed value rate i.e. before differential annual deemed values apply.

⁴⁹ The <u>Deemed Value Guidelines (2020)</u> are an operational policy statement used by FNZ to guide the development of advice to you on the setting of deemed value rates. They have been reviewed by MPI Legal for consistency with section 75 of the Act. The 2020 iteration of the Guidelines was developed by the Deemed Values Working Group in 2019 and supersedes the previous (2012) version.

⁵⁰ For vulnerable or rebuilding stocks, or those taken with a high degree of selectivity, a more stringent differential schedule may be appropriate. Likewise, less stringent differential schedules may be more appropriate for low value, low TACC stocks where targeted fishing does not occur. Non-standard differential schedules are commonly referred to as 'special' differential schedules.

- 108. Each of the stock-specific sections within this chapter set out how FNZ's recommendations are consistent with your mandatory statutory consideration under section 75(2)(a).
- 109. Section 75(2)(b) allows you, when setting deemed value rates, to have regard to:
 - The desirability of commercial fishers landing catch for which they do not have ACE;
 - The market value of the stock's ACE;⁵¹
 - The market value of the stock;52
 - 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 any other fish commonly taken in association 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 you consider relevant.
- 110. Section 75(3) requires you to set an annual deemed value rate for each stock that is greater than the interim deemed value rate set for that stock. All interim deemed value rates are currently set at 90% of the lowest annual deemed value rate.
- 111. Section 75(4) allows you to set different annual deemed value rates in respect of the same stock which apply to different levels of catch in excess of annual catch entitlement.
- 112. Further, under section 75(6), when setting either interim or annual deemed value rates, you must not:
 - Have regard to the personal circumstances of any individual or class of person liable to pay the deemed value of any fish, aquatic life, or seaweed; or
 - Set separate deemed value rates in individual cases.
- 113. Under section 75(7), interim or annual deemed value rate settings take effect on the first day of the next fishing year for the stock concerned.⁵³
- 114. Before setting any interim or annual deemed value rate, section 75A of the Act requires you to consult, if practicable, persons or organisations that you consider represent classes of persons who have an interest in the stocks concerned, including Māori, recreational, commercial, and environmental interests. This consultation must also be conducted in a manner that is consistent with the principles of the Treaty of Waitangi (this is discussed further below under the 'Consultation in accordance with the Treaty' section). As the Minister you must make informed decisions that actively protect Māori rights and interests, especially rights secured by the Treaty.
- 115. Section 5(b) of the Act requires all decision makers to exercise powers consistent with the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992 (**Settlement Act**).⁵⁴
- 116. The options for deemed value rate adjustments proposed within this chapter were informed by the above statutory criteria and our Deemed Value Guidelines (2020).

4 Identifying stocks for deemed value rate review

117. Stocks considered for deemed value rate review are identified primarily through the Catch Balancing Review Process. The Catch Balancing Review Process was developed during 2019 by the Deemed Values Working Group. Its purpose is to identify stocks where catch balancing issues are of concern and provide options for management responses. Appropriate management actions are determined based on the potential causes of over-catch (if relevant), economic changes in the fishery and stock-specific considerations. The Commercial Catch

⁵¹ As a measure of the market value of a stock's ACE, FNZ uses an annual ACE price value that is calculated by FishServe using information supplied as part of registering ACE transfers.

⁵² As a measure of a stock's market value, FNZ uses port prices. These are calculated annually via a voluntary survey that collects information on the average price paid by licenced fish receivers to independent fishers from whom they receive fish. Port prices represent what commercial fishers receive at port, not what the fish is worth at market (which is higher). Nor does it reflect the income for Licensed Fish Receivers (including, wholesalers and/or processors) and retailers.

⁵³ FNZ notes that within the <u>Regulatory Systems (Primary Industries) Amendment Bill</u>, which was introduced to the House on 21 May 2023, there is a proposal to alter this provision to also allow deemed value settings to also be changed within a fishing year. This Bill is expected to be enacted in 2024.

⁵⁴ The Settlement Act must also be interpreted in a manner that best furthers the agreements expressed in the Fisheries Deed of Settlement.

^{20 •} Review of deemed value rates for selected stocks for the 2023 October round

Balancing Forum, comprised of industry representatives, Te Ohu Kaimoana, and FNZ officials, meets annually to discuss catch balancing issues.

118. The Catch Balancing Forum met in December 2022 and discussed stocks identified as having recent catch balancing issues. In the meeting, participants provided information and input on the stocks of concern and discussed potential options for management. The notes from this meeting helped to inform FNZ's prioritisation of stocks to review for the upcoming fishing year.

4.1 Summary of deemed value rate reviews for October 2023

119. Three stocks have been identified for deemed value rate reviews for October 2023. These stocks and the rationale for reviewing adjustments to their deemed value rates is provided in Table 1 below.

Table 4. Definition for the review of	المم مقمير منامير اممسم ماد	unternante fau CNIA O. CNIA	7 and COLLE fair Oatabar 2022
Table 1: Rationale for the review of	deemed value rate adj	ustments for SNA 8, SNA	7, and SCH 5 for October 2023.

Species	Stock	Rationale for review of deemed value rate changes
Snapper	SNA 8	 Catch exceeded available ACE for the 2021/22 fishing year. A small upward adjustment to tighten SNA 8 deemed value rates will help to support continued abundance of the stock, through ensuring appropriate incentives for fishers to remain within ACE holdings. The annual deemed value rate could be better aligned with port price (indicative market value). SNA 8 port price increased by around 10% in the last fishing year.
	SNA 7	 The annual deemed value rate could be better aligned with the ACE and port price of the stock. Aligning the deemed value rates of SNA 7 with the rates of the adjacent SNA 8 stock may help to reinforce incentives for fishers who fish across these stock boundaries to report accurately.
School shark	SCH 5	 Catch exceeded available ACE for the 2021/22 fishing year. The fishery is rebuilding and there is an ongoing need to ensure appropriate incentives for fishers to remain within ACE holdings. Aligning the deemed value rates of SCH 5 with the rates of the adjacent SCH 3 stock may help to reinforce incentives for fishers who fish across these stock boundaries to report accurately.

120. Table 2 below summarises the specific deemed value rate options proposed for each fish stock, and FNZ's recommendations (highlighted blue).

Table 2: Current and proposed deemed value rates (\$/kg) for snapper (SNA 8 & SNA 7) and school shark (SCH 5) from 1 October 2023. Fisheries New Zealand's recommended options are highlighted in blue.

			Current				Proposed				
Species	Stock	Interim \$/kg	Annual \$/kg	Annual at maximum excess \$/kg	Differential	Option	Interim \$/kg	Annual \$/kg	Annual at maximum excess \$/kg	Differential	
Snapper	CNIA 0 4.02	4.03	1 18	8.96	Chandard	1	4.68	5.20	10.40 (>200% ACE)	Standard	
	SNA 0	4.05	4.40	(>200% ACE)	Stanuaru	2 5.40	6.00	12.00 (>180% ACE)	Special		
	SNA 7 E 40	5.40	E 40 G 00	12.00	Special	1	4.68	5.20	10.40 (>200% ACE)	Standard	
	SNA /	5.40	0.00	(>180% ACE)	Special	2 (status quo) 5.40 6.0	6.00	12.00 (>180% ACE)	Special		
School shark		SCH 5 1.13 1.25 2.50 Stand	Standard	1	3.24	3.60	7.20 (>200% ACE)	Standard			
	2CH 2		1.20	(>200% ACE)	Standard	2 (new)	2.79	3.10	6.20 (>200% ACE)	Standard	

121. Further details of these proposed deemed value rate options, including the relevant supporting information and analysis they are based on, can be found within Section 7 of this chapter.

4.2 Deemed value rate considerations in other reviews

- 122. For the stocks being reviewed for catch limit and allowance changes as part of the October 2023 sustainability round, deemed value rate settings have also been considered. For consultation, FNZ provided relevant analysis around deemed value rate settings of each stock and presented an opportunity for feedback and comments on the settings.
- 123. FNZ considers that deemed value adjustments are not required for any of those stocks, and as such, we are not asking for your decisions on deemed value rates for any other stocks as part of this round. In the advice chapters for those stocks, FNZ has briefly outlined why deemed value rate adjustments are not proposed, and where applicable, has included feedback from tangata whenua and stakeholders on the settings for your information.

5 Treaty of Waitangi Obligations

5.1 Consultation in accordance with the Treaty

- 124. As noted above, consultation with Māori is required under section 75A of the Act and consultation must be conducted in a manner that is consistent with the principles of the Treaty of Waitangi. In line with this, we have tried to provide sufficient information to Māori (through public consultation, and engagement with Iwi Fisheries Forums) so that the impact of the deemed value proposals on their rights and interests could be understood. We also sought to provide sufficient time to allow for informed responses.
- 125. The lwi Fisheries Forums provide platforms for Māori to engage on issues that affect their interests and how they exercise their rights and interests.⁵⁵ The setting of deemed value rates can influence what commercial fishers take, and this is of interest to Forums as kaitiaki. As kaitiaki have a responsibility to manage fisheries for both current and future generations consistent with tikanga, this includes an interest in ensuring deemed values do not adversely affect the ability of Māori to fish commercially or sell ACE. This links with the duty of protection under the Principles of the Treaty.
- 126. SNA 8 falls within the rohe of Te Hiku o Te Ika (Far North), Mid-North (Kerikeri to Auckland), Te Tai Hauāuru (Taranaki to Titahi Bay), and Ngaa Hapuu o Te Uru o Tainui (West coast of Waikato) Iwi Fisheries Forums. SNA 7 and SCH 5 fall within the rohe of Te Waka a Māui me Ōna Toka (South Island) Iwi Fisheries Forum, which includes all nine Iwi of Te Wai Pounamu (South Island).
- 127. The stocks proposed for deemed value reviews were presented at lwi Fisheries Forum hui held between May and July 2023, and a summary of the engagement and feedback from these hui is presented below in Table 3.

Iwi Fisheries F	orum	Engagement on deemed value reviews
		FNZ provided the Forum with a one-pager on the potential review of the SNA 8 deemed value rates and attended in-person hui with the Forum on 12 May and 22 June 2023.
Te Hiku o Te Ika (North of Kerikeri)	Forum members noted that they did not support reviews of stocks for which 28N rights have not been resolved (noting that SNA 8 has associated 28N rights ⁵⁶). Members of the forum agreed with a proposed increase to SNA 8 deemed value rates, noting that the deemed value regime should perform its function of preventing over catch.	
Mid-North (Kerikeri to Aucl	kland)	FNZ provided the Forum with a one-pager on the potential review of the SNA 8 deemed value rates and attended an in-person hui with the Forum on 11 May 2023. The Forum did not have any specific comments on deemed values.

Table 3: Summary of engagement with Iwi Fisheries Forums on the SNA 8, SNA 7 and SCH 5 deemed value reviews

⁵⁵Iwi Fisheries Forums may be used as entities to consult iwi with an interest in fisheries. However, FNZ also engages directly with Iwi (outside of Forums) on matters that affect their fisheries interests in their takiwa and also consults with any affected Mandated Iwi Organisations and Iwi Governance Entities where applicable.

⁵⁶ '28N rights', also known as 'preferential allocation rights', were granted to permit holders under section 28N of the Fisheries Act 1983 who elected to take administrative rather than compensated reductions to their catch allocations. 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.

^{22 •} Review of deemed value rates for selected stocks for the 2023 October round

lwi Fisheries Forum	Engagement on deemed value reviews
Ngaa Hapuu o Te Uru o Tainui (West coast of Waikato)	FNZ provided the Forum with a one-pager on the potential review of the SNA 8 deemed value rates and attended in-person hui with the Forum on 9 May and on 11 July 2023.
	Members of the forum commented generally on the current deemed values system, expressing the view that under the current deemed value framework there are inequities between large quota holders/fishing companies and small ACE fishers. A member of the Forum noted that it is easier for the larger operators and quota holders to obtain ACE from other holders, and they have the ability to extract more value from fish where deemed values are paid. It was suggested that non-quota owners should have a separate deemed value allowance with a different set of penalties than quota holders.
	These concerns were raised particularly in relation to the proposal to increase the deemed value rates of the SNA 8 stock, because there have been issues with some fishing companies 'banking' quota in the area. As noted by a member of the forum, this has driven issues with availability and price of ACE, making it even more difficult for small fishers to access.
Te Tai Hauāuru (Taranaki to Titahi Bay)	Te Tai Hauāuru held an in-person hui on 23 June 2023. FNZ provided the forum with relevant one pager summaries for the sustainability round ahead of this, including a summary of the deemed value proposals. However, the forum did not table the sustainability round for discussion or provide any feedback or comments.
Te Waka a Māui me Ōna Toka (South Island)	Te Waka a Māui held an in-person hui on 18 July 2023 and FNZ provided relevant one pager summaries for the sustainability round (including a summary of the deemed value proposals) prior to this hui. The forum did not provide any feedback or comments relating to the deemed value rate proposals.

- 128. In addition to information provided by forums, tangata whenua can express kaitiakitanga through lwi Fisheries Plans, which set out views of iwi on the management of fisheries resources and fish stocks.
- 129. Snapper is listed as taonga species in the fisheries plans of Te Hiku o Te Ika, Ngā Hapū o Te Uru o Tainui and Te Tai Hauāuru (all of which have members overlapping SNA 8). As a newer forum, the Mid-North has not yet developed a fisheries plan.
- 130. Snapper is also identified as a taonga species In the Te Waipounamu Iwi Forum Fisheries Plan developed by the Te Waka a Māui me Ōna Toka Forum (which has members overlapping SNA 7). School shark is not directly listed as a taonga species in this plan, however, the plan lists mangō, which refers to sharks generally.
- 131. FNZ's view is that the management options presented in this document are in keeping with the objectives of all of the relevant lwi Fisheries Plans, which generally relate to active engagement with iwi and the maintenance of healthy and sustainable fisheries. For SNA 8, this view was reinforced through support from the Te Hiku O Te Ika Forum for the proposal to increase deemed value rates of SNA 8. However, other forums did not express clear support or opposition for any of the specific deemed value proposals.
- 132. While deemed values apply directly to commercial fishing, there is potential for deemed value settings to have downstream effects on customary non-commercial fishing (because deemed value settings can influence commercial catches). However, FNZ considers that the proposed adjustments are relatively small and unlikely to impact non-commercial fishing. None of the consulted lwi Fisheries Forums raised specific issues regarding potential impacts on non-commercial fishing.

6 Public consultation

- 133. FNZ sought feedback on the proposed deemed value rate adjustments during the formal consultation process between 7 June and 17 July 2023.
- 134. Six submissions were received relating to the proposed deemed value rate adjustments. These were from:

- Seafood New Zealand Inshore Council (Inshore Council).⁵⁷
- New Zealand Sport Fishing Council (**NZSFC**) and LegaSea, joint recreational submission with the New Zealand Angling & Casting Association (NZACA).
- Southern Inshore Fisheries Management Co. Ltd (Southern Inshore Fisheries).
- Egmont Seafoods Ltd.
- Royal New Zealand Society for the Prevention of Cruelty to Animals Inc. (RNZSPCA).
- The New Zealand Federation of Commercial Fishermen Inc.58
- 135. Submitters' and respondents' comments on the proposed deemed value rate settings for specific stocks are addressed in the analysis of each species or stock below. Comments on the deemed values regime itself, or feedback that was applicable across all stocks is summarised under heading 6.1 below.

6.1 General submissions and responses about the deemed values regime

6.1.1 Inequities in the current deemed value framework

- 136. The Ngaa Hapuu o Te Uru o Tainui (West coast of Waikato) lwi Fisheries Forum and New Zealand Sport Fishing Council (**NZSFC**) each made comments concerning inequities in the current deemed value framework.
- 137. Members of Ngaa Hapuu o Te Uru o Tainui expressed concerns of inequities between large quota holders/fishing companies and small ACE fishers, noting that it is easier for the larger operators and quota holders to obtain ACE from other holders, and they can extract more value from fish where deemed values are paid. The forum suggests that non-quota owners should have a separate deemed value allowance with a different set of penalties from quota holders.
- 138. The NZSFC agreed with the forum's view and commented further that the current system suits the corporate and larger fishing companies who set the port price but impoverishes ACE fishers who are trying to make a living and survive in the face of rising costs. They also note that the current system has driven up ACE prices for some stocks, making it more difficult for smaller operators who are dependent on ACE to make a living.

FNZ's response

- 139. FNZ acknowledges these concerns around inequities in the current framework but notes that but notes that these relate to operation of the market and are not within the ambit of the current decisions on deemed value settings.
- 140. In relation to the suggestion that non-quota owners should have a separate deemed value allowance with a different set of penalties from quota holders, FNZ reiterates that under section 75(6) of the Act, when setting either interim or annual deemed value rates, you must not have regard to the personal circumstances of any individual or class of person liable to pay the deemed value of any stock, and you cannot set separate deemed value rates in individual cases.

6.1.2 Costs of overfishing not being attributed to the fishers responsible

141. The NZSFC raised a concern around deemed value payments, asserting that even when deemed value invoices are issued, not all invoices are paid by the offenders. They are concerned that the costs of overfishing are externalised (paid by the fishery and other stakeholders), which does not discourage overcatch for the operating fishers.

FNZ's response

142. FNZ considers that deemed value costs continue to discourage overcatch for operating fishers. FNZ regularly monitors excess catches and deemed value invoices for QMS stocks to determine whether certain stocks' deemed value rates are not sufficiently discouraging overcatch. This is considered across individual fishers, companies, and the stocks/fisheries as a whole. In cases where deemed values do not appear to provide appropriate incentives for avoiding catch in excess of ACE, the rates are prioritised for proposed adjustments.

24 • Review of deemed value rates for selected stocks for the 2023 October round

⁵⁷ This submission also noted support for the submissions of other industry representatives (Southern Inshore Fisheries, Egmont Seafoods Ltd. and the New Zealand Federation of Commercial Fishermen).

⁵⁸ This submission also endorsed the submissions of Seafood NZ Inshore Council and Southern Inshore Fisheries.

6.1.3 Deemed value rates should constrain fishing to the level of the TACC

143. The NZSFC considers that the deemed values regime is a failure because it has consistently failed to constrain commercial catch of many stocks to the TACC.

FNZ's response

144. The suggestion of the NZSFC is inconsistent with the purpose of the deemed values regime, which is to provide an incentive for every commercial fisher to acquire or maintain sufficient ACE that is not less than the fisher's total catch of each stock taken. It is not to constrain fishing so that commercial catches do not exceed the TACC.

6.1.4 Concerns of under-reporting to avoid deemed values

145. The NZSFC and RNZSPCA both expressed concern that the current deemed value system in practice does not encourage fisheries to report and land all their catch, and this may lead to either overfishing or illegal dumping of fish. RNZSPCA would like to see further emphasis placed on addressing the under-reporting problems.

FNZ's response

- 146. As noted above, the deemed values regime is designed to be sufficiently flexible to provide fishers with a mechanism to deal with unintended and accidental catch in excess of ACE, whilst also constraining and discouraging catch in excess of ACE. As per the Deemed Value Guidelines (2020), the risk of misreporting is something that is considered when determining what deemed value settings may be appropriate for a fish stock.
- 147. FNZ is currently coordinating a nationwide rollout of cameras on commercial fishing vessels, focussed on increasing coverage across inshore fisheries. It is expected that the on-board camera rollout will enhance our monitoring and provide better verification of fishing activity and reporting. This will help us to better assess and respond to any potential misreporting.

6.1.5 Consideration of landing and discard policy changes

148. The NZSFC notes that FNZ is currently working through implementation of a new landing and discard policy framework which will likely require commercial fishers to land more QMS species in future. The submitters state that if some fishers are struggling to balance catches with existing ACE, they will struggle more to source sufficient ACE if they are expected to land all of their catch in future, and that, unless there is a major structural overhaul, we can expect more instances of catches exceeding the TACCs in future.

FNZ's response

- 149. FNZ notes that for every species being reviewed for exceptions to the requirement to commercial landing, consideration will be given to whether a subsequent review of sustainability measures and/or deemed value rates is needed to support their sustainable management.
- 150. As part of this, we will initiate sustainability reviews for stocks where the volume of reported returns are "significant", i.e., over one percent of the TACC, and if the ability or requirement to return a species is removed entirely, and the previously legally returned catch of any stocks of that species must be landed, catch of those stocks may potentially exceed available ACE.

6.1.6 Deemed values should be a last resort

151. The New Zealand Federation of Commercial Fishermen object to the application of deemed values proposed as part of this review, suggesting that deemed values are being used to manage fish stocks in the absence of appropriately set TACC's. They note that deemed values should be the last resort applied to any stock.

FNZ's response

- 152. FNZ concurs that deemed values are not a substitute for setting appropriate TACCs, but we do not consider that the current proposals are applying deemed values in this way. The proposals each intend to provide appropriate incentives for commercial fishers to balance catch with ACE, in line with the purpose of the deemed value framework and the Act.
- 153. We disagree that deemed values should only be a last resort for management of fish stocks. Deemed values provide a useful tool for management which can be considered alongside other measures to fulfil the purpose of the Act (to provide for utilisation while ensuring sustainability).

7 Deemed value rate adjustments

- 154. As noted under the legal context section of this chapter, section 75(2)(b) of the Act lists the matters that you may have regard to when setting interim or annual deemed value rates. FNZ refers to these as 'permissible statutory considerations'.
- 155. While each of the permissible statutory considerations in section 75(2)(b) are considered by FNZ, not each is viewed as being directly relevant to the recommendations for specific stocks. Below in Table 4 we have listed which permissible statutory considerations we consider to be directly relevant to the proposed options for each stock under review. These considerations and their relevance is discussed further within each stock-specific section below.

Table 4: List of permissible statutory considerations FNZ considers to be directly relevant to stock-specific recommendations.

Permissible statutory consideration	SNA 8	SNA 7	SCH 5
Desirability of commercial fishers landing catch for which they do not have ACE			
(75(2)(b)(i)).	•	v	•
Market value of the ACE for the stock (75(2)(b)(ii)).	-	-	-
Market value of the stock (75(2)(b)(iii)).	✓	✓	√
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 any other	-	-	-
fish commonly taken in association with the fish.			
Extent to which catch of that stock has exceeded or is likely to exceed TACC for that			
stock in any year 75(2)(b)(v).	v	v	v
Any other matters you consider relevant 75(2)(b)(vi).	\checkmark	✓	~

7.1 Snapper / tāmure (SNA 8) – West Coast of Northland, Auckland, Taranaki & Wellington



Snapper - Pagrus auratus, Tāmure, Karati



Figure 1: Quota Management Areas (QMAs) for snapper, with SNA 8 highlighted.

7.1.1 Stock information

- 156. SNA 8 is the second largest snapper fishery in New Zealand. It is highly valued by tangata whenua, recreational and commercial fishers, and the wider community.
- 157. The commercial fishing fleet that catches SNA 8 is primarily made up of small to mid-size trawl vessels (< 35 metres length), with a small number of Danish seine, bottom longline, and set net

operators also present. Over the last 10 years approximately 80% of the commercial SNA 8 catch has been taken by trawl.

- 158. The fishery is characterised as being 'mixed', meaning vessels catching SNA 8 also catch other important inshore species. In the last ten fishing years, approximately 15% of snapper caught was recorded as being the target species. All other snapper was reported as being taken as bycatch. This is likely a function of fishers attempting to avoid snapper due to its high abundance and targeting other species to maximise overall catch with the SNA 8 ACE they have available.
- 159. The SNA 8 fishery was overfished and heavily depleted in the 1960's and 1970's, prior to its introduction into the QMS, and the stock remained low through the mid 2000's. In 2005, the stock was estimated to be at only 8-12% of unfished biomass (B_0).⁵⁹ In response to its poor status at that time, cuts were made to the TACC and SNA 8 was put on a stringent deemed value regime to initiate a rebuild of the fishery. The fishery has since seen a substantial increase in abundance. The most recent stock assessment for SNA 8 in 2021 estimated spawning biomass of the stock to be well above Maximum Sustainable Yield, at around 54% of B_0 .
- 160. In response to the stock's improved status and high abundance, from 1 October 2021 the TACC was increased from 1,300 tonnes to 1,600 tonnes and the deemed value schedule was changed to a standard and less stringent regime.
- 161. Catch of SNA 8 and available ACE is shown below for the period since 2011/12 (Figure 2).⁶⁰ It shows that since 2011/12 catch remained consistently around the level of available ACE, but in 2021/22 following the TACC increase and deemed value regime change, catch exceeded available ACE.





Basic annual deemed value rate, port price, and ACE price information

162. Information on deemed value rates, port price, and average ACE price for SNA 8 is summarised in Figure 3 below.

⁵⁹ B_0 or the virgin biomass is the theoretical carrying capacity of the recruited or vulnerable biomass of a fish stock, as defined in the <u>Harvest Strategy Standard for New Zealand Fisheries</u>. SB_0 is the same thing for the spawning biomass.

⁶⁰ Note that landings are compared to available ACE, rather than the TACC. This is because available ACE exceeds the TACC for most stocks as the Act provides for up to 10% of ACE to be carried forward to the next fishing year.



- Figure 3: Summary of port price, average annual ACE transfer price, and annual deemed value rate information for SNA 8 since 2011/12. The most recent port price was calculated during 2022/23 for use during the 2023/24 fishing year. Note that the average ACE transfer price for 2022/23 is based on a smaller sample size given that the fishing year is not yet complete.
- 163. Figure 3 shows that the basic annual deemed value rate of SNA 8 has remained consistently above the average ACE price⁶¹ over the last decade.
- 164. Average market value (measured by port price) for SNA 8 fluctuated over the period, but in most years remained lower than the annual deemed value rate. The deemed value rates remained high over this period in recognition that there needed to be strong incentives for commercial fishers to stay within ACE holdings to support the rebuild of the fishery from its previously depleted state.
- 165. When the deemed value schedule was last reviewed for 2021/22, the annual deemed value rate for SNA 8 was lowered from \$6.00/kg (for 100-105% catch of ACE) to \$4.48/kg (for 100-120% catch of ACE), and the differential schedule was also lowered and put on a standard regime. Since the change, the SNA 8 basic annual deemed value rate has remained below the port price and above the ACE price.

7.1.2 Proposed options and analysis

- 166. In 2021 the Minister for Oceans and Fisheries requested that FNZ closely monitor deemed value payments for SNA 8, and noted that a further review should be undertaken if there was an excessive use of deemed values (Minister for Oceans and Fisheries 2021). As catch of SNA 8 in 2021/22 exceeded available ACE by about 5% (~80 t), FNZ considered there was sufficient rationale to review a further adjustment for 2023 in line with the intention expressed by the Minister in 2021.
- 167. FNZ recognises that the SNA 8 stock is still experiencing high abundance and the deemed value rates were moved to a less stringent regime from 2021 to better reflect the improved state of the fishery. FNZ is not proposing to return the stock to the previous stringent differential rates but considers that a further upward adjustment to the deemed value schedule will help to encourage commercial fishers to avoid higher levels of excess catch and to ensure there are appropriate incentives for fishers to remain within ACE holdings.
- 168. FNZ consulted on two proposed options to increase the deemed value rates of SNA 8 from October 2023. These options are outlined below in Table 5.

⁶¹ This is the average price paid per kg of ACE transferred (exc. GST) during each fishing year (as reported by FishServe). It excludes transfers considered unrepresentative of true ACE price.

Table 5: Current and proposed deemed value rates (\$/kg) for SNA 8.

.	Option	Interim	Annual	Differential rates (\$/kg) for excess catch (% of ACE)							
Stock		(\$/kg)	100-120% (\$/kg)	120-140%		140-160%	160-	180%	180-200%		>200%
	Current rates	tes 4.03 4.48 5.38		6.27	7.	17	8.06		8.96		
	Option 1	4.68	5.20	6.24		7.28	8.	32	9.36		10.40
		Intorim	Annual	Differential rates (\$/kg) for excess catch (% of ACE)							
SNA 8		(\$/kg)	100-110% (\$/kg)	110- 120%	120- 130%	130- 5 140%	140- 150%	150- 160%	160- 170%	170- 180%	>180%
	Option 2 (SNA 7 rates)	5.40	6.00	6.75	7.50	8.25	9.00	9.75	10.50	11.25	12.00

169. Both proposed options would increase the deemed values rates of SNA 8 to provide better incentives for commercial fishers to acquire or maintain sufficient ACE to cover catches. Therefore, FNZ considers that both options are consistent with your mandatory consideration for setting deemed values under section 75(2)(a) of the Act (requirement to take into account the need to provide an incentive for every commercial fisher to acquire or maintain sufficient ACE that is not less than the fisher's total catch of each stock taken).

- 170. Option 1 proposes a small increase to the deemed value rates and would retain a standard differential schedule, whereas Option 2 proposes a larger increase to the deemed value rates and would change the differential schedule to a special regime with higher penalties for larger amounts of catch in excess of ACE.
- 171. Option 1 would be overall less punitive than Option 2 for commercial fishers and would place more weight on the current positive status of the stock and low sustainability risk associated with low levels of excess catch. However, the lower rates under Option 1 would also provide weaker incentives for avoiding catches in excess of ACE. This means that there would be a greater risk of fishers landing more catch for which they are unable to acquire ACE, and as such, a greater risk of the TACC being exceeded.
- 172. Recognising that fishers may land catch for which they are unable to acquire ACE is something that you may have regard to under section 75(2)(b)(i) (desirability of fisher's landing catch for which they do not have ACE). You may also have regard to the extent to which catch of SNA 8 has exceeded or is likely to exceed TACC in any year under section 75(2)(b)(v). FNZ notes that both options proposed in this chapter carry a lower risk of catch in excess of ACE, and a lower risk of the TACC being exceeded, compared with the current deemed value rates of SNA 8. Of the two options proposed, Option 2 proposes higher deemed value rates and therefore carries a lower risk of the TACC being exceeded compared with Option 1.
- 173. The port price of SNA 8 has increased by around 10% in the last fishing year. Both proposed options would set the basic annual deemed value rate for SNA 8 higher and in better alignment with the stock's recent port price of \$5.34/kg. The market value of SNA 8 (as measured by its recent port price) is something that you may have regard to under section 75(2)(b)(iii). FNZ considers that an upward adjustment to the deemed value rates to better align with port price would be appropriate in line with this section.
- 174. Option 1 proposes to set the basic annual deemed value rate at \$5.20/kg, which is below the recent SNA 8 port price of \$5.34/kg, whereas Option 2 proposes to set the basic annual rate higher at \$6.00/kg. As Option 1 proposes a lower deemed value rate in comparison to port price, it will provide greater incentives for fishers to accurately report and balance catch with available ACE (because the cost of landing the stock without ACE would be lower).
- 175. Option 2 would pose a higher risk of inaccurate catch reporting compared with Option 1 due to the higher cost of landing when ACE is not available. However, FNZ notes that there is overall a relatively low risk of inaccurate reporting in SNA 8. While observer coverage in SNA 8 is low (6% for the 2021/22 fishing year based on event-level data⁶²), the fishery has a high level of monitoring from camera coverage, with inshore trawl vessels in this area being prioritised for camera rollout due to the risk posed to protected species (specifically Māui dolphins).⁶³

 ⁶² This coverage is calculated based on fishing events (individual tows, sets or shots) in which the fish stock was recorded as caught and an observer was on board. This metric does not reflect the overall level of monitoring in the fishery.
 ⁶³ The timeline for the rollout of online cameras can be found on the FNZ website.

Fisheries New Zealand

- 176. Under either Option 1 or Option 2, the deemed value rates of SNA 8 could be aligned with the deemed value rates of the adjacent SNA 7 stock (West Coast and Top of the South Island). The alignment of these rates is something you may have regard to under section 75(2)(b)(vi) (any other matters considered relevant).
- 177. As part of this advice and decision paper, FNZ is also proposing options to adjust the deemed value rates of SNA 7 from October 2023 (see section 7.2 below). The options presented for SNA 7 have identical deemed value rates to those proposed for SNA 8. Therefore, you may align the deemed value rates of SNA 8 and SNA 7 if you decide to implement either Option 1 or Option 2 for both stocks, or a different set of rates that applies to both stocks.
- 178. As noted above under the 'stock information' section, there are strong parallels between the SNA 7 and SNA 8 stocks in terms of their current stock status and trajectory. The stocks also have similar port prices (\$5.34/kg for SNA 8 and \$4.96/kg for SNA 7). However, the deemed value rates of SNA 7 are currently higher than those for SNA 8.
- 179. FNZ is proposing that the deemed value rates for SNA 8 and SNA 7 are aligned based on their similar profiles and market values, and to reinforce incentives for fishers who fish across these stock boundaries to report accurately. This potential alignment is discussed further below in relation to proposed deemed value adjustments for SNA 7.

7.1.3 Consultation

- 180. Three submissions were received directly commenting on the proposed deemed value rates for SNA 8; from the NZSFC, the Inshore Council, and Egmont Seafoods Ltd. The Te Hiku o Te Ika and Ngaa Hapuu o Te Uru o Tainui Iwi Fisheries Forums also provided input relevant to the SNA 8 deemed value review. This input is summarised above in Table 3, and FNZ has responded to relevant comments from the Ngaa Hapuu forum under section 6.1.1.
- 181. The NZSFC support Option 2 for SNA 8, but only on the basis that it will align the SNA 8 rates with the current SNA 7 rates. They consider it important to align the rates given the mix of fishing effort and landings between the areas. The Te Hiku o Te Ika Iwi Fisheries Forum did not indicate support for a particular option, but generally supported an increase in the deemed value rates on the basis that the regime should prevent overcatch.
- 182. The Inshore Council and Egmont Seafoods do not support either of the options to increase deemed value rates of SNA 8. The Inshore Council argues that the deemed values should not be increased and should instead be reduced to provide relief to fishers until catch limits are reviewed. However, the Inshore Council does agree that the deemed value rates for SNA 7 and SNA 8 should be aligned. Egmont Seafoods supports retaining the *status quo*.
- 183. The Ngaa Hapuu o Te Uru o Tainui Iwi Fisheries Forum and Egmont Seafoods are concerned that raising the deemed value rates of SNA 8 will subsequently increase ACE price and cause financial difficulties for fishers. Egmont Seafoods believes this is unwarranted given that the stock is healthy, increasing in abundance, and caught mainly as bycatch. They are further concerned that increasing the deemed value rates may lead to snapper becoming a choke species⁶⁴ which will impact the mix and harvest of other species in the area. The Ngaa Hapuu o Te Uru o Tainui Iwi Fisheries Forum is concerned about the impact an increase will have on smaller operators, noting that smaller fishers are being penalised because it is increasingly difficult to source ACE from the larger companies.
- 184. Both the Inshore Council and Egmont Seafoods consider that an upward adjustment to the deemed value rates will not help to encourage fishers to avoid higher levels of excess catch because the TACC is set too conservatively, and while fishers have been trying to avoid catching snapper in this area it is becoming more difficult due to the stock's increased abundance (which the Inshore Council notes can be attributed to the broad ecological range of snapper and the fact that it is responding positively to warming sea conditions).
- 185. The Inshore Council emphasised that while fishers are already changing the way they fish for target species to avoid catching snapper, such changes can only have limited effectiveness when snapper is so abundant and dominant in New Zealand's inshore marine environment. They ask that consideration is also given to the unintended consequences of incentivising fishers to target alternative species that are likely to be less abundant than snapper, as this

⁶⁴ A 'choke species' is a species for which available quota is exhausted long before the quotas are exhausted for other species that are caught together in a mixed fishery (Zimmermann et al. 2015). They are generally species caught through less selective fishing methods (such as trawl) and cannot be easily avoided when targeting other species in the same area.

^{30 •} Review of deemed value rates for selected stocks for the 2023 October round

may have flow on effects for the abundance and composition of other species within coastal ecosystems.

186. Egmont Seafoods also made comments in relation to the ACE price and port price for SNA 8. Regarding ACE price, they noted that they generally pay more for ACE (\$5.50-6.00/kg) than the average ACE price presented (\$3.41/kg), and this makes sourcing ACE to cover catch more difficult. In relation to the port price, they commented that the market for snapper has weakened considerably recently and based on the downward pressure on pricing and the current economic climate, they expect the port price of SNA 8 to reduce in the coming months.

7.1.4 Analysis of submissions

- 187. FNZ does not agree with the suggestion from some submitters that an upward adjustment to the deemed value rates is unwarranted, and does not agree that the deemed value rates of SNA 8 should be reduced at this time.
- 188. We recognise that the stock is experiencing high abundance but remain of the view that an upward adjustment is needed at this time to provide better incentives for fishers to acquire sufficient ACE to cover catch. This is consistent with the requirements for setting deemed values under section 75 of the Act and with the intention of the previous Minister to manage the SNA 8 fishery for higher abundance (above B_{MSY}) (Minister for Oceans and Fisheries, 2021). We reiterate that we are not proposing to return the stock to the high stringent rates which applied prior to 2021. The increases proposed are smaller and consider the stock's positive status.
- 189. Regarding the concerns that the TACC for SNA 8 is set too low given the high abundance of the stock, FNZ notes that there is currently a stock assessment underway for SNA 8, and depending on the results of the assessment, a further review of catch limits for SNA 8 may be undertaken in 2024.
- 190. We will continue to monitor the SNA 8 fishery following any adjustment to deemed value rates. This will include monitoring the ACE and port price of the stock to ensure that the deemed value rates are remaining at appropriate levels relative to the market. Further adjustments to the rates will be considered in 2024 if information suggests that they would be appropriate.

7.1.5 Conclusion and recommendation

- 191. FNZ recommends that you agree to Option 1 for SNA 8, which would increase the basic annual deemed value rate by \$0.72/kg, from \$4.48/kg to \$5.20/kg. It would retain SNA 8 on a standard deemed value schedule with a deemed value rate at maximum excess of \$10.40/kg (for >200% ACE).
- 192. FNZ believes that this is a pragmatic option that will give the best balance between discouraging over-catch of SNA 8 and allowing sufficient flexibility for fishers to deal with unintended and accidental catch in excess of ACE. Option 1 is less punitive than Option 2, and we consider this to be appropriate given the positive status of SNA 8 and its increasing abundance.
- 193. As noted above, we have assessed Option 1 as being consistent with your mandatory consideration under section 75 to take into account the need to provide an incentive for every commercial fisher to acquire or maintain sufficient ACE that is not less than the fisher's total catch of each stock taken. This option also has regard to several other important considerations, including the sustainability and market value of SNA 8, and the likelihood of catches exceeding available ACE and the TACC.
- 194. This option was not directly supported by submissions received during consultation. However, it does reflect an intermediate between the views expressed by submitters. It also aligns with the general view of Te Hiku o Te Ika Iwi Fisheries Forum that the rates should be increased to prevent overcatch.
- 195. To align the deemed value rates of SNA 8 with SNA 7, FNZ is recommending that you apply the same deemed value rates for SNA 7 (see advice and recommendations for SNA 7 below under 7.2). We note that while submitters disagreed on the most appropriate deemed value rates for these stocks, there was general agreement that the rates of these stocks should be aligned.

7.2 Snapper / tāmure (SNA 7) – West Coast of & top of the South Island



Snapper - Pagrus auratus, Tāmure, Karati



Figure 4: Quota Management Areas (QMAs) for snapper, with SNA 7 highlighted.

7.2.1 Stock information

- 196. SNA 7 is a shared snapper fishery that is highly valued by tangata whenua, recreational fishers, commercial fishers, and the wider community.
- 197. Commercially SNA 7 is predominantly harvested via inshore bottom trawling, concentrated within Tasman and Golden Bay. Over the past decade or so commercial catch of snapper has also been increasing along the top of the west coast of the South Island as the distribution of snapper extends further south (FNZ Fisheries Assessment Plenary, 2023).
- 198. Like SNA 8, the SNA 7 fishery is 'mixed'. The inshore trawl fisheries operating in FMA 7 take snapper both as target catch and as bycatch alongside a variety of other species including flatfish, red cod, gurnard, tarakihi, barracouta, and blue warehou. Since 2013/14, most (> 80%) of the snapper catch has been taken as a bycatch of those fisheries. As with SNA 8, the large proportion reported as being taken as bycatch is likely a function of fishers attempting to avoid snapper and targeting other species to maximise overall catch with the SNA 7 ACE they have available.
- 199. The SNA 7 stock was heavily fished in the 1970's and 1980's, leading to its depletion. Biomass was at an historical low level in the early 2000's then increased substantially from 2009 (moving from below the hard limit of 10% unfished biomass (B_0)) to above the default target of 40% B_0 by around 2015). The initial increase was due to the recruitment of several strong year classes in the fishery. The fishery has since continued to increase in abundance and its most recent assessment in 2022 determined that the stock is very likely to be at or above the target, with biomass in 2020-21 estimated to be 63% B_0 .²⁶
- 200. In response to the stock's improved status and high abundance, the catch limits have been regularly reviewed and increased incrementally in line with abundance. Following management reviews the TACC was increased from 200 to 250 tonnes in 2016, from 250 tonnes to 350 tonnes in 2020, and from 350 to 450 tonnes in 2022. The deemed value regime for SNA 7 has not changed over this time (last changed in 2012).
- 201. Catch of SNA 7 and available ACE is shown below for the period since 2011/12 (Figure 5). It shows that since 2011/12 catch remained consistently around the level of available ACE.


Figure 5: Commercial catch vs available Annual Catch Entitlement (ACE) for SNA 7 from 2011/12 to 2021/22.

Basic annual deemed value rate, port price, and ACE price information





- Figure 6: Summary of port price, average annual ACE transfer price, and annual deemed value rate information for SNA 7 since 2011/12. The most recent port price was calculated during 2022/23 for use during the 2023/24 fishing year. Note that the average ACE transfer price for 2022/23 is based on a smaller sample size given that the fishing year is not yet complete.
- 203. Figure 6 shows that the basic annual deemed value rate of SNA 7 has remained consistently above the average ACE price and port price over the last decade.
- 204. The deemed value rates were initially set at a high level (above port price) and have remained high over this period to provide strong incentives for commercial fishers to stay within ACE holdings to support the stock in rebuilding from the depleted levels observed in the prior decade.
- 205. When the deemed value schedule was last reviewed for 2012/13, the annual deemed value rate for SNA 7 was lowered from \$8.00/kg to \$6.00/kg (both for 100-110% catch of ACE), and the special differential schedule was slightly loosened (lowered from \$16.00/kg at maximum excess to \$12.00/kg at maximum excess).

7.2.2 Proposed options and analysis against statutory criteria

206. FNZ is proposing two options for the deemed values rates of SNA 7. These options are outlined below in Table 6.

		Interim	Annual	Differential rates (\$/kg) for excess catch (% of ACE)									
Stock	Option	(\$/kg)	100-120% (\$/kg)	120-140%		14	40-160%	160- ⁻	180%	180-2009	%	>200%	
	Option 1	4.68	5.20	6.24	6.24		7.28	8.	8.32			10.40	
		Intorim	Annual		Differential rates (\$/kg) for excess catch (% of ACE)								
SNA 7		(\$/kg)	100-110% (\$/kg)	110- 120%	120 130)- %	130- 140%	140- 150%	150- 160%	160- 170%	170- 180%	> 180%	
	Option 2 (Current rates)	5.40	6.00	6.75	7.5	0	8.25	9.00	9.75	10.50	11.25	12.00	

Table 6: Current and proposed deemed value rates (\$/kg) for SNA 7.

207. As noted above under the discussion for SNA 8, the deemed value rate options proposed for SNA 7 are the same as those proposed for SNA 8.

- 208. Option 1 for SNA 7 would result in a modest reduction in the stock's current deemed value rates to align with Option 1 (an increase) for SNA 8. This option would move SNA 7 from its current special differential schedule to a standard schedule. Option 2 would retain the current deemed value regime for SNA 7, and would maintain its current special differential schedule.
- 209. Option 1 would be a less punitive regime for commercial fishers than Option 2 and would place more weight on the current positive status of the stock and low sustainability risk posed by marginal levels of excess catch.
- Both options aim to provide appropriate incentives for commercial fishers to acquire or maintain sufficient ACE to cover catches of SNA 7, consistent with your mandatory consideration under section 75(2)(a) of the Act.
- 211. Both options, if aligned with the options for SNA 8 above, could help to reinforce incentives for fishers who fish across these stock boundaries to report accurately. This alignment is something you may have regard to under section 75(2)(b)(vi) (any other matters considered relevant).
- 212. The setting of the SNA 7 deemed value rate relative to its market value (measured by port price) is something that you may have regard to under section 75(2)(b)(iii) (market value of the stock). Under both options, the annual deemed value rate of SNA 7 would be set above the level of market value. However, the rate would be set higher above market value for Option 2 (the *status quo*) compared with Option 1.
- 213. Setting the deemed value rate higher above market value will mean there are higher penalties for catches which cannot be covered by ACE. This will provide stronger incentives for commercial fishers to avoid catches in excess of ACE, which will also result in a lower risk of the TACC being exceeded. The desirability of commercial fishers landing catch for which they do not have ACE is something that you may have regard to under section 75(2)(b)(i). You may also have regard to the extent to which catch of SNA 7 has exceeded or is likely to exceed TACC in any year under section 75(2)(b)(v).
- 214. Because abundance of SNA 7 has recently increased and is still increasing, the risk of commercial fishers exceeding their ACE will have also increased. While this is not desirable there remains a need for the deemed value rates to be set at a level that requires fishers to acquire ACE to cover catch and/or adjust fishing practises to avoid over-catch. It is also noted that the TACC of SNA 7 has been increased incrementally over recent years (from 200 tonnes to 450 tonnes since 2016) and this should have helped to mitigate the risk of fishers being unable to acquire ACE to cover catch.
- 215. Under Option 2 (the *status quo*), catches have remained close to the TACC, and in years where catch has exceeded ACE, the excess quantities have been low (Figure 5). Because both proposed options would set the basic annual deemed value rate above port price, FNZ considers that the risk of the TACC being exceeded would not be significantly higher under Option 1 compared with Option 2, and that both options carry an overall low risk to the TACC being exceeded (by more than marginal quantities).

- 216. While the higher deemed value rates under Option 2 would provide more certainty that the TACC won't be exceeded, it should be noted that the higher penalties may also pose a higher risk of inaccurate reporting and balancing of SNA 7 catch with ACE.
- 217. FNZ notes that observer coverage is currently negligible for SNA 7, averaging below 5% over the last five fishing years based on event level data.⁶⁵ Cameras are planned to be rolled out for inshore trawl vessels in this area throughout 2023 and 2024 and this will support improved levels of monitoring and verification of accurate catch reporting in SNA 7.

7.2.3 Consultation

- 218. Two submissions were received directly commenting on the proposed deemed value rates for SNA 7; one from the NZSFC, and one from Southern Inshore Fisheries.
- 219. The NZSFC supports Option 2 for SNA 7 to maintain the existing deemed value rates and support aligning the SNA 8 deemed value rates with these rates.
- 220. Southern Inshore Fisheries support Option 1 for SNA 7 on the basis that it better aligns with the stock's port price, and the increasing abundance observed in the fishery. They also expressed disappointed that the stock was not prioritised for a review of catch limits alongside the adjustment, stating that there is currently strong rationale for reviewing an increase to the TACC.

7.2.4 Analysis of submissions

- 221. FNZ concurs with the NZSFC that the SNA 7 and SNA 8 deemed values should be aligned and notes that this could also be achieved under Option 1 for both stocks.
- 222. As with SNA 8, FNZ recognises that the status of SNA 7 is positive, and the fishery is experiencing high abundance. SNA 7 was not prioritised for a review of catch limits as part of this sustainability round, noting that its fully quantitative stock assessment is not yet complete. However, it will be a strong candidate for review in 2024 based on the results of its assessment (expected to begin in August 2023).

7.2.5 Conclusion and recommendation

- 223. FNZ recommends that you agree to Option 1 for SNA 7. Under this option the basic annual deemed value rate will be lowered by \$0.80/kg, from \$6.00/kg (for 100-110% ACE) to \$5.20/kg (for 100-120% ACE). It will move the rates from a special differential schedule to a standard schedule, with the deemed value rate at maximum excess changing from \$12.00/kg (for >180% ACE) to \$10.40/kg (for >200% ACE).
- 224. This option better aligns with the ACE and port prices of SNA 7 and FNZ considers that it will provide the best balance between providing incentives to limit over-catch and allowing sufficient flexibility for fishers to deal with unintended and accidental catch in excess of ACE.
- 225. As noted above, we have assessed this option as being consistent with your mandatory consideration under section 75 to take into account the need to provide an incentive for every commercial fisher to acquire or maintain sufficient ACE that is not less than the fisher's total catch of each stock taken. This option also has regard to several other important considerations, including the sustainability and market value of SNA 7, and the likelihood of catches exceeding available ACE and the TACC. This option was supported by Southern Inshore Fisheries.
- 226. As noted above under the recommendation for SNA 8, this option would align the deemed value rates of SNA 8 and SNA 7 if you also agree to FNZ's preferred option for SNA 8. FNZ is recommending this alignment under Option 1 to help reinforce incentives for fishers who fish across their stock boundaries to report accurately.

⁶⁵ This coverage is calculated based on fishing events (individual tows, sets or shots) in which the fish stock was recorded as caught and an observer was on board. This metric does not reflect the overall level of monitoring in the fishery.

7.3 School shark (SCH 5) – Southland and Sub-Antarctic



Figure 7: Quota Management Areas (QMAs) for school shark, with SCH 5 highlighted.

7.3.1 Stock information

- 227. SCH 5 supports the largest school shark target fishery in New Zealand. In this fishery school shark are mostly caught by setnet (81%) as target catch, with a small amount caught as bycatch in setnets targeting rig. About 10% are taken by bottom longline, primarily targeting school shark, hāpuku/bass and ling, and 8% by bottom trawl primarily targeting squid, stargazer and ling (FNZ Fisheries Assessment Plenary, 2023).
- 228. School shark are likely a single biological stock in New Zealand (Francis 2010).⁶⁶ However, fisheries characterisations and catch per unit effort (**CPUE**) analyses monitor school shark at a quota management area scale, with SCH 5 and the lower part of SCH 3 a combined monitoring unit using standardised setnet CPUE (FNZ Fisheries Assessment Plenary, 2023).
- 229. The standardised setnet CPUE for lower SCH 3 & SCH 5 has shown a long and gradual declining trend since 2005. The most recent assessment in 2021 determined that SCH 5 was unlikely to be at or above the target, as likely as not to be below the soft limit, and likely to be overfished. In response to the decline, from October 2021 the TACC of SCH 5 was cut from 743 to 520 tonnes (30%). This catch limit reduction is intended to help the stock rebuild back towards the management target within an appropriate period (proposed as 20 years based on the biological characteristics of school shark) (FNZ, 2021).
- 230. The next CPUE update for SCH 5 is scheduled for 2024 and a stock status assessment will follow.
- 231. Catch of SCH 5 and available ACE is shown below for the period since 2011/12 (Figure 8). It shows that since 2011/12 catch has remained below the level of available ACE, except in 2021/22 following the TACC decrease, where catch exceeded available ACE by a total of about 4% (22 tonnes).

⁶⁶ This is based on tagging data which show that school shark have a wide range.

^{36 •} Review of deemed value rates for selected stocks for the 2023 October round



Figure 8: Commercial catch vs available Annual Catch Entitlement (ACE) for SCH 5 from 2011/12 to 2021/22.

- 232. While the majority of SCH 5 is caught in the Southland setnet fishery, FNZ notes that a significant portion (>80%) of deemed values incurred for catch in excess of ACE in 2021/22 was from bottom longline fishers landing SCH 5 as bycatch.
- 233. Bottom longline fishers can release school sharks if they are determined likely to survive.⁶⁷ However, some bottom longline fishers landing SCH 5 have informed FNZ that they have chosen to land school sharks and pay deemed values because they determined that the sharks were unlikely to survive and could not source ACE to cover the catch. They also noted that due to the inability to cover catch with ACE, they have often moved to different areas after catching them to avoid catching more.

Deemed value rates, port price, and ACE price information

Information on deemed value rates, port price, and average ACE price of SCH 5 is summarised in Figure 9 below.



Figure 9: Summary of port price, average annual ACE transfer price, and annual deemed value rate information for SCH 5 since 2011/12. The most recent port price was calculated during 2022/23 for use during the 2023/24 fishing year. Note that the average ACE transfer price for 2022/23 is based on a smaller sample size given that the fishing year is not yet complete.

⁶⁷ This was previously specified under Schedule 6 of the Act, but as of 2022 is now specified under the <u>Fisheries (Landing and Discard Exceptions) Notice</u>.

- 234. Figure 9 shows that the basic annual deemed value rate of SCH 5 has remained consistently above the average ACE price and below the port price over the last decade.
- 235. The annual deemed value rate and differential schedule for SCH 5 have not changed since 2009 (see current rates below in Table 7). The interim deemed value rate for SCH 5 was increased from \$0.63/kg to \$1.13/kg in 2020. This change was part of a broader change to interim deemed value rate settings across 454 QMS stocks, intended to help ensure catches remain within the available ACE by reducing the incentive for fishers to delay acquiring ACE until the end of the fishing year (Minister of Fisheries 2020).

7.3.2 Proposed option and analysis against statutory criteria

236. FNZ is proposing an option to increase to the interim, annual and differential deemed value rates for SCH 5 from October 2023 as outlined below (Table 7).

		Intorim	Annual	Differential rates (\$/kg) for excess catch (% of ACE)						
Stock	tock Option (\$/kg)		100-120% (\$/kg)	120- 140%	140- 160%	160- 180%	180- 200%	>200%		
	Current rates	1.13	1.25	1.50	1.75	2.00	2.25	2.50		
SCH 5	Option 1	3.24 68	3.60	4.32	5.04	5.76	6.48	7.20		

Table 7: Current and proposed deemed value rates (\$/kg) for SCH 5.

- 237. Under this proposed option (Option 1) the annual deemed value rate of SCH 5 would increase from \$1.13/kg to \$3.60/kg, and the interim rate and differential rates would be increased in line with this. The differential rates would remain on a standard schedule.
- 238. Consistent with your mandatory consideration for setting deemed values under section 75(2)(a) of the Act, this increase to SCH 5 deemed value rates would provide greater incentives for commercial fishers to acquire or maintain sufficient ACE to cover their catch of SCH 5.
- 239. FNZ notes that the recent TACC reduction and consequent reduction in ACE availability for SCH 5 has likely contributed to commercial fishers landing more catch for which they are unable to acquire sufficient ACE, leading to catch in excess of the stock's TACC.
- 240. This proposed deemed value change should lower the desirability of commercial fishers catching SCH 5 when ACE is not available (given that it would incur higher penalties). This is something that you may have regard to under section 75(2)(b)(i). You may also have regard to the extent to which catch of SCH 5 has exceeded or is likely to exceed TACC in any year under section 75(2)(b)(v).
- 241. As noted above, available information indicates that SCH 5 is currently low in abundance and needs to rebuild back toward its management target. Increasing incentives for fishers to avoid excess catches of ACE will reduce the risk of the TACC being exceeded and this will support the stock in rebuilding to its management target within an appropriate timeframe. It should also encourage bottom longline fishers landing school shark to release individuals alive where possible, and where not possible, to better avoid them and mitigate risks of landing them.
- 242. At \$3.60/kg, the annual deemed value rate under this option would be set above the most recent port price estimated for SCH 5 (\$2.59/kg). This is something that you may have regard to under section 75(2)(b)(iii) of the Act. As noted in FNZ's Deemed Value Guidelines (2020), setting the annual deemed value rate above the landed price can be considered appropriate where it may help with meeting sustainability and/or utilisation objectives for the stock. This applies to the SCH 5 stock since there is currently a need for measures to help ensure catch remains at or below the TACC to support the stock in rebuilding.
- 243. FNZ recognises that setting the annual deemed value rate at this level above port price will make landing school shark in SCH 5 strongly cost negative for fishers unable to source ACE, which may carry a higher risk of misreporting. However, this risk is considered to be low based on the monitoring regime for the fishery. FNZ will continue to prioritise observer and camera coverage in the Southern South Island setnet fishery which is responsible for most catch of SCH 5. For 2023/24 it is planned that observers/cameras cover a minimum of 60% of effort

⁶⁸ FNZ notes that the interim deemed value rate proposed for Option 1 in our consultation paper was \$3.20/kg. We have corrected the value in this chapter to \$3.24, which is 90% of the basic annual deemed value rate. This aligns with the recommendations in FNZ's Deemed Value Guidelines (2020). This change does not materially change the basis of the option. The other rates are the same as those presented during consultation.

^{38 •} Review of deemed value rates for selected stocks for the 2023 October round

(based on number of covered sea days) in the setnet fishery. Cameras are also planned to be rolled out for inshore trawl and longline vessels in this area throughout 2023 and 2024, which will support improved levels of monitoring for SCH 5 caught by other methods.

- 244. The proposed Option 1 will align the deemed value rates of SCH 5 with the adjacent SCH 3 stock. This alignment is something you may have regard to under section 75(2)(b)(vi) (any other matters considered relevant).
- 245. FNZ considers this proposed alignment to be appropriate for two reasons:
 - SCH 5 is assessed together with the lower part of SCH 3, and both have the same status and associated sustainability concern; and
 - Aligning deemed value rates between adjacent stocks can provide appropriate incentives for fishers who fish across the stock boundaries to report accurately.

7.3.3 Consultation

- 246. One submission from Southern Inshore Fisheries directly commented on the proposed deemed value rates for SCH 5.
- 247. Overall Southern Inshore Fisheries do not support the proposed increase to the deemed value rates because the landing exceptions process has not been completed, and this may have implications on the level of returns to sea if the requirement for landing school sharks changes.
- 248. However, they recognise that the current deemed value rates for SCH 5 are low in comparison to the port price, and have suggested an alternative option to increase the deemed value rates on this basis, as shown in Table 8 below:
- Table 8: Current and proposed deemed value rates (\$/kg) for SCH 5, including an additional Option 2 suggested by Southern Inshore Fisheries.

		Annual	Differential rates (\$/kg) for excess catch (% of ACE)						
Option	Interim (\$/kg)	100-120% (\$/kg)	120- 140%	140- 160%	160- 180%	180- 200%	>200%		
Current rates	1.13	1.25	1.50	1.75	2.00	2.25	2.50		
Option 1	3.24	3.60	4.32	5.04	5.76	6.48	7.20		
Option 2 (Southern Inshore suggested option)	2.79 ⁶⁹	3.10	3.72	4.34	4.96	5.58	6.20		

249. Southern Inshore Fisheries note that under this option the annual deemed value rate would be set at \$3.10/kg, which is above the most recent port price estimated for SCH 5 (\$2.59/kg).

7.3.4 Analysis of submissions

- 250. FNZ disagrees with Southern Inshore Fisheries' view that the deemed value rates of SCH 5 should not be increased on the basis that the exceptions process has not been completed.
- 251. We note that there will be further opportunities to review the deemed value rates of SCH 5 following any outcome of the exceptions process if needed. In the meantime, this does not negate the need for a current adjustment to ensure that catches of SCH 5 are being appropriately balanced with ACE to support the trajectory of the stock in rebuilding to its management target.
- 252. Regarding the alternative deemed value rate option (Option 2) proposed by Southern Inshore Fisheries, FNZ considers that this is a valid option that you may consider. We have therefore included Option 2 for your consideration in the decision pages at the end of this chapter.
- 253. The option would provide better incentives for commercial fishers to acquire or maintain sufficient ACE to cover catches of SCH 5 compared with the current rates, consistent with your mandatory consideration under section 75(2)(a) of the Act. It also has regard to the same permissible statutory considerations as Option 1, except that it would not align the deemed value rates of SCH 5 with the adjacent SCH 3 stock.

⁶⁹ Southern Inshore Fisheries proposed an interim deemed value rate of \$2.80/kg. We have amended this slightly to \$2.79/kg to be exactly 90% of the basic annual deemed value rate in line with our deemed value guidelines.

7.3.5 Conclusion and recommendation

- 254. FNZ recommends that you agree to Option 1 for SCH 5. Under this option the basic annual deemed value rate will increase by \$2.35/kg, from \$1.25/kg to \$3.60/kg (for 100-120% ACE). The rates would remain on a standard schedule and the rate at maximum excess would increase to \$7.20/kg (for >200% ACE).
- 255. FNZ considers that the settings under this option will provide better incentives for commercial fishers to balance catches of SCH 5 with ACE, and this will help to support the stock in rebuilding back to its management target.
- 256. As noted above, FNZ have assessed this option as being consistent with your mandatory consideration under section 75 to take into account the need to provide an incentive for every commercial fisher to acquire or maintain sufficient ACE that is not less than the fisher's total catch of each stock taken. This option also has regard to several other important considerations, including the status of the stock, its market value, the likelihood of catches exceeding available ACE and the TACC.
- 257. Southern Inshore Fisheries did not support Option 1 and have proposed an alternative option for your consideration. However, we note that the alternative option would not align the deemed value rates of SCH 5 with the adjacent SCH 3 stock. On this basis, we believe that Option 1 remains the most appropriate.

8 Decisions

8.1 SNA 8

Option 1 (FNZ's recommended option)

Agree to set the interim, annual, and differential deemed values for SNA 8 at the following rates:

Interim	Annual		Differential rate	Differential rates (\$/kg) for excess catch (% of ACE)						
(\$/kg)	(\$/kg)	120-140%	140-160%	160-180%	180-200%	>200%				
4.68	5.20	6.24	7.28	8.32	9.36	10.40				

OR

Agreed / Agreed as Amended / Not Agreed

Option 2

Agree to set the interim, annual, and differential deemed values for SNA 8 at the following rates:

	Annual		Differential rates (\$/kg) for excess catch (% of ACE)									
Interim (\$/kg)	100-110% (\$/kg)	110- 120%	120- 130%	130- 140%	140- 150%	150- 160%	160- 170%	170- 180%	> 180%			
5.40	6.00	6.75	7.50	8.25	9.00	9.75	10.50	11.25	12.00			

Agreed / Agreed as Amended / Not Agreed

Agreed / Agreed as Amended / Not Agreed

8.2 SNA 7

Option 1 (FNZ's recommended option)

Agree to set the interim, annual, and differential deemed values for SNA 7 at the following rates:

Interim	Annual		Differential rates (\$/kg) for excess catch (% of ACE)						
(\$/kg)	(\$/kg)	120-140%	140-160%	160-180%	180-200%	>200%			
4.68	5.20	6.24	7.28	8.32	9.36	10.40			

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Option 2

Agree to retain the interim, annual, and differential deemed values for SNA 7 at the following rates:

	Annual	Differential rates (\$/kg) for excess catch (% of ACE)									
Interim (\$/kg)	100-110% (\$/kg)	110- 120%	120- 130%	130- 140%	140- 150%	150- 160%	160- 170%	170- 180%	> 180%		
5.40	6.00	6.75	7.50	8.25	9.00	9.75	10.50	11.25	12.00		

Agreed / Agreed as Amended / Not Agreed

^{258.} FNZ considers that all the deemed value rate options below are consistent with your statutory obligations and powers under section 75(2)(a) and 75(2)(b) of the Act.

8.3 SCH 5

Option 1 (FNZ's recommended option)

Agree to set the interim, annual, and differential deemed values for SCH 5 at the following rates:

	Annual	Differential rates (\$/kg) for excess catch (% of ACE)								
Interim (\$/kg)	100-120% (\$/kg)	120-140%	140-160%	160-180%	180-200%	>200%				
3.24	3.60	4.32	5.04	5.76	6.48	7.20				

Agreed Agreed as Amended / Not Agreed

Option 2 (Southern Inshore Fisheries proposed option)

Agree to set the interim, annual, and differential deemed values for SCH 5 at the following rates:

	Annual	Differential rates (\$/kg) for excess catch (% of ACE)								
Interim (\$/kg)	100-120% (\$/kg)	120-140%	140-160%	160-180%	180-200%	>200%				
2.79	3.10	3.72	4.34	4.96	5.58	6.20				

Agreed / Agreed as Amended / Not Agreed

Hon Rachel Brooking Minister for Fisheries and Oceans

21 / 8 / 2023

Deemed values supplemental information

The deemed value framework

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.

The deemed value system is a civil as opposed to a criminal regime (over-fishing 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 fishing year by a system of financial incentives.

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 level of available ACE.⁷⁰ Harvesting above available ACE has the effect of undermining the sustainability of the fishery. The deemed value framework also provides flexibility for commercial operators to manage unexpected amounts of catch by providing a means to balance unintended catches in excess of ACE.

On the first day of the fishing year, all quota owners are allocated 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 every kilogram of fish landed in excess of ACE. Fishers selfreport their catch of quota species on a monthly basis. ACE may be freely traded during the fishing year, but the value of ACE may change during the year depending upon its availability. Often the fisher is not a quota holder and holds only ACE.

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 that is charged at the end of the fishing year on catch in excess of available ACE. Interim deemed value rates are charged each month to commercial fishers for every kilogram of fish landed in excess of ACE holdings. Annual deemed value rates must be set higher than the interim 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.

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 available ACE which may have negative implications for sustainability and the long-term value of the resource. Likewise, if set too high, deemed value rates may discourage landing and accurate reporting, (i.e. behaviours such as illegal dumping and/or misreporting) which can compromise effective fisheries management.

Previous abuse of the regime suggests 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 over-fishing thresholds, which, if breached, result in automatic exclusion from the fishery.

The Deemed Value Guidelines recommends that interim deemed value should be set at 90% of the annual rate. This is to incentivise fishers to cover deemed value invoices promptly, rather than delay balancing.

For most stocks, progressively increased (differential) annual deemed value rates are set. Differential deemed value rates (also known as 'ramping') result in an escalated schedule of rates as the percentage by which catch exceeds the fisher's ACE increases. The standard approach increases in 20% increments up to a maximum of 200% of the annual deemed value (see DV Supplementary Table below). Differential rates reflect the increasingly detrimental impact on sustainability of higher levels of over-catch, by providing stronger incentives to avoid over-catch. The setting of differential deemed value rates is permitted under section 75(4) of the Act.

⁷⁰ For most fishstocks, the ability to carry forward some ACE from one fishing year to the next means that the sum of available ACE is greater than the TACC.

Deemed values supplementary table: Standard differential deemed value rate schedule recommended 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%

For vulnerable or rebuilding fish stocks, or stocks that are taken almost entirely as a target species, 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. Alternatively, less stringent differential schedules may also be applied to low value, low TACC stocks where targeted fishing does not occur.

The deemed value rate changes recommended in this decision document are aimed at ensuring catch does not exceed the available ACE, regardless of the level at which the TACC is set, by encouraging balancing of landings with ACE while avoiding creating incentives to discard and misreport catch.



Figure 1: Quota Management Areas (QMAs) for green-lipped mussel, with GLM 9 highlighted.

1 Why are we proposing a review?

- 259. In 2022, the Fisheries Act 1996 (the Act) was amended through the Fisheries Amendment Act 2022⁷¹ to change the fishing year for green-lipped mussels in the Waikato, West Coast of Auckland, and Northland (GLM 9) (Figure 1) from a fishing year starting on 1 October to a fishing year starting on 1 April.
- 260. To support Parliament's decision to change the fishing year, Fisheries New Zealand (**FNZ**) is now proposing options to set the Total Allowable Catch (**TAC**) of GLM 9 under section 14 of the Act,⁷² for the six-month transitional period between 1 October 2023 and 31 March 2024. As part of this proposal, FNZ is advising on appropriate settings for the allowances and Total Allowable Commercial Catch (**TAC**) within the TAC for this transitional period.
- 261. Following this six-month transitional period, FNZ proposes that the GLM 9 TAC and settings will revert to the current full year settings from the 1 April 2024 fishing year. This approach is consistent with the Cabinet decisions made alongside the changing of the fishing year.⁷³

⁷¹ Fisheries Amendment Act 2022: Schedule 1, Part 3, Subpart 2 – Fishing year for green-lipped mussel in quota management area 9

⁷² Section 14 of the Act outlines alternative TAC settings for stocks specified in Schedule 3. For stocks such as GLM 9 which are listed in Schedule 3, the Minister may set a TAC otherwise than in accordance with section 13 if he or she considers that the purpose of the Act would be better achieved by doing so.

⁷³ Approval to Release a Supplementary Order Paper to the Fisheries Amendment Bill 2022 – Cabinet paper (mpi.govt.nz).

1.1 Summary of proposed options

 Table 1: Summary of options proposed for GLM 9 for the 1 October 2023 to 31 March 2024 six-month transitional period, and for future 12-month fishing years from 1 April 2024. Figures are all in tonnes. The preferred option of Fisheries New Zealand is highlighted in blue.

					Allowances				
Option		TAC	TACC	Customary Māori	Recreational	All other mortality caused by fishing			
	Current annual settings	233	135	59	39	0			
Option 1	6-month settings for 1 October 2023 to 31 March 2024	140.5	67.5	44	29	0			
	Annual settings from 1 April 2024	233	135	59	39	0			
Option 2	6-month settings for 1 October 2023 to 31 March 2024	122	49	44	29	0			
••••••	Annual settings from 1 April 2024	233	135	59	39	0			
		1 0							

In total, 8 submissions were received on the proposed options.

2 About the stock

2.1 Biology

- 262. Green-lipped mussels are filter-feeding, bivalve molluscs. They are dioecious (either male or female) with a 1:1 sex ratio throughout all sizes (Alfaro et al., 2001) and reproduce via broadcast spawning with fertilisation of eggs occurring in the water column. Most spawning occurs in late spring to early autumn, but larvae can be present all year (Alfaro, 2006).
- 263. Sexual maturity has been observed in some populations to begin from 27 mm shell length, with most individuals sexually mature by 40 mm shell length. Females can produce 100 million eggs per season and successful fertilisation largely depends on the proximity of other adult mussels. Greater adult densities contribute to greater fertilisation success (Alfaro et al., 2001).
- 264. After a three-to-five-week larval stage,⁷⁴ primary settlement of mussels occurs on a mixture of finely branched algae (seaweed) and hydroids (this mixed material is hereafter referred to as seaweed) (Jeffs et al., 2018). Primary settlement onto beds of adult mussels is uncommon, but settlement can take place on surrounding algae and sometimes on the byssus threads of adult mussels.
- 265. Secondary settlement occurs when mussel spat⁷⁵ detach from their settlement substrate and drift in the water column using extruded mucous to provide buoyancy (Lane et al., 1985; Buchanan and Babcock, 1997; Andrew Jeffs, *in review*). Mussel spat are able to drift/migrate over considerable distances using this method, allowing them to reach new areas or substrates where re-attachment/secondary settlement can occur. This is thought to be how most juveniles recruit into mussel beds. This secondary settlement process may occur multiple times before mussel spat finally settle into adult mussel bed habitat, primarily rocky or biogenic reefs.⁷⁶
- 266. Recent research has shown that mussel spat up to 20 mm in length are highly mobile and can detach from primary settlement substrate and drift in the water column over considerable distances (Andrew Jeffs, *in review*).

2.2 Fishery characteristics

267. Green-lipped mussels are an important customary and recreational species gathered by hand from shore or while diving. There is no targeted commercial harvest of adult green-lipped

⁷⁴ A larva is the first life-stage of an organism (larvae is plural), which usually looks very different from the adult form and may have a different habitat (i.e. benthic vs. pelagic). For many marine organisms, the larval stage occurs in the water column (pelagic), after which larvae metamorphose and settle in adult habitat (e.g. rocky or soft sediment seafloor).

⁷⁵ Mussel spat develop from a floating larval stage. The larvae attach themselves to seaweed or aquaculture ropes and develop into miniature shellfish 0.3 mm long – about the width of a needle tip. They move from site to site (secondary recruitment) until they attach themselves permanently to a settlement site.

⁷⁶ Biogenic reefs are made up of hard matter created by living organisms. The reefs are raised above the seabed.

mussels in GLM 9. However, New Zealand's mussel farming industry is heavily reliant on wildcaught juvenile mussels (mussel spat) which are harvested exclusively from Te Oneroa a Tōhe (Alfaro et al., 2010).

- 268. The mussel spat used by the mussel aquaculture industry is collected while attached to seaweed that has been washed into the surf zone or onto the beach (hereafter referred to as beach-cast seaweed) on Te Oneroa a Tōhe (Ninety Mile Beach). This mussel spat has either settled onto drifting unattached seaweed, or settled onto reef-attached seaweed that has subsequently become detached from the reef (Alfaro et al., 2010; Jeffs et al., 2018).
- 269. Biophysical and population genetic modelling suggests that most mussel spat present in the water and on beach-cast seaweed at Te Oneroa a Tōhe originates from wild mussel beds across the west coast of Te Tai Tokerau (Northland; Fig. 3; Chaput et al., 2023); The Moana Project, *unpublished data*).⁷⁷
- 270. Green-lipped mussels, like many marine invertebrates, employ a reproductive strategy where many eggs and larvae are produced (*c.* 100 million eggs per female mussel per season) with the likelihood that only a few will survive (Gosling et al., 2015). Consequently, the mussel spat that is present on beach-cast seaweed, and is therefore able to be harvested for the mussel aquaculture industry, is likely to be a very small proportion of the mussel larvae/mussel spat population that is present in the waters on the west coast of Te Tai Tokerau (Alfaro, 2006).
- 271. For mussel spat to survive and to recruit and grow into adult mussels, they require access to rocky or biogenic reef structures. Consequently, the mussel spat attached to beach-cast seaweed will not survive if they remain on the beach. While many of these beach-cast mussel spat will perish, it is possible for beach-cast seaweed to be resuspended and transported either alongshore or back out of the surf zone. The seaweed may eventually encounter reef areas where the spat can recruit to adult habitat (Alfaro et al., 2004). Spat may also detach from a primary settlement substrate and drift independently in the water column, potentially encountering appropriate settlement substrates on which to continue the recruitment process (Buchanan and Backcock, 1997; Alfaro & Jeffs, 2002; Alfaro et al., 2004). No research has been conducted to date that provides an indication of the proportion of beach-cast spat that go on to recruit into local mussel beds or their importance to the wild mussel populations of Te Tai Tokerau.
- 272. Because of the abundance of mussel spat present in the waters of Te Tai Tokerau, including off the coast of Te Oneroa a Tohe (Alfaro 2006), and because of the somewhat limited opportunities for beach-cast mussel spat to access appropriate habitats for recruitment and further development (Alfaro & Jeffs, 2002), the harvesting of beach-cast mussel spat is not considered a sustainability concern to wild populations of green-lipped mussels or the GLM 9 fishery.
- 273. The commercial harvest of mussel spat is controlled under the Act, with a spat ratio⁷⁸ (see paragraph 276) in place to calculate the volume of spat harvested from collected seaweed and a TACC constraining the overall level of take. It is estimated that wild caught mussel spat from Te Oneroa a Tōhe accounts for at least 65% of the aquaculture industry's spat requirements. However, the overall proportion used in the aquaculture industry varies from year to year. Spat is also sourced from spat catching installations around New Zealand and spat farming operations.

2.3 Management background

- 274. Harvesting of spat and seaweed has been occurring at Te Oneroa a Tōhe since the 1970s. Green-lipped mussels were introduced to the Quota Management System (**QMS**) in 2004, including green-lipped mussel spat.
- 275. A key reason for managing the spat fishery within the QMS was to create a framework to improve efficiency of harvesting in the context of growing demand for the mussel spat. Prior to the QMS, mussel spat harvest was managed using aquaculture permits. In the early 2000s, the various permit applications totalled 600 tonnes per year (approximately five times what was

⁷⁷ Researchers working in The Moana Project have been using genetics to determine where the larvae of important kaimoana species come from. The genetic analyses for GLM 9 have been conducted, but the research has not yet been published.

 ⁷⁸ Section 188A of the Act 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.

^{47 •} Review of sustainability measures for the 2023 October round: GLM 9

actually taken). The QMS provided a mechanism to encourage efficient harvest by reducing intensive harvesting by allocating catch across participants.

- 276. A ratio reporting system is used to record how much of the material harvested off the beach is spat and how much is seaweed. The last review of GLM 9 was conducted in 2018 and established a more realistic spat-to-seaweed ratio of 25:75 (Minister of Fisheries 2018). Prior to that review, a spat-to-seaweed ratio of 50:50 was used. The 2018 review saw the TACC reduced from 180 tonnes to 135 tonnes to address concerns that the change in spat ratio would increase harvesting pressure. Whilst the decrease to the TACC was modest, it still provided for utilisation to meet mussel spat demands from mussel aquaculture.
- 277. Because the harvesting of beach-cast mussel spat is not considered a sustainability concern for wild populations or the GLM 9 fishery (see section 2.2 above), this makes the management of mussel spat harvesting different from most other species. To reflect this difference, GLM 9 is listed in Schedule 3 of the Act, allowing for an alternative approach to setting a TAC under section 14 of the Act.
- 278. While the approach to managing the GLM 9 fishery must be consistent with the purpose of the Act, there is no requirement under section 14 to set the TAC to move the stock towards or above a level that can produce the maximum sustainable yield (**MSY**).⁷⁹
- 279. A Working Group (Te Oneroa a Tōhē Spat Working Group) involving iwi representatives, mussel spat collectors, marine farmers, Aquaculture New Zealand, Te Ohu Kaimoana, and FNZ was formed to develop a GLM 9 management plan. As part of this process, in 2019 the Working Group developed a voluntary Beach Collecting and Loader Driving Code of Practice (Code of Practice) for mussel spat collectors.⁸⁰ Compliance with the Code of Practice is monitored by observers who report to Aquaculture New Zealand. Buyers of Te Oneroa a Tōhe spat are also asked by Aquaculture New Zealand to only deal with operators that sign up to, and comply with, the Code of Practice.
- 280. The Code of Practice was developed to address and mitigate concerns that had been raised about mussel spat harvesting practices, the use of mechanical loaders, and potential impacts of harvesting on the ecology of Te Oneroa a Tōhe. The Code of Practice is reviewed regularly and includes the following:
 - Operators will not collect spat from the rocks including at Wakatehaua (The Bluff), Kahokawa (Scott Point) and Whaaro (Ahipara).
 - No loaders will operate on the beach from 15 December to 31 March, each year.
 - Areas where only hand-gathering is permitted (where no mechanical collection is to occur) are identified.
 - Toheroa and tuatua beds, and other wildlife, will be actively avoided.
 - Restrictions on numbers of harvesting vehicles/loaders, speed limits and maintenance standards for vehicles used in harvesting.
- 281. Te Oneroa a Tōhē Spat Working Group also recommended to change GLM 9 from the fishing year starting on 1 October to the fishing year starting on 1 April. This change of fishing year is expected to reduce the incentive for intensive fishing practices around the conclusion of the October fishing year which often coincides with peak spat falls. This recommendation was aimed at improving economic and environmental performance and responding to iwi and community concerns around intensive harvesting practices on the beach.
- 282. In response to the recommendation from the Working Group, FNZ progressed a change process, and in 2022, Parliament amended the Act to change the GLM 9 fishing year from October to April.
- 283. This review of the GLM 9 stock is a technical requirement to implement the change to the GLM 9 fishing year.

 ⁷⁹ Maximum sustainable yield is the largest long-term average catch or yield that can be taken from a stock under prevailing ecological and environmental conditions. It is the maximum use that a renewable resource can sustain without impairing its renewability through natural growth and reproduction.
 ⁸⁰ Aveilable on request from Arguent two New Zealand.

⁸⁰ Available on request from Aquaculture New Zealand.

3 Status of the stock

- 284. It is not known whether GLM 9 is at, above, or below a level that can produce MSY, because no estimates of reference points or current biomass are available at a Quota Management Area (QMA) level (FNZ – Fisheries Assessment Plenary, 2023).
- 285. While no attempts have been made to assess adult green-lipped mussel biomass in GLM 9, a stock assessment would be difficult. This is due to factors including finding and assessing benthic and rocky substrates where the mussels settle, locating potentially numerous mussel beds within the QMA at different depths, limitations on using invasive tools for measurement (such as dredging), and the unpredictability of spawning and settlement.
- 286. As mentioned in section 2.1 of this chapter, because of the great abundance of mussel larvae and post-larval juveniles in the waters of Te Tai Tokerau (Alfaro, 2006), and because of the somewhat limited opportunities for beach-cast mussel spat to access appropriate habitats for recruitment and further development (Alfaro & Jeffs, 2002), the harvesting of beach-cast mussel spat is not considered a sustainability concern and is not likely to affect the abundance of wild populations of green-lipped mussels or the productivity of the GLM 9 fishery.

4 Catch information and current settings within the TAC

4.1 Commercial

- 287. Commercial fishing in GLM 9 is conducted by mechanical loaders or hand gathering of seaweed and mussel spat on Te Oneroa a Tohe. The fishing year has run from 1 October to 30 September. The Code of Practice stipulates a voluntary prohibition of the use of mechanical loaders from 15 December to 31 March every year.⁸¹ Hand gathering is still allowed during this time.
- 288. From the 2004/05 to 2013/14 fishing years (except for the 2009/10 fishing year), the harvesting of mussel spat was well below the TACC. In the 2014/15 fishing year and the following two fishing years, there was consistent harvesting above the TACC at an average of 206 tonnes (Figure 2).
- 289. Since the decrease of the TACC and the spat-to-seaweed ratio change in 2018, a decrease in the catch rates was observed until the 2021/22 fishing year. In the 2021/22 fishing year, harvest exceeded the TACC by 43 tonnes (Figure 2).
- 290. FNZ understands that timing limitations faced by the aquaculture industry contributed to this excess harvest in the 2021/22 fishing year. Though spat fall and availability vary, spat fall often coincides with the transition in fishing years. In 2021/22, a major spat fall occurred during the change in fishing year from September 2021 into October 2021, and again in August to September 2022. When this occurs, there is a 'race' for harvesters to catch their Annual Catch Entitlement (ACE) before the fishing year ends, making it more difficult for harvesters to balance their catch with ACE.

⁸¹ This voluntary mechanical loader closure is to ensure the safety of the other users of Te Oneroa a Tōhe/Ninety Mile Beach, during the time when most visitors are expected.

^{49 •} Review of sustainability measures for the 2023 October round: GLM 9



Figure 2: Monthly Harvest Returns and TACC settings for green-lipped mussel (GLM 9) from the 2004/05 fishing year to the 2021/22 fishing year.

4.2 Customary Māori

- 291. Customary fishers target adult mussels and are not known to gather mussel spat. The current allowance for Māori customary fishing is 59 tonnes.
- 292. FNZ's records show that the harvest of adult green-lipped mussels does occur through customary authorisations. Since 2013 there have been over 500 permits issued. Total catches are uncertain because authorisations use different units of measurement (bags, bins, buckets, individual mussel counts) and because many of the authorisations issued are under regulation 50 of the Fisheries (Amateur Fishing) Regulations 2013, where catches are not required to be reported.
- 293. Of the 512 permits issued since 2013, 73% were issued for the October to March period, which coincides with the transitional six-month term.

4.3 Recreational

- 294. The best available information to estimate the recreational harvest of adult green-lipped mussels in GLM 9 is provided by the National Panel Survey of Marine Recreational Fishers 2017-2018 (NPS) (Wynne-Jones et al., 2019). This survey estimated that nearly 17,000 green-lipped mussels were recreationally harvested in GLM 9 during the 2017/18 year.
- 295. FNZ notes there is uncertainty in this estimate and that recreational catches are likely to vary from year to year.
- 296. The current recreational daily limit for green-lipped mussels across most of GLM 9 is 50 per person per day, with no minimum legal size. The exception to the 50 mussel daily limit is the west coast of Auckland where the daily limit is 25 mussels per person per day (Figure 4).
- 297. The NPS did not have an estimated weight for the 2017/18 recreational GLM 9 harvest but advised that it would likely be below the 39-tonne allowance currently set.

4.4 Other sources of mortality caused by fishing

298. The other sources of mortality caused by fishing allowance for GLM 9 is currently set at zero. FNZ does not have any available information that would provide evidence of mortality caused by fishing and/or unreported mortality from illegal activities.

5 Treaty of Waitangi obligations

5.1 Input and participation of tangata whenua

- 299. Section 12(1)(b) of the Act requires that before undertaking any sustainability process, you shall provide for the input and participation of tangata whenua who have a non-commercial interest in the stock or an interest in the effects of fishing on the aquatic environment in the area concerned. In considering the views of tangata whenua, you are required to have particular regard to kaitiakitanga.⁸²
- 300. Input and participation of tangata whenua into the sustainability decision-making process is provided mainly through lwi Fisheries Forums, which have been established for that purpose. Each lwi Fisheries Forum can develop an lwi Fisheries Forum Plan that describes how the iwi in the Forum exercise kaitiakitanga over the fisheries of importance to them, and their objectives for the management of their interest in fisheries. Iwi Fisheries Forums may also be used as entities to consult iwi with an interest in fisheries.⁸³
- 301. The GLM 9 QMA falls within the rohe moana of Ngā Hāpū o Te Uru o Tainui Iwi Fisheries Forum, the Mid-North Iwi Fisheries Forum and Te Hiku o Te Ika Fisheries Forum. During consultation, feedback was sought from tangata whenua on how the proposed options for GLM 9 may or may not assist tangata whenua to provide kaitiakitanga, and how tangata whenua consider the proposal may affect their rights and interests in this stock.

lwi Fisheries Forum	Engagement on GLM 9
	FNZ discussed the GLM 9 sustainability review with the Te Hiku o Te Ika Iwi Fisheries Forum on 12 May and 22 June 2023. The Forum indicated support for Option 1 (the 50% TACC option), while also noting their support for the Beach Management Plan, which was developed with all Te Hiku Iwi following wide consultation.
	It was also expressed that any concerns about the sustainability of the GLM 9 fishery were not about the number of spat harvested, but were about the method used to harvest spat (i.e. mechanical harvesting). The forum noted that permits are for beach cast mussel spat, but that mechanical harvesters are in the water, loading seaweed out of the surf zone.
Mid-North	FNZ discussed the GLM 9 sustainability review with the Mid-North Fisheries Forum on 11 May 2023. No specific feedback was received from this lwi Fisheries Forum
Ngā Hāpū o Te Uru o Tainui	Ngā Hāpū o Te Uru o Tainui Fisheries Forum did not provide any specific feedback on this sustainability review.

Table 2: Summary o	f engagement	with Iwi	Fisheries	Forums.
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5.2 Kaitiakitanga

- 302. Information provided by forums, and iwi views on the management of fisheries resources and fish stocks, as set out in Iwi Fisheries Plans, are ways that tangata whenua can exercise kaitiakitanga in respect of fish stocks.
- 303. Ngā Hāpū o Te Uru o Tainui lwi Fisheries Forum and Te Hiku o Te Ika Fisheries Forum both have lwi Fisheries Plans that include green-lipped mussels as taonga species.
- 304. Te Hiku o Te Ika Fisheries Forum rohe moana extends across three different Fisheries management areas, FMAs 1, 9, and 10 and is directly impacted by the GLM 9 mussel spat harvesting practises on Te Oneroa a Tohe.
- 305. Te Oneroa a Tōhe is included in the Te Hiku o Te Ika rohe moana specifically and the beach is of particular cultural and historical significance for the collective iwi of this region. Any impacts

⁸² 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.

⁸³ However, FNZ also engages directly with lwi (outside of Forums) on matters that affect their fisheries interests in their takiwa and consults with any affected Mandated lwi Organisations and lwi Governance Entities where needed.

^{51 •} Review of sustainability measures for the 2023 October round: GLM 9

related to the mauri of this area and the impacts on taonga species through spat harvesting practises have been considered, managed, and are closely monitored by iwi of the region.

306. The adult mussel beds that have been recognised as the source of the mussel spat that washes up on Te Oneroa a Tōhe also sit within the rohe moana of the Te Hiku o Te Ika and Mid-North Fisheries Forums.

5.3 Mātaitai reserves and other customary management tools

- 307. Section 21 (4) of the Act requires that, when allowing for Māori customary non-commercial interests, you must take into account
 - a) any mātaitai reserve in GLM 9 that is declared by notice in the Gazette under regulations made for the purpose under section 186A.
 - b) any area closure or any fishing method restriction or prohibition in GLM 9 that in imposed by the Minister by notice in the Gazette made under section 186A.
- 308. There are three customary fisheries management areas within GLM 9. These include one taiāpure and two mātaitai reserves (Table 3). It is not anticipated that the options proposed within this review would impact the availability of mussels in these areas, given that the proposed six-month settings are expected to provide for expected catch in line with the harvest practices of the full year settings, and FNZ is not proposing a change to the subsequtent full year settings.

Customary Area	Management Type
	Taiāpure
Kawhia Aotea Taiāpure	All types of fishing are permitted within a taiāpure. The management committee can recommend regulations for commercial, recreational, and customary fishing
Marokopa Mātaitai	Mātaitai Reserve
Aotea Harbour Mātaitai	Commercial fishing is not permitted within mātaitai reserves unless regulations state otherwise.

Table 3: Customary fishing areas within GLM 9.

6 Environmental and sustainability considerations under the Act

6.1 Overview

- 309. You are being asked to make a decision under section 14 of the Act, to set the TAC for greenlipped mussels in GLM 9. This is a sustainability measure. Before setting or varying a sustainability measure, you must adhere to section 11 of the Act. When making your decision you must also act consistently with the requirements in section 5 of the Act, and sections 8-10 (Purpose and Principles of the Act).
- 310. The requirements and details of each of these sections are set out below, in the following order:
 - a) Section 5 (Application of international obligations and Treaty of Waitangi (Fisheries Claims) Settlement Act 1992);
 - b) Section 8 (Purpose);
 - c) Section 9 (Environmental principles);
 - d) Section 11 (Sustainability measures);
 - e) Section 14 (Alternative total allowable catch for stock specified in Schedule 3); and
 - f) Section 10 (Information principles).

6.2 Application of international obligations and the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992 – section 5 of the Act

311. You must act in a manner consistent with the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992. This is discussed in more detail under Heading 2.2.1 of the *Introduction and Legal Overview* chapter of this document. You must also act in a manner consistent with New

Zealand's international obligations relating to fishing. Discussion of these relevant obligations is provided under Heading 2.2.2 of the *Introduction and Legal Overview*.

6.3 Purpose of the Act – section 8 of the Act

312. The Act's purpose is to "provide for the utilisation of fisheries resources while ensuring sustainability." Guidance for you on the meaning of section 8 and how it should be applied for decision making (for all the stocks being reviewed as part of this round) is provided under Heading 2.2.3 in the *Introduction and Legal Overview*.

6.4 Environmental principles – section 9 of the Act

- 313. The environmental principles that you must take into account when considering sustainability measures for GLM 9, are as follows:
 - Associated or dependent species should be maintained above a level that ensures their long-term viability.
 - Biological diversity of the aquatic environment should be maintained; and
 - Habitats of particular significance for fisheries management should be protected.
- 314. The current annual settings pose little risk to associated and/or dependent species, biodiversity, or any habitats of particular significance. It is unlikely that the six-month settings proposed will have any negative or positive effects in relation to the environmental principles noted above. The settings proposed are to reflect a six-month period that will limit catch during this transitional period.
- 315. FNZ plans to assess information on the mussel beds that supply spat to Te Oneroa a Tōhe and the mussel aquaculture industry against guidelines for the identification of habitats of particular significance for fisheries management, once those guidelines are finalised (see section 6.4.3 below).

6.4.1 Associated or dependent species – section 9(a) of the Act

Protected species interactions

- 316. GLM 9 includes a large portion of the western coastline of the North Island, an area associated with the critically endangered Māui dolphin (FNZ, 2020a). The Hector's and Māui Dolphin Threat Management Plan guides management approaches for addressing both non-fishing and fishing-related impacts on Hector's and Māui dolphins (DOC, 2020).
- 317. Mussel spat collection occurs in the intertidal and shallow subtidal areas of Te Oneroa a Tōhe and does not involve using nets or structures that may entrap or entangle dolphins, other marine mammals, protected shark species, or seabirds.
- 318. There have been no marine mammal captures or interactions reported in relation to commercial harvesting of green-lipped mussels (specifically mussel spat) in GLM 9.
- 319. The most recent Spatially Explicit Fisheries Risk Assessment ranks the southern Buller's albatross as the most at-risk seabird, followed by the Salvin's albatross, New Zealand white-capped albatross, black petrel, and Westland petrel (Edwards et al., 2023).
- 320. The management of seabird interactions with New Zealand's commercial fisheries is guided by the National Plan of Action to Reduce the Incidental Captures of Seabirds in New Zealand Fisheries (**NPOA-Seabirds;** FNZ, 2020b).
- 321. There have been no seabird captures reported in relation to commercial harvesting of greenlipped mussels, (specifically mussel spat) in GLM 9. As such, FNZ expects that the proposed settings to the TAC, TACC and allowances for GLM 9 will have little, if any, effect on seabirds.

Tuatua and toheroa interactions

- 322. There have been concerns raised that the practices used for harvesting mussel spat (mechanical loaders) are having adverse effects on the tuatua and toheroa populations located on Te Oneroa a Tōhe. In 2019, an assessment of the impacts of the mechanical harvesting processes was conducted (Ross, 2020).
- 323. As part of this assessment, an experiment was conducted to emulate 'the worst-case scenario' in terms of the potential impacts of mechanical spat harvesting on the survival/health/ecology of

tuatua and toheroa. In this experiment, there was no detectable impact of the mechanical spat harvesting on tuatua or toheroa when they were standing upright either fully or partially buried in the sand. However, when the tuatua or toheroa were lying on their sides, on top of the beach surface, they were vulnerable to being crushed by loaders, or any other form of vehicle traffic. Toheroa or tuatua could end up in this vulnerable position, when excavated from the sand by wave action/turbulence and then deposited on the beach by the receding tide. Juvenile toheroa and tuatua were also observed to float to the beach surface (where they were vulnerable to crushing) once the surface sand was liquified by the vibration of multiple loaders passing.

- 324. Although some mortalities were observed, it was concluded that the normal spat harvesting operations would not significantly impact the ecology or viability of tuatua or toheroa populations in this area.
- 325. As a result of this assessment, it was recommended that the loader operators avoid areas where known tuatua and toheroa beds are located. This recommendation has been incorporated into a voluntary Code of Practice developed in 2019 to manage the impacts of spat harvesting practices (see paragraph 279 above).

6.4.2 Biological diversity of the aquatic environment – section 9(b) of the Act

- 326. The main interactions that harvesting practices have on the biological diversity of Te Oneroa a Tōhe are on the tuatua and toheroa beds, as mentioned in section 6.4.1 above.
- 327. A voluntary Code of Practice (see paragraph 279 above) was developed and introduced in 2019 which stipulates that vehicle operators (associated with spat harvesting operations) should actively avoid toheroa and tuatua beds, and other wildlife.
- 328. FNZ considers it unlikely that the catch setting options proposed here would impact overall biodiversity of the aquatic environment given that they would not provide for any increase to fishing effort in GLM 9.

6.4.3 Habitats of particular significance for fisheries management – section 9(c) of the Act

- 329. There are no specific habitats of particular significance identified for GLM 9 at this time in the draft guidelines.
- 330. Table 4 outlines what is currently known about important mussel habitat in Te Tai Tokerau. Irrespective of whether a habitat of particular significance for GLM 9 has yet been identified, FNZ considers that neither of the proposed interim catch limit options would increase adverse effects from fishing on any significant green-lipped mussel habitats in GLM 9.
- 331. While not currently identified as being habitats of particular significance for fisheries management, mussel beds, both intertidal and subtidal, on the west coast of Te Tai Tokerau (including those located at Tiriparepa/Scott Point, Ahipara, and Herekino) are presently considered to be the main contributors for the mussel spat that washes onto Te Oneroa a Tōhe (Chaput et al., 2023). It is unlikely that the proposed settings will affect these habitats as commercial harvesting occurs on Te Oneroa a Tōhe rather than at the adult mussel beds.
- 332. There is no commercial harvesting of adult mussels at Te Oneroa a Tōhe, and customary and recreational fishers have only limited access to intertidal or subtidal mussel beds. Consequently, it is unlikely that there are sustainability risks (other than localised depletion of easily accessed intertidal mussel reefs) to adult mussel habitat from any form of mussel harvesting or gathering.
- 333. Potential threats to important adult mussel beds and habitats include physical impacts of trawling/dredging, sedimentation, parasites and disease, invasive species, harmful algal blooms, pollution, and seabed mining. Climate change and warming have been identified as possibly the greatest future threat as mussels are unlikely to survive prolonged exposure to temperatures exceeding 24°C (Ericson et al., 2023). Whilst there is no evidence to indicate that climate change has so far affected mussel recruitment, spat production, mussel habitats, future monitoring should be considered.
- 334. There are no protections in place for these habitats other than the current settings within the TAC. The information on these areas will be assessed against the guidelines for identification of habitats of particular significance for fisheries management once the guidelines have been finalised. Risks to these areas will be assessed during development of the register of habitats of particular significance for fisheries management. Consideration of options for avoiding, remedying, and mitigating adverse effects will follow that assessment.

Table 4: Summary of information on potential habitats of particular significance for fisheries management for GLM 9.

Fish stock	Green-lipped mussels (GLM 9)			
Potential habitat of particular significance	Intertidal and subtidal mussel reef and macroalgal beds on the west coast of Te Tai Tokerau.			
Attributes of habitat	 Rocky intertidal reefs Subtidal mussel beds to a depth of 25 m Subtidal macroalgal beds, sponges, bryozoans and hydroids 			
Reasons for particular significance	 The reefs support the adult mussels which produce the mussel spat which ensures the sustainability of an important customary fishery The reefs may be important for supporting sustainability of mussel stocks in the wider area The reefs support the adult mussels which produce the mussel spat which are harvested from Te Oneroa a Tohe and are the basis for much of the New Zealand mussel aquaculture industry The reefs are identified as sites of importance for Customary Fisheries. Aupouri Māori Trust Board, Te Rūnanga o Te Aupouri and the Aupouri Negotiations Treaty Claims Company submitted proposal for a taiāpure on behalf of Te Aupouri. 			
Risks/threats	 Resuspension of sediment from bottom contact fishing Physical impact from trawling/dredging Land-based sources of sedimentation Parasites and disease Invasive species Algal blooms Chemical pollution from land or marine discharges Sand extraction Climate related environmental changes 			
Evidence	 Alfaro, 2006 Alfaro, et al., 2001, 2010 Castinel, et al., 2019 Chaput et al., 2023 Ericson et al., 2023 The Moana Project, unpublished research McLeod et al., 2012 Jeffs et al., 2018 Andrew Jeffs, in review Webb et al., 2019 			



Figure 3: Ocean modelling and genetic studies by the Moana Project indicate that the spat that washes up on Te Oneroa a Tōhe is from nearby mussel reefs – particularly those off Ahipara, Tiriparepa/Scott Point, and Hokianga (approximate locations)(Chaput et al., 2023).

6.5 Considerations for setting sustainability measures under section 11 of the Act

- 335. Section 11 of the Act sets out various matters that you must take into account or have regard to when setting or varying sustainability measures (such as the TAC and TACC settings proposed as part of this chapter). These include:
 - a) any effects of fishing on any stock and the aquatic environment; and
 - b) any existing controls under the Act that apply to the stock or area concerned; and
 - c) the natural variability of the stock concerned; and
 - d) any relevant planning instruments, strategies, or services.84

6.5.1 Effects of fishing on any stock and the aquatic environment – section 11(1)(a)

- 336. You must take into account any effects of fishing on any stock and the aquatic environment when making your decision about the GLM 9 TAC settings.
- 337. Impacts of spat harvesting on the tuatua and toheroa beds on the beach area of Te Oneroa a Tōhe have been considered and discussed in section 6.4.2 of this chapter.
- 338. There is no information to suggest that there are sustainability concerns with the current full year settings. The proposed six-month settings are expected to provide for expected catch in line with the harvest practices of the full year settings. It is unlikely that any new effects of fishing on the aquatic environment will arise through this transitional period or through the return to full year catch settings at the start of the new April fishing year.

⁸⁴ Sections 11 (2) and (2A).

6.5.2 Existing controls that apply to the stock or area – section 11(1)(b)

- 339. You must take into account any existing controls under the Act including rules and regulations made under the Act (section 2(1A)) that apply to the stock when setting or varying the TAC.
- 340. The current recreational daily limit for green-lipped mussels across most of GLM 9 is 50 per person per day, with no minimum legal size. The exception to the 50-mussel daily limit is the west coast of Auckland where the daily limit is 25 mussels per person per day (Figure 4).



Figure 4: A bag limit of 25 mussels per person per day has been set for the Auckland/Coromandel area, which includes Auckland's west coast (from the Okiritoto River to the sand spit at Port Waikato) which is within the GLM 9 QMA.

6.5.3 The natural variability of the stock – section 11(1)(c)

- 341. You must take into account the natural variability of the stock when setting or varying its TAC.
- 342. The availability of mussel spat at Te Oneroa a Tōhe varies seasonally and from year to year. Primarily, it is the availability of the seaweed settlement substrate and its delivery to the shore that determines the amount and timing of harvest. However, it is also likely that oceanography and weather patterns also contribute to the timing and availability of mussel spat availability.
- 343. No attempts have been made to assess the biomass of adult green shell mussels within GLM 9, as a consequence there are no data with which to assess natural variability in the abundance in wild mussel populations (see section 3 of this chapter).
- 344. It is not expected that natural variability will impact on suitable management settings for the transitional period, given the short timeframe for which it will apply.
- 345. FNZ will continue to monitor the catches in GLM 9 to gain a greater understanding of natural variability in this stock.

6.5.4 Relevant statements, plans, strategies, provisions, and documents - section 11(2)

346. In setting or varying the TAC of this stock, you must have regard to the following statements, plans, strategies, provisions, and planning documents under section 11(2) of the Act, that apply to the coastal marine area and that you consider to be relevant.

347. The following plans and strategies are relevant for GLM 9.

Regional Plans – section 11(2)(a)

- 348. Three Regional Councils have Coastlines within the boundaries of the GLM 9 area: Northland, Auckland, and Waikato (NRC, 2016; AC, 2016; WRC, 2005). Each of these regions have policy statements and plans to manage the coastal and freshwater environments, including terrestrial and coastal linkages, ecosystems, and habitats.
- 349. While the provisions in these various documents are, for the most part, of a general nature and focus mostly on land-based stressors on the marine environment, Regional Councils are increasingly playing a role in the protection and management of marine biodiversity and biogenic habitats (Urlich et al., 2022).
- 350. FNZ has reviewed these documents and the provisions that might be considered relevant can be found in Table A1 of Addendum 1. FNZ considers that the proposed options in this chapter are consistent with the objectives of these relevant regional plans.
- 351. The FNZ Coastal Planning Team engages with the Resource Management Act 1991 coastal planning processes (including regional authorities) to support marine management decisions to manage not only the fishing effects on the coastal environment but also land-based impacts on fisheries.

Te Rautaki o Te Oneroa a Tōhe – Te Oneroa a Tōhe/Ninety Mile Beach Management Plan

- 352. As a result of Treaty of Waitangi settlement legislation in 2012, an eight-member board was established, consisting of iwi and local government members. This board developed Te Rautaki o Te Oneroa a Tōhe (Beach Management Plan; NRC, 2021). Public input on the Beach Management Plan was provided through public consultation. This Beach Management Plan acknowledges that iwi will have the responsibility and management of Te Oneroa a Tōhe, for the many uses and betterment for all people.
- 353. The Beach Management Plan incorporates the Māori history and cultural significance of Te Oneroa a Tōhe. It also gives a background on settlement legislation, statutory requirements in the form of public consultation and how this plan came together in partnership with councils and iwi.
- 354. The objectives and desired outcomes of the Beach Management Plan are broken into seven topics: spiritual value, leadership, ecology and biodiversity economic wellbeing recreation, collaboration, and educations.
- 355. The desired ecology and biodiversity outcomes include making sure that the biodiversity and ecology is protected and restored for future generations, that information and research is gathered to help better understand the health of Te Oneroa a Tōhe and that it is managed holistically, that mahinga kai are healthy and abundant, and that a healthy beach will lead to healthy people.

6.5.5 Relevant services or fisheries plans – section 11(2A)

- 356. Under section 11(2A), before setting or varying any sustainability measure or making any decision or recommendation under the Act to regulate or control fishing, you must take into account:
 - a) any conservation services or fisheries services; and
 - b) any relevant fisheries plan approved under this Part; and
 - c) any decisions not to require conservation services or fisheries services.
- 357. Fisheries services of relevance to the options in this chapter include the research used to monitor the fisheries, such as electronic reporting of landings, and the tools used to enforce compliance of management controls in the fishery. These are discussed under '*Management background*', '*Catch information and current settings within the TAC*', and above under '*Existing controls that apply to the stock or area section 11(1)(b)*.'
- 358. FNZ notes that there is no observer or onboard camera coverage for GLM 9, but Fisheries Compliance monitor the area to ensure that management controls are being adhered to.
- 359. There are no approved or current fisheries plans that are relevant to this stock. There are also no applicable conservation services that specifically relate to GLM 9, or any decisions not to require conservation services or fisheries services.

6.5.6 Other plans and strategies

360. The following plans and strategies are not mandatory considerations under section 11 of the Act, but they may be considered relevant to this review.

Te Mana o te Taiao – the Aotearoa New Zealand Biodiversity Strategy

- 361. FNZ considers that the sustainability measures proposed for GLM 9 are generally consistent with relevant objectives of the Te Mana o te Taiao the Aotearoa New Zealand Biodiversity Strategy including Objective 10, which is to ensure that ecosystems are protected, restored, resilient and connected form mountain tops to ocean depths, and Objective 12, which is to manage natural resources sustainability.
- 362. For more information on Te Mana o te Taiao see section 3.3 of the '*Introduction and Legal Overview*' chapter.

The New Zealand Government's Aquaculture Strategy

- 363. The Government's Aquaculture Strategy sets out a sustainable growth pathway toward a more sustainable, innovative aquaculture industry that forms a bigger part of the primary sector. The Strategy's goal is to reach \$3 billion in annual sales by 2035.
- 364. The Aquaculture Strategy has four principal outcomes that the New Zealand Government led by FNZ is working towards.

Outcome 1: <u>Sustainable</u> – A primary industry leading in environmentally sustainable practises across the value chain. Objectives in this outcome includes;

- Partnering with industry on a transition plan to reduce emissions and waste along the value change and;
- To promote and assist implementation of strategic integrated coastal and catchment planning to ensure a healthy aquatic environment.
- **Outcome 2:** <u>Productive</u> Aquaculture growth supports regional prosperity. Objectives in this outcome includes;
 - Maximise the value of all farmed space through a strong research, innovation and commercialisation system.
 - Develop world-leading frameworks for open ocean and land-based farming growth.
 - Support infrastructure needs to enable growth
- **Outcome 3:** <u>Resilient</u> Aquaculture is protected from biological harm and supported in adapting to climate change. Objectives in this outcome includes;
 - Strengthen biosecurity management
 - Support industry to adapt to climate change

Outcome 4: <u>Inclusive</u> – Partnering with Māori and communities on opportunities to realise meaningful jobs, wellbeing, and prosperity. Objectives in this outcome includes;

- Build Māori and community knowledge about aquaculture and their input into growth opportunities.
- Deliver the Crown's aquaculture settlement obligations in a manner that facilitates early investment in new opportunities
- 365. Under the Aquaculture Strategy, FNZ published a *Report on a method and approach for measuring the environmental effects of aquaculture* (FNZ, 2021). Maintaining environmental sustainability is at the heart of the Government's aspiration for aquaculture growth and this report is intended to establish a baseline of environmental effects and reporting mechanisms to measure improvement over time.
- 366. FNZ recognises that wild harvested mussel spat is a valuable resource that should be used as efficiently as possible. It is also recognised that the alternative to wild spat harvest (hatchery based spat production) comes with environmental costs. FNZ encourages further optimisation

of mussel spat husbandry to maximise survival⁸⁵ and ensure the efficient use of resources, whether associated with wild harvested or hatchery production of mussel spat (Skelton et al., 2022).

367. An overall objective within the Aquaculture Strategy is to ensure efficient and sustainable use of resources including spat and ensuring appropriate settings for the management of the GLM 9 fishery align with this objective.

6.6 Alternative total allowable catch for stock specified in Schedule 3 - section 14 of the Act

- 368. The GLM 9 mussel spat fishery is an unusual fishery for three main reasons. First, it is not possible to estimate MSY (which is usually based on the adult population of a target species). Second, because the spat harvested from beach-cast seaweed on Te Oneroa a Tōhe has a reduced likelihood of ever settling into its adult habitat, surviving, and therefore contributing back to the stock. Third, because the GLM 9 fishery only targets juveniles that have not recruited onto adult habitat, commercial fishing will most likely have nil or only negligible impact on the abundance of adult mussels present with the QMA. These characteristics of the GLM 9 mussel spat fishery makes its management very different to the management of most other fisheries.
- 369. To reflect unusual nature of this fishery, GLM 9 has been included on Schedule 3 of 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**). The original TAC for GLM 9 was set to reflect the likely demand for the spat fishery while also providing for recreational and customary harvest of adult mussels. There is no information to suggest that the current or proposed catch settings are not consistent with enabling utilisation while ensuring sustainability.

6.6.1 Harvest Strategy Standard

- 370. 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.
- 371. The HSS outlines the Ministry's approach to relevant sections of the Act and forms a core input to the Ministry's advice to the Minister on the management of fisheries.
- 372. Management of GLM 9 is not guided by the default of the Harvest Strategy Standard (using a target of 40% B_0^{86}) and there is no alternative target. GLM 9 was added to Schedule 3 of the Act and the TAC, TACC, and allowances were set under section 14 of the Act. Schedule 3 lists species that have reason for an alternative TAC to be set under section 14 (rather than under the provisions of section 13).
- 373. Reasons for listing a species under Schedule 3 include if *'it is not possible, because of the biological characteristics of the species, to estimate maximum sustainable yield.'* In the case of green-lipped mussels in GLM 9, there are no established reference points or available estimates of B_{MSY} (the biomass that enables a fish stock to deliver *MSY*), and as such there is uncertainty as to where the current biomass sits in relation to the default targets (including the soft or hard limit) set out by the HSS. Reported commercial monthly harvest returns⁸⁷ are the main data source that can be used to assess the state of the GLM 9 fishery.

⁸⁵ From 2015 to 2020 on average, 344 billion spat were harvested from the wild each year, yet <1% of these were retained on mussel farms from seeding out through to final harvest (Skelton et al., 2022).

⁸⁶ A useful indicator of stock status is the spawning stock biomass (total mass of breeding-age fish) compared to the initial biomass (B_0), as a percentage. The initial biomass (B_0) is an estimate of the biomass a fish population would eventually return to if fishing was halted. 40% B_0 indicates a spawning stock biomass that is at 40% of the initial biomass.

⁸⁷ A return required to be submitted to FishServe by all fishing permit holders and other persons. A return is to be completed for each calendar month for all fish taken during that month, there are some exceptions to this rule. The rules are defined in the Fisheries (Reporting) Regulations 2001.

6.7 Information principles: Uncertainties and unknowns - section 10 of Act

- 374. Under section 10 of the Act, decision-makers are required to take into account four information principles:
 - a) decisions should be based on the best available information.88
 - b) decision makers should consider any uncertainty in the information available in any case;
 - c) decision makers should be cautious when information is uncertain, unreliable, or inadequate;
 - 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 this Act.
- 375. FNZ considers that the information presented in this chapter represents the best available information.
- 376. In various sections of this chapter, FNZ has pointed out where information is uncertain and warrants caution for your decision making, in line with the principles above. In particular, uncertainty around the status of the wild mussel populations within GLM 9, uncertainty around the contribution that harvested spat would make to wild populations if not harvested, and uncertainty in FNZ's estimates of recreational and customary catch.
- 377. You should therefore be cautious in light of this uncertainty.
- 378. However, it is important to note that (as emphasised by section 10(d)) uncertainty should not be used as a reason for postponing or failing to take any measure to achieve the purpose of the Act.
- 379. A precautionary approach to ensure sustainability of both the stock and the aquatic environment would be consistent with both the purpose of the Act and New Zealand's international obligations.

7 Submissions

- 380. Eight submissions were received for GLM 9. Table 5 summarises the submissions received and shows submitters' support for each option.
- 381. Four submitters supported Option 1.
- 382. Three submitters expressed support for neither option. Instead, they highlighted the vulnerability of GLM 9 to climate change, while advocating for the implementation of ecosystem-based management, for the precautionary principle to be applied, for the commissioning of further research into recruitment process and the role of spat settlement substrate, while also calling for protection and monitoring of adult mussel beds.

Table 5: Written	submissions	and resp	onses receive	ed for GLM 9.
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Submitter	Option supported				
Submitter	1	2	Other	Notes	
Aquaculture New Zealand	~			Supports Option 1 as this maximises the quantity of spat able to be harvested to support mussel aquaculture sector. There is also concern that spatfall may occur later this year making this six-month period particularly important for spat collecting.	
Coromandel Marine Farmers Association (CMFA)	~			Supports Option 1 as this maximises the quantity of spat able to be harvested to support mussel aquaculture sector. There is also concern that spatfall may occur later this year making this six-month period particularly important for spat collecting. The CMFA states that Option 2 is inconsistent with QMS property rights and would unfairly reduce ACE within that period of the fishing year.	

⁸⁸ Section 2(1) of the Act defines "best available information" to mean "the best information that, in the particular circumstances, is available without unreasonable costs, effort, or time."

^{61 •} Review of sustainability measures for the 2023 October round: GLM 9

Submitter	Option supported					
Submitter	1 2 Other			Notes		
Te Ohu Kaimoana	~			Supports Option 1 as this provides the greatest flexibility to spread fishing effort as spat becomes available. Support for this option is dependent on commercial spat harvesters complying with the conditions of the Beach Collecting and Loader Driving Code of Practice for mussel spat harvesters.		
lwi Collective Partnership (ICP)	~			Supports Option 1 as this provides flexibility for the harvesters during this transitional period. The ICP approves of the proposed allowances for customary and recreational take, which are proposed to be set at 44 tonnes and 29 tonnes, respectively.		
The Moana Project			~	Does not indicate support for either option but identifies key research findings that are not included in the review and are of significance in assessing the sustainability of the GLM 9 stock. Dr Chaput advocates for GLM 9 to be managed cautiously, urges the commissioning of further research into recruitment process, and encourages monitoring of adult beds that supply spat to Te Oneroa a Tōhe.		
The Mussel Reef Restoration Trust			V	Recommends that FNZ promptly invest in further monitoring and research, in collaboration with mana whenua, to continue building knowledge on the status and health of the GLM 9 population. Encourages implementation of ecosystem-based management approach. Recommends FNZ continue to work in partnership with mana whenua to urgently ensure culturally appropriate protection of the mussel beds at Ahipara and Tiriparepa/Scott Point. The trust urges FNZ to adopt a precautionary approach that prioritises the long-term well-being of the GLM 9 population		
Professor Andrew Jeffs (University of Auckland)			V	Does not indicate support for a specific option. However, he does note the sustainability review incorrectly cites his research. He requests the review is amended to correct the misinterpretation of his work. Prof. Jeffs also explains how his research indicates issues with mussel recruitment that are not currently understood, and suggests greater effort is needed to understand role of spat material in contributing to recruitment of wild populations.		
Ben			\checkmark	Generally opposed proposed changes to catch limits.		

8 Options and analysis

- 383. As discussed in section 6.6 of this chapter, the TAC settings for GLM 9 are made under section 14 of the Act. Section 14 provides an alternative approach to setting a TAC, TACC and allowances that does not involve MSY.
- 384. FNZ considers there are no sustainability concerns for wild green-lipped mussel populations or the GLM 9 fishery associated with either of the proposed catch setting options. The primary sustainability concerns for this fishery relate to the impact of spat harvesting practices on Te Oneroa a Tōhe and the effects that these may have on the local community, iwi, and the surrounding environment (Ross, 2020). Following the introduction of voluntary management and a Code of Practice FNZ is confident that these concerns are being addressed.
- 385. Parliament's decision in 2022 to change the fishing year from an October fishing year to an April fishing year was in direct support of the Te Oneroa a Tōhe Mussel Spat Management Board. This acted on their concerns regarding intensified harvesting caused by a race to catch ACE before the October fishing year finished, as the timing of this sometimes coincides with the peak availability of the mussel spat.
- 386. To implement the change in fishing year, a transitional period of six months from 1 October 2023 to 31 March 2024 was introduced, and FNZ is now advising on appropriate TAC, TACC, and allowances to be set for that period.

- 387. In accordance with Parliament's decision for the implementation process, following this sixmonth transitional period, the TAC, TACC, and allowances are proposed to be returned to the previous annual settings (see *Current settings* below).
- 388. Under both options, a 44-tonne customary Māori allowance is proposed for the transitional sixmonth period from 1 October 2023 to 31 March 2024, which is 75% of the current annual allowance. This allowance represents the likely level of customary harvest that may occur during the transitional period.
- 389. Under both options, a 29-tonne recreational allowance is proposed for the transitional sixmonth period from 1 October 2023 to 31 March 2024, which is 75% of the current annual allowance. Although there is no information available on the seasonality of recreational harvest of green-lipped mussels, it is well known that there is more public harvesting activity along the coast during the summer months. This suggests that most of the recreational take occurs during this period.
- 390. The allowance for other mortality caused by fishing is proposed to remain set at zero tonnes, until any future review of GLM 9.
- 391. The two options presented below vary only in the TAC and TACC proposed for transitional sixmonth period from 1 October 2023 to 31 March 2024.

8.1 Current settings (full year)

Current settings	for 12-month fishing years			
TAC : 233 t	TACC : 135 t	Customary: 59 t	Recreational: 39 t	Other mortality: 0 t

- 392. The *status quo* for the TAC, TACC, and allowances is not proposed as an option as the catch settings that are being established are for a six-month transitional period to facilitate a change in the fishing year.
- 393. FNZ proposes under both options, that following the transitional six-month period, the current full-year settings will be applied to subsequent 12-month fishing years, with the first of these commencing on 1 April 2024.
- 394. The following two options are proposed for consideration.

8.2 Option 1

Transitional six-month period from 1 October 2023 to 31 March 2024						
TAC: 140.5 t	TACC: 67.5 t	Customary: 44 t	Recreational: 29 t	Other mortality: 0 t		
Twelve-month fishing years commencing from 1 April 2024						
TAC : 233 t	TACC : 135 t	Customary: 59 t	Recreational: 39 t	Other mortality: 0 t		

- 395. Option 1 includes proposed catch settings for (a) the transitional six-month period from 1 October 2023 to 31 March 2024, and (b) 12-month fishing years commencing from 1 April 2024.
- 396. Under Option 1, the TAC would be set at 140.5 tonnes for the six-month transitional period. The TACC would be set at 67.5 tonnes (50% of the current annual TACC), the customary and recreational allowances would be set at 44 tonnes and 29 tonnes, respectively. The allowance for other sources of mortality would remain at 0 tonnes.
- 397. Option 1 sets allowances that FNZ considers to reasonably reflect expected levels of take during the transitional period. This period includes the summer months when a greater proportion of the customary and recreational harvest occurs. The customary allowance represents the likely level of customary harvest that may occur during the transitional period. The recreational harvest is likely to be below the proposed 29-tonne allowance.
- 398. The TACC would be halved, allowing commercial harvest up to half of the current full year setting.
- 399. This approach does not consider the seasonality of commercial harvest across the fishing year, and potentially provides for a small amount of additional catch above what would typically be

harvested during the months of the transitional period. This would provide greater flexibility to harvesters if there is unexpected variability in the availability of spat.

- 400. Following this six-month transitional period, FNZ proposes that the GLM 9 TAC and settings would revert to the current full year settings from the 1 April 2024 fishing year. The current settings consist of a TAC of 233 tonnes, a TACC of 135 tonnes, and customary and recreational allowances of 59 tonnes and 39 tonnes respectively. The allowance for other sources of mortality would remain at 0 tonnes.
- 401. Submissions in support of Option 1 were received from the Coromandel Marine Farmers Association (CMFA), Aquaculture New Zealand, the Iwi Collective Partnership (ICP), and Te Ohu Kaimoana. The CMFA and Aquaculture New Zealand expressed support for this option as it maximises the quantity of spat able to be harvested to support mussel aquaculture sector. Both of these submitters were concerned that spatfall may occur later than usual in 2023 making this six-month transitional period particularly important for spat collecting.
- 402. Both the ICP and Te Ohu Kaimoana support Option 1 as it provides the greatest flexibility to spread fishing effort as spat becomes available during the six-month transitional period. Te Ohu Kaimoana qualified their support as being dependent on commercial spat harvesters complying with the conditions of the Code of Practice. The ICP also expressed their support for the proposed allowances for customary and recreational take.
- 403. The Te Hiku o Te Ika Iwi Fisheries Forum indicated their support for Option 1 (the 50% TACC option). No specific feedback relating to this GLM 9 sustainability review was received from the Mid-North or Ngā Hāpū o Te Uru o Tainui Iwi Fisheries Forums.

8.3 Option 2

Transitional six-month period from 1 October 2023 to 31 March 2024						
TAC: 122 t	TACC: 49 t	Customary: 44 t	Recreational: 29 t	Other mortality: 0 t		
Twelve-month fishing years commencing from 1 April 2024						
TAC : 233 t	TACC : 135 t	Customary: 59 t	Recreational: 39 t	Other mortality: 0 t		

- 404. Option 2 includes proposed catch settings for (a) the transitional six-month period from
 1 October 2023 to 31 March 2024, and (b) full 12-month fishing years commencing from 1 April 2024.
- 405. Under Option 2, the TAC would be set at 122 tonnes for the six-month transitional period. The TACC would be set at 49 tonnes, the customary and recreational allowances would be set at 44 tonnes and 29 tonnes, respectively. The allowance for other sources of mortality would remain at 0 tonnes.
- 406. The proposed TACC setting for Option 2 (a reduction from 135 tonnes to 49 tonnes, 36% of the current annual TACC) more closely reflects the actual historical harvest of mussel during these months (calculated from tonnage landed since 2004 over the six months from October to March). Note that during this six-month period, the voluntary closure to mechanical loader harvesting is in place from 15 December to 31 March at Te Oneroa a Tōhe.
- 407. The customary allowance of 44 tonnes represents the likely level of customary harvest that may occur during the transitional period. The recreational harvest is likely be below the proposed 29-tonne allowance.
- 408. Following this six-month transitional period, FNZ proposes that the GLM 9 TAC and settings would revert to the current full year settings from the 1 April 2024 fishing year. The current settings consist of a TAC of 233 tonnes, a TACC of 135 tonnes, and customary and recreational allowances of 59 tonnes and 39 tonnes respectively. The allowance for other sources of mortality would remain at 0 tonnes.
- 409. There were no submissions in support of Option 2. The CMFA were opposed to Option 2 as they viewed it as being inconsistent with QMS property rights and they noted that this option would unfairly reduce ACE within the six-month transitional period.

8.4 Other matters raised

410. Three submissions (from the Moana Project, The Mussel Reef Restoration Trust, and Professor Andrew Jeffs) did not support either of the proposed options, but advocated for (a) cautious or ecosystem-based approaches to managing and maintaining the long-term health and productivity of GLM 9, and (b) the commissioning of research to be conducted in support of the management of this fishery. Specifically, these submitters identified a need for research into recruitment processes and the role of seaweed in contributing to recruitment of wild populations.

- 411. In their submission, The Moana Project identified key research findings that were not included in the review that they saw as significant in assessing the sustainability of the GLM 9 stock. In response, FNZ talked with researchers on the project to gain a better understanding of the research referred to, some of which is yet to be finalised or published. This research has now been incorporated into this review (including in paragraphs 269, Figure 3, and Table 4 of this chapter).
- 412. The Mussel Reef Restoration Trust advocated for monitoring and research to be conducted in collaboration with mana whenua to build knowledge on the status and health of GLM 9. They recommended FNZ continue working in partnership with mana whenua to ensure culturally appropriate protection of the mussel beds at Ahipara and Tiriparepa/Scott Point.
- 413. Professor Andrew Jeffs, a researcher at the University of Auckland, noted in his submission that the sustainability review incorrectly cited his research (Alfaro and Jeffs, 2002). Following discussion with Prof. Jeffs and further review of the literature, the paragraphs he refers to have been corrected. Prof. Jeffs also notes the importance of subtidal mussel beds, given the vulnerability of intertidal beds to intensive recreational and customary fishing.
- 414. FNZ acknowledges that there are many gaps in our understanding of the ecology and life history of green-lipped mussels and we will continue to support and advocate for research to fill these knowledge gaps. We recognize that there are current and potential future threats to both wild mussel populations and the mussel aquaculture industry. FNZ also has confidence that the GLM 9 fishery and its practices do not represent a threat to the sustainability of wild mussel populations or the continued viability of the mussel spat fishery. Based on the available information, FNZ considers that the TAC/TACC catch settings proposed in this review are sustainable.
- 415. FNZ notes that green-lipped mussel research is relatively well funded at present. The Moana Project, which has a focus on mussel recruitment and mussel aquaculture, recently received \$11 million from MBIE, and mussel restoration research in the Hauraki Gulf receives funding from Fisheries New Zealand, the Department of Conservation, and The Nature Conservancy.
- 416. At Te Hiku o Te Ika Iwi Fisheries Forum it was expressed that any concerns about the sustainability of the GLM 9 fishery were not about the number of spat harvested, but were about the method used to harvest spat (i.e. mechanical harvesting). The Forum noted that permits are for beach cast mussel spat, but that mechanical harvesters operate in the water, loading seaweed out of the surf zone.

9 Economic context

- 417. The GLM 9 fishery supports many people, including quota holders, commercial fishers, licensed fish receivers, the mussel aquaculture industry and employees related to the fishery. To give a sense of scale and distribution, based on the 2021/22 fishing year, 57% of GLM 9 quota was owned by four entities, and the remaining 43% of quota was owned by 28 entities. At the end of the 2021/22 fishing year, there were 11 commercial entities holding ACE: 94% held by four entities, and the remaining 6% held by seven entities.
- 418. It is noted that the GLM 9 mussel spat harvest contributes upwards of 65% of the spat required for mussel aquaculture in New Zealand. Mussel aquaculture in New Zealand from April 2022 to March 2023 had an export value of approximately \$320 million.
- 419. With the growth of mussel aquaculture in New Zealand, new areas are being explored for marine farming of mussels. These new areas, such as Opotiki, create new jobs and economic possibilities to support and grow small coastal communities. With this increasing interest and uptake in mussel farming, ensuring the availability of mussel spat through existing and new channels is a top priority.
- 420. It should be noted that the proposed six-month settings for the TAC and TACC are proportional to the full-year settings, and therefore unlikely to create any change in annual revenue from GLM 9.
- 421. The 2023/24 port price for GLM 9 sits at \$5.23 per kg, which has been stable for 10 years. The port price information is an index value representing what commercial fishers receive at port,

not what the fish is worth at market. Nor does it reflect the income for Licensed Fish Receivers (including, wholesalers and/or processors) and retailers.

- 422. Option 1 with a TACC of 67.5 tonnes, would allow for an approximate revenue of \$353,000, based on the current port price, to be generated for the six-month transitional period.
- 423. Option 2 with a TACC of 49 tonnes would allow for an approximate revenue of \$256,000, based on the current port price, to be generated for the six-month transitional period.
- 424. It is unlikely that these settings will generate any lasting economic, cultural, or social issues, due to the proposed settings being temporary.

10 Deemed values

425. FNZ is satisfied that the current deemed value rates for GLM 9 are consistent with section 75(2)(a) of the Act in that they provide sufficient incentive for fishers to balance their catch with ACE. FNZ therefore did not propose any deemed value rate changes as part of this review. None of the submissions received commented on the GLM 9 deemed value rates.

11 Conclusions and recommendations

- 426. GLM 9 is a highly unusual fishery. There is no commercial targeting of adult mussels, with all harvest focused on post-settlement juveniles (mussel spat). Despite the limited information available regarding the distribution and abundance of adult mussel beds in the region, or quantification of potential spat supply to either wild populations or the aquaculture industry, FNZ is confident in the sustainability of both current full-year catch settings and those proposed for the transitional six-month period.
- 427. FNZ is satisfied that potential sustainability issues associated with impacts of spat harvesting methods (mechanical loaders) on intertidal shellfish populations have been mitigated by the recent introduction of voluntary management and a Code of Practice for Beach Collecting and Loader Driving that is reviewed regularly.
- 428. A *status quo* option was not proposed as the catch settings that are being established are temporary, and for a six-month transitional period to facilitate a change in the fishing year.
- 429. Of the two options proposed, FNZ prefers Option 1 for the six-month transitional period. This includes setting the TAC at 140.5 tonnes, the TACC at 67.5 tonnes, and customary and recreational allowances set at 44 tonnes and 29 tonnes, respectively.
- 430. FNZ believes there are no sustainability issues associated with either of the proposed options but consider that Option 1 will allow for greater utilisation of this resource by the mussel aquaculture sector. This option will also provide greater flexibility for spat harvesters to adjust their fishing effort to accommodate the natural variability in spat availability.

12 Decision for GLM 9

Option 1 (Fisheries New Zealand preferred option)

Agree to the following settings for the six-month transitional period (1 October 2023 to 31 March 2024)

- i. Set the GLM 9 TAC at 140.5 tonnes and, within the TAC, to:
- ii. Set the allowance for Māori customary non-commercial fishing interests at 44 tonnes;
- iii. Set the allowance for recreational fishing interests at 29 tonnes;
- iv. Retain the allowance for all other sources of mortality to the stock caused by fishing at 0 tonnes;
- v. Set the GLM 9 TACC from at 67.5 tonnes.

<u>AND</u>

Agree to revert to the current full-year settings from 1 April 2024

- i. Set the GLM 9 TAC at 233 tonnes and, within the TAC, to:
- ii. Set the allowance for Māori customary non-commercial fishing interests at 59 tonnes;
- iii. Set the allowance for recreational fishing interests at 39 tonnes;
- iv. Retain the allowance for all other sources of mortality to the stock caused by fishing at 0 tonnes;

Agreed /

v. Set the GLM 9 TACC 135 tonnes.

Option 2

Agree to the following settings for the six-month transitional period (1 October 2023 to 31 March 2024)

- i. Set the GLM 9 TAC at 122 tonnes and, within the TAC, to:
- ii. Set the allowance for Māori customary non-commercial fishing interests at 44 tonnes;
- iii. Set the allowance for recreational fishing interests at 29 tonnes;
- iv. Retain the allowance for all other sources of mortality to the stock caused by fishing at 0 tonnes;
- v. Set the GLM 9 TACC at 49 tonnes.

AND

Agree to revert to the current full-year settings from 1 April 2024

- i. Set the GLM 9 TAC at 233 tonnes and, within the TAC, to:
- ii. Set the allowance for Maori customary non-commercial fishing interests at 59 tonnes;
- iii. Set the allowance for recreational fishing interests at 39 tonnes;
- Retain the allowance for all other sources of mortality to the stock caused by fishing at 0 tonnes;
- v. Set the GLM 9 TACC 135 tonnes.

Agreed / Agreed as Amended / Not Agreed

Agreed as Amended / Not Agreed

Hon Rachel Brooking Minister for Oceans and Fisheries

79 IX / 2023



Kina (SUR 1A and SUR 1B) - East Northland & Hauraki Gulf and Bay of Plenty

Figure 1: Quota Management Areas (QMAs) for kina, with SUR 1A and SUR 1B highlighted.

1 Why are we proposing a review?

- 431. The management of the New Zealand sea urchin (*Evechinus chloroticus*), known as kina, has become an important topic in recent times. Interest in this topic has come about for a number of reasons, including (a) recognition of the important ecological role that kina plays in coastal ecosystems, (b) the movement of FNZ towards a more ecosystems-based approach to fisheries management, and (c) commercial kina fishers identifying an opportunity for increased utilisation.
- 432. The management of kina fisheries is complex because they are multi-use fisheries. Kina are important for customary, commercial and recreational fishers and there is a need for Fisheries New Zealand (**FNZ**) to consider the potential for competition or spatial conflict between these different user groups. Consequently, FNZ has always taken a cautious approach to the setting of TACs, TACCs and other allowances.
- 433. Since the 2019 sustainability review of the SUR 1A (East Northland) and SUR 1B (Hauraki Gulf/Bay of Plenty) fisheries, FNZ has gained a much greater understanding of the behaviours and needs of these different user groups, as well as developing a greater understanding of the ecological role that kina play within the SUR 1A and SUR 1B quota management areas (QMAs). It is now known that the abundance of kina in SUR 1A and SUR 1B has increased significantly since the mid-1900s, and as such there is a need for FNZ to review the current catch settings and determine their sustainability and whether there is an opportunity for increased utilisation.
- 434. From an ecosystem perspective, the best available evidence indicates that in some locations, kina are present at high abundances and are having significant ecological impacts on other species and ecosystems (for example, through creating *'urchin* or *kina barrens'*).⁸⁹

⁸⁹ Kina barrens refer to areas in marine ecosystems where sea urchin populations have dramatically increased. In these areas, kina graze on kelp and other macroalgae, preventing their growth and causing a shift to barren rocky or sandy habitats. Barrens are characterized by the absence or depletion of kelp forests and the proliferation of kina, resulting in reduced biodiversity and ecological imbalance.
Consequently, FNZ has begun a process, that is separate to this sustainability review, to address the ecosystem effects of fishing, including the development of a kina barrens management plan. Future sustainability reviews of the SUR1A and 1B fisheries will be conducted as part of this future management plan approach.

- 435. The SUR 1A and SUR 1B fisheries do not have formal assessments of kina stock status and no measures of overall biomass. However, FNZ has been able to gather valuable information on the commercial fishery from a number of sources. These include reported commercial landings, and more recently via electronic reporting (ER) and Geospatial Position Reporting (GPR) systems. This fine-scale ER and GPR data indirectly provides an indication of locations where kina abundance and condition make harvesting commercially viable.
- 436. Commercial catch has been consistently maintained at or above the TACC which suggests that the overall biomass of both kina stocks is high relative to the current catch setting. This belief is supported by estimates of kina density reported in the ecological literature (Shears and Babcock, 2002; Shears et al., 2008). FNZ consider that kina biomass is stable, if not increasing, at current management settings and therefore think there is an opportunity for greater utilisation.
- 437. FNZ recently consulted on two options to increase the Total Allowable Catch (**TAC**) of each kina stock. While the size and overall status of the SUR 1A and SUR 1B stocks are unknown, FNZ considers that both proposed options carry a low sustainability risk.
- 438. FNZ is advising you on options to either retain the *status quo* or to increase the TAC of SUR 1A and SUR 1B under section 13(2A) of the Fisheries Act 1996 (**the Act**). Within these options, you are also being advised on retaining the *status quo* or increasing the allowances for customary Māori harvest and Total Allowable Commercial Catch (**TACC**) to allow for greater utilisation of the stocks.

1.1 Summary of proposed options

					Allowances				
Stock	Option	TAC	TACC	Customary Māori	Recreational	All other mortality caused by fishing			
SUR 1A	Option 1 (Status quo)	172	40	65	65	2			
	Option 2	247 (↑ 75 t)	80 (1 40 t)	100 (↑ 35 t)	65	2			
	Option 3	267 (个 95 t)	100 (个 60 t)	100 (↑ 35 t)	65	2			
	Option 1 (Status quo)	324	140	90	90	4			
SUR 1B	Option 2	439 (↑ 115 t)	210 (个 70 t)	135 (个 45 t)	90	4			
	Option 3	509 (↑ 185 t)	280 (140 t)	135 (个 45 t)	90	4			
In total, 21 submissions were received on the proposed options for SUR 1A, and 21 submissions for SUR 1B.									

 Table 1: Summary of options proposed for SUR 1A and SUR 1B from 1 October 2023. Figures are all in tonnes. The preferred options of Fisheries New Zealand are highlighted in blue.

2 About the stocks

2.1 Biology

- 439. Kina are found throughout New Zealand and the sub-Antarctic Islands in coastal habitats, generally in waters from the shallow subtidal to depths of at least 60 metres (Miller & Abraham, 2011).
- 440. Kina have an annual reproductive cycle which culminates in multiple spawning events across mid- and late summer (Walker, 1982). Size at maturity appears to vary between locations and may be as small as 30 mm test diameter (**TD**) and as large as 75 mm TD (Miller & Abraham, 2011). The rate of settlement is likely to vary between years and appears to differ among locations and habitats. Laboratory work has shown that the settlement of urchin larvae is

inhibited, and the survival of recruits (2 to 5 mm TD) and juveniles (10 to 30 mm TD) is reduced by high sediment concentrations (Walker, 2007). Larval abnormalities have also been correlated with increasing suspended sediment concentration in laboratory experiments (Shima & Phillips, 2006). This signals a link between environmental factors associated with terrestrial runoff and kina abundance.

- 441. Feeding experiments have indicated that kina possess a selective mode of feeding, being able to distinguish between algal species but with a preference for the kelp *Ecklonia radiata* (Don, 1975; Schiel, 1982) and to a lesser extent *Sargassum sinclarii*, *Landsburgia quercifolia* and *Carpophylum maschalocarpum* (Schiel, 1982). However, kina can also feed on encrusting organisms, such as sponges, when algal food is scarce (Avling, 1978).
- 442. Interactions between kina, their predators (including rock lobster and snapper), and the algal species they graze on, is a highly studied aspect of New Zealand's marine ecology (Dromgoole, 1964; Shears and Babcock, 2002; Spyksma et al., 2017 and references therein). Research conducted within marine protected areas (**MPA**s) where predators of kina such as snapper and crayfish are more abundant than in fished areas, indicates these predator species can both control the abundance of kina and influence their foraging behaviour (Shears and Babcock, 2002; Spyksma et al., 2017). These studies have drawn a direct link between increases in the abundance of snapper and crayfish inside the Cape Rodney-Okakari Point (Goat Island) Marine Reserve and other marine protected areas, the long-term declines in kina abundance, and reforestation of areas of bare reef known as kina barrens.
- 443. Other factors, for example wave exposure, climate, disease, and toxic microalgae (Shears, Babcock, & Salomon, 2008; Shears & Ross, 2010), are also known to influence the abundance and distribution of kina and kina barrens.
- 444. There is little genetic difference between kina that have been analysed in different parts of New Zealand, and the boundaries of the biological stock are unknown.
- 445. In general, coastal shellfish resources fluctuate naturally and are susceptible to environmental degradation. Potential stressors to kina, other than human harvesting include:
 - anthropogenic contaminants
 - changes in the marine environment associated with human activity, such as increased sediment loading, nutrient enrichment, and climate change; and
 - natural phenomena, such as heat stress, and diseases/parasite events.

2.2 Fishery characteristics

- 446. Kina is a species that is highly valued by tangata whenua, recreational, and commercial fishers. In SUR 1A and SUR 1B, customary and recreational fishers harvest kina by hand-gathering either by wading, breath-hold freediving, or on scuba. Underwater breathing apparatus is prohibited for commercial fishers, who harvest primarily via breath-hold freediving. Commercial fishers target kina for their roe, which is extracted from the shell and primarily sold in the domestic market (FNZ – Fisheries Assessment Plenary, 2023).
- 447. Kina hold cultural significance as a taonga species.⁹⁰ They are regularly harvested under customary authorisations and play an important role as a food source for Māori communities.
- 448. Recreational fishers also target kina, with hand gathering, wading, freediving, or scuba diving methods employed from both shore and boat. The north-eastern coastline of New Zealand (SUR 1A and SUR 1B) offers numerous accessible areas of rocky intertidal and subtidal reefs where kina can be found.

2.3 Management background

- 449. In 2003, kina in SUR 1A and SUR 1B were included in the Quota Management System (QMS). At the time, the division between SUR 1A and SUR 1B provided a degree of finer-scale management than the standard Fisheries Management Areas (FMAs) used for the majority of QMS stocks, while still giving fishers flexibility to gather kina from a variety of locations. Initial catch limits were set cautiously, below the maximum historical recorded catches.
- 450. Following the 2019 review of SUR 1A and SUR 1B, the Minister at the time decided against changing the management settings. This decision was based on the fact there was limited

⁹⁰ Taonga is defined as a treasure or anything prized and considered to be of value.

information available, including a lack of historical fine-scale fishing effort and catch records. There were also concerns raised by lwi Fisheries Forums regarding potential over-exploitation of this culturally significant species, especially in areas important for customary harvest. While the decision was made not to change the catch settings, officials were instructed to support further work in developing a collaborative management plan that addresses iwi and community aspirations and gathers additional information if all parties expressed interest. The intention was to develop a plan and once sufficient information was collected the stocks could be reviewed.⁹¹ The collaborative development of a management plan was hindered due to the impacts of the COVID-19 pandemic on the ability to engage with Treaty partners and stakeholders. Since the 2019 review concerns from commercial fishers and stakeholders about the rising abundance of kina has grown.

- 451. FNZ has made significant progress in gathering better information on catch levels since the introduction of ER and GPR in 2019. The introduction of ER and GPR also means FNZ is better placed to monitor spatial conflict between sectors, including overlap between commercial harvest and key customary harvest areas. Furthermore, an improved dialogue with the fishing industry has allowed better understanding of commercial kina harvesting activity and how fishers operate.
- 452. FNZ are advising you on options to consider either *status quo* or an increase in utilisation for SUR 1A and SUR 1B. Irrespective of the outcome of this review, FNZ will continue to work on the broader management approach for kina (and kina barrens), including actively engaging with Treaty partners and stakeholders to develop a management plan.

3 Status of the stocks

- 453. There are no established reference points to use for estimating the maximum sustainable yield (MSY) of kina, no recognised approach for assessing the status of the stock, and there is insufficient information to estimate current stock status (FNZ Fisheries Assessment Plenary, 2023).
- 454. In the absence of an estimate of current stock status, the monitoring of fine-scale catch per unit effort of kina is recommended as the most effective and practical monitoring approach for New Zealand kina fisheries (Andrew et al., 2002; Miller & Abraham, 2011). The implementation of ER and GPR in 2019 allowed for this level of monitoring to begin and provides the best available information on the kina fisheries.
- 455. While there is no formally assessed estimate of kina biomass for the SUR 1A and SUR 1B stocks, there is a range of research that provides insights into the likelihood of high abundance. This includes studies of kina barrens, where kina are found in extremely high densities of greater than 20 per m² (the ecology of kina barrens is covered below in '*Interdependence of stocks*').
- 456. As an indication of the biomass present in some areas within SUR 1A and SUR 1B, University of Auckland researchers, operating under a Fisheries Act special permit, recently removed an estimated 65 tonnes of kina (~403,000 individual kina) from just 7.1 hectares of shallow subtidal reef at sites at Hauturu-o-Toi / Little Barrier Island, Leigh, and Ōtata (Noises) (Miller & Shears, 2022).
- 457. FNZ recognises that kina are not uniformly distributed and do not occur at such high densities at all locations. However, there is suitable reef habitat for kina along much of the QMA coastline and it is anticipated that the overall kina biomass for both stocks is very high relative to the current and proposed TAC settings.

4 Catch information and current settings within the TAC

4.1 Commercial

458. The best available information on commercial fishing within the SUR 1A and SUR 1B stocks is from commercial reporting. Until the implementation of ER and GPR in 2019, information on commercial kina fishing effort and catch was provided at a fisheries general statistical area scale. These areas are large and not reported consistently or completely (Figure 2). However, by December 2019, all commercial operators were required to report and submit precise

⁹¹ www.mpi.govt.nz/dmsdocument/37203-Ministers-decision-letter-on-the-review-of-sustainability-measures-for-1-October-2019

electronic fishing reports on a daily basis and carry GPR devices on their vessels. The roll out of ER and GPR has improved the ability to monitor fishing activity and understand the extent of localised kina catch within SUR 1A and SUR 1B.

- 459. Commercial fishers have continued to report consistent catches at, around or above the TACC and have expressed the view that substantially more kina could be harvested sustainably, based on what they see in the water. Since 2019 commercial landings have been consistently maintained at between 35 and 42 tonnes in SUR 1A and between 130 and 150 tonnes in SUR 1B. Similar commercial harvest levels were recorded prior to 2019.
- 460. Commercial fishing activity occurs throughout SUR 1A and SUR 1B (Figure 2), but certain areas are specifically targeted for repeated (rotational) harvesting of kina throughout the fishing year.



Figure 2: Commercial landings for SUR 1A and SUR 1B in greenweight from 2019 to 2023, since the introduction of electronic reporting and geospatial position reporting.⁹² Statistical areas, at which commercial catch was reported by prior to 2019, are shown as well.

⁹² Note the resolution used in Figure 2 is in line with the Ministry for Primary Industries data release guidelines and as such does not show fishing activity at a fine scale.

461. Figures 3 and 4 show that catches in SUR 1A and SUR 1B have remained at a relatively consistent level, with the respective TACCs constraining the total commercial harvest at or near 40 tonnes in SUR 1A and 140 tonnes in SUR 1B.



Figure 3: Landings and catch limit for SUR 1A (East Northland) from 2003/04 to 2021/22. TACC refers to catch limit, and weight refers to greenweight.



Figure 4: Landings and catch limit for SUR 1B (Hauraki Gulf and Bay of Plenty) from 2003/04 to 2021/22. TACC refers to catch limit, and weight refers to greenweight.

4.2 Customary Māori

- 462. Kina are an important traditional food for Māori and continue to be gathered under provisions for customary fishing.
- 463. While kina is a common species for which customary authorisations are issued, there is limited quantitative information available on the level of customary take of kina from both SUR 1A and SUR 1B. It is likely that Māori customary fishers also utilise the provisions under recreational fishing regulations (recreational fishers can take up to 50 kina per person per day).
- 464. Parts of the SUR 1A and SUR 1B QMAs are not currently covered under the Fisheries (Kaimoana Customary Fishing) Regulations 1998.⁹³ Customary fishing authorisations in some parts of SUR 1A and SUR 1B, if issued, would be under the Fisheries (Amateur Fishing) Regulations 2013, where there is no requirement to report on catch. As such, customary harvest records held by FNZ are likely to be incomplete.
- 465. The customary Māori allowances for SUR 1A and SUR 1B are currently set at 65 tonnes and 90 tonnes, respectively.

⁹³ Fisheries (Kaimoana Customary Fishing) Regulations 1998 are further discussed under Option 2.

4.3 Recreational

- 466. Kina is a popular recreational species that is harvested through hand gathering while wading, freediving or scuba diving, either from shore or from a boat. The use of underwater breathing apparatus is permitted in the recreational fishery.
- 467. The best available information on the current recreational catch is from the 2017/18 National Panel Survey of Marine Recreational Fishers (NPS), which provides a snapshot of the level of recreational take in that fishing year (Wynne-Jones, Gray, Heinemann, Hill, & Walton, 2019). The 2017/18 NPS estimated 539,808 kina were harvested across all of New Zealand, with approximately 55% (296,104) of the national harvest of kina taken in SUR 1A and SUR 1B combined.
- 468. Estimates of mean kina weight are not available to allow recreational catch estimates reported in the NPS to be converted into harvested weight (catches in the NPS are reported as numbers of individual kina). However, by using a conversion factor of 161 g per individual (used recently by researchers studying kina barrens in SUR 1B (Miller, K. *pers comm*), the recreational catch from SUR 1A and SUR 1B can be estimated at approximately 48 tonnes. It is important to note that this is likely to be an underestimate as the161 g conversion factor was derived from kina barrens, and not kina of greater size and roe quality.
- 469. The recreational allowances for SUR 1A and SUR 1B are currently set at 65 tonnes and 90 tonnes, respectively, well above the estimated harvest levels from the NPS.

4.4 Other sources of mortality caused by fishing

- 470. Although there is no minimum legal size for kina, some incidental mortality is likely because roe quality (recovery rate and colour) is commonly assessed by opening 'test' kina underwater. These animals are not subsequently landed. There are no estimates of the extent to this incidental mortality.
- 471. Another source of kina mortality in SUR 1A and SUR 1B results from the use of kina as groundbait to attract fish. Ground-baiting is a common practice among spearfishers that involves collecting kina, placing them in a pile in the middle of an open area, and then breaking them open using a knife, rock, or the butt of a speargun.
- 472. Illegal harvest or poaching of kina is also a potential source of mortality caused by fishing for SUR 1A and SUR 1B. There is qualitative data to suggest significant illegal, unreported, unregulated activity in these fisheries.
- 473. FNZ have also issued a number of permits, some of which are ongoing, in the SUR 1A and SUR 1B area to allow for the harvesting of kina under investigative research. These permits have seen a substantial amount of kina being extracted from the ocean and so it is expected that a significant mortality to kina occurs under special permits. Currently, the take from special permits is not considered under the other sources of mortality allowance and an assessment of the sustainability impact of special permits is undertaken on a case-by-case basis.
- 474. The allowances for other sources of mortality caused by fishing in SUR 1A and SUR 1B are currently set at two tonnes and four tonnes, respectively.

5 Treaty of Waitangi obligations

5.1 Input and participation of tangata whenua

- 475. Section 12 (1)(b) of the Act requires that, before undertaking any sustainability process, you shall provide for the input and participation of tangata whenua who have a non-commercial interest in the stock or an interest in the effects of fishing on the aquatic environment in the area concerned. In considering the views of tangata whenua, you are required to have particular regard to kaitiakitanga.⁹⁴
- 476. Input and participation of tangata whenua into the sustainability decision-making process is provided mainly through lwi Fisheries Forums, which have been established for that purpose. Each lwi Fisheries Forum can develop an lwi Fisheries Forum Plan that describes how the iwi

⁹⁴ 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.

^{75 •} Review of sustainability measures for the 2023 October round: SUR 1A & SUR 1B

in the Forum exercise kaitiakitanga over the fisheries of importance to them, and their objectives for the management of their interest in fisheries. Iwi Fisheries Forums may also be used as entities to consult iwi with an interest in fisheries.⁹⁵

- 477. SUR 1A and SUR 1B cover the rohe of the Te Hiku o te Ika Iwi Fisheries Forum in the far North, the Mid-North Iwi Fisheries Forum and the Mai i Nga Kuri a Wharei ki Tihirau Iwi Fisheries Forum in the Bay of Plenty.
- 478. Feedback on the review of SUR 1A and SUR 1B from the lwi Fisheries Forums was mixed. There was support from some forum members who agreed there were benefits to providing for additional commercial harvest, including the potential for Māori commercial enterprises from kina harvest. Other forum members maintained the concerns expressed during the 2019 review, that an increase in available commercial catch increased the risk of overlap between commercial fishing and important customary harvest sites. They felt any benefits of increased catch were overstated because commercial fishing activity would not take place in kina barren areas, so would not help address this issue. They were also sceptical of commercial fishers description of how they rotate their fishing activity to ensure good quality kina expressing it was more realistic that intensive harvest in areas of good quality kina would occur, and that these areas may be of customary significance.
- 479. The was a consistent desire expressed by Tangata whenua with interests in SUR 1A and SUR 1B to collaboratively develop a planned approach to address kina barrens using a multitude of management tools and options, while being guided by mātauranga Māori. There were mixed views as to whether this should come before a review of catch limits or whether they could work together.
- 480. There was also an expectation expressed by members of the Mid-North lwi Fisheries Forum that iwi are involved in the process of option development, as opposed to being asked to provide feedback at Forum hui after options had already been formed.
- 481. Further details received by each lwi Fisheries Forum is summarised in Table 2 below.

lwi Fisheries Forum	Engagement on SUR 1A & SUR 1B
Te Hiku o te Ika	Members communicated mixed feedback. Some believed it would lead to positive outcomes and improvements, with members supporting the proposed increases. Some viewed the options proposed as a positive initiative that could support a reduction in risk of kina barrens in areas that are fished, as well as provide utilisation opportunities for Māori with commercial interests. Other members were more apprehensive and expressed concerns about potential risks or negative consequences – such as impacts of commercial fishing on local customary harvest areas. There was also a concern at the lack of matauranga and Māori lead science to inform the review process. All members highlighted the importance of sustainability as a core principle and supported the development of a management plan to address the broader issue of kina barrens. There was a strong view that this needs to be developed in close consultation and collaboration with iwi.
Mai i Ngā Kuri a Wharei ki Tihirau	Members supported the potential for an increase in TACC and customary allowance. Members indicated concerns about the kina barrens in their rohe and saw benefits in the options proposed for areas that are fished. They also supported the need for a broader management plan beyond changes to the catch settings.
Mid-North	Indicated strong concerns around providing for any further commercial fishing of kina. The forum did not support any increases to the TACC, with a view that a broader management approach should be developed before any changes to catch settings are made. Members communicated their preference for Government to consult hapū and iwi on establishing an appropriate kina management plan and then provide resourcing for hapū to develop and deliver the plan in their respective rohe, rather than FNZ.

Table 2: Summary of engagement with Iwi Fisheries Forums.

482. During consultation, feedback was sought from tangata whenua on how the proposed options for SUR 1A and SUR 1B may or may not assist tangata whenua to provide kaitiakitanga, and how tangata whenua consider the proposal may affect their rights and interests in this stock.

⁹⁵ However, FNZ also engages directly with Iwi (outside of Forums) on matters that affect their fisheries interests in their takiwa and consults with any affected Mandated Iwi Organisations and Iwi Governance Entities where needed.

483. FNZ received a submission from the Mai i Ngā Kuri a Wharei ki Tihirau Iwi Fisheries Forum in the Bay of Plenty and feedback from this submission is included in the '*Submissions*' section of this chapter.

5.2 Kaitiakitanga

- 484. Information provided by forums, and iwi views on the management of fisheries resources and fish stocks, as set out in Iwi Fisheries Plans, are ways that tangata whenua can exercise kaitiakitanga in respect of fish stocks.
- 485. Kina is identified as a taonga species in the Fisheries Plans of Te Hiku O Te Ika Iwi Fisheries Forum and the Mai I Nga Kuri A Wharei Ki Tihirau Iwi Forum.
- 486. FNZ considers that the management options presented in this advice paper contribute to the objectives of these plans, which generally relate to the maintenance of healthy and sustainable fisheries but notes that initial feedback from iwi has been mixed.

5.3 Mātaitai reserves and other customary management tools

- 487. Section 21 (4) of the Act requires that, when allowing for Māori customary non-commercial interests, you must take into account
 - a) any mātaitai reserve in SUR 1A and SUR 1B that is declared by notice in the Gazette under regulations made for the purpose under section 186A.
 - b) any area closure or any fishing method restriction or prohibition in SUR 1A and SUR 1B that in imposed by the Minister by notice in the Gazette made under section 186A.
- 488. There are 13 customary fisheries management areas within SUR 1A and SUR 1B. These include two taiāpure, six temporary closures, and five mātaitai reserves implemented under section 186A of the Act (Table 3).
- 489. Analysis of fine-scale catch and fishing effort data suggests the majority of commercial fishing occurs at offshore islands and isolated coastal regions, and generally does not overlap with the customary management areas in Table 3.
- 490. FNZ believes that the remoteness of the majority of commercial fishing activity limits the likelihood of significant overlap with areas of customary and recreational harvest.
- 491. While FNZ does not anticipate that an increase in TACC will result in increased harvesting near customary management areas, FNZ will continue to monitor commercial harvest and should any concerns arise, will review the management settings accordingly.

Stock	Customary Area	Management Type		
SUR 1A	Waikare Inlet Taiāpure	Taiāpure All types of fishing are permitted within a taiāpure. The		
SUR 1B	Maketu Taiāpure	management committee can recommend regulations for commercial, recreational, and customary fishing.		
	Marsden Bank and Mair Bank Temporary			
SUR 1A	Closure	_		
	Maunganui Bay Temporary Closure	Section 186A temporary closures		
	East Coromandel Temporary Closure	Section 186A temporary closures are used to restrict or		
	Te Mata and Waipatukahu Temporary	prohibit fishing of any species of fish, aquatic life or seaweed or the use of any fishing method.		
SUR 1B	Closure			
	Umupuia Beach Temporary Closure			
	Waiheke Island Temporary Closure			
SUR 1A	Te Puna Mātaitai	_		
	Raukokere Mātaitai	_ Mātaitai reserve		
SUR 1B	Te Kopa o Rongokānapa Mātaitai	_ Commercial fishing is not permitted within mātaitai reserves		
	Te Maunga o Mauoa Mātaitai	unless regulations state otherwise.		
	Te Rae o Kohi Mātaitai			

Table 3: Customary fisheries management areas in SUR 1A and SUR 1B.

6 Environmental and sustainability considerations under the Act

6.1 Overview

- 492. You are being asked to make a decision under section 13(2A) of the Act, to set the TAC for kina in SUR 1A and SUR 1B. This is a sustainability measure. Before setting or varying a sustainability measure, you must adhere to section 11 of the Act. When making your decision you must also act consistently with the requirements in section 5, and sections 8-10 (Purpose and Principles of the Act).
- 493. The requirements and details of each of these sections are set out below, in the following order:
 - a) Section 5 (Application of international obligations and Treaty of Waitangi (Fisheries Claims) Settlement Act 1992);
 - b) Section 8 (Purpose);
 - c) Section 9 (Environmental principles);
 - d) Section 11 (Sustainability measures);
 - e) Section 13 (Setting a Total Allowable Catch); and
 - f) Section 10 (Information principles).

6.2 Application of international obligations and the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992 – section 5 of the Act

494. You must act in a manner consistent with the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992. This is discussed in more detail under Heading 2.2.1 of the *Introduction and Legal Overview* chapter of this document. You must also act in a manner consistent with New Zealand's international obligations relating to fishing. Discussion of these relevant obligations is provided under Heading 2.2.2 of the *Introduction and Legal Overview*.

6.3 Purpose of the Act – section 8 of the Act

495. The Act's purpose is to "provide for the utilisation of fisheries resources while ensuring sustainability." Guidance for you on the meaning of section 8 and how it should be applied for decision making (for all the stocks being reviewed as part of this round) is provided under Heading 2.2.3 in the *Introduction and Legal Overview*.

6.4 Environmental principles – section 9 of the Act

- 496. The environmental principles that you must take into account when considering sustainability measures for SUR 1A and SUR 1B, are as follows:
 - Associated or dependent species should be maintained above a level that ensures their long-term viability.
 - Biological diversity of the aquatic environment should be maintained; and
 - Habitats of particular significance for fisheries management should be protected.

6.4.1 Associated or dependent species – section 9(a) of the Act

Protected species interactions

- 497. Harvesting of kina is considered to pose little to no risk to seabirds (FNZ AEBAR, 2021). However, harvesting involves the use of boats or vessels and there is a risk of direct collisions between seabirds and the vessels, leading to injury or mortality.
- 498. There is no data to suggest captures of marine mammals, seabirds, or protected fish species in New Zealand kina fisheries.

Fish and invertebrate bycatch

499. Kina are harvested by hand-gathering while freediving in SUR 1A and SUR 1B. The method of hand-gathering is a highly selective one and there is no bycatch of any fish and invertebrate species.

6.4.2 Biological diversity of the aquatic environment – section 9(b) of the Act

- 500. SUR 1A and SUR 1B are recognized as target fisheries where commercial harvesting is conducted through hand gathering while freediving. The selective nature of this method of harvesting ensures that there is no bycatch or incidental mortality of kina or non-target organisms.
- 501. Harvesting of kina may lead to a reduction in herbivory on reefs, resulting in an increase in the abundance of macroalgal and invertebrate species and a corresponding increase in associated biodiversity (Miller & Shears, 2022).
- 502. Information from fishers and scientists, as well as other stakeholders, indicates that kina barrens are widespread within the SUR 1A and SUR 1B stocks. The occurrence of kina barrens will have an impact on associated biodiversity (MacDiarmid et al., 2013). The full extent of this impact is unknown (including on associated and dependent species), but it is likely that a shift from productive kelp forests to kina barrens will result in reduced primary production and biodiversity. It is acknowledged that kelp habitats are likely to be important for a range of harvested and non-harvested species, and any reduction in such habitats is therefore likely to have adverse impacts on species that rely on kelp-dominated habitats (Dayton, 1985).
- 503. FNZ notes that environmental factors, such as sedimentation, water quality, and disease also affect the distribution and abundance of biological diversity on rocky reefs, but are not directly managed by FNZ. FNZ will continue to monitor research in this field and will engage with relevant local authorities in this regard.

6.4.3 Habitats of particular significance for fisheries management – section 9(c) of the Act

- 504. Habitats of particular significance for fisheries management are not defined in the Act. FNZ recently consulted on draft guidelines for identification of habitats of particular significance for fisheries management and the operational proposals to support its application. In this context, protect means taking measures that would avoid, remedy, or mitigate the adverse effect of a decision that could undermine the function the habitat provides for the fisheries resource and ecosystem.
- 505. There are no specific habitats of particular significance identified for SUR 1A or SUR 1B at this time in the draft guidelines. What is known is outlined in Table 4. Irrespective of whether a habitat of particular significance for kina has yet been identified, FNZ considers that an increase to catch limits would not increase adverse effects from fishing on any significant kina habitats in SUR 1A or SUR 1B as kina are harvested through a highly selective method, thus reducing the direct impacts on their habitat and benthos.

Fish stocks	Kina – SUR 1A and SUR 1B
Potential habitat of	Rocky intertidal and subtidal reefs, however no known specific locations of habitat of particular
particular significance	significance for fisheries management.
Attributes of habitat	Kina are found along most coastal habitats, particularly in rocky intertidal and subtidal reefs dominated by encrusting algae. They inhabit shallow subtidal waters to depths of about 60 metres. Kina populations are not uniformly distributed across all rocky reef habitats. Abundance is primarily determined by depth and wave exposure.
Reasons for particular significance	Kina larvae spend between 20 to 40 days in the water column before settling on rocky substrate indicating the importance of the presence of suitable settlement surfaces. Rocky intertidal and subtidal reefs are also characterised by the growth of seaweed species and algae. Rocky shores provide stable platforms for seaweeds to anchor themselves to and create forests. These kelp forests provide shelter and nursery grounds for many fish species such as kina, snapper, and crayfish. They also provide food for grazing species such as kina, crabs and snails which serve as prey for large predatory fish species. Rocky shores in areas of wave exposure are important habitats that support a wide variety of sedentary species (sponges, molluscs, ascidians, echinoderms and algae) that rely on waves and currents to transport food and nutrients to them. Intertidal and subtidal wave exposed reefs are typically ecosystems that are high in biodiversity.
Risks/threats	The overfishing of key predator species, such as snapper and crayfish, is considered a key contributor to the formation of kina barrens in northern New Zealand. Kina barrens are characterised by bare rocky substrate, a complete or significant loss in seaweeds, low biodiversity, and high densities of kina and they ultimately threaten healthy kina habitats.

Table 4: Summary of information	on potential habitats	of particular significance	for fisheries management for
SUR 1A and SUR 1B.			

Fish stocks	Kina – SUR 1A and SUR 1B
	Fine sediments introduced from runoff from the land may have adverse effects on kina and the kina habitat. Layers of fine sediment can reduce light levels for marine plant species which could impact food availability for intertidal and subtidal species. The oceans around the East Coast of the North Island of New Zealand are warming at a rate well in excess of the global average, and moderate to strong heatwaves have been recorded in recent years in the Hauraki Gulf. Changes in the environmental conditions associated with marine heatwaves may have impacts on the survival of larval kina and food availability for kina. However, the extent to which changes in climate and temperature may be affecting kina habitat suitability in SUR 1A and SUR 1B is unknown. The increased presence of the long-spined sea urchin (<i>Centrostephanus rodgersii</i>) may also pose a risk to kina habitat. The long-spined sea urchin has been observed to cause barren expansion.
Evidence	 Shears & Babcock, 2007 Nicholls, Hewitt & Halliday, 2003 Sutton & Bowen, 2019 Moana Project, n.d.; Kerr, 2016.

6.5 Considerations for setting sustainability measures under section 11 of the Act

- 506. Section 11 of the Act sets out various matters that you must take into account or have regard to when setting or varying sustainability measures (such as the TAC changes proposed as part of this chapter). These include:
 - a) any effects of fishing on any stock and the aquatic environment; and
 - b) any existing controls under the Act that apply to the stock or area concerned; and
 - c) the natural variability of the stock concerned; and
 - d) any relevant planning instruments, strategies, or services.96

6.5.1 Effects of fishing on any stock and the aquatic environment – section 11(1)(a)

- 507. You must take into account any effects of fishing on any stock and the aquatic environment when making your decision about the SUR 1A and SUR 1B TACs.
- 508. In setting or varying a sustainability measure the Minister must take into account any effects of fishing on any stock and the aquatic environment. "Effect" is defined widely in the Act.⁹⁷
- 509. All information regarding the effects of harvesting kina on any stock and the aquatic environment is discussed above under '*Environmental principles*', and below under '*Total Allowable Catch*' and ''*Options and analysis*'.

6.5.2 Existing controls that apply to the stock or area – section 11(1)(b)

- 510. You must take into account any existing controls under the Act (including rules and regulations made under the Act (section 2(1A)) that apply to the stock when setting or varying the TAC.
- 511. Aside from the catch limits and allowances set under the TAC, there are daily bag limits for recreational take in both SUR 1A and SUR 1B of 50 kina per person per day. A daily bag limit is intended not only to ensure sustainable harvesting levels, but also to share the resource between individual fishers.

6.5.3 The natural variability of the stock – section 11(1)(c)

- 512. You must take into account the natural variability of the stock when setting or varying its TAC.
- 513. Settlement of kina larvae within the SUR 1A and SUR 1B fisheries is likely to vary between years and appears to differ among locations and habitats, attributed to the variability in larval mortality (Walker, 1984).

⁹⁶ Sections 11 (2) and (2A).

⁹⁷ Section 2(1) of the Act defines "effect" to mean the direct or indirect effect of fishing, and includes any positive, adverse, temporary, permanent, past, present, or future effect. It also includes any cumulative effect, regardless of the scale, intensity, duration, or frequency of the effect, and includes potential effects.

- 514. In laboratory and field studies, larval mortality and developmental abnormalities have been observed to increase with increasing concentrations of suspended sediment. The suspended sediment concentrations used in these experiments were equivalent to typical peak sediment loads to the Wellington Harbour System (Phillips & Shima, 2006; Schwarz et al., 2006). This suggests that environmental conditions associated with terrestrial runoff are of importance.
- 515. Population growth of kina and the establishment of kina barrens has been attributed to fishing of large predators, as discussed under *'Total Allowable Catch section 13 of the Act.'*
- 516. The proposed increases to the TACs of SUR 1A and SUR 1B would provide for additional sustainable utilisation of the kina resource and may also contribute to managing the expansion of kina barrens in areas that are fished in the short to medium term. FNZ does not anticipate a sustainability risk with the proposed increases to catch settings as reported landings have remained consistent for the past 19 years and information from fishers, scientists, and other stakeholders (including through local area surveys) suggests kina abundance is high in many areas.
- 517. FNZ will continue to monitor reported landings in both fisheries, and should new information suggest that kina abundance has changed over time in a way that may signal a sustainability concern, the management settings will be reviewed.

6.5.4 Relevant statements, plans, strategies, provisions, and documents - section 11(2)

- 518. In setting or varying the TAC of this stock, you must have regard to the following statements, plans, strategies, provisions and planning documents under section 11(2) of the Act, that apply to the coastal marine area and that you consider to be relevant.
- 519. The following plans and strategies are relevant for SUR 1A and SUR 1B.

Regional Plans – section 11(2)(a)

- 520. Four Regional Councils have coastlines within the boundaries of the SUR 1A and SUR 1B areas: Northland, Auckland, Waikato, and Bay of Plenty. Each region has policy statements and plans to manage the coastal and freshwater environments, including terrestrial and coastal linkages, ecosystems, and habitats.
- 521. FNZ considers that the proposed management options presented in this document, are in keeping with the objectives of relevant regional plans, which generally relate to the maintenance of healthy and sustainable ecosystems to provide for the needs of current and future generations. The provisions that might be considered relevant can be found in Table A1 of Addendum 1.
- 522. In April 2023, the Environment Court released its finalised decision on marine protection measures under the proposed Northland Regional Plan. Of relevance to SUR 1A, is the prohibition of all fishing, except for kina harvest, in Maunganui Bay to Oke Bay and Mimiwhangata under the proposed Plan to protect the biodiversity values identified. These prohibitions came into effect in May 2023. It is uncertain what effect these areas will have but FNZ will take interest in any data and studies produced in the future about the closed areas and aims to work with the council and share information in this regard.
- 523. The Bay of Plenty Regional Coastal Environment Plan also contains rules since 2021 prohibiting all fishing in the three areas that make up the Motiti protection area. The rules have been introduced to protect indigenous biodiversity and acknowledge the significant marine landscape and cultural values in the area. Those three areas comprise of Ōtaiti (Astrolabe Reef); including Te Papa (Brewis Shoal), Te Porotiti, and Okarapu Reef, Motuhaku Island (Schooner Rocks) and Motunau Island (Plate Island). These areas are located in the SUR 1B QMA.
- 524. Kina, being a species that plays a significant role in coastal ecosystems, can be affected by various factors, including land-based activities. The FNZ Coastal Planning Team engages with the Resource Management Act 1991 coastal planning processes (including regional authorities) to support marine management decisions to manage not only the fishing effects on the coastal environment but also land-based impacts on kina fisheries.

Hauraki Gulf Marine Park Act (HGMPA) – section 11(2)(c)

525. SUR 1A and SUR 1B boundaries overlap within the Hauraki Gulf Marine Park (**HGMP**). Therefore, sections 7 (recognition of national significance of Hauraki Gulf) and 8 (management of Hauraki Gulf) of the Hauraki Gulf Marine Park Act 2000 (**HGMPA**) apply to the management of this fishery.

- 526. FNZ considers that this review of SUR 1A and SUR 1B and the proposed options are consistent with obligations under sections 7 and 8 of the HGMPA in that the proposed options aim to address a sustainable utilisation opportunity in both fisheries. Addressing this should help to:
 - support the life-supporting capacity of the environment of the Hauraki Gulf and its islands indirectly as it may help manage kina populations and barren expansion and potentially allow for algal regrowth;
 - protect natural and historic resources (i.e., kina and their ecosystems) in the Hauraki Gulf by reducing kina densities and potentially allowing for algal regrowth for kina to feed on and subsequently improve in quality; and
 - with properly monitored and managed commercial harvest, provide the capacity for enhanced future use of these resources, such as improved habitat conditions, for people and communities in the Hauraki Gulf.
- 527. The Hauraki Gulf Forum is a statutory body, which promotes and facilitates integrated management and the protection and enhancement of the Hauraki Gulf, under the Hauraki Gulf Marine Park Act 2000. The Hauraki Gulf Forum provided a submission on the Options proposed for SUB 1A and SUR 1B, supporting Option 3 for both stocks. Further detail on their submission is included in the *Submissions* section below.

6.5.5 Relevant services or fisheries plans – section 11(2A)

- 528. Under section 11(2A), before setting or varying any sustainability measure or making any decision or recommendation under the Act to regulate or control fishing, you must take into account
 - a) any conservation services or fisheries services; and
 - b) any relevant fisheries plan approved under this Part; and
 - c) any decisions not to require conservation services or fisheries services.
- 529. Fisheries services of relevance to the options in this chapter include the research used to monitor the fisheries, such as electronic reporting of landings, and the tools used to enforce compliance of management controls in the fishery. These are discussed under '*Management background*', '*Catch information and current settings within the TAC*', and '*Existing controls that apply to the stock or area section 11(1)(b)*.'
- 530. FNZ notes that the SUR 1A and SUR 1B fisheries do not currently have observer or onboard camera coverage, but Fisheries Compliance regularly monitors the SUR 1A and SUR 1B areas to ensure that management controls are being adhered to.
- 531. There are no applicable conservation services that specifically relate to SUR 1A or SUR 1B, or any decisions not to require conservation services or fisheries services.

Hauraki Gulf Fisheries Plan

- 532. In addition to the HGMPA, the *Revitalising the Gulf: Government action on the Sea Change Plan* strategy (Revitalising the Gulf) is relevant to the future management of the portion of SUR 1A and SUR 1B that lies within the HGMP. A key fisheries output from Revitalising the Gulf is the area specific fisheries plan approved under section 11A of the Act. The Hauraki Gulf Fisheries Plan has three desired outcomes:
 - Healthy, functioning aquatic ecosystems that support sustainable fisheries,
 - fisheries resources are at levels which meet the needs of Treaty partners and stakeholders; and,
 - inclusive and integrated regional participation in the governance of fisheries.
- 533. There are also new marine protection proposals for the HGMP which would overlap SUR 1A and SUR 1B.
- 534. FNZ considers that the proposed changes to the SUR 1A and SUR 1B catch limits would be consistent with the desired outcomes, management objectives and actions in draft Hauraki Gulf Fisheries Plan, in that the abundance of kina is considered at a level that is sustainable, while

also considering the wider ecosystem effects of fishing and impacts of kina populations on the environment.

- 535. The Hauraki Gulf Fisheries Plan proposes specific management measures to support the sustainability and improved future management of kina within the HGMP. One of these management measures is to facilitate the co-development of a management plan for restoring healthy kelp forests, which will consider the causes and address the environmental impacts of kina barrens ad include management considerations for predator species such as snapper and crayfish.
- 536. FNZ acknowledges that this review will not, independently, address the issue of kina barrens and that a wider management plan, as indicated in the Hauraki Gulf Fisheries Plan, will be needed in order to fulfil a healthy and functioning ecosystem.

6.5.6 Other plans and strategies

537. The following plans and strategies are not mandatory considerations under section 11 of the Act, but they may be considered relevant to this review.

Te Mana o te Taiao (Aotearoa New Zealand Biodiversity Strategy)

- 538. FNZ considers that the sustainability measures proposed for SUR 1A and SUR 1B are generally consistent with relevant objectives of the Te Mana o te Taiao the Aotearoa New Zealand Biodiversity Strategy including Objective 10, which is to ensure that ecosystems are protected, restored, resilient and connected from mountain tops to ocean depths, and Objective 12, which is to manage natural resources sustainability.
- 539. For more information on Te Mana o te Taiao see section 3.3 of the *Introduction and Legal Overview*.

6.6 Total Allowable Catch - section 13 of the Act

- 540. As outlined above under '*Status of the stocks*', the best available information on the status of the SUR 1A and SUR 1B stocks comes from fishers, scientists, and other stakeholders which suggest that kina densities and abundance are high, to the point of forming kina barrens in certain areas. Based on this, FNZ considers that there is an opportunity to provide for greater utilisation in the SUR 1A and SUR 1B stocks.
- 541. The status of these stocks in relation to MSY is unknown, and there is uncertainty as to the overall levels of kina density and biomass in these areas, as well as uncertainty in relation to how much their biomass may have increased in recent years. Because of this, FNZ is proposing a moderate increase to the catch limits under section 13(2A). Two options were consulted on for increasing the TAC of each stock and it is considered that both options would be sustainable if implemented.
- 542. For the purpose of setting TACs under this section, if you consider that the current level of the stocks, or the level of the stocks that can produce the MSY is not able to be estimated reliably using the best available information, you must—
 - (a) not use the absence of, or any uncertainty in, that information as a reason for postponing or failing to set a total allowable catch for the stock; and
 - (b) have regard to the interdependence of stocks, the biological characteristics of the stock, and any environmental conditions affecting the stock; and
 - (c) set a total allowable catch ----
 - (i) using the best available information; and
 - (ii) that is not inconsistent with the objective of maintaining the stock at or above, or moving the stock towards or above, a level that can produce the maximum sustainable yield.
- 543. Section 13(3) requires you to have regard to such social, cultural, and economic factors you consider relevant when considering the way in which and rate at which a stock is moved towards or above a level that can produce MSY. FNZ considers that all of the options presented to increase the TACs of SUR 1A and SUR 1B are not inconsistent with the objective of maintaining the stock at or above, or moving the stocks towards or above MSY, despite the status of the stocks in relation to MSY being unknown. The best available information to assist

your assessment of the social, cultural, and economic factors under section 13(3), when considering 'way and rate' is provided under the '*Options and Analysis*' section below.

6.6.1 Biological characteristics

544. Biological characteristics of kina that you must have regard to when setting a TAC under section 13(2A) of the Act are discussed under '*Biology*' above. Their ability to undergo multiple spawning events during the summer and their small size at maturity (as small as 30 mm) contribute to an early start of reproduction, enhancing the likelihood of maintaining a substantial population.

6.6.2 Interdependence of stocks

545. When setting the TAC for SUR 1A and SUR 1B under section 13(2A), you must have regard to the interdependence of stocks. The interdependence of stocks involves the consideration of the effects of fishing on associated stocks affected by fishing for the target stock.

Relevant predators of kina in SUR 1A and SUR 1B

- 546. Kina are an important prey species on rocky reefs across New Zealand. Within SUR 1A and SUR 1B, their main predators are understood to be rock lobsters and snapper (although numerous other fish and echinoderm species also prey on them to a lesser extent).
- 547. In describing predators of urchins there is an important relationship between the size classes of both predator and prey. A wide variety of species predate kina, with the range of predators narrowing as kina increase in size. Large predators are generally required to successfully manipulate and kill a large sea urchin whereas smaller urchins are easier to both pry off rocks and consume whole. Predatory consumption by fish has been linked directly to gape size (mouth size) in New Zealand (Marianovich, 2022). While they have a similar relationship between predator and prey size, lobsters are more unique in their ability to pry sea urchins from rocks and consume the animal via the unprotected mouthparts (Flood, 2021). Thus, the largest size classes of kina (>15 cm) might be immune to predation by all but the largest of lobster (Andrew & MacDiarmid, 1991).

Kina or urchin barrens

- 548. There is a trend occurring in parts of New Zealand, especially in the eastern North Island, (and in other places globally) where sections of rocky reef previously covered in kelp forest, have been, or are being, converted to homogenous sea urchin dominated barrens largely devoid of kelp and other benthic biodiversity. The primary evidence that fishing of urchin predators in north-eastern New Zealand has caused kina to become more abundant and kina barrens more prevalent comes from studies comparing protected and unprotected areas (Shears & Babcock, 2002, 2003, 2004; Shears et al., 2008; Allard, Ayling, & Shears, 2022), along with the observation of trends in protected areas.
- 549. One hypothesized driver for this pattern of increased barrens in New Zealand is through a trophic cascade, where an ecosystem is controlled from the top-down (Paine, 1980). There is evidence to suggest that urchin predators, including snapper and spiny rock lobsters, when at sufficient abundance, can prevent kina attaining a density where they graze a kelp forest to the point of complete algal removal (Shears & Babcock, 2003).
- 550. However, when predator abundance is reduced (by fishing or other factors), sea urchin populations are released from top-down control, and eventually reach an abundance where their grazing results in kelp deforestation and the formation of kina barrens. These barrens are less biologically diverse and less productive environments than the kelp forest habitats they replace. In SUR 1A and SUR 1B, evidence indicates that snapper and spiny rock lobster are not present at an abundance that enables them to meaningfully contribute to controlling kina populations, whether alone or in combination with other factors (Shears et al., 2008).
- 551. The increase in kina abundance and subsequent loss of kelp forests is considered a problem because it is indicative of a significant adverse effect of fishing on aquatic ecosystems (FNZ AEBAR, 2021), and because kelp forests provide a wide and diverse range of ecosystem services. These include:
 - Providing important settlement, nursery, shelter, and refuge habitats for a wide range of coastal and inshore shellfish and finfish species, including kina.
 - Providing food for invertebrates, shellfish, finfish, and seabird species, which in turn supports a variety of important commercial and non-commercial fisheries resources.

- Modifying wave and tidal action and influencing coastal and physical processes such as, erosion, sedimentation, and turbidity.
- Driving primary production and energy and nutrient recycling that contribute to other near-shore systems including sandy beaches and deep-water ecosystems.
- Once a reef is converted from kelp forest to urchin barren, these ecosystem services are lost.
- 552. Kina barrens are not ubiquitous across rocky reefs and tend to be restricted to different depth zones determined by environmental conditions. On moderately exposed coasts the shallow reef (0–3 m) is characterized by stands of fucalean algae,⁹⁸ intermediate depths (3–8 m) are maintained as kina barrens, and deeper reef (>8 m) is dominated by kelp forests (Choat & Shiel, 1982; Shears & Babcock, 2004). On more exposed reefs, barrens form on deeper sections of reef (12–20 m), while in more sheltered conditions barrens are restricted to shallower depths (Shears, Babcock, Duffy, & Walker, 2004). Kina barrens tend to not form in very sheltered areas that experience high sediment loads.
- 553. Kina barrens in north-eastern New Zealand are also caused by the long-spined sea urchin (*Centrostephanus rodgersii*). *Centrostephanus* has been present in New Zealand since at least 1897, but recently due to climate change, warming waters and shifting ocean currents, the species has both extended its range southwards and increased in abundance throughout New Zealand and Australia (Sweatmann, 2021). *Centrostephanus* has few predators due to its long spines and is known to either create barrens in areas where kina would not or join existing barrens alongside kina.
- 554. The long-spined sea urchin is not encompassed within the QMS framework and, therefore, does not have an allocated TAC or specific restrictions. However, fishers are required to possess a registered commercial license to commercially fish them and there is a requirement to report their catch of this species. If a fishery began to develop for long-spined sea urchins, as indicated by increased catch reporting, FNZ would consider including the species within the QMS.

6.6.3 Environmental conditions affecting the stocks

555. Environmental conditions affecting the stock are considered under '*Habitats of particular significance for fisheries management*', above. While there are known effects of sedimentation, FNZ does not have data to confirm the scale at which sedimentation has on the overall stock. However, it may be considered to be low given that abundance of kina appears to be increasing. FNZ is not aware of any other specific environmental conditions adversely affecting SUR 1A and SUR 1B that you should have regard to in deciding on an appropriate TAC.

6.6.4 Harvest Strategy Standard

- 556. Section 13 of the Act provides for the setting of a TAC for SUR 1A and SUR 1B, and guidance is provided by the Harvest Strategy Standard for New Zealand Fisheries (**HSS**). The High Court has held that the HSS is a mandatory relevant consideration that the Minister must have regard to when setting a TAC under section 13 of the Act.⁹⁹
- 557. The 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.
- 558. The HSS outlines the Ministry's approach to relevant sections of the Act and forms a core input to the Ministry's advice to the Minister on the management of fisheries. The HSS defines a hard limit as a biomass limit below which fisheries should be considered for closure and a soft limit as a biomass limit below which the requirement for a formal time-constrained rebuilding plan is triggered.
- 559. In the case of kina in SUR 1A and SUR 1B, there are no established reference points or available estimates of B_{MSY} (the biomass that enables a fish stock to deliver MSY), and as such there is uncertainty as to where the current biomass sits in relation to the default targets (including the soft or hard limit) set out by the HSS. Reported commercial landings, and

85 • Review of sustainability measures for the 2023 October round: SUR 1A & SUR 1B

⁹⁸ '*Fucalean algae*' are common brown seaweeds that are commonly found in the upper intertidal shores of temperate oceans and are characterised by their distinctive thallus structure.

⁹⁹ Fisheries Inshore New Zealand Ltd v Royal Forest and Bird Protection Society of New Zealand Incorporated [2023] NZCA 359.

observations while on the water, discussed under 'Catch information and current settings within the TAC', represent the best available information for monitoring stock health.

6.7 Information principles: Uncertainties and unknowns - section 10 of Act

- 560. Under section 10 of the Act, decision-makers are required to take into account four information principles:
 - a) decisions should be based on the best available information;¹⁰⁰
 - b) decision makers should consider any uncertainty in the information available in any case;
 - c) decision makers should be cautious when information is uncertain, unreliable, or inadequate;
 - 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 this Act.
- 561. FNZ considers that the information presented in this chapter represents the best available information.
- 562. In various sections of this chapter, FNZ has indicated where information is uncertain and warrants caution for your decision making, in line with the principles above. These include section 2, section 3, section 6.4, and section 6.6 of this chapter.

7 Submissions

563. A total of 18 submissions were received for SUR 1A and a total of 21 submissions were received for SUR 1B. One response did not specify which stocks were being submitted on.

564. Table 5 summarises the submissions received and shows submitters' support for each option.

Table 5: Written submissions and responses received for SUR 1A and SUR 1B.

Submitter		Option supported						
Submitter	1	2	3	Other	Notes			
East Northland (SUR 1A)								
Dr. A. Spyksma, Dr. P. Caiger, C. Balemi, & K. Miller	~				Option support considers the absence of a stock assessment. Indicated support for a management plan with measures that increase kelp forest resilience and biodiversity, including targeted removals of kina in barrens.			
Te Ohu Kaimoana		\checkmark			Supported Option 2. Also indicated support for the development of a management plan.			
Iwi Collective Partnership (ICP)		~			Supported Option 2. Also indicated support for the development of a management plan.			
Ngātiwai Holdings Ltd.		\checkmark			Supported Option 2. Also indicated support for the development of a management plan.			
New Zealand Sport Fishing Council (NZSFC) and LegaSea, joint recreational submission with the New Zealand Angling & Casting Association (NZACA)			~		Supported Option 3. Also indicated support for the development of a management plan.			
Kina Industry Council			\checkmark					
New Zealand Federation of Commercial Fishermen Inc.			\checkmark		Did not indicate option support but supported the submission made by the Kina Industry Council.			
Pāua Industry Council			\checkmark		Supported Option 3. Also indicated support for the development of a management plan.			
New Zealand Rock Lobster Industry Council			\checkmark		Supported Option 3. Also indicated support for the development of a management plan.			
Cando Fishing Ltd.			~		Requests a similar approach for SUR 3, SUR 5, and SUR 7A.			

¹⁰⁰ Section 2(1) of the Act defines "best available information" to mean "the best information that, in the particular circumstances, is available without unreasonable costs, effort, or time"

Submitter		Option supported						
Submitter	1	2	3	Other	Notes			
EnviroStrat/Kinanomics NZ Ltd.			~		Supported Option 3. Option support assumes close consultation with iwi and hapū was made and provisions to maintain traditional customary harvesting areas are in place without the threat of commercial utilisation.			
P.Herbert			~		Supported Option 3. Also indicated support for the development of a management plan.			
Specialty and Emerging Fisheries Group			~					
A. Spence			\checkmark					
Royal New Zealand Society for the Prevention of Cruelty to Animals Inc. (RNZSPCA)				~	Did not indicate option support. Indicated support for the development of a management plan.			
Stet Ltd. (S. Lee)				~	Only supports a TAC increase if there is a proposal to decrease the TAC of key predators.			
M. Caldwell				~	Supports an increase of 25% with periodic increases or decreases as required. Also supports a step towards surface-assisted breathing or underwater breathing apparatus for commercial harvesting.			
Ben				\checkmark	Generally opposed proposed changes to catch limits.			
Hauraki Gulf and Bay of Plenty (SUR 1	B)							
Dr. A. Spyksma, Dr. P. Caiger, C. Balemi, & K. Miller	~				Option support considers the absence of a stock assessment. Indicated support for a management plan with measures that increase kelp forest resilience and biodiversity, including targeted removals of kina in barrens.			
Te Mana o Ngati Rangitihi Trust	\checkmark							
Te Ohu Kaimoana		~			Supported Option 2. Also indicated support for a management plan.			
Iwi Collective Partnership (ICP)		~			Supported Option 2. Also indicated support for the development of a management plan.			
Ngātiwai Holdings Ltd.		~			Supported Option 2. Also indicated support for the development of a management plan.			
Mai i Ngā Kuri a Wharei ki Tihirau Iwi Customary Fisheries Forum			~		Supported Option 3. Also supports an increase for recreational allowance.			
Hauraki Gulf Forum			~		Supported Option 3. Also indicated support for the development of a management plan.			
New Zealand Sport Fishing Council (NZSFC) and LegaSea, joint recreational submission with the New Zealand Angling & Casting Association (NZACA)			~		Supported Option 3. Also indicated support for the development of a management plan.			
Kina Industry Council			✓					
New Zealand Federation of Commercial Fishermen Inc.			✓		Did not indicate option support but supported the submission made by the Kina Industry Council.			
Pāua Industry Council			~		Supported Option 3. Also indicated support for the development of a management plan.			
New Zealand Rock Lobster Industry Council			~		Supported Option 3. Also indicated support for the development of a management plan.			
Cando Fishing Ltd.			~		Requests a similar approach for SUR 3, SUR 5, and SUR 7A.			

Submitter		Option supported						
Gubinitter	1	2	3	Other	Notes			
EnviroStrat/Kinanomics NZ Ltd.			~		Option support assumes close consultation with iwi and hapū was made and provisions to maintain traditional customary harvesting areas are in place without the threat of commercial utilisation. Indicated support for the development of a management plan.			
P. Herbert			~		Supported Option 3. Also indicated support for the development of a management plan.			
Specialty and Emerging Fisheries Group			~					
A. Spence			\checkmark					
Royal New Zealand Society for the Prevention of Cruelty to Animals Inc. (RNZSPCA)				~	Did not indicate option support. Indicated support for the development of a management plan.			
Stet Ltd. (S. Lee)				\checkmark	Only supports a TAC increase if there is a proposal to decrease the TAC of key predators.			
M. Caldwell				~	Supports an increase of 25% with periodic increases or decreases as required. Also supports a step towards surface-assisted breathing or underwater breathing apparatus for commercial harvesting.			
Ben				\checkmark	Generally opposed proposed changes to catch limits.			

8 Options and analysis

- 565. Under section 13(2A) of the Act, if you are satisfied that the MSY cannot be reliably estimated, you must set the TAC using the best available information and in a way 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 MSY.
- 566. Three options are proposed for the TAC, TACC and allowances (customary, recreational, and other sources of mortality caused by fishing) for each stock. The options represent the general range of increases to catch settings being considered.
- 567. Commercial landings are considered the best available information and have been consistent for the past 19 years. Reports of kina abundance suggest that there is an opportunity for increased utilisation.
- 568. FNZ recognizes that if commercial catch limits were increased, it is unlikely the additional harvest would be taken from kina barren areas. However, in areas that are currently fished, and new areas that may be fished, harvest would likely be sustainable and may also help prevent the formation of additional barrens. The manner in which commercial harvesting takes place, such as grooming or rotational fishing of areas, is also not seen as a resolution to the issue of kina barren areas, but it could offer a mechanism that may assist in managing expansion in fished areas through the reduction of kina density. Effective monitoring using ER and GPR will provide the ability to closely monitor fishing activity and catch for any signs of localised depletion or overfishing.
- 569. Moreover, it is possible these harvesting practices may enhance the potential utilisation for other sectors by improving the quality of kina left between harvests through reduced competition. Therefore, while concerns exist regarding local depletion affecting lwi and other sectors' local kina gathering areas, there may also be overlapping benefits. Should concerns arise regarding concentrated fishing efforts, particularly in areas of significance to other sectors, FNZ is prepared to engage with all parties and review management settings accordingly.
- 570. Although not a statutory consideration, FNZ envisions the development of a kina management plan and other initiatives like crayfish and snapper management, special permits, increased research efforts, and working in tandem with any increases in catch limits to provide an integrated solution to kina barrens. An integrated management approach will be developed in

collaboration with tangata whenua, commercial and recreational fishers, and local communities to address more localized concerns.

8.1 Option 1 – *status quo*

East Northland (SUR 1A)							
TAC: 172 t	TACC: 40 t	Customary: 65 t	Recreational: 65 t	Other mortality: 2 t			
Hauraki Gulf and Bay of Plenty (SUR 1B)							
TAC : 324 t	TACC : 140 t	Customary: 90 t	Recreational: 90 t	Other mortality: 4 t			

- 571. Option 1 is the *status quo* for both SUR 1A and SUR 1B and proposes no changes to the current management settings.
- 572. Option 1 does not provide for further utilisation despite the high likelihood that further kina harvest in both QMAs would be sustainable. It also does not account for the improved information gathering and monitoring capability since the introduction of ER and GPR in commercial fisheries.
- 573. This option reflects a cautious approach to management and puts the most weight on the uncertainty in information regarding the stock status of SUR 1A and SUR 1B. This option carries the least sustainability risk to these overall kina stocks.
- 574. Option 1 also acknowledges and places weight on the concern expressed by tangata whenua that increases to commercial catch may negatively impact on local customary fisheries.
- 575. Feedback from the Mid-North Iwi Fisheries Forum supported retaining the *status quo* and favoured a broader, Iwi led management approach, using special permit processes to undertake targeted management interventions such as removals and/or translocation.
- 576. Section 13(3) requires you to have regard to social, cultural and economic factors in "considering the way and rate at which a stock is moved towards or above a level that can produce MSY." While there are no estimates of what the MSY may be, the best available information suggests the abundance of kina is high relative to current catch settings. Retaining the *status quo* is a more precautionary option than Options 2 and 3, but this would be at the expense of social, cultural, and economic benefit by not providing for increased utilisation (see *SUR 1A* and *SUR 1B* subsections below under *Economic considerations*).
- 577. One submission was received supporting Option 1 for SUR 1A and two submissions were received supporting Option 1 for SUR 1B.

8.2 Option 2

East Northland (SUR 1A)								
TAC : 247 t (↑ 75 t)	TACC: 80 t (1 40 t)	Customary: 100 t (1 35 t)	Recreational: 65 t	Other mortality: 2 t				
Hauraki Gulf and Bay of Plenty (SUR 1B)								
TAC : 439 t (↑ 115 t)	TACC: 210 t (1 70 t)	Customary: 135 t (1 45 t)	Recreational: 90 t	Other mortality: 4 t				

- 578. Option 2 proposes a moderate increase to the TAC for both SUR 1A and SUR 1B stocks. It proposes a 100% and 50% increase to the TACC for SUR 1A and SUR 1B, respectively, as well as an increase to the allowance for customary harvest.
- 579. The proposed moderate increase in the TAC may result in a lower abundance of kina in some areas which may reduce herbivory and result in increased abundance of macroalgae in the short-term, as noted above when discussing the '*Interdependence of stocks*.'
- 580. While it is acknowledged that increasing the TAC may reduce the number of kina available as food for predatory species like snapper and crayfish, there is no evidence to suggest these species are currently food limited. Kina are unlikely to be harvested from depths greater than 10-12 m (due to harvesting methods) and so it is anticipated that they will continue to be available as a food source for predators on most reefs where harvesting occurs. Therefore, FNZ does not anticipate that the proposed increase in TAC would pose a significant risk to the sustainability of the SUR 1A and SUR 1B, or related snapper and crayfish stocks.

- 581. There is currently no evidence to indicate that an increase in TAC would pose a sustainability risk due to environmental factors which are discussed under '*Environmental and sustainability considerations under the Act*' in this chapter. However, ongoing monitoring of the ecosystem is crucial to ensure that any potential impacts are carefully managed. FNZ is committed to advancing scientific research on kina populations to improve our understanding of the variation in their spatial distribution, density, and condition.
- 582. The increases proposed in Option 2 take into account that commercial landings for kina in both stocks have remained consistent for the last 19 years and appear to be constrained even with some fluctuations. Information from fishers, scientists, and other stakeholders (including through local area surveys) indicates a high abundance of kina, specifically in fished areas, suggesting that there is potential for the expansion of the fishery.
- 583. The social, cultural, and economic benefits of this option include that it provides for some increased utilisation, and the increased harvest of kina in both SUR 1A and SUR 1B may help to increase the overall quality of kina in many areas within the QMAs. Of the proposed options, Option 2 provides and intermediate approach in terms of social, cultural and economic benefits (see *SUR 1A* and *SUR 1B* subsections below under *Economic considerations*). It is less precautionary compared with Option 1, but more precautionary than Option 3.
- 584. This option also proposes increasing the allowance for customary harvest. This is driven by the anticipation of closer collaboration with iwi in implementing initiatives for kina management. The customary fishing provisions under the Fisheries (Amateur Fishing) Regulations 2013 have limited applications of kina harvest, due to permits only being able to be issued for the purposes of hui and tangi. However, for those areas where a rohe moana has been established and the Fisheries (Kaimoana Customary Fishing) Regulations 1998 are utilised, there is a broader scope for customary practices. In areas where the Fisheries (Kaimoana Customary Fishing) Regulations 1998 are applicable, there is potential in exploring iwi-led approaches to kina management using customary permits to enable the removal of kina. These approaches would support recognition and integration of mātauranga Māori and traditional practices in managing fisheries resources.
- 585. FNZ notes, however, that while commercial harvest of kina may potentially contribute to reducing the expansion of barrens in the short-term, this approach is not a solution for effective kina barren management. Broader strategies and considerations are required to ensure the sustainable management and conservation of important coastal marine ecosystems.

8.2.1 East Northland (SUR 1A)

- 586. Under Option 2, the TACC would be increased by 40 tonnes from 40 tonnes to 80 tonnes.
- 587. Available information from research and anecdotal reports suggests that the current TACC of 40 tonnes in the SUR 1A fishery is relatively small in comparison to the vast area in which the fishery operates. These sources indicate a high abundance of kina, specifically in fished areas, suggesting that there is potential for the expansion of the fishery.
- 588. Three submissions were received supporting Option 2 for SUR 1A.

8.2.2 Hauraki Gulf and Bay of Plenty (SUR 1B)

- 589. Under Option 2, the TACC would be increased by 70 tonnes from 140 tonnes to 210 tonnes.
- 590. SUR 1B encompasses the Hauraki Gulf, a region characterised by the presence of numerous kina barrens, which has raised widespread concern among stakeholders and the wider community. Recognising the ecological importance of addressing this issue, active exploratory research has been conducted to study the impacts of kina removals within the area. Initial results from this research indicate positive outcomes from a restoration perspective.
- 591. Three submissions were received supporting Option 2 for SUR 1B.

8.3 Option 3

East Northland (SUR 1A)								
TAC: 267 t (↑ 95 t)	TACC: 100 t (1 60 t)	Customary: 100 t (1 35 t)	Recreational: 65 t	Other mortality: 2 t				
Hauraki Gulf and Bay of Plenty (SUR 1B)								
TAC : 509 t (↑ 185 t)	TACC: 280 t (140 t)	Customary: 100 t (1 35 t)	Recreational: 90 t	Other mortality: 4 t				

- 592. Option 3 is the least conservative option and proposes a higher increase to the TAC for both SUR 1A and SUR 1B stocks. It proposes an increase to the TACC and to the allowance for customary harvest.
- 593. The increases proposed in Option 3, also considers the factors discussed under Option 2. While being the least conservative option, FNZ does not consider that Option 3 carries a sustainability risk given the reports of widespread kina abundance.
- 594. The social, cultural, and economic benefits of this option include that it provides for increased utilisation, and it is likely that the increased harvest of kina in both SUR 1A and SUR 1B will increase the overall quality of kina in many areas within the QMAs. Of the options proposed, Option 3 will provide the most social, cultural and economic benefits (see *SUR 1A* and *SUR 1B* subsections below under *Economic considerations*) but is also less precautionary compared with the other options.
- 595. Feedback from Mai i Ngā Kuri a Wharei ki Tihirau Iwi Fisheries Forum in the Bay of Plenty supported Option 3 for SUR 1B and favoured a broader management approach as discussed previously in this document.
- 596. Ten submissions were received supporting Option 3 for SUR 1A and 12 submissions were received supporting Option 3 for SUR 1B.

9 Economic considerations

- 597. The SUR 1A and SUR 1B kina fisheries support many associated people, including:
 - Quota holders¹⁰¹
 - Commercial fishers
 - Seafood processing facilities and licensed fish receivers.
- 598. To give a sense of scale and distribution, based on the 2021/22 fishing year, in SUR 1A, 90% of quota was owned by four entities, and the remaining 10% of quota was owned by seven entities. In SUR 1B, 95% of quota was owned by four entities, and the remaining 5% of quota was owned by 10 entities. As at the end of the 2021/22 fishing year, there were six commercial entities holding ACE in SUR 1A, and five commercial entities holding ACE in SUR 1B.

9.1 SUR 1A

- 599. Under Option 1, the current management settings would be retained at *status quo*. This would not result in any increase in commercial harvest of kina thus not resulting in any increase in annual revenue.
- 600. Under Option 2, the TACC would increase from 40 tonnes to 80 tonnes. This would allow for increased commercial harvest, increasing the maximum landed catch by 40 tonnes a 100% increase. Based on the 2023/24 port price of \$0.78/kg, this would result in an increase of approximately \$31,000 in annual revenue potential.
- 601. Under Option 3, the TACC would increase from 40 tonnes to 100 tonnes. This would allow for increased commercial harvest, thus increasing the maximum landed catch by 60 tonnes a 150% increase. Based on the 2023/24 port price of \$0.78/kg, this would result in an increase of approximately \$47,000 in annual revenue potential.

9.2 SUR 1B

- 602. Under Option 1, the current management settings would be retained at *status quo*. This would not result in any increase in commercial harvest of kina, so would not result in any increase in annual revenue.
- 603. Under Option 2, the TACC would be increased from 140 tonnes to 210 tonnes. This would allow for increased commercial harvest, thus increasing the maximum landed catch by 70

¹⁰¹ This includes Māori who own Fisheries Settlement quota shares – Some iwi and mandated iwi organisations are therefore likely to be impacted by a closure of commercial take. However, Fisheries New Zealand does not have information to accurately quantify the potential loss in quota value or flow on impacts of this for iwi and their associated communities.

^{91 •} Review of sustainability measures for the 2023 October round: SUR 1A & SUR 1B

tonnes – a 50% increase. Based on the 2023/24 port price of \$0.98/kg, this would result in an increase of approximately \$69,000 in annual revenue potential.

604. Under Option 3, the TACC would be increased from 140 tonnes to 280 tonnes. This would allow for increased commercial harvest, thus increasing the maximum landed catch by 140 tonnes – a 100% increase. Based on the 2023/24 port price of \$0.98/kg, this would result in an increase of approximately \$137,000 in annual revenue potential.

10 Deemed values

605. FNZ is satisfied that the current deemed value rates for SUR 1A and SUR 1B are consistent with section 75(2)(a) of the Act in that they provide sufficient incentive for fishers to balance their catch with ACE. FNZ therefore did not propose any deemed value rate changes as part of this review. None of the submissions received commented on the SUR 1A and SUR 1B deemed value rates.

11 Conclusions and recommendations

- 606. Based on the best available information, FNZ consulted on options to increase the TACs of SUR 1A and SUR 1B as an opportunity for increased utilisation was identified. Information from fishers, scientists, and other stakeholders suggest that kina abundance is increasing and constraining catch at the current TACCs. FNZ notes that both Options 2 and 3, for both stocks, are considered low sustainability-risk increases despite the absence of formal stock assessments. In determining the difference between these two options there is a trade-off between the absence of stock assessment, the potential for additional utilisation as well as the views of Treaty partners and stakeholders.
- 607. FNZ's preference leans towards Option 2 for SUR 1A as it is more cautious and provides a smaller increase. This option considers both the reports of high kina abundance as well as the absence of a stock assessment and the concerns raised by iwi in the North. While FNZ feels Option 3 would be sustainable from a stock perspective in SUR 1A, the key difference is the ongoing concerns expressed by Māori in the region with respect to increasing commercial catch. While it was acknowledged there may be some advantages from having increased harvest in certain areas that are fished, there was also a strong view that the significance of kina as a taonga and local source of kaimoana meant the risk of providing for large scale increases in commercial catch was not justified. A lower increase (relative to Option 3) would mitigate some of the concerns raised of iwi, while providing for some increased use. This would provide the ability to see how the fishery responds to the changes and monitor for overlap between commercial operations and key customary harvest areas. It could provide a platform for further increases in the future.
- 608. In particular, the Mid-North Iwi Fisheries Forum expressed little confidence in the ability of the system to monitor and respond to local area concerns and therefore a risk that additional commercial harvest may have real and detrimental impacts to local iwi, hapū and whanau. However, there was interest in working with FNZ on the broader management approach to kina and kina barrens. It was suggested that this work, and the conversations with Iwi, should come first before catch limits are increased.
- 609. FNZ's preference leans towards Option 3 for SUR 1B. The majority of the feedback from lwi Fisheries Forum and submissions in SUR 1B supported the view that abundance has increased, and that the sustainability risk of the proposed options is low. There was also strong interest in working with FNZ on the broader management approach, alongside increases to commercial catch.
- 610. These preferred options for SUR 1A and SUR 1B take into account valuable input from lwi, fishers, scientists, and other stakeholders, along with commercial data from ER and GPR. The data highlights that kina abundance is high in many areas, which is impacting the broader ecosystem.
- 611. Feedback from the Mid-North Iwi Fisheries Forum and some submissions strongly opposed any increase to commercial catch and suggested that a long-term management plan was required instead. Option 1 maintains status quo and does not consider the opportunity for further utilisation or the benefits that may come from it. It also does not account for the improved information gathering and monitoring capabilities of ER and GPR in commercial fisheries. This option puts the most weight on the uncertainty of the stock statuses of SUR 1A and SUR 1B offering the least sustainability risk to these kina stocks and addressing concerns of iwi.

612. FNZ intends to monitor the stocks should the recommended increases be implemented through landings and ER and GPR and will review management settings should a sustainability risk become apparent. In addition, FNZ officials are progressing work on a broader suite of measures to address kina abundance and barrens in collaboration with iwi and stakeholders. This work will include the commissioning of research projects to improve information, the consideration of options such as management options for predator species such as rock lobster and snapper, spatial restrictions or sub-area catch limits within CRA 1, and targeted removals of kina from barrens through special permits.

12 Decision for SUR 1A

Option 1

Agree to set the SUR 1A TAC at 172 tonnes and, within the TAC, to:

- i. retain the allowance for Māori customary non-commercial fishing interests at 65 tonnes;
- ii. retain the allowance for recreational fishing interests at 65 tonnes;
- iii. retain the allowance for all other sources of mortality to the stock caused by fishing at 2 tonnes; and
- iv. retain the SUR 1A TACC at 40 tonnes.

Agreed / Agreed as Amended / Not Agreed

<u>OR</u>

Option 2 (Fisheries New Zealand preferred option)

Agree to set the SUR 1A TAC at 247 tonnes and, within the TAC, to:

- i. increase the allowance for Māori customary non-commercial fishing interests from 65 to 100 tonnes;
- ii. retain the allowance for recreational fishing interests at 65 tonnes;
- iii. retain the allowance for all other sources of mortality to the stock caused by fishing at 2 tonnes; and
- iv. increase the SUR 1A TACC from 40 to 80 tonnes.

Agreed Agreed as Amended / Not Agreed

<u>OR</u>

Option 3

Agree to set the SUR 1A TAC at 267 tonnes and, within the TAC, to:

- i. increase the allowance for Māori customary non-commercial fishing interests from 65 to 100 tonnes;
- ii. retain the allowance for recreational fishing interests at 65 tonnes;
- iii. retain the allowance for all other sources of mortality to the stock caused by fishing at 2 tonnes; and
- iv. increase the SUR 1A TACC from 40 to 100 tonnes.

Agreed / Agreed as Amended / Not Agreed

13 Decision for SUR 1B

Option 1

Agree to set the SUR 1B TAC at 324 tonnes and, within the TAC, to:

- i. retain the allowance for Māori customary non-commercial fishing interests at 90 tonnes;
- ii. retain the allowance for recreational fishing interests at 90 tonnes;
- iii. retain the allowance for all other sources of mortality to the stock caused by fishing at 4 tonnes; and
- iv. retain the SUR 1A TACC at 140 tonnes.

Agreed / Agreed as Amended / Not Agreed

<u>OR</u>

Option 2

Agree to set the SUR 1B TAC at 439 tonnes and, within the TAC, to:

- i. increase the allowance for Māori customary non-commercial fishing interests from 90 to 135 tonnes;
- ii. retain the allowance for recreational fishing interests at 90 tonnes;
- iii. retain the allowance for all other sources of mortality to the stock caused by fishing at 4 tonnes; and
- iv. increase the SUR 1B TACC from 140 to 210 tonnes.

Agreed / Agreed as Amended / Not Agreed

<u>OR</u>

Option 3 (Fisheries New Zealand preferred option)

Agree to set the SUR 1B TAC at 509 tonnes and, within the TAC, to:

- i. increase the allowance for Māori customary non-commercial fishing interests from 90 to 135 tonnes;
- ii. retain the allowance for recreational fishing interests at 90 tonnes;
- iii. retain the allowance for all other sources of mortality to the stock caused by fishing at 4 tonnes; and
- iv. increase the SUR 1B TACC from 140 to 280 tonnes.

Agreed / Agreed as Amended / Not Agreed

Hon Rachel Brooking Minister for Oceans and Fisheries

/ 8 / 2023 31



Gemfish - Rexea solandri, Tiikati, Maka-taharaki, Maka-tikati



Figure 1: Quota Management Areas (QMAs) for gemfish, with SKI 1 and SKI 2 highlighted.

1 Why are we proposing a review?

- 613. The 2023 stock assessment suggests that the biomass of gemfish in SKI 1 and SKI 2 has increased considerably in recent years and there is a >90% probability that the spawning biomass is above the interim target biomass level, 40% unfished spawning biomass (*SB*₀) (FNZ Fisheries Assessment Plenary, 2023). The bycatch of gemfish from target fisheries such as hoki and tarakihi has also increased in line with increased abundance.
- 614. Projected increases of approximately 10, 20, 30, and 80 percent of the combined SKI 1 and SKI 2 Total Allowable Commercial Catch (**TACC**) were modelled. These projections suggest that increasing the TACC under all increase scenarios would be very unlikely (<10% probability) to cause the stock to decline below the interim target biomass level in the next nine years. Consequently, a utilisation opportunity is available.
- 615. The Total Allowable Catch (**TAC**) for SKI 1 was last adjusted in October 2020. At the time, the Minister agreed to relatively moderate increases of 89 tonnes (41% increase) because of the uncertainty associated with the increase in gemfish biomass at that time. The TAC for SKI 2 was last adjusted in 2023, as the 2020 TAC increase of 77 tonnes (31%) was put on hold pending the determination of an application for judicial review regarding concerns about the operation of preferential allocation rights (otherwise known as 28N rights). This has since been discontinued following the discharge of the interim orders on 30 May 2023.¹⁰²
- 616. FNZ is advising on options to either retain the *status quo* or to increase the TACs for SKI 1 and SKI 2 under section 13(2)(a) of the Fisheries Act 1996 (**the Act**), and within this, to increase the allowances for all other mortality caused by fishing and the TACCs to allow for greater utilisation of the stocks.

¹⁰² On 29 May 2023, judicial review applicants filed to discontinue the SKI 2 28N rights proceeding, and to have the associated interim order preventing the 2020 TAC and TACC increases for SKI 2 from being implemented. As a result of the interim orders being discharged, the 2020 TAC and TACC increases for SKI 2 have now been implemented.

1.1 Summary of proposed options

	Option	TAC	TACC	Allowances		
Stock				Customary Māori	Recreational	All other mortality caused by fishing
SKI 1	Option 1 (Status quo)	307	252	3	27	25
	Option 2	362 (个 55 t)	302 (🛧 50 t)	3	27	30 (个 5 t)
	Option 3	418 (🛧 111 t)	353 (🛧 101 t)	3	27	35 (个 10 t)
	Option 1 (Status quo)	325	288	3	5	29
SKI 2	Option 2	389 (个 64 t)	346 (🛧 58 t)	3	5	35 (个 6 t)
	Option 3	451 (🛧 126 t)	403 (个 115 t)	3	5	40 (个 11 t)
In total, 10 submissions were received on the proposed options.						

Table 1: Summary of options proposed for SKI 1 and SKI 2 from 1 October 2023.¹⁰³ Figures are all in tonnes. The preferred options of Fisheries New Zealand are highlighted in blue.

2 About the stocks

2.1 Biology¹⁰⁴

- 617. Gemfish (also known as silver or southern kingfish) are benthopelagic¹⁰⁵ fish found around the coastline of New Zealand, mainly in waters between 50 and 550 metres in depth.
- 618. The North Island gemfish stocks, SKI 1 and SKI 2, are considered to comprise a single biological stock, particularly the eastern portion of SKI 1 (SKI 1E) and SKI 2. There is also a southern/west coast gemfish stock comprising SKI 3 and SKI 7 (refer Figure 1).
- 619. Gemfish are known to undertake spawning migrations and the pre-spawning runs have formed the basis of winter target fisheries, but exact times and locations of spawning are not well known. It is thought that adult fish in SKI 1 and SKI 2 migrate from the lower east and west coasts of the North Island (SKI 2) to north of the North Island (SKI 1) to spawn in July.
- 620. Gemfish grow rapidly, attaining a fork length¹⁰⁶ of approximately 30 cm at the end of the first year and grow to around 63 cm at the end of the fourth year. Both male and female gemfish display similar growth rates until about age five, from which point females grow larger. The maximum age of gemfish is around 15 years and individuals recruit into the fishery at age three when they are around 53 cm fork length.
- 621. No correlations have been found between SKI 1 and SKI 2 recruitment variability and climate variables. However, annual recruitment for SKI 1 and SKI 2 is estimated to be cyclical, with periods of higher recruitment occurring approximately every 15 years and low recruitment occurring during the intervening period. The most recent period of low recruitment was in 2002 to 2010 and the most recent period of high recruitment was in 2013 to 2017, suggesting the stock may be entering a low recruitment phase. However, this lower recruitment phase is unlikely to cause gemfish stock biomass to decline below 90% SB_0^{107} over the next 5 years under current catch levels (see Table 3).

2.2 Fishery characteristics

622. SKI 1 is equivalent to Fisheries Management Areas (**FMA**s) 1 (Auckland East) and 9 (Auckland West), which comprise the waters from Nukuhakari Bay in North Taranaki, up the west coast

¹⁰³ Note the *status quo* TAC and TACC figures for SKI 2 are the 2020 TAC and TACC increases that were subject to interim orders (meaning that the increase to TAC and TACC could not be implemented) pending the determination of an application for judicial review regarding concerns about the operation of preferential allocation rights (otherwise known as 28N rights). As of 30 May 2023, this proceeding has been discontinued and the 2020 TAC and TACC settings have now been implemented.

¹⁰⁴ Information in this section references the FNZ Fisheries Assessment Plenary 2023.

¹⁰⁵ Relating to species that live and feed near the sea floor as well as in midwaters or near the surface.

¹⁰⁶ The length of a fish as measured on a line tracing the contour of the body from the tip of the upper jaw to the fork of the tail.

¹⁰⁷ Assuming recent (lower) average recruitment (64% of the long-term average – 1975 to 2017).

and around to Cape Runaway on the East Cape (eastern Bay of Plenty). SKI 2 is equivalent to FMA 2 (Central East), which comprises the waters from Cape Runaway south and around to Mana Island off the west coast of the Wellington region.

- 623. Gemfish in SKI 1 and SKI 2 are predominantly caught by commercial fishers, with most catch currently taken as non-target catch (approximately 90% of gemfish caught in SKI 1 and SKI 2 in the last five years) by vessels using midwater and bottom trawl gear targeting tarakihi, hoki, ling, and scampi.
- 624. In recent years recreational interest in gemfish has been increasing, resulting in growing numbers of gemfish being caught by recreational fishers, particularly on the east coast of the North Island.¹⁰⁸ The predominant recreational method used for catching gemfish is rod and reel. Gemfish are caught alongside popular table fish species such as hāpuku, bass, and bluenose, and are highly regarded as a smoking fish.
- 625. Gemfish in SKI 1 and SKI 2 are caught mainly off the east coast of the North Island in spring and summer, consistent with pre- and post-spawning migrations, but catches are recorded yearround. In the early 1990s commercial landings (both bycatch and target) for SKI 1 and SKI 2 combined were approximately 2,000 tonnes annually. Stock abundance declined substantially from the mid-1990s onwards but has improved significantly in recent years (see sections 3.3 and 4.2 of this chapter).
- 626. Consistent with the increase in stock abundance from 2017, catches from both stocks have noticeably increased during recent years (Figure 5; FNZ-Fisheries Assessment Plenary, 2023). Industry have noted that gemfish have become increasingly difficult to avoid and as a result, landings in both SKI 1 and SKI 2 have exceeded available ACE since 2017/18, with the exception of the 2021/22 fishing year for SKI 2. Both stocks have also incurred significant deemed value¹⁰⁹ invoices over the last four years ranging from \$53,530 to \$391,791 for SKI 1¹¹⁰ and \$86,935 to \$304,558 for SKI 2.¹¹¹

2.3 Management background

- 627. Gemfish were introduced into the Quota Management System (**QMS**) in 1986, with an October fishing year (1 October to 30 September). Prior to the introduction of the Act, a TAC and non-commercial allowances were not required and only a TACC was required to be set. Initially the TACCs for SKI 1 and SKI 2 were set at 550 tonnes and 860 tonnes, respectively. These were gradually increased over time through Quota Appeal Authority¹¹² decisions to 1,152 tonnes by 1989 for SKI 1 and 1,300 tonnes by 1993 for SKI 2.
- 628. In the late 1990s, action was taken to rebuild SKI 1 and SKI 2 stocks after monitoring indicated abundance had declined significantly to a historical low of approximately 25% of unfished spawning biomass (**SB**₀). This resulted in successive TACC cuts being made for SKI 1 and SKI 2 between 1997 and 2001 to curtail depletion and to promote rebuilding of the stock. From 1997 to 2001, the TACC was reduced from 1,151.8 tonnes to 210 tonnes for SKI 1 and from 1,300.4 tonnes to 240 tonnes for SKI 2.
- 629. Over the last two decades, North Island gemfish abundance has increased significantly, from approximately 25% *SB*₀ to 104% *SB*₀. A similar trend has been observed for the southern gemfish stocks (SKI 3 and SKI 7), with biomass increasing by approximately tenfold since 2015.
- 630. In 2020, the best available information at the time (2020 CPUE update) suggested that the management actions taken for SKI 1 and SKI 2 in the late 1990s/early 2000s had been successful in improving the abundance and health of these stocks. As a result, the Minister of Fisheries at the time decided to increase the TAC to 307 tonnes for SKI 1 and to 325 tonnes for SKI 2 to allow for increased utilisation (Table 2; Minister of Fisheries decision letter, 2020).
- 631. Shortly after the Minister's 2020 decisions, the TAC and TACC increases for SKI 2 were put on hold pending the determination of an application for judicial review regarding concerns about

¹⁰⁸ The National Panel Survey of Marine Recreational Fishers 2017-18 and 2011-12 provide the most reliable estimate of New Zealand recreational fish harvest.

¹⁰⁹ Deemed values are the price paid by fishers for each kilogram of unprocessed fish landed in excess of a fisher's Annual Catch Entitlement (ACE) holdings.

¹¹⁰ Approximately 32 to 184 tonnes overcaught.

¹¹¹ Approximately 23 to 128 tonnes overcaught. However, in the most recent fishing year (2021/22), SKI 2 had a significantly lower deemed value invoice of \$60.38, likely due to fishers avoiding gemfish in effort to minimise deemed value payments, which were significant the year prior.

¹¹² The Quota Appeal Authority has the sole function of hearing appeals and making decisions under sections 28(H) and 28(I) of the Fisheries Act 1983 in respect of the quota management systems.

the operation of preferential allocation rights (otherwise known as 28N rights). As a result, the old (2001) catch settings¹¹³ for SKI 2 (248-tonne TAC and 240-tonne TACC) have continued to apply since then.

- 632. However, on 29 May 2023, judicial review applicants filed to discontinue the SKI 2 28N rights proceeding. The discontinuation, which was confirmed by a Court order on 30 May, means the 2020 TAC and TACC increases for SKI 2 have been implemented (as of 8 June 2023) and that all 28N rights for SKI 2 have now been extinguished.
- 633. SKI 2 TAC and TACC figures in this chapter therefore reflect the 2020 increases but figures showing commercial catch still reflect the old TAC and TACC settings.

Table 2: TAC and allowance increases made in October 2020 for gemfish stocks, SKI 1 and SKI 2. Figures are all in tonnes.

				Allowances		
Stock		TAC	TACC	Customary Māori	Recreational	All other mortality caused by fishing
01/14	Old	218	210	3	5	0
SKIT	New	307 🛧	252 🛧	3	27 🛧	25 🛧
SKI D	Old	248	240	3	5	0
JRI Z	New	325 🛧	288 🛧	3	5	29 🛧

634. Alongside the 2020 decisions, the then Minister agreed to consider the introduction of a recreational daily bag limit for SKI 1 and SKI 2 as an additional management measure. Gemfish was subsequently added to the finfish combined daily bag limit following a national review of recreational daily bag limits for finfish in 2021/22 (Minister for Oceans and Fisheries decision letter, 2022). This change meant that recreational fishers could no longer take unlimited quantities of gemfish and were instead restricted to a maximum of 20 gemfish per day within the total combined daily bag limit of 20 finfish per fisher (excluding specified baitfish and freshwater eels).

3 Status of the stocks

635. SKI 1 and SKI 2 are assessed together in a single stock assessment as they are thought to comprise a single biological stock, particularly in SKI 1E and SKI 2.

3.1 Summary of the 2020 - 2022 CPUE updates

- 636. The 2020 CPUE analysis, based on a sub-adult¹¹⁴/adult target tarakihi bottom trawl index, suggested that the SKI 1 and SKI 2 stock biomass had increased significantly since a stock assessment in 2008, which estimated gemfish biomass to be at 26% or 32% B_0 ¹¹⁵ in 2006, and 22% B_0 in 2007 (FNZ Fisheries Assessment Plenary, 2020). The 2020 analysis indicated that the CPUE had increased steeply since 2015 and was used to inform the SKI 1 and SKI 2 TAC review in October 2020. This CPUE increase was also reflected in increases in catch seen in both commercial and recreational fisheries.
- 637. A CPUE analysis update was completed in 2021 based on a new hoki/gemfish target trawl index. This updated analysis suggested that SKI 1 and SKI 2 adult biomass had increased to almost twice the target level of 40% unfished biomass (FNZ Fisheries Assessment Plenary, 2021). Large increases in the CPUE for sub-adult/adult gemfish taken in the tarakihi target trawl fishery over recent years also indicated that the gemfish spawning stock¹¹⁶ would have had continued high recruitment over the next few years.

99 • Review of sustainability measures for the 2023 October round: SKI 1 and SKI 2

¹¹³ The 2001 review of SKI 2 resulted in a reduction to the TAC, which is why 28N rights were not triggered at that time. See Table 5 for an overview of changes to SKI 2 catch settings.

¹¹⁴ A sub-adult fish is a fish that has passed through the juvenile stage but has not yet developed all the adult characteristics, sexual maturity, or size.

¹¹⁵ B_0 or the virgin biomass is the theoretical carrying capacity of the recruited or vulnerable biomass of a fish stock, as defined in the <u>Harvest Strategy Standard for New Zealand Fisheries</u>. <u>SB_0 is the same thing for the spawning biomass</u>.

¹¹⁶ The spawning stock is the sexually mature fish within a stock that spawn in a given year.

- 638. An agreed soft limit proxy¹¹⁷ was established by the Inshore Stock Working Group based on the mean hoki/gemfish target trawl CPUE for the period 2004–17, using the default <u>Harvest</u> <u>Strategy Standard for New Zealand Fisheries (HSS)</u> definition. From that, a *B_{MSY}* compatible target¹¹⁸ (40% *SB*₀ or *SB_{MSY}*) of twice the soft limit and a hard limit¹¹⁹ of half the soft limit were established.
- 639. The 2021 CPUE indices were further updated in 2022 with data from the 2021 fishing year.

3.2 Summary of the 2023 stock assessment results.

- 640. The best available information on the status of the SKI 1 and SKI 2 stocks is a combined fully quantitative stock assessment, which was accepted by the 2023 Fisheries Assessment Plenary (FNZ- Fisheries Assessment Plenary, 2023).
- 641. For the 2023 assessment, annual catches from 1950 were partitioned between the target (defined as gemfish and hoki target trawling) and bycatch (predominantly bycatch from the tarakihi trawl fishery) fisheries in SKI 1 and SKI 2. Recreational catches of gemfish are small and there is no information available regarding customary catches. The assessment model therefore only included reported catch from the commercial fishery.
- 642. The 2023 stock assessment shows that SKI 1 and SKI 2 were heavily depleted in the late 1990s and early 2000s, reaching a historical low of about 25% of the unfished biomass levels (Figure 3). Spawning biomass increased during the 2000s following higher recruitment in the late 1990s and early 2000s, while catches remained at relatively low levels. Spawning biomass is estimated to have increased further during 2019 to 2023 following higher recruitments in 2013 to 2017.
- 643. The estimated annual recruitments for SKI 1 and SKI 2 are cyclical with periods of higher recruitment occurring at approximately 15-year intervals and low recruitment during the intervening years (Figure 4). The most recent period of high recruitment was during 2013 to 2017 suggesting the stock may be entering a period of low recruitment. However, the stock is predicted to remain well above the target biomass level (above 90% *SB*₀) for the next five years at current catch levels (see Table 3).

¹¹⁷ The soft limit is a biomass limit below which a fish stock is considered to be overfished or depleted and a requirement for a formal, time-constrained fishery rebuilding plan is triggered, as defined in the <u>Harvest Strategy Standard for New Zealand</u> <u>Fisheries.</u>

¹¹⁸ A specified target biomass about which a fishery or stock should fluctuate based on B_{MSY} with a at least 50% probability of achieving the target.

¹¹⁹ The hard limit is a biomass limit below which a fish stock is considered to be collapsed and should be considered for closure.



Figure 3: Annual spawning biomass for SKI 1 and SKI 2 relative to virgin biomass (equilibrium, unexploited) estimated from the Base Case model (black) and the five-year projection (red) assuming annual catches equivalent to 2023 catch with recent recruitment at the long-term average level (1975-2017). The solid line represents the median and the shaded area represents the 95% confidence interval. The horizontal dashed line represents the default target biomass level (40% *SB*₀).



Figure 4: Annual estimates of recruitment (numbers of fish, thousands) from the Base Case model (Markov Chain Monte Carlos - MCMCs). The black line represents the median of the MCMC estimates and the shaded area represents the 95% confidence interval.

3.3 Stock status¹²⁰

- 644. Stock status in the current fishing year (2022/23) was determined relative to the estimated unfished spawning biomass (SB_0). The spawning biomass is believed to have increased considerably over the last five years and is currently estimated to be 104% of the unfished biomass levels (under the base case model).¹²¹ It should be noted that there is considerable uncertainty associated with this biomass estimate, reflecting the uncertainty associated with the estimates of recent higher recruitments. This uncertainty is reflected in the 95% confidence interval, which has a lower bound of 76% SB_0 and an upper bound of 150% SB_0 (Figure 3), meaning there is a possibility the stock biomass could be significantly higher or lower than the median estimate of 104% SB_0 .
- 645. However, there is no uncertainty regarding whether the stock is above the target biomass level (40% SB_0). It is considered very likely (>90% probability) that the stock biomass is above the interim target biomass level, and very unlikely and exceptionally unlikely that the stock biomass is below the soft (20% SB_0) and hard (10% SB_0) limits,¹²² respectively.
- 646. Correspondingly, with the high stock biomass and relatively low catches, fishing mortality (the proportion of the available biomass taken by fishing) for SKI 1 and SKI 2 over the last 10 years is estimated to be well below the rate that would produce the target biomass level ($F_{SB40\%}$).¹²³ The assessment model outputs estimate current (2023) fishing mortality to be 17% ¹²⁴ of $F_{SB40\%}$, meaning it is very unlikely that overfishing is occurring in SKI 1 and SKI 2.
- 647. Five-year stock projections (to the 2027/28 fishing year) were conducted using the base case model assuming annual catches equivalent to 2021/22 commercial catch (508 tonnes). Two recruitment models were considered: recruitment at the long-term (1975 to 2017) average level and recruitment at the average 2002 to 2010 level (64% of the long-term average), representing a recent period of lower recruitment.
- 648. The projections indicate that at current catch levels the stock biomass will reach a peak in the next few years and then decline slightly, following the progression of the strong 2013 to 2017-year classes through the fishery. Nonetheless, for all recruitment assumptions the stock remains well above the target biomass level throughout the projection period (Figure 3 and Table 3).
- Table 3: Projected spawning biomass relative to virgin spawning biomass (and 95% confidence interval) and the probability of the spawning biomass being above default biomass limits and interim target level in 2028 (2027/28 fishing year) for the base case model at the current level of catch with different recruitment assumptions.

Recruitment option	SB2028/SB0	Pr (SB2028 > X%SB0)		
		10%	20%	40%
Avg 1975-2017	1.03 (0.77-1.50)	1.00	1.00	1.00
Avg 2002-2010	0.91 (0.66-1.35)	1.00	1.00	1.00

- 649. Given the stock level is estimated to be at or above the interim B_{MSY} reference level (40% SB_0), catch settings can be altered under section 13(2)(a) of the Act. Section 13(2)(a) allows the TAC to be altered in a way that maintains the stock at or above a level that can produce the maximum sustainable yield, having regard to the interdependence of stocks. This section applies when maintaining the *status quo* or when increasing the TAC.
- 650. Noted uncertainties at the time of the 2023 stock assessment are summarised in the May 2023 Plenary report (FNZ Fisheries Assessment Plenary, 2023). They are outlined as the following:
 - The extent of the recent increase in the CPUE indices.
 - Insufficient age data to corroborate recent year class strengths.

¹²⁰ Information in the section references the FNZ Fisheries Assessment Plenary 2023.

¹²¹ The base case model and a number of alternative models testing key assumptions (including natural mortality rates, the proportion of fish of different ages or sizes that are mature, spawning stock-recruitment relationship and type of CPUE indices) were run. The models produced spawning biomass estimates ranging from 85% SB₀ to 145% SB₀. The base case model was the preferred model by the Inshore Fisheries Working Group.

¹²² Under the Harvest Strategy Standard, the default management target is 40% *B*₀ (unfished biomass), the soft limit is 20% *B*₀, and the hard limit is 10% *B*₀.

 $^{^{123}}$ F_{SB40%} is the level of fishing mortality that results in SB_{40%} under equilibrium conditions.

¹²⁴ From the base case model.

3.4 Post 2023 plenary SKI 1 and SKI 2 projections

- 651. Following the May 2023 Plenary, to assess the effect any adjustment to the TAC would have on the stock, nine-year projections (to 2031/32) were made using the 2023 stock assessment and the two recruitment models: long-term average (1975 to 2017) and average recent (lower) recruitment (2002 to 2010).
- 652. The projections modelled changes in TACC¹²⁵ (with no change to the allowances) and demonstrated the change in future biomass associated with increases in catch. Potential increases of approximately 10, 20, 30, and 40 percent of the combined SKI 1 and SKI 2¹²⁶ TACC were modelled. When factoring in the newly implemented TAC and TACC for SKI 2 (325-tonne TAC and 288-tonne TACC), these increases equate to approximately zero, 10, 20, and 30 percent of the updated TACC. Each percent increase was then converted to a corresponding increase in tonnes (zero, 50, 100, and 149 tonnes respectively), which was applied to the TAC.
- 653. A further projection modelling an increase of approximately 100% of the combined SKI 1 and SKI 2 TACC was run.¹²⁷ When factoring in the newly implemented SKI 2 TAC and TACC, this increase equates to an approximately 80% or 444 tonnes.
- 654. To support the development of management options, the recent (lower) average recruitment projections have been used as they mitigate the risk that recruitment in SKI 1 and SKI 2 has declined and will remain at this level over the next five- to nine-year period.
- 655. The projections indicate that under all scenarios, assuming recent (lower) average recruitment (64% of the long-term average 1975 to 2017), the stock biomass will continue to increase in the coming year and then decrease slightly to around 88% SB_0 by 2027/28 (Table 4). This is due, in part, to the progression of the strong 2013 to 2017-year classes recruiting to the fishery. These recruitments have the potential to support higher catches over the next ten years, although catch levels beyond the next five years would need to be determined based on ongoing monitoring and assessment.

Projection	Median (95% Cl)	Probability SB ₂₀₂₈ >SB _{40%}	Interpretation of the <u>median</u> results
S <i>tatus quo</i> (0 tonnes)	0.902 (0.66-1.34)	1.00	Spawning biomass in 2028 is 90% unfished levels
TACC + 10% (50 tonnes)	0.89 (0.65-1.34)	1.00	Spawning biomass in 2028 is 89% unfished levels
TACC + 20% (100 tonnes)	0.89 (0.64-1.33)	1.00	Spawning biomass in 2028 is 89% unfished levels
TACC + 30% (149 tonnes)	0.87 (0.63-1.32)	1.00	Spawning biomass in 2028 is 87% unfished levels
TACC +80% (444 tonnes) ¹²⁸	0.83 (0.59-1.29)	0.99	Spawning biomass in 2028 is 83% unfished levels

Table 4: Median results from the post 2023 Plenary projections, with 95% confidence intervals, and probabilities of the biomass in 2028 being above specified levels.

- 656. If the *status quo* is maintained, gemfish biomass is projected to continue to increase to 105% SB_0 in the next year, and then decline slightly to 90% SB_0 by 2028, with a >90% probability of being above 40% SB_0 . Under the highest catch increase projection (444 tonnes), gemfish biomass will decline slightly more than under current catch levels to 83% SB_0 by 2028, which is still over double the target biomass level (40% SB_0). For this scenario there is also a >90% probability of the spawning biomass being above 40% SB_0 in 2028. At the end of nine years, the projections estimate that gemfish biomass will decline further under all projection scenarios (to 71% under *status quo* and to 59% SB_0 under the highest catch increase projection) but there is still a very high probability (98% or better) that spawning biomass will remain above 40% SB_0 in 2031.
- 657. A CPUE update will be conducted for SKI 1 and SKI 2 in 2024 and will provide a further opportunity to consider a review of the catch settings for October 2024.

¹²⁵ Based on the old (2001) SKI 2 TAC and TACC catch settings (248-tonne TAC and 240-tonne TACC).

¹²⁶ The 2001 TACC of 240 tonnes.

¹²⁷ This projection was not included in the consultation document as it was not ready in time to be included.

¹²⁸ This projection was not included in the consultation document as it was not ready in time to be included.

3.5 Cyclone Gabrielle

- 658. On 12-16 February 2023, Cyclone Gabrielle caused unprecedented damage across parts of the North Island and in particular within FMA 2, especially the Gisborne and Hawkes Bay regions.
- 659. Cyclone Gabrielle produced strong winds and torrential rainfall causing loss of life, significant flooding, and damage to the environment (both land and marine). Its effects have impacted several communities and industries, including fisheries in FMA 2.¹²⁹
- 660. The environmental impacts of the cyclone are believed to be extensive and are considered to have long-term fishery implications. These include:
 - Physical debris (woody debris such as forestry slash) has been widespread along the Gisborne and Hawke's Bay coastline and in the ocean. This has caused navigational issues for fishing vessels, and fishing gear issues where nets have been caught and damaged. In turn this has changed fisher behaviour, such as travelling further out to new grounds or spending significant time repairing damaged gear;
 - The discharge of chemicals, sewage, and debris into the marine environment may cause polluted and anoxic conditions, potentially leading to localised mass die-off events of local benthic sea life; and,
 - Sedimentation will have wide-ranging impacts on inshore fisheries due to loss of habitat and productivity (such as smothering of rocky reefs, suspension, and resettlement to new areas) resulting in the disruption to the food web and potential displacement of fish stocks.
- 661. Since Cyclone Gabrielle, the National Institute of Water and Atmospheric Research (**NIWA**) has conducted two surveys within FMA 2 to understand the immediate impacts of the cyclone and establish a baseline to monitor ongoing changes in the marine environment within this FMA.
- 662. In April 2023 the NIWA research vessel *Ikatere* was deployed to specifically map the seabed between Cape Kidnappers and Mohaka using multibeam echosounder equipment. In June 2023, the NIWA research vessel *Kaharoa* was deployed within the wider FMA 2 region (Cape Turnagain to East Cape) to sample benthic sediment, video the seafloor, and provide further mapping of the seafloor using multibeam echosounder equipment.
- 663. NIWA do not expect the data gathered from these two voyages to be fully analysed and ready for dissemination until later this year. However, preliminary observations from these surveys include:
 - Visibility above the seabed was poor at most locations, due to the presence of a layer of suspended sediments. Sites further offshore and in deeper waters had better underwater visibility and less suspended sediment;
 - At deeper water sites (>70 m depth) further offshore in the Gisborne region (between East Cape and Mahia), camera transects were taken with excellent sea floor visibility where healthy sponges, some sleeping pink maomao, butterfly perch, and black coral with a multitude of basket stars were seen;
 - At some sites, kelp was seen protruding through turbid water along with larger sponges. These were too large to have been recent recruits, suggesting that they survived through Cyclone Gabrielle;
 - Other faunal (animal) groups were notably rare or absent across the survey, especially mobile invertebrates including starfish, sea cucumbers, urchins and snake-stars; and,
 - Some sites, like Wairoa Hard in Hawke Bay, returned no sponges, macroalgae, bryozoans, or other species expected to be present. However, wood debris was caught in all three beam trawl tows conducted there.

3.5.1 Impacts on the SKI 1 and SKI 2 fishery

- 664. It is expected that the full impact of Cyclone Gabrielle can only be properly evaluated in four to five years' time. This represents a potential source of uncertainty for the long-term trends in the SKI 1 and SKI 2 stock status.
- 665. Gemfish in SKI 2 are caught mainly on the east coast of the North Island, south of East Cape in spring through to autumn, and this catch includes juvenile fish (Morrison et al. 2014). It is

¹²⁹ The FMA that encompasses the SKI 2 Quota Management Area.
expected that the impact of the cyclone on the SKI 1 and 2 stocks will be minor as spawning grounds for the northern gemfish stock are thought to be north of the Bay of Plenty and North Cape, and young gemfish are most often recorded in the Bay of Plenty. Furthermore, gemfish generally inhabit deeper waters than other inshore species (between 50 and 550 metres in depth) and are a highly mobile species that are not dependent on nearshore reef habitat that may have been impacted by the cyclone.

- 666. As mentioned above, deeper water sites (>70 m) along the Gisborne coast also appear to have been less impacted by the Cyclone Gabrielle and are in a better condition than shallower sites.
- 667. The environmental impacts of the cyclone could, however, affect commercial catch in SKI 2. Given the implications for other inshore fisheries and fishing grounds in FMA 2, it is likely that commercial fishing behaviour will change. If trawl fishers choose to travel further offshore to fish, they will likely encounter and catch more gemfish, resulting in an increase in commercial catch for SKI 2. FNZ will continue to closely monitor the SKI 1 and SKI 2 fishery in the coming years. However, with the TACC for tarakihi in FMA 2 currently constrained as part of the east coast tarakihi rebuild plan, fishing effort on the deeper inshore grounds may be somewhat constrained.

4 Catch information and current settings within the TAC

4.1 Commercial

- 668. The commercial catch history of SKI 1 and SKI 2 is shown in Figure 5.
- 669. When SKI 1 and SKI 2 entered the QMS in 1986, the fishery was primarily a target fishery in SKI 1E and SKI 2 and landings were around 700 and 900 tonnes, respectively. The TACC was gradually increased through Quota Appeal Authority decisions to 1,152 tonnes for SKI 1 in 1989/90 and 1,300 tonnes for SKI 2 in 1993/94. Landings in both SKI 1 and SKI 2 remained high for a number of years, fluctuating between 905 and 1,292 tonnes annually.
- 670. From 1993 to 2000 there was a major shift in fishing effort, with over 50% of SKI 1 catch taken on the west coast of the North Island (SKI 1W). During this period, SKI 1 and 2 landings declined substantially with an estimated 330 and 335 tonnes landed in 2000/01 and approximately 201 and 268 tonnes landed in 2001/02, respectively. Subsequently, the TACC for both stocks were reduced three times throughout this period in effort to halt the stock decline and rebuild abundance (Table 5).



Figure 5: Reported commercial landings and TACC for SKI 1 and SKI 2 (in tonnes) from 1931/32 to 2020/21. Weight refers to greenweight. Note the TACC for SKI 2 is the old (2001) TACC of 240 tonnes).

Table 5: Changes to the TAC and TACC for SKI 1 and SKI 2 since 1986 (all figures are in tonnes). Note the 2023 TAC change for SKI 2 was made in 2020 but has been on hold and only recently implemented.

	Year	TAC	TACC	Reduction/Increase	% Change
<u>eki 4</u>	1986	1,151.8	1,151.8	1	1
	1997	753	752	398.8	-34.6%
JAN 1	1998	468	460	285	-37.8%
	2001	218	210	250	-53.4%
	2020	307	252	89	+40.8%
	Year	TAC	TACC	Reduction/Increase	% Change
	1986	1,300.4	1,300.4	1	/
SKI 2	1997	850	849	450.4	-34.6%
SRI Z	1998	528	520	322	-37.9%
	2001	248	240	280	-53.0%
	2023 ¹³⁰	325	288	77	+31.0%

671. Following the TACC reductions in 2001, the northwest coast North Island and the east northland fisheries in SKI 1 virtually ceased. Since then, gemfish in SKI 1 and SKI 2 have been primarily taken as bycatch in other trawl fisheries targeting tarakihi, hoki, ling, and scampi. In the last five years, approximately 90% of gemfish caught in SKI 1 and SKI 2 were recorded as bycatch.

- 672. Between 2001 and 2018, landings for SKI 1 were fairly consistent with only minor fluctuations around the 210 tonne TACC, with the exception of 2014/15. However, since 2017/18, coinciding with an increase in abundance, landings have been well above the TACC, peaking at 394 tonnes in 2019/20. For SKI 2, landings continued to decline until 2012/13, reaching a historical low of 140 tonnes. Since then, landings have increased, coinciding with an increase in abundance, and have been in-excess of the TACC since 2017/18.
- 673. A conservative increase to the TACC was made in 2020 to reflect the abundance of gemfish and the utilisation opportunity in the SKI 1 and SKI 2 fisheries (Minister of Fisheries decision letter, 2020). As mentioned in section 3.3 this increase has been on hold for SKI 2 but was recently implemented on 8 June 2023.¹³¹
- 674. Since 2020, SKI 1 landings have reduced to around 285 tonnes, likely due to fishers avoiding gemfish in an effort to minimise deemed value payments, which were significant for the 2018/19 and 2019/20 fishing years. In the current fishing year (2022/23, yet to be completed) landings to date (as of 15 July 2023) are 215 tonnes in total out of the 252-tonne commercial catch limit (Figure 6). Based on previous catch trends the TACC will be overcaught again this year.
- 675. SKI 2 has been subject to old (2001) catch settings since 2020. A total of 368 tonnes of gemfish were landed in 2020/21. This decreased to 189 tonnes in 2021/22, likely due to fishers avoiding gemfish in an effort to minimise deemed value payments, which were significant the year prior. In the current fishing year, landings to date (as of 15 July 2023) are 180 tonnes in total out of the old 248-tonne commercial catch limit (Figure 6). Given the SKI 2 fishing season peak is November to March, total catch may not exceed the 2001 TACC this year. The impact of Cyclone Gabrielle on fishing operations and the reduction of the tarakihi TACC in TAR 2 (FMA 2) may have also contributed to low catch levels in SKI 2 this year.

¹³⁰ The decision to increase the SKI 2 TAC to 325 tonnes, and the TACC to 288 tonnes was made by the Minister of Fisheries in October 2020. However, the increase has been on hold since September 2020 pending the determination of a judicial review regarding concerns about the operation of preferential allocation rights (otherwise known as 28N rights). The SKI 2 proceeding has since been discontinued (as of 30 May 2023) meaning the 2020 TAC and TACC increases were only recently implemented on 8 June 2023.

¹³¹ On 29 May 2023, judicial review applicants filed to discontinue the SKI 2 28N rights proceeding. The discontinuation, which was confirmed by a court order on 30 May 2023, means the 2020 TAC and TACC increases for SKI 2 have now been implemented.



Figure 6: Cumulative catch for gemfish (in tonnes) for SKI 1 and SKI 2 for the 2019/20 to 2022/23 fishing years. Note the current fishing year data is up to March 2023, and the TACC for SKI 2 is the old (2001) TACC of 240 tonnes).

4.2 Customary Māori

- 676. Gemfish is identified as a taonga species in the Treaty settlements of two northern lwi (see section 6.2 below) and may be considered an important species by other iwi. The current allowance for Māori customary non-commercial harvesting of gemfish in SKI 1 and SKI 2 is three tonnes each. These allowances have remained unchanged for over two decades.
- 677. Customary catch in SKI 1 and SKI 2 is highly uncertain. In the last 10 years, only one customary permit has been issued for gemfish. This permit was issued under the pātaka¹³² kai arrangement whereby fish (including gemfish) for the use of tangata whenua may be caught by commercial trawlers.
- 678. FNZ considers this information to be incomplete and unlikely to reflect current customary use. One of the reasons for this is because parts of the North Island are not gazetted under the Fisheries (Kaimoana Customary Fishing) Regulations 1998 and therefore customary catch may be occurring under the Fisheries (Amateur Fishing) Regulations 2013, for which there is no requirement to report catch.

4.3 Recreational

679. Recreational interest in gemfish has increased in recent years, resulting in growing numbers of gemfish being caught by recreational fishers, particularly on the east coast of the North Island (Wynne-Jones et al. 2019).

¹³² A place where fish is stored for customary purposes.

- 680. The predominant method used for catching gemfish is rod and reel. Gemfish are caught alongside popular table fish species such as hāpuku, bass, and bluenose, and are highly regarded as a smoking fish.
- 681. The current recreational allowance is 27 tonnes for SKI 1 and five tonnes for SKI 2. The SKI 1 allowance was increased from 5 tonnes in 2020 to reflect the best available information, which is outlined below. The SKI 2 recreational allowance has remained unchanged for several years.
- 682. The most reliable estimate of recreational harvest comes from the National Panel Survey of Marine Recreational Fishers (**NPS**) 2017/18, which estimates that 7,140 gemfish were taken from SKI 1 and 1,299 from SKI 2 between 1 October 2017 and 30 September 2018 (Table 6; Wynne-Jones et al., 2019). However, the amount of recreational fishing effort is likely to vary from year to year depending on factors such as weather, and the availability of the gemfish. It is also important to note that the confidence intervals for these estimates are large, which reflects the uncertainty in these estimates.
- 683. The same survey methods were also undertaken in 2011/12, but the result (an estimate of 2,752 gemfish taken in SKI 1 and none in SKI 2) was considered highly uncertain (Wynne-Jones et al., 2014). Although uncertain, the data suggests that an increase in recreational catch occurred in both SKI 1 and SKI 2 between 2011/12 and 2017/18 and this is consistent with anecdotal information that suggests gemfish have grown in popularity with recreational fishers.
- Table 6: Recreational harvest estimates of gemfish in SKI 1 and SKI 2 from 2011/12 NPS and 2017/18 NPS, +/- represents a 95% confidence interval (CI).

Stock	2011/12 estimated number of fish	95% Cl (number of fish)	2017/18 estimated number of fish	95% Cl (number of fish)
SKI 1	2,752	± 2103.63	7,140	± 4618.15
SKI 2	0	-	1,299	± 1349.40

- 684. A weight estimate is available for gemfish using fishery observer data. Using this data, the average weight is approximately 3.78 kilograms in SKI 1 and 3.54 kilograms in SKI 2. Assuming the gemfish taken by recreational fishers were of these average weights, the 2017/18 estimate translates to approximately 27 tonnes of recreational catch from SKI 1, and 5 tonnes of recreational catch from SKI 2.
- 685. This level of recreational use was provided for through the 2020 SKI 1 and SKI 2 TAC review. Within the TAC, the recreational allowance in SKI 1 was increased from 5 to 27 tonnes and retained at 5 tonnes in SKI 2 to reflect current utilisation of the stocks (see Table 2).
- 686. In the absence of any new survey information since 2017/18, it is expected that recreational catch of gemfish from SKI 1 has increased since this estimate. Anecdotal information from amateur charter vessel catch reporting¹³³ shows that the number of gemfish reported caught and retained in SKI 1 increased approximately sixfold in 2019 (compared to 2018) and has been stable since (Figure 7). Reported amateur charter vessel catch in SKI 2 has remained low, with the exception of a spike in catch in 2020.

¹³³ Gemfish is not one of the species legally required to be reported by amateur charter vessel operators under the <u>Fisheries</u> (<u>Amateur-fishing Charter Vessel Reporting</u>) Notice 2020 and may not be consistently reported. Reported numbers of gemfish are therefore only an indicator of catch.



Figure 7: Gemfish reported as caught and retained by amateur charter vessel operators in SKI 1 and SKI 2 from 2016 to 2022.

687. As part of the 2020 TAC review decisions, the then Minister of Fisheries agreed to consider the introduction of a recreational daily bag limit for SKI 1 and SKI 2 as an additional management measure. Gemfish was subsequently added to the finfish combined daily bag limit in 2022 (Minister for Oceans and Fisheries decision letter, 2022). For SKI 1 and SKI 2 this is a combined daily bag limit of 20 finfish (excluding specified baitfish and freshwater eels), meaning a maximum of 20 gemfish can now be taken per fisher, per day. Prior to 2022, recreational fishers could legally take unlimited quantities of gemfish. By including gemfish in the finfish combined daily bag limit, current recreational catch levels in line with the 27-tonne and 5-tonne allowances have been maintained and the risk of recreational take becoming unsustainable due to unconstrained take has been mitigated.

4.4 Other sources of mortality caused by fishing

- 688. The other sources of mortality caused by fishing allowance accounts for mortality that occurs due to any fishing activity that is not otherwise accounted for in the TAC, such as fish escaping through the trawl net and subsequently dying from injuries, accidental loss from ripped trawl nets, and unreported discarding.
- 689. For inshore trawl fisheries with low levels of observer coverage, there is generally more uncertainty in the level of other mortality occurring. In 2018, the then Minister of Fisheries indicated that this allowance should be set higher for inshore stocks caught mostly by trawl, suggesting that unless there is evidence to suggest otherwise, the allowance should be set at an amount that equates to around 10% of the TACC (Minister of Fisheries decision letter, 2018). This is the approach that has been used to set the other mortality allowance for SKI 1 and SKI 2, which are currently 25 tonnes and 28 tonnes, respectively.
- 690. For SKI 1 and SKI 2 there are no quantitative estimates available regarding the impact of other sources of fishing mortality. Observer coverage on the west coast of the North Island has been moderate since 2014 to monitor for potential interactions with Māui and Hector's dolphins. Coverage on the east coast of the North Island, where gemfish are primarily caught, is low. Average observer coverage for the past five fishing years has been 10.66% for SKI 1 and 5.56% for SKI 2, based on fishing event data.¹³⁴ The current on-board camera rollout will likely improve our understanding of other sources of mortality caused by fishing, which may provide an opportunity to review this setting in the future.
- 691. There is also currently no data available on the scale of misreporting,¹³⁵ but it is assumed to be negligible (FNZ Fisheries Assessment Plenary, 2023). There may have been some gemfish discarded prior to the introduction of the Exclusive Economic Zone (**EEZ**), but this is likely to have been minimal since the early 1980s because gemfish is a medium value species.
- 692. Furthermore, as discussed in section 3.1 above, SKI 1 and SKI 2 commercial harvest is predominantly trawl-caught, suggesting that the current setting of 10% of the TACC is still appropriate.

 ¹³⁴ This coverage was calculated based on fishing events (individual tows, sets or shots) in which the fish stock was recorded as caught and an observer was on board. This metric does not reflect the overall level of monitoring in the fishery.
 ¹³⁵ Fish that are not reported by commercial fishers and taken illegally.

^{109 •} Review of sustainability measures for the 2023 October round: SKI 1 and SKI 2

5 Treaty of Waitangi obligations

5.1 Input and participation of tangata whenua

- 693. Section 12(1)(b) of the Act requires that before undertaking any sustainability process you shall provide for the input and participation of tangata whenua who have a non-commercial interest in the stock or an interest in the effects of fishing on the aquatic environment in the area concerned. In considering the views of tangata whenua, you are required to have particular regard to kaitiakitanga.¹³⁶
- 694. Input and participation of tangata whenua into the sustainability decision-making process is provided mainly through lwi Fisheries Forums, which have been established for that purpose. Each lwi Fisheries Forum can develop an lwi Fisheries Forum Plan that describes how the iwi in the Forum exercise kaitiakitanga over the fisheries of importance to them, and their objectives for the management of their interest in fisheries. Iwi Fisheries Forums may also be used as entities to consult iwi with an interest in fisheries.¹³⁷
- 695. SKI 1 is relevant to the rohe of Te Hiku o Te Ika (Far North), Mid-North (mid lower Northland), Hauraki (Hauraki Gulf), Ngaa Hapuu o Te Uru o Tainui (West coast of Waikato), and Mai i Ngā Kuri a Whārei ki Tihirau (Bay of Plenty) Iwi Fisheries Forums.
- 696. SKI 2 is relevant to the rohe of Ngāti Porou (Gisborne area), and Mai Paritu ae atu ki Turakirae (Mahia to Wairarapa) lwi Fisheries Forums.
- 697. Prior to and during the consultation period, feedback was sought from tangata whenua on how the proposed options for SKI 1 and SKI 2 may or may not assist tangata whenua to provide kaitiakitanga, and how tangata whenua consider the proposal may affect their rights and interests in this stock. However, for SKI 2, FNZ was unable to engage with relevant lwi Fisheries Forums until after 30 May 2023 due to a judicial review regarding SKI 2 28N rights.
- 698. FNZ's engagement with relevant lwi Fisheries Forums and understanding of the views from these Forums are outlined in Table 7.

Table 7: Summary of engagement with Iwi Fisheries Forums.

lwi Fisheries Forum	Engagement on SKI 1
Ngā Hapū o Te Uru o Tainui (West coast of Waikato)	FNZ provided the Forum with a summary on the potential review of the SKI 1 for discussion and attended an in-person hui with the Forum on 9 May. At the hui, the Forum noted gemfish is not targeted under customary allowance in this region currently, so no changes to customary catch were proposed. FNZ also provided a summary on the proposed options for SKI 1 for discussion in June and attended an in-person hui with the Forum on 13 June. The Forum had no further feedback on gemfish.
Mid-North (mid – lower Northland)	FNZ provided the Forum with a summary on the potential review of the SKI 1 for discussion and attended an in-person hui with the Forum in May. At the hui, the Forum noted it does not support an increase of any TACC. FNZ also provided a summary on the proposed options for SKI 1 for discussion in July and attended an in-person hui with the Forum on 28 July. The Forum had no further feedback on gemfish
Te Hiku o Te Ika (Far North)	FNZ provided the Forum with a summary on the potential review of the SKI 1 for discussion and attended an in-person hui with the Forum on 12 May. At the hui, the Forum noted that the Māori customary non-commercial allowance should be increased if the TACC is increased as customary take could be utilised via pātaka. FNZ also provided a summary on the proposed options for SKI 1 for discussion in June and attended an in-person hui with the Forum on 22 June. The Forum had no further feedback on gemfish.
Mai i Ngā Kuri a Whārei ki Tihirau (Bay of Plenty)	FNZ provided the Forum with a summary on the potential review of the SKI 1 for discussion and attended an in-person hui with the Forum in April. At the hui, the Forum did not have specific any specific feedback on gemfish but did note in a general context that their pātaka kai arrangement is an important consideration for them. FNZ also provided a summary on the proposed options for SKI 1 for discussion in June and attended an in-person hui with the Forum on 12 June. The Forum had no specific feedback regarding gemfish.

¹³⁶ 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.

¹³⁷ However, FNZ also engages directly with Iwi (outside of Forums) on matters that affect their fisheries interests in their takiwa and consults with any affected Mandated Iwi Organisations and Iwi Governance Entities where needed.

lwi Fisheries Forum	Engagement on SKI 2
Ngā Hapū o Ngāti Porou Management Trust <i>(East Cape)</i>	FNZ provided Trust members with a summary for discussion on the proposed options for SKI 2 via email in May and provided an overview of the proposals at an online hui in July. No feedback was provided by the trust as whole, but some trust members expressed they did not support an increase to the TAC given the impacts of the Cyclone in their rohe. Some trust members also provided written submissions.
Mai Paritu tae atu ki Turakiraa (East Coast	FNZ provided the Forum with a for discussion on the proposed options for SKI 2 and
from Paritu to Turakirae)	gemfish.

- 699. FNZ notes that two Forums (Te Hiku and Mai i Nga Kuri) made comments about pātaka kai arrangements. If there is expanding interest in using pātaka kai to take gemfish for customary purposes, FNZ will look to review the customary allowance in the future.
- 700. FNZ also received a submission Te Aitanga a Mare Te Aowera & Te Whanau a Hinekehu Takutai Kaitiaki Trust, and Ngati Wakarara Ngati Hau Takutai Kaitiaki Trust (part of Ngā Hapū o Ngāti Porou Management Trust). Feedback from these submissions is discussed later in the 'Submissions' section of this document.

5.2 Kaitiakitanga

- 701. Information provided by forums, and iwi views on the management of fisheries resources and fish stocks, as set out in Iwi Fisheries Plans, are ways that tangata whenua can exercise kaitiakitanga in respect of fish stocks.
- 702. Gemfish is identified as a taonga species by Te Hiku o te Ika, and Mai i Ngā Kuri a Whārei ki Tihirau Iwi Fisheries Forums.
- 703. Both of these Forums have Iwi Fisheries Forum Plans that contain management objectives relevant to the proposal to review the SKI 1 stock. Ngaa Hapuu o Te Uru o Tainui Iwi Fisheries Forum also has an Iwi Fisheries Forum Plan that contains management objectives relevant the management of fisheries in their rohe. These are summarised in Table 8 below.
- 704. The Mid-North Forum has not yet developed an lwi Fisheries Forum Plan. The Hauraki lwi Fisheries Forum is yet to begin meeting formally and as such do not yet have Forum Fisheries plans.

lwi Fisheries Forum	Relevant Management Objectives contained in Iwi Fisheries Forum Plan
Te Hiku o te Ika Fisheries Forum	 Fish stocks are healthy and support the social, cultural and economic prosperity of Te Hiku iwi and Hapu.
Ngaa Hapuu o Te Uru o Tainui Forum	 Ngaa Hapuu o Te Uru kaitiaki are able to participate in and influence fisheries decision-making. Relationships and partnerships with key stakeholders, managers and agencies are established and maintained.
Mai i Ngā Kuri a Whārei ki Tihirau Fisheries Forum	 Iwi are actively engaged with others to increase their fisheries potential within environmental limits. The fisheries environment is healthy and supports a sustainable fishery.

Table 8: SKI 1 relevant lwi Fisheries Forum Plan management objectives.

- 705. In SKI 2, the Mai Paritu tae atu ki Turakirae Fisheries Forum is in the process of developing an lwi Fisheries Forum Plan. Likewise, Ngāti Porou are in the process of establishing an lwi Fisheries Forum and as such do not yet have a Forum Fisheries Plan.
- 706. Some iwi in the Te Tai Hauāuru Fisheries Forum have interests in the SKI 2 fishery, and the associated Forum Plan contains management objectives relevant to the proposal to review the SKI 2 stock. Rangitaane (North Island) Iwi have an Iwi Fishery Plan for FMA 2 that also contains relevant management objectives. These management objectives are summarised in Table 9 below.

Table 9: SKI 2 relevant lwi Fisheries Forum and lwi Fisheries Plan management objectives

Iwi Fisheries Forum	Relevant Management Objectives contained in Iwi Fisheries Forum Plan
Te Tai Hauāuru	 Our customary non-commercial fisheries are healthy, sustainable and supports the cultural wellbeing of Te Tai Hauāuru lwi. Our commercial fisheries are sustainable and support the economic wellbeing of Te Tai Hauāuru lwi. Mana and rangatiranga over our fisheries is restored, preserved and protected for future generations. Iwi collaborate in fisheries and environmental resource management to achieve iwi driven objectives.
lwi	Relevant Management Objectives contained in Iwi fisheries Plan
Rangitaane (North Island)	 Mana and rangatiratanga over Rangitaane (North Island) Fisheries is restored, preserved and protected for future generations. Collaborative iwi partnerships in fisheries and environmental resource management are realised. Rangitaane (North Island) have sufficient capacity to meet their individual and collective responsibilities as tiaki tangata/kaitiaki in partnership with others. Our customary non-commercial fisheries are healthy, sustainable and support the cultural wellbeing of nga iwi o Rangitaane (North Island). Our commercial fisheries are sustainable and support the economic wellbeing of Rangitaane (North Island) hapu and whanau.

707. FNZ considers that all proposed management options will maintain the stock well above the target level (40% *SB*₀) over the next five years and are aligned with the objectives of the above-mentioned lwi Fisheries and lwi Fisheries Forum Plans, which generally relate to active engagement with iwi and the maintenance of healthy and sustainable fisheries.

5.3 Mātaitai reserves and other customary management tools

- 708. Section 21 (4) of the Act requires that, when allowing for Māori customary non-commercial interests, you must take into account
 - a) any mātaitai reserve in SKI 1 or SKI 2 that is declared by notice in the Gazette under regulations made for the purpose under section 186A.
 - b) any area closure or any fishing method restriction or prohibition in SKI 1 or SKI 2 that in imposed by the Minister by notice in the Gazette made under section 186A.
- 709. There are seven mātaitai reserves, three taiāpure, and six section 186A temporary closure areas that fall within SKI 1. These are set out in Table 10.

Table 10: Customary fisheries management areas in SKI 1.

Customary area	Management type
Aotea Harbour Mātaitai	
Marokopa Mātaitai	
Raukokere Mātaitai	Mātaitai Reserve
Te Maunga o Mauao Mātaitai ¹³⁸	Commercial fishing is not permitted within mātaitai reserves unless
Te Puna Mātaitai ¹³⁹	regulations state otherwise.
Te Rae o Kohi Mātaitai	
Te Kopa o Rongokānapa Mātaitai	
Kawhia Aotea Taiāpure	Taiāpure
Maketu Taiāpure	All types of fishing are permitted within a taiāpure. The management committee can recommend regulations to manage commercial.
Waikare Inlet Taiāpure	recreational, and customary fishing.
Maunganui Bay Temporary Closure – all	Temporary Closures
species of fish, aquatic life or seaweed	Continuity of oscilles
except kina	Section rook temporary closures are used to restrict or prohibit fishing of
Marsden Bank and Mair Bank Temporary	any species of lish, aqualic life of seaweed of the use of any lishing
Closure – shellfish only	meulou.

¹³⁸ There is a maximum daily limit of 25 mussels per fisher per day.

¹³⁹ The taking of green-lipped mussels, blue mussels or black mussels by any person is prohibited.

Customary area	Management type
Waiheke Island Closure – scallops, mussels,	
rock lobster and pāua only	
Te Mata and Waipatukahu Temporary	
Closure – pipi, cockles, mussels and oysters	
only	
Umupuia Beach Temporary Closure –	
cockles only	
East Coromandel Closure – scallops only	

710. There are seven mātaitai reserves, two taiāpure, and one section 186A temporary closure area that fall within SKI 2. These are set out in Table 11.

Customary area	Management type
Te Kopa o Rongokānapa Mātaitai	
Hakihea Mātaitai	
Horokaka Mātaitai ¹⁴⁰	Mātaitai Reserve
Toka Tamure Mātaitai ¹⁴¹	Commercial fishing is not permitted within mātaitai reserves
Te Hoe Mātaitai ¹⁴²	unless regulations state otherwise.
Moremore Mātaitai(a)	-
Moremore Mātaitai(b)	
Palliser Bay Taiāpure	Taiāpure
Porangahau Taiāpure	All types of fishing are permitted within a taiāpure. The management committee can recommend regulations to manage commercial, recreational, and customary fishing.
	Temporary Closures
Waimārama – blackfoot pāua only	Section 186A temporary closures are used to restrict or prohibit fishing of any species of fish, aquatic life or seaweed or the use of any fishing method.

711. It is not anticipated that the options proposed in this chapter would negatively impact the availability of gemfish in these areas in SKI 1 and SKI 2, as gemfish are typically caught further offshore, in waters between 50 and 550 metres in depth, and the options proposed are either to either maintain *status quo*, align the TACC with actual catch levels or allow for a moderate increase in utilisation. However, any positive impacts are unknown.

6 Environmental and sustainability considerations under the Act

6.1 Overview

- 712. You are being asked to make decisions under section 13 of the Act, to set the TACs for SKI 1 and SKI 2. This is a sustainability measure. Before setting or varying a sustainability measure, you must adhere to section 11 of the Act. When making your decision you must also act consistently with the requirements in section 5, and sections 8-10 (Purpose and Principles of the Act).
- 713. The requirements and details of each of these sections are set out below, in the following order:
 - a) Section 5 (Application of international obligations and Treaty of Waitangi (Fisheries Claims) Settlement Act 1992);
 - b) Section 8 (Purpose);

¹⁴⁰ The taking of beach cast seaweed, cockles, conger eel, deepwater clam, freshwater eel, karengo seaweed, mussels, packhorse rock lobster, pāua, pipi, sea cucumber, seahorse, surf clams, tuatua, and kina (between 1 April and 30 September) by any person are prohibited. There is a maximum daily limit of three spiny rock lobster and 25 kina (between 1 October and 31 March). Underwater breathing apparatus to take fish, shellfish or seaweed, and loops to take rock lobster are prohibited.

³¹ March). Underwater breathing apparatus to take fish, shellfish or seaweed, and loops to take rock lobster are prohibited. ¹⁴¹ The taking of beach cast seaweed, cockles, conger eel, deepwater clam, freshwater eel, karengo seaweed, mussels, packhorse rock lobster, pāua, pipi, sea cucumber, seahorse, surf clams, tuatua, and kina (between 1 March and 31 July) by any person are prohibited. There is a maximum daily limit of three spiny rock lobster and 25 kina (between 2 August and 28 February). Underwater breathing apparatus to take fish, shellfish or seaweed, and loops to take rock lobster are prohibited.

¹⁴² The taking of kina, rock lobster, mussels, and pāua by any person are prohibited from Waikokopu to Opoutama within the Te Hoe Mātaitai.

^{113 •} Review of sustainability measures for the 2023 October round: SKI 1 and SKI 2

- c) Section 9 (Environmental principles);
- d) Section 11 (Sustainability measures);
- e) Section 13 (Setting a Total Allowable Catch); and
- f) Section 10 (Information principles).

6.2 Application of international obligations and the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992 – section 5 of the Act

714. You must act in a manner consistent with the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992. This is discussed in more detail under Heading 2.2.1 of the *Introduction and Legal Overview* chapter of this document. You must also act in a manner consistent with New Zealand's international obligations relating to fishing. Discussion of these relevant obligations is provided under Heading 2.2.2 of the *Introduction and Legal Overview*.

6.3 Purpose of the Act – section 8 of the Act

715. The Act's purpose is to "provide for the utilisation of fisheries resources while ensuring sustainability." Guidance for you on the meaning of section 8 and how it should be applied for decision making (for all the stocks being reviewed as part of this round) is provided under Heading 2.2.3 of the *Introduction and Legal Overview*.

6.4 Environmental principles – section 9 of the Act

- 716. The environmental principles that you must take into account when considering sustainability measures for SKI 1 and SKI 2, are as follows:
 - 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) Habitats of particular significance for fisheries management should be protected.
- 717. It is important to note in some cases FNZ has made some assumptions about environmental interactions based on fisher reported data that may not have been independently verified (for example, by an on-board FNZ observer). Observer coverage on the east coast of the North Island, where the majority of gemfish are caught, is relatively low¹⁴³ based on fishing event data.¹⁴⁴
- 718. Gemfish is predominantly a bycatch species in a range of trawl fisheries on the east and west coasts of the North Island, including tarakihi, hoki, scampi, and ling, although targeting of gemfish does occur. In the last five years, approximately 90% of gemfish caught in SKI 1 and SKI 2 were recorded as bycatch. Industry has also indicated that there is little interest in a target fishery as there is low market potential for gemfish.¹⁴⁵ As such, it is unlikely the proposed options will result in a significant increase of commercial target of gemfish in both areas. Likewise, the amount of trawl effort targeting other fish species is not expected to increase as a consequence of the proposed options.
- 719. FNZ is currently coordinating a nationwide rollout of on-board cameras on commercial fishing vessels. Deepwater vessels that account for less than 20% of gemfish catch in SKI 1 and less than 30% of catch in SKI 2 are not being targeted by this camera rollout since there are already high levels of monitoring on those vessels. However, it is expected that on-board cameras will be installed and transmitting footage on smaller trawl vessels (less than 36 metres in overall length) that catch gemfish by June 2024.
- 720. It is expected that the on-board camera rollout will enhance our understanding of the SKI 1 and SKI 2 stock by providing for better verified information to underpin fisheries management decisions and encourage better fishing practices.

¹⁴³ Due to vessels not meeting watchkeeping requirements or being lower priority for inshore observer coverage than other vessels in other higher risk fisheries.

¹⁴⁴ This coverage was calculated based on fishing events (individual tows, sets or shots) in which the fish stock was recorded as caught and an observer was on board. This metric does not reflect the overall level of monitoring in the fishery.

¹⁴⁵ This stance was confirmed by Seafood New Zealand Inshore Council in their submission.

- 721. Consideration of the impacts of Cyclone Gabrielle on the SKI 1 and SKI 2 stock is discussed in section 3.5 above.
- 722. FNZ believes the proposed options do take all of the above principles into account.

6.4.1 Associated or dependent species – section 9(a) of the Act

- 723. Associated or dependent species include marine mammals, seabirds, fish, and invertebrate species caught as bycatch in the gemfish target and bycatch fisheries. Commercial fishers must file daily reports about what they have caught. FNZ is now releasing these reports quarterly (from the 2019/20 fishing year) on our webpage. It is important to note, in some cases FNZ has made assumptions about the likely fishing method.
- 724. As gemfish in SKI 1 and SKI 2 are predominantly taken as non-target catch in midwater and bottom trawl fisheries, and industry have indicated there is low market potential for a target gemfish fishery, FNZ does not anticipate any significant increase in the environmental effects of fishing for these stocks with respect to the key environmental interactions outlined in the sections below.

Marine mammals

- 725. New Zealand fur seals, common dolphins, and other marine mammals inhabit the marine environment where gemfish are caught in SKI 1 and SKI 2. These species periodically interact with trawl vessels.
- 726. The SKI 1 and SKI 2 target fisheries rarely interact with marine mammals and have no reported captures of marine mammals in the last 5 fishing years (2017/18-2021/22).
- 727. In fisheries that catch gemfish as bycatch, interactions with New Zealand fur seals and common dolphins are most common. However, as observer coverage is low in these fisheries (an average of 10.66% for SKI 1 and 5.56% for SKI 2 for the past five fishing years based on event level data), there are no model estimates for New Zealand fur seal or dolphin captures on the east and west coasts of the North Island.
- 728. Fisher reported data for the main gemfish bycatch fisheries suggests that in the last five fishing years, an average of 52 New Zealand fur seals and two common dolphins were caught annually in SKI 2. An average of two common dolphins and one fur seal were caught annually in SKI 1 for the same period. Both New Zealand fur seals and common dolphins have a New Zealand Threat Classification of Not Threatened.
- 729. In general, trawl fisheries have been assessed as posing a substantially lesser risk to dolphins than commercial set-net fisheries. The Hector's and Māui dolphin Threat Management Plan guides management approaches for addressing both non-fishing and fishing related impacts on Hector's and Māui dolphins. To date, with regard to gemfish target and bycatch trawl fisheries, there have been no reported interactions with Hector's or Māui dolphins in SKI 1or SKI 2. The risk to the dolphins from trawling around the west and east costs of the North island is low and largely managed under the current trawl restrictions.
- 730. Overall, FNZ considers the number of incidental marine mammal captures is unlikely to increase under the options proposed in this chapter as it is not expected that the amount of trawling will increase significantly given gemfish is primarily a bycatch fishery and there is no market potential for a target gemfish fishery. FNZ will continue to closely monitor marine mammal captures in these fisheries.

Seabirds

- 731. The management of seabird interactions with New Zealand's commercial fisheries is guided by the National Plan of Action – Seabirds 2020 (<u>NPOA-Seabirds</u>). The NPOA-Seabirds sets out the New Zealand government's commitment to reducing fishing-related captures and associated mortality of seabirds. The vision of the NPOA-Seabirds is that New Zealanders work towards zero fishing-related seabird mortalities.
- 732. Management actions and research under the NPOA-seabirds are guided and prioritised based on the seabird risk assessment that breaks down the risks to seabird populations by fishery groups.

- 733. The updated risk assessment, Edwards et al. 2023, identified Southern Buller's albatross as the most at-risk seabird, followed by four taxa in the second-highest category: Salvin's albatross, New Zealand white-capped albatross, black petrel, and Westland petrel.
- 734. FNZ and the fishing industry have worked collaboratively for over a decade, more recently for the inshore fleet, to ensure vessels have, and follow, a Protected Species Risk Management Plan (**PSRMP**). A PSRMP specifies the measures that must be followed on board each vessel to reduce the risk of incidental seabird captures. While there is no legal requirement that fishers have a PSRMP, more than 90% of the full-time trawl vessels have, and follow, one. For trawl vessels greater than 28 metres in length, there are also mandatory requirements for seabird mitigation set out in the <u>Seabird Scaring Devices Circular 2010 No. F517</u>, which is issued pursuant to regulation 58A of the Fisheries (Commercial Fishing) Regulations 2001.
- 735. Information on seabird interactions with trawl vessels in the SKI 1 and SKI 2 area is limited due to the small proportion of trawls that are observed by FNZ observers. Model estimates based on observer reports for trawl fisheries in 2019/20 fishing year suggest that an average of 17, 36, and 9 seabird interactions occurred in the Northland and Hauraki, Bay of Plenty, West Coast North Island areas (all SKI 1), respectively. For SKI 2, an estimated 66 seabird interactions occurred on the East Coast North Island for the same period.
- 736. Seabird interactions reported by commercial fishers operating in gemfish target and bycatch fisheries in SKI 1 over the last three fishing years (2019/20, 2020/21 and 2021/22) were 16 (12 deaths, 4 released alive), 31 (13 deaths, 18 released alive) and 18 (7 deaths, 11 released alive), respectively. For SKI 2, seabird interactions reported by commercial fishers over the same three years (2019/20, 2020/21 and 2021/22) were 9 (8 deaths, 1 released alive), 8 (7 deaths, 1 released alive) and 11 (10 deaths, 1 released alive), respectively. Overall, FNZ considers the number of incidental seabird captures is unlikely to increase under the options proposed in this chapter as it is not expected that the amount of trawling will increase significantly, given gemfish is primarily a bycatch fishery and there is no market potential for a target gemfish fishery. FNZ will continue to closely monitor seabird captures in these fisheries.

Fish and invertebrate bycatch

- 737. The main QMS bycatch species of the target SKI 1 and SKI 2 fishery (approximately 10% of gemfish caught) include hoki, tarakihi, rubyfish, barracouta, Japanese gurnard, and mirror dory. SKI 1 and SKI 2 landings also occur as bycatch in a range of trawl fisheries, including tarakihi, hoki, scampi, rubyfish, and ling.
- 738. Consideration of fish bycatch interactions is particularly important for East Coast tarakihi, as it is currently undergoing a rebuild due to low abundance. FNZ actively monitors catch in the East Coast tarakihi fishery to ensure that commercial catch is within the TACC and agreed catch splitting arrangements with industry. This information is reported quarterly on the FNZ <u>website</u>. FNZ considers it unlikely that the proposed increases to the TACC for SKI 1 and SKI 2 will result in additional pressure on the East Coast tarakihi stock, as gemfish is predominantly taken as bycatch. However, FNZ will continue to actively monitor the rebuild of the East Coast tarakihi fishery and will take further action if changes in fishing activity leads to increased pressure on this stock.
- 739. Invertebrate species most commonly caught as bycatch in the main gemfish bycatch fisheries (hoki, tarakihi, ling, and scampi) include sponges and true corals.¹⁴⁶ For SKI 1, commercial fishers reported catching a total of 7,237 kg, 478 kg and 549 kg of invertebrate species over the last three fishing years (2019/20, 2020/21 and 2021/22, respectively). For SKI 2, a total of 1 kg, 0 kg and 0 kg of invertebrate bycatch was reported by commercial fishers over the same three years (2019/20, 2020/21 and 2021/22, respectively).
- 740. The SKI 1 and SKI 2 target fisheries have no reported captures of invertebrate species in the last five fishing years (2017/18-2021/22).
- 741. SKI 1 and SKI 2 target and bycatch fisheries rarely interact with protected fish species. In the last five fishing years (2017/18 to 2021/22) there have been no reported captures of protected fish species in SKI 1 or SKI 2 target fisheries. For SKI 1 and SKI 2 bycatch fisheries, there has been a total of three white pointer shark interactions (two in SKI 1 and one in SKI 2) reported by fishers over the same period.

¹⁴⁶ Coral species that are part of the class Anthozoa, such as stony corals, black corals, and soft corals. Most true corals are protected species.

6.4.2 Biological diversity of the aquatic environment – section 9(b) of the Act

- 742. SKI 1 and SKI 2 are primarily caught in bycatch fisheries by vessels using midwater and bottom trawl gear. Bottom trawling can damage the marine environment; particularly where trawling occurs on biodiverse habitats. However, the proposed increases are not likely to significantly increase bottom trawl effort as they reflect increased fish abundance and CPUE, and gemfish are predominantly taken as bycatch in other trawl fisheries.
- 743. Research has characterised both New Zealand's benthic environment and the level of benthic impact from fisheries activity (Baird & Mules, 2021). The environmental impacts of fishing are summarised annually by FNZ.
- 744. In 2019, the gemfish target fishery in SKI 1 and SKI 2 had an estimated trawl footprint of 128.3 km², which equates to <1% of the total 2019 inshore trawl footprint (Baird & Mules, 2021). Trawling in the target SKI 1 and SKI 2 fishery is also typically confined to areas that have been consistently fished over time (i.e., not areas of high biodiversity).</p>
- 745. FNZ will continue to monitor changes in the fishery (including trawl footprints) that occur as a result of this review.

6.4.3 Habitats of particular significance for fisheries management – section 9(c) of the Act

746. Gemfish are broadly distributed in SKI 1 and SKI 2 and there is little information available to guide identification of habitats of particular significance to the stocks. There are no specific habitats of particular significance identified for SKI 1 and SKI 2 at this time. What is known is discussed in Table 12 below.

Table 12: Summary of information on potential habitats of particular significance for fisheries management for SKI 1 and SKI 2.

Fish stock	Gemfish - SKI 1 and SKI 2		
Potential habitat of particular significance	 Spawning: Water column between 50 and 550 metres depth on the northern east coast of the North Island (northern ECNI). There may be other spawning grounds for the northern gemfish biological stock, however, the northern ECNI spawning ground appears to be most important. Juvenile: Young gemfish (6-12 months old and 15-30 cm long) are most often recorded in the Bay of Plenty. 		
Attributes of habitat	Continental shelf and slope around the coastline of New Zealand, mainly in waters between 50 and 550 metres in depth.		
Reasons for particular significance Risks/threats	 Successful spawning and development through juvenile stages is critical to supporting the productivity of the stock and ensuring juveniles recruit into the fishery. Research trawl surveys have suggested that the northern gemfish stock (SKI 1 and SKI 2) migrates from the central east coast up into more northern waters during in autumn (May-June). Recruitment is cyclical, with periods of higher recruitment occurring approximately every 15 years and low recruitment occurring during the intervening period. Due to the unknown significance of the benthic environment to the life cycle of gemfish it cannot be determined whether bottom-contacting fishing activities will have an impact on any habitats of particular significance to the management of SKI 1 or SKI 2. Changes in water temperature and water circulation could impact spawning and egg/larval development. 		
Existing protection	There are no known habitats of particular significance to this species that are protected by		
Evidence	 Morrison, M.A.; Jones, E.G.; Parsons, D.P.; Grant, C.M. (2014). Habitats and areas of particular significance for coastal finfish fisheries management in New Zealand: A review of concepts and life history knowledge, and suggestions for future research. New Zealand Aquatic Environment and Biodiversity Report No. 125. 202 p. FNZ (2023). Fisheries Assessment Plenary, May 2023: stock assessments and stock status. Compiled by the Fisheries Science Team, FNZ, Wellington, New Zealand. 		

6.5 Considerations for setting sustainability measures under section 11 of the Act

- 747. Section 11 of the Act sets out various matters that you must take into account or have regard to when setting or varying sustainability measures (such as the TAC changes proposed as part of this chapter). These include:
 - a) any effects of fishing on any stock and the aquatic environment; and
 - b) any existing controls under the Act that apply to the stock or area concerned; and
 - c) the natural variability of the stock concerned; and
 - d) any relevant planning instruments, strategies, or services.¹⁴⁷

6.5.1 Effects of fishing on any stock and the aquatic environment – section 11(1)(a)

- 748. You must take into account any effects of fishing on any stock and the aquatic environment when making your decision about the SKI 1 and SKI 2 TAC.
- 749. "Effect" is defined widely in the Act.¹⁴⁸ The broader effects of removing gemfish from SKI 1 and SKI 2 from the ecosystem as well as the more direct effects of trawling must be taken into account.
- 750. All information relevant to your decision with regard to the effects of trawling for gemfish on any stock and the aquatic environment is discussed above in '*Environmental principles*' and below in 'Setting a Total Allowable Catch' and 'Options and analysis'.

6.5.2 Existing controls that apply to the stock or area – section 11(1)(b)

- 751. You must take into account any existing controls under the Act (including rules and regulations made under the Act (section 2(1A)) that apply to the stock when setting or varying the TAC.
- 752. Along with the catch limits and allowances set under the TAC, there are several management controls currently in place for SKI 1 and SKI 2 (Table 13). There is also a maximum daily bag limit for recreational take.

Table 13: Recreational and comme	ercial restrictions for SKI 1 and SKI 2.
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Fishery	Restrictions
Recreational	 Daily bag limit is 20 gemfish per fisher, per day, as part of the Auckland/Kermadec and Central combined daily bag limits for finfish. Minimum net mesh size of 100 millimetres.
Commercial	 Minimum net mesh size of 100 millimetres. Spatial gear restrictions:¹⁴⁹ Prohibition of trawling in several areas in SKI 1 and SKI 2. Trawl restrictions in several areas in SKI 1 and SKI 2. Trawling by vessels over 46 m prohibited in certain waters. Taking of any finfish prohibited in various areas in SKI 1 and SKI 2.

753. Spatial restrictions set under the Act can be put in place to ensure sustainable utilisation or to protect habitats of particular significance for fisheries management. These can apply to both recreational and commercial fishers. There are no general spatial restrictions currently in place for gemfish in the SKI 1 and SKI 2 fisheries. There are, however, a number of mātaitai reserves, taiāpure, and section 186A area closures that fall within SKI 1 and SKI 2 (see section 6.3 of this chapter).

6.5.3 The natural variability of the stock – section 11(1)(c)

754. You must take into account the natural variability of the stock when setting or varying its TAC.

¹⁴⁷ Sections 11(2) and (2A).

¹⁴⁸ Section 2 (1) of the Act defines "effect" to mean the direct or indirect effect of fishing, and includes any positive, adverse, temporary, permanent, past, present, or future effect. It also includes any cumulative effect, regardless of the scale, intensity, duration, or frequency of the effect, and includes potential effects.

¹⁴⁹ Pursuant to the Fisheries (Central Area Commercial Fishing) Regulations 1986 and Fisheries (Auckland and Kermadec Areas Commercial Fishing) Regulations 1986.

- 755. No significant correlations have been found between SKI 1 and SKI 2 recruitment variability and climate variables (Hurst et al., 1999). However, gemfish recruitment in SKI 1 and SKI 2 is cyclical with periods of higher recruitment occurring at approximately 15-year intervals and low recruitment during the intervening years (FNZ Fisheries Assessment Plenary, 2023). The most recent high recruitment period for SKI 1 and SKI 2 was between 2013 and 2017. This suggests that the stock is now likely entering a low recruitment phase and will likely have low recruitment for approximately the next 5-10 years.
- 756. As discussed in section 3.2 of this chapter, the SKI 1 and SKI 2 stock is estimated to be well above the interim target level but has had relatively low catches since the early 2000s when TAC cuts were made to curtail the decline in abundance. The stock has been rebuilding from historically low abundance and only recently increased in abundance in line with a period of high recruitment.
- 757. Five-year projections using recent (lower) average recruitment (64% of the long-term average 1975-2017) indicate the stock biomass reaches a peak in the next few years and then declines slightly, following the progression of the strong 2013-to-2017-year classes through the fishery.
- 758. Projections of increased catch under the recent (lower) average recruitment model, discussed in section 3.4 of this chapter, suggest that despite being in a period of low recruitment the SKI 1 and SKI 2 stock will remain above the interim target level (**SB**_{40%}) for at least the next five years under all options proposed in this chapter.
- 759. FNZ will continue to closely monitor the fishery and management settings may be reviewed should new information show that abundance has decreased to a level that would not allow for sustainable fishing.

6.5.4 Relevant statements, plans, strategies, provisions, and documents - section 11(2)

- 760. In setting or varying the TAC of this stock, you must have regard to the following statements, plans, strategies, provisions and planning documents under section 11(2) of the Act, that apply to the coastal marine area and that you consider to be relevant.
- 761. The following plans and strategies are relevant for SKI 1 and SKI 2.

Regional plans – section 11(2)(a)

- 762. There are six regional councils and two unitary authorities that have coastlines within the boundaries of SKI 1 and SKI 2: Northland, Waikato, Bay of Plenty, Auckland, Greater Wellington, Manawatu-Wanganui, Hawke's Bay, and Gisborne. Each of these regions have policy statements and plans to manage the coastal and freshwater environments, including terrestrial and coastal linkages, ecosystems, and habitats.
- 763. The provisions of these various documents are, for the most part, of a general nature and focus mostly on land-based stressors on the marine environment. There are no provisions specific to gemfish.
- 764. FNZ has reviewed these documents and the provisions that might be considered relevant can be found in Table A1 of Addendum 1. FNZ considers that the proposed options in this chapter are consistent with the objectives of these relevant regional plans.
- 765. The FNZ Coastal Planning Team engages with the Resource Management Act 1999 coastal planning processes (including regional authorities) to support marine management decisions to manage not only the fishing effects on the coastal environment but also land-based impacts on fisheries.

6.5.5 Relevant services or fisheries plans – section 11(2A)

- 766. Under section 11(2A), before setting or varying any sustainability measure or making any decision or recommendation under the Act to regulate or control fishing, you must take into account
 - a) any conservation services or fisheries services; and
 - b) any relevant fisheries plan approved under this Part; and
 - c) any decisions not to require conservation services or fisheries services.
- 767. Fisheries services of relevance to the options in this chapter include the research used to monitor the fisheries and the tools used to enforce compliance of management controls in the fisheries. These are discussed under '*Management background*', '*Catch information and current*

settings within the TAC', and above under 'Existing controls that apply to the stock or area – section 11(1)(b).'

- 768. Observer and onboard camera coverage relevant to the SKI 1 and SKI 2 fisheries is also described above under the '*Other sources of mortality caused by fishing*' and *Environmental principles section 9 of the Act*' sections.
- 769. There are no applicable conservation services that specifically relate to SKI 1 or SKI 2, or any decisions not to require conservation services or fisheries services.

National Inshore Finfish Fisheries Plan

- 770. The National Inshore Finfish Fisheries Plan (**the Plan**) provides guidance on management objectives and strategies for finfish species, including gemfish. The Plan will guide the operational management of inshore finfish fisheries including SKI 1 and SKI 2 for the next five years and is aimed at progressing New Zealand towards more ecosystem-based fisheries management.
- 771. Stocks are grouped within the Plan, with management approaches and objectives tailored accordingly for each group.
- 772. SKI 1 and SKI 2 fall under Group 2, which recognises the need to manage the stocks to provide for moderate levels of use with moderate levels of information to monitor stock status (i.e., a partial quantitative assessment comparing against trends over time). However, given the importance of SKI 1 and SKI 2 as bycatch in other trawl fisheries on the east and west coasts of the North Island, a fully quantitative stock assessment of SKI 1 and SKI 2 was completed in May 2023, providing comprehensive information for management of the stock.

6.5.6 Other plans and strategies

773. The following plans and strategies are not mandatory considerations under section 11 of the Act, but they may be considered relevant to this review.

Te Mana o te Taiao (Aotearoa New Zealand Biodiversity Strategy)

- 774. FNZ considers that the sustainability measures proposed for gemfish are generally consistent with relevant objectives of the Te Mana o te Taiao the Aotearoa New Zealand Biodiversity Strategy including Objective 10, which is to ensure that ecosystems are protected, restored, resilient and connected from mountain tops to ocean depths, and Objective 12, which is to manage natural resources sustainability.
- 775. For more information on Te Mana o te Taiao see section 3.3 of the *Introduction and Legal Overview.*

6.6 Total Allowable Catch - section 13 of the Act

- 776. Given the SKI 1 and SKI 2 stock is estimated to be at or above the interim B_{MSY} reference level (40% SB_0), you are being asked to make decisions under section 13(2)(a) of the Act.
- 777. Section 13(2)(a) applies if you wish to maintain the stock at or above a level that can produce the maximum sustainable yield (which is 40% SB_0 for gemfish), having regard to the interdependence of stocks. You have wide discretion on how you vary the TAC, so section 13(2)(a) of the Act is relevant if you choose to maintain *status quo* and the certainty that the stock level remains well above the B_{MSY} reference level, or if you or if you choose to increase the TAC and move the stock to a level that is closer to the B_{MSY} reference level.
- 778. FNZ considers that all three options proposed below would be consistent with the objective of maintaining the stock at or above a level that can produce the maximum sustainable yield. All proposed options are expected to maintain the stock above 80% SB₀ over the next five fishing years, and above 60% SB₀ out to nine years (albeit with less certainty).

6.6.1 Interdependence of stocks

779. When setting the TAC for SKI 1 and SKI 2 under section 13, you must have regard to the interdependence of stocks. The interdependence of stocks involves consideration of the effects of fishing on associated stocks affected by fishing for the target stock (as discussed above in *'Environmental principles'*).

- 780. Examples include non-target fish species (bycatch) or benthic species that are incidentally taken or impacted by fishing gear ('*Associated or dependent species*'). The role of the target stock in the food chain should also be considered. In particular, interdependence involves direct trophic relationships between stocks (i.e., one stock is likely to be directly affected through a predator-prey relationship by the abundance of another stock).
- 781. There is little information available regarding predator/prey interdependency for gemfish. Gemfish are benthopelagic fish that, according to Australian studies, feed on other benthopelagic species such as hoki, squid, and crustaceans (Kailola et al., 1993, Bulman et al. 2001). Significant predators of gemfish have not been identified.
- 782. The impact of altering the TAC for gemfish on the abundance of their prey is not well understood but it is possible that increasing the TAC could decrease food abundance for gemfish predators. However, given gemfish in SKI 1 and SKI 2 are primarily taken as bycatch (approximately 90% of gemfish caught), the proposed increases are not significantly higher than current catch levels and that there is little interest in expanding the small target fishery, FNZ does not anticipate that increasing the TAC would result in increased targeting of gemfish in SKI 1 and SKI 2. Therefore, FNZ considers that increasing the TAC would not have a strong effect on the relationship between gemfish and their prey and predators in SKI 1 and SKI 2.

6.6.2 Harvest Strategy Standard

- 783. As the SKI 1 and SKI 2 stocks have a >90% probability of being above the interim target biomass level (40% SB₀), section 13 (2)(a) of the Act provides for the setting of a TAC for SKI 1 and SKI 2, and guidance is provided by the Harvest Strategy Standard for New Zealand Fisheries (**HSS**).
- 784. The High Court has held that the HSS is a mandatory relevant consideration that the Minister must have regard to when setting a TAC under section 13 of the Act.¹⁵⁰
- 785. The 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.
- 786. The HSS outlines the Ministry's approach to relevant sections of the Act and forms a core input to the Ministry's advice to the Minister on the management of fisheries. The HSS defines a hard limit as a biomass limit below which fisheries should be considered for closure and a soft limit as a biomass limit below which the requirement for a formal time-constrained rebuilding plan is triggered.
- 787. In the case of gemfish in SKI 1 and SKI 2, there are no alternative management targets, therefore, the HSS default target, and soft and hard limits, apply to this stock.

6.7 Information principles: Uncertainties and unknowns - section 10 of Act

- 788. Under section 10 of the Act, decision-makers are required to take into account four information principles:
 - a) decisions should be based on the best available information.¹⁵¹
 - b) decision makers should consider any uncertainty in the information available in any case;
 - c) decision makers should be cautious when information is uncertain, unreliable, or inadequate;
 - 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 this Act.
- 789. FNZ considers that the information presented in this chapter represents the best available information.

 ¹⁵⁰ Fisheries Inshore New Zealand Ltd v Royal Forest and Bird Protection Society of New Zealand Incorporated [2023] NZCA 359.
 ¹⁵¹ Section 2(1) of the Act defines "best available information" to mean "the best information that, in the particular circumstances, is available without unreasonable costs, effort, or time"

^{121 •} Review of sustainability measures for the 2023 October round: SKI 1 and SKI 2

- 790. In various sections of this chapter, FNZ has pointed out where information is uncertain and warrants caution for your decision making, in line with the principles above.
- 791. Uncertainties in the information regarding the status of the stock are noted above in section 3.3.
- 792. Potential uncertainties in the long-term trends in SKI 1 and SKI 2 stock status due to the impacts of Cyclone Gabrielle are discussed above in section 3.5.
- 793. Uncertainties in the level of customary Māori harvest, recreational harvest, and other sources mortality caused by fishing for gemfish are noted above in sections 4.2, 4.3 and 4.4, respectively.

7 Submissions

- 794. Section 12(1)(b) of the Act requires that before undertaking any sustainability process you shall consult with such persons or organisations that are considered to be representative of those classes of persons having an interest in the stock or effects of fishing on the aquatic environment in the area concerned including Māori, environmental, commercial and recreational interests.
- 795. A total of 10 submissions were received for SKI 1 and SKI 2 during the 6-week public consultation. Summaries of the submissions received and submitters' support for each option are outlined in Table 14 below. Additional analysis of submitters views and suggestions for alternative options are discussed throughout section 8 of this chapter.
- 796. There are contrasting views on increasing the TAC for SKI 1 and SKI 2. One submitter generally opposed proposed changes to catch limits, four submitters supported retaining the *status quo*, and four supported the largest increase to the TACs and/or the alternative options proposed by Seafood New Zealand Inshore Council (**Inshore Council**).

Submitter		Option supported					
Submitter	1	2	3	Other	Notes		
Te Aitanga a Mate Te Aowera & Te Whanau a Hinekehu Takutai Kaitiaki Trust	~				Do not support increases of take for gemfish in SKI 2 given the impacts of Cyclone Gabrielle and Hale and ongoing adverse weather events.		
Ngati Wakarara Ngati Hau Takutai Kaitiaki Trust	\checkmark				Support Option 1 for gemfish.		
Ngātiwai Holdings Ltd.	\checkmark				Support no change to the TAC for SKI 1.		
Royal New Zealand Society for the Prevention of Cruelty to Animals Inc. (RNZSPCA)	\checkmark				Support maintaining the <i>status quo</i> for both SKI 1 and SKI 2 as this option results in the lowest risk to the stock, associated species and habitats.		
Te Ohu Kaimoana			\checkmark	\checkmark	Support Option 3 for both SKI 1 and SKI 2. However, prefer the alternative option put forward by Inshore Council for SKI 1.		
Iwi Collective Partnership (ICP)			~	\checkmark	Support Option 3 for SKI 1 and SKI 2. However, would likely support alternative options proposed by Inshore Council.		
Sealord Group Ltd.			~	\checkmark	Support greater utilisation for SKI 1 and SKI 2 under Option 3 or the option proposed by Inshore Council.		
Seafood NZ - Inshore Council (Inshore Council)				\checkmark	Support alternative options developed by industry for SKI 1 and SKI 2 $$		
NZ Federation of Commercial Fishermen Inc.				✓	Support proposal made by Inshore Council.		
Ben				\checkmark	Generally opposed proposed changes to catch limits.		

Table 14: Written submissions and responses received f	for SKI 1 and SKI 2. Submissions refer to both gemfis
stocks unless otherwise indicated.	-

8 Options and analysis

797. Given SKI 1 and SKI 2 are estimated to be above the interim B_{MSY} reference level (40% SB_0), catch settings can be altered under section 13(2)(a) of the Act. Section 13(2)(a) allows the TAC

to be altered in a way that maintains the stock at or above a level that can produce the maximum sustainable yield, having regard to the interdependence of stocks. This section applies when deciding to retain the current TAC and other settings (the *status quo*) and when increasing the TAC.

- 798. The TAC options proposed below for SKI 1 and SKI 2 have been guided by the results of the 2023 stock assessment and post 2023 Plenary biomass projections based on the 2023 model but drawing from a period of recent (lower) average recruitment (2002 to 2010). FNZ considers that these options would not be inconsistent with the objective of maintaining or moving the stock towards or above a level that can produce the maximum sustainable yield.
- **799**. Option 1 proposes to maintain the current catch settings for SKI 1 and SKI 2 while Options 2 and 3 aim to provide for increased utilisation whilst maintaining the stock above the B_{MSY} reference level.
- 800. As the current customary Māori and recreational allowances reflect best available information, no changes are proposed to these allowances under the proposed options.
- 801. For all options proposed, the allowance for all other mortality caused by fishing is maintained at a level equivalent to 10% of the TACC. This is because gemfish in SKI 1 and SKI 2 are predominantly taken via trawl methods and have low levels of observer coverage. Furthermore, there is no new evidence to suggest that the allowance should be changed.

SKI 1	TAC: 307 t	TACC: 252 t	Customary: 3 t	Recreational: 27 t	Other mortality: 25 t
SKI 2	TAC: 325 t	TACC: 288 t	Customary: 3 t	Recreational: 5 t	Other mortality: 29 t

8.1 Option 1 – status quo

- 802. Option 1 is to retain the current TAC and other settings (*status quo*) under section 13(2)(a) of the Act. This option retains the existing catch limits and allowances for both SKI 1 and SKI 2 set out in the table above and will maintain the stock above a level that can produce maximum sustainable yield (40% SB_0 for gemfish).
- 803. This option represents the most cautious approach and also places the most weight on any unknown impacts to the stocks caused by Cyclone Gabrielle. This option carries the lowest risk to the stock, *associated or dependent species* and the wider ecosystem. However, this option would forgo a modest utilisation opportunity that best available information (2023 stock assessment) indicates is available for SKI 1 and SKI 2. It would also likely constrain the catch of other species, given gemfish is mainly taken as bycatch in tarakihi, hoki, ling, and scampi target fisheries.
- 804. Maintaining *status quo* would give greater regard to feedback from Mid-North and Te Hiku o Te Ika Iwi Fisheries Forums and some of the Ngā Hapū o Ngāti Porou Management Trust Board members.
- 805. A total of four submissions were received supporting Option 1. Ngātiwai Holdings Ltd. support *status quo*, as they believe a cautious approach should be adopted for the SKI 1 fishery. The RNZSPCA (as part of a more general submission raising concerns around animal welfare, environmental impacts and potential protected species interactions associated with all bottom trawling) support maintaining *status quo* as it results in the lowest risk to the stock, associated species and habitats.
- 806. Te Aitanga a Mare Te Aowera & Te Whanua a Hinekehu Takutai Kaitiaki Trust and Ngati Wakarara Ngati Hau Takutai Kaitiaki Trust (both part of the Ngā Hapū o Ngāti Porou Management Trust Board) also support Option 1. Te Aitanga a Mare Te Aowera & Te Whanua a Hinekehu Takutai Kaitiaki Trust views as Kaitiaki are that it is very difficult to support any increases of take given the last two severe weather events (Cyclones Hale and Gabrielle) and ongoing adverse weather conditions.

8.1.1 Discussion

807. Maintaining status quo is not expected to have any additional impacts on the long-term viability of other interdependent stocks, or on those species with which gemfish interact as predators and prey. Similarly, it is not expected to cause any increase in the amount of bottom trawling in

SKI 1 and SKI 2, and no *significant* impacts on biological diversity, habitats of significance or associated or dependent species (e.g. marine mammals, seabirds) are anticipated.

- 808. However, FNZ notes that by retaining the *status quo*, there is likely to be a missed opportunity for utilisation economic, social, and cultural benefit. Best available information (2023 stock assessment) indicates that the SKI 1 and SKI 2 stock is very likely to be above the interim target biomass level (40% *SB*₀) and that commercial catch has exceeded the TACC and available ACE for most of the past five years.
- 809. Landings for the 2021/22 fishing year exceeded the current TACC for SKI 1 by just over 14% (288 tonnes were landed). SKI 2 was under caught in 2021/22 fishing year (a total of 189 tonnes landed), likely due to fishers avoiding gemfish in an effort to minimise deemed value payments, which were significant the year prior. SKI 2 landings exceeded the TACC by just over 53% the year prior (368 tonnes were landed).
- 810. Under the *status quo*, it is likely deemed value charges will continue to be incurred if gemfish biomass remains high.
- 811. FNZ also considers that although the impacts of Cyclone Gabrielle on the SKI 1 and SKI 2 stock are unknown, the characteristics of the fishery (highly mobile species that generally inhabit deeper waters; see section 3.5) suggest that the impact of the cyclone on the stock will likely be limited.

8.2 Option 2

SKI 1	TAC: 362 t (1 55 t)	TACC: 302 t (1 50 t)	Customary: 3 t	Recreational: 27 t	Other mortality: 30 t (1 5 t)
SKI 2	TAC: 389 t (↑ 64 t)	TACC: 346 t (1 58 t)	Customary: 3 t	Recreational: 5 t	Other mortality: 35 t (1 6 t)

- 812. Under Option 2, the TAC would be set at 362 tonnes for SKI 1 and 389 tonnes for SKI 2, pursuant to section 13(2)(a) of the Act, which allows the TAC for a stock, to be altered in a way that maintains that stock at or above a level that can produce maximum sustainable yield (which is 40% *SB*₀ for gemfish).
- 813. Option 2 represents a 55 tonne (18%) increase for SKI 1 and 64 tonne (20%) increase for **SKI** 2 to reflect the increase in abundance of gemfish and provide for a moderate increase in utilisation.
- 814. Option 2 is also precautionary and recognises potential unknown impacts to the stocks caused by Cyclone Gabrielle. However, it also recognises the current abundance of gemfish and that spawning biomass, assuming recent (lower) average recruitment,¹⁵² is precited to remain well above the interim target level (40% *SB*₀) over the next five nine years (>90% probability).
- 815. Under Option 2, no changes are proposed to the current customary Māori and recreational allowances as they reflect best available information. However, the allowance for all other mortality caused by fishing is proposed to be increased to 30 tonnes (a five-tonne increase) for SKI 1 and 35 tonnes (a six-tonne increase) for SKI 2. This aligns with the current practice of setting this allowance at an amount that equates to around 10% of the TACC for inshore trawl caught stocks with low observer coverage.
- 816. Option 2 equates to a 20% increase to the TACC for both SKI 1 and SKI 2 (50-tonne increase for SKI 1 and 58-tonne increase for SKI 2). This option would set the TACC at approximate current catch levels based on previous fishing years (in the 2021/22 fishing year, 288 tonnes were landed in SKI 1, and in the 2020/21 fishing year, 368 tonnes were landed in SKI 2).¹⁵³
- 817. No submissions were received supporting this option.

8.2.1 Discussion

818. As best available information (2023 stock assessment) estimates that current catch levels are unlikely to result in anything more than a small decrease in stock status over the short term, there is no information to suggest that this option would present a significant sustainability

 $^{^{152}}$ 64% of the long-term average – 1975 to 2017.

¹⁵³ SKI 2 was under caught in 2021/22 fishing year (a total of 189 tonnes landed), likely due to fishers avoiding gemfish in an effort to minimise deemed value payments, which were significant the year prior.

concern. Much larger increases have been modelled and would also be sustainable for the stock but FNZ did not propose them given the uncertainities of the cyclone impacts.

- 819. FNZ considers that although the impacts of Cyclone Gabrielle on the SKI 1 and SKI 2 stock are unknown, the characteristics of the fishery, such as being highly mobile and generally inhabiting deeper waters (discussed in section 3.5), suggest that the impact of the Cyclone on the stock will likely be minor.
- 820. As discussed in section 6.6 above, the moderate increase to the TAC associated with this option is not expected to have an impact on the long-term viability of other interdependent stocks, or on those species with which gemfish interact as predators and prey.
- 821. As noted in section 6.4 above, the *moderate* increase to the TAC proposed under this option is not expected to cause a substantial increase in the amount of bottom trawling in SKI 1 and SKI 2, and no significant impacts on biological diversity or on habitats of significance are anticipated. Similarly, FNZ does not anticipate any significant increase in interactions with associated or dependent species (e.g. marine mammals, seabirds).
- 822. By increasing the TACC to recent catch levels, Option 2 would provide for an increased quantity of gemfish to be taken as unavoidable bycatch. However, based on current catch trends and stock assessment predictions, it would not fully provide for utilisation of the strong increase in gemfish biomass.
- 823. FNZ considers it unlikely that Option 2 will markedly alter the behaviour of fishers that catch gemfish as bycatch or increase the level of fishing effort targeting gemfish in SKI 1 and SKI 2. Industry have also indicated that there is little interest in a target fishery as there is no increased market potential for gemfish. As such, the environmental impacts of the proposed TAC increases are likely to be negligible. Additional ACE for SKI 1 and SKI 2 will also likely result in reduced deemed value invoices for the commercial fishing industry.

8.3 Option 3

SKI 1	TAC: 418 t (↑ 111 t)	TACC: 353 t (101 t)	Customary: 3 t	Recreational: 27 t	Other mortality: 35 t (10 t)
SKI 2	TAC: 451 t (126 t)	TACC: 403 t (115 t)	Customary: 3 t	Recreational: 5 t	Other mortality: 40 t (11 t)

- 824. Under Option 3, the TAC would be set at 418 tonnes for SKI 1 and 451 tonnes for SKI 2, pursuant to section 13(2)(a) of the Act, which allows the TAC for a stock, to be altered in a way that maintains that stock at or above a level that can produce maximum sustainable yield (which is 40% *SB*₀ for gemfish). Option 3 represents a 111 tonne (36%) increase for SKI 1 and 126 tonne (39%) increase for SKI 2 to better reflect the increase in abundance of gemfish and provide for a larger increase in utilisation.
- 825. Option 3 provides for increased utilisation of SKI 1 and SKI 2 as, assuming recent (lower) average recruitment, ¹⁵⁴ it is predicted that spawning biomass will remain well above the interim target level, (40% *SB*₀) over the next five to nine years (>90% probability). However, this option places less importance on the level of uncertainty associated with the estimate of stock status and the potential impact of Cyclone Gabrielle.
- 826. Under this option, no changes are proposed to the current customary Māori and recreational allowances as they reflect best available information. However, the allowance for all other mortality caused by fishing is proposed to be increased to 35 tonnes (a 10-tonne increase) for SKI 1 and 40 tonnes (an 11-tonne increase) for SKI 2. This aligns with the current practice of setting this allowance at an amount that equates to around 10% of the TACC for inshore trawl caught stocks with low observer coverage.
- 827. Option 3 equates to a 40% increase to the TACC for both SKI 1 and SKI 2 (101-tonne increase for SKI 1 and 115-tonne increase for SKI 2). This option would set the TACC above recent catch levels based on the previous fishing years (in the 2021/22 fishing year, 288 tonnes were landed in SKI 1, and in the 2020/21 fishing year, 368 tonnes were landed in SKI 2).¹⁵⁵
- 828. Three submissions were received supporting Option 3. Te Ohu Kaimoana, the lwi Collective Partnership (**ICP**) and Sealord Group support Option 3 for both SKI 1 and SKI 2 given the stock status and that increasing catch limits would be unlikely (<10% probability) to result in the stock

 $^{^{154}}$ 64% of the long-term average – 1975 to 2017.

¹⁵⁵ SKI 2 was under caught in 2021/22 fishing year (a total of 189 tonnes landed), likely due to fishers avoiding gemfish in an effort to minimise deemed value payments, which were significant the year prior.

^{125 •} Review of sustainability measures for the 2023 October round: SKI 1 and SKI 2

declining below the target biomass level in the next five to nine years. Te Ohu Kaimoana also state that while the impacts of Cyclone Gabrielle are uncertain, projections of Option 3 are not thought to pose a sustainability risk to the stock and may result in some relief to inshore fishers affected by the cyclone, who as a result of changing their fishing behaviour, may be more likely to encounter gemfish.

829. However, Te Ohu Kaimoana, the ICP and Sealord also note that they support or would likely support the alternative options proposed by Inshore Council (Te Ohu Kaimoana in relation to SKI 1 only). The Inshore Council alternative options are discussed in section 8.4 below.

8.3.1 Discussion

- 830. Best available information (2023 stock assessment) estimates that current catch levels are unlikely to result in a biomass reduction over the next two years and stock projections suggest that the proposed increase under Option 3 would not pose a sustainability risk to the stock in the next five years. Much larger increases have been modelled and would also be sustainable for the stock but FNZ did not propose them given the uncertainities of the cyclone impacts.
- 831. This option places less importance on the potential impact of Cyclone Gabrielle on the SKI 1 and SKI 2 stock as the characteristics of the fishery, such as being highly mobile and generally inhabiting deeper waters (discussed in section 3.5), suggest that the impact of the Cyclone on the stock will likely be minor.
- 832. As discussed in Section 6.6, the larger, but still precautionary, increase to the TAC associated with this option is not expected to have an impact on the long-term viability of other interdependent stocks, or on those species with which gemfish interact as predators and prey.
- 833. As noted in Section 6.4, the larger, but still precautionary, increase to the TAC proposed under this option is not expected to cause a substantial increase in the amount of bottom trawling in SKI 1 and SKI 2, and no significant impacts on biological diversity or on habitats of significance are anticipated. Similarly, FNZ does not anticipate any significant increase in interactions with associated or dependent species (e.g. marine mammals, seabirds).
- 834. By increasing the TACC to above recent catch levels, Option 3 would provide for an increased quantity of gemfish to be taken as unavoidable bycatch (as a result of the greater biomass). However, FNZ does not expect that this change will markedly alter fisher behaviour and increase the level of fishing effort as gemfish in SKI 1 and SKI 2 are primarily taken as bycatch and industry have indicated that there is little interest in a target fishery as there is no increased market potential for gemfish. As such, the environmental impacts of the proposed TAC increases are likely to be negligible. Additional available ACE for SKI 1 and SKI 2 will also likely result in reduced costs for the commercial fishing industry. These costs are due to changing fishing grounds to avoid areas of high gemfish abundance while fishing for target species and/or deemed value invoices.

8.4 Other options proposed by submitters

- 835. The Seafood New Zealand Inshore Council (**Inshore Council**) did not support the options consulted on by FNZ and instead proposed alternative options for SKI 1 and SKI 2.
- 836. Their first preferred option proposes to increase the SKI 2 TAC, TACC, and allowance for all other mortality caused by fishing as set out under Option 3 but proposes a much larger increase to the TAC (64%), TACC (71%), and subsequently the allowance for all other mortality caused by fishing for SKI 1 (see the table below).

SKI 1	TAC: 503 t (196 t)	TACC: 430 t (178 t)	Customary: 3 t	Recreational: 27 t	Other mortality: 43 t (1 18 t)
SKI 2	TAC: 451 t (↑ 126 t)	TACC: 403 t (115 t)	Customary: 3 t	Recreational: 5 t	Other mortality: 40 t (11 t)

837. Inshore Council state that this option better reflects what recent catch levels would have been if the fleet wasn't paying deemed values and changing fishing behaviour to avoid gemfish. The combined TAC for SKI 1 and SKI 2 for this option (954 tonnes) sits with the range of catch projections¹⁵⁶ with a high degree of probability that the stock will be above target in five to ten

¹⁵⁶ An additional projection of TACC +82% (a combined TACC of 984 tonnes) was done for SKI 1 and SKI 2 that was not presented in the consultation paper. The projection suggests that spawning biomass in 2028, under a 83% TACC increase, will be at 87% unfished levels.

years. They also note that this alternative option is most likely to meet the management objective of ensuring catches are sustainable without incurring unnecessary costs from avoiding of highly valuable fishing grounds and incurring deemed values.

838. The Inshore Council's second preferred option proposes the same combined TACC as Option 3 but instead catch limits are allocated so that SKI 1 has a larger TAC increase of 50% and SKI 2 has a smaller increase of 26% in line with largest recent catch levels (see the table below).

SKI 1	TAC: 460 t (↑ 153 t)	TACC: 391 t (139 t)	Customary: 3 t	Recreational: 27 t	Other mortality: 39 t (14 t)
SKI 2	TAC: 410 t (1 85 t)	TACC: 365 t (1 77 t)	Customary: 3 t	Recreational: 5 t	Other mortality: 37 t (1 8 t)

- 839. Inshore Council state this alternative allocation option better reflects the fishing that occurs and the catch in both areas and is more likely to meet the management objectives of ensuring sustainability while avoiding the unnecessary costs that Option 3 would impose on fishers.
- 840. Te Ohu Kaimoana, ICP, Sealord and the NZ Federation of Commercial Fishermen note in their submissions that they support or would likely support these alternative options proposed by Inshore Council.
- 841. FNZ acknowledges these alternative options proposed by Inshore Council and considers that the increases suggested are consistent with the Act. However, FNZ notes that both these alternative options propose an increase to SKI 1 that is not within the bounds of what was consulted on during engagement with tangata whenua and public consultation. While this does not preclude you from making a decision to the effect of these options, it does create risk as they were not consulted on.

8.5 Other matters raised

- 842. Two submitters raised additional matters in their submission.
- 843. Te Aitanga a Mate Te Aowera & Te Whanau a Hinekehu Takutai Kaitiaki Trust have expressed that it is important that focus is put on creating better systems to capture recreational and customary data. Every five to six years FNZ undertakes a National Panel Survey for Marine Recreational Fishers to help us understand recreational harvest. The next survey is currently underway and will provide updated information on recreational harvest in 2024. However, FNZ continues to explore systems for recreational reporting and to work closely with tangata whenua and tangata kaitiaki/tiaki to support reporting of customary Māori harvest.
- 844. In their submission, Te Ohu Kaimoana encouraged FNZ to target research effort to FMA 2 inshore fisheries to increase knowledge of the impacts of Cyclone Gabrielle. As discussed in section 3.5 above, NIWA has undertaken initial surveys in the FMA 2 area to understand the immediate impacts of the cyclone and establish a baseline to monitor ongoing changes in the marine environment within this FMA. FNZ will continue to closely monitor the inshore fisheries in FMA 2 area.
- 845. RNZSPCA raised broader concerns around animal welfare, environmental impacts and potential protected species interactions associated with bulk harvest methods such as bottom trawling and NZ Federation of Commercial Fishermen voiced concerns regarding stock prioritisation in sustainability rounds (refer to Heading 6 of the *Introduction and Legal Overview* for FNZ's general response to these concerns).

9 Economic context

- 846. The SKI 1 & SKI 2 fisheries support many people, including quota holders, commercial fishers, licensed fish receivers, and seafood processing facilities. To give a sense of scale and distribution, based on the 2021/22 fishing year, in SKI 1, 86% of quota was owned by four entities, and the remaining 14% of quota was owned by 36 entities. In SKI 2, 73% of quota was owned by four entities, and the remaining 27% of quota was owned by 43 entities. At least 88% of SKI 1 quota and 53% of SKI 2 quota is held by Māori owned entities.
- 847. As at the end of the 2021/22 fishing year, there were 36 commercial entities holding ACE in SKI 1: 86% held by 4 entities (one of which is a Māori owned entity), and the remaining 14% held by 32 entities. In SKI 2, there were 47 commercial entities holding ACE: 56% held by 4 entities (one of which is a Māori owned entity), and the remaining 44% held by 43 entities.

- 848. Gemfish is primarily exported. In the 2022 calendar year, 817 tonnes (processed weight) of gemfish were exported with an FOB¹⁵⁷ value of NZ \$3.2 million. It is unknown how much is sold on the domestic market.
- 849. There are likely to be some economic benefits associated with Options 2 and 3 as catch has exceeded the TACC and available ACE in the last four years for SKI 1, and three of the last four years for SKI 2. Given the significant proportion of quota and ACE owned by Māori owned entities, these economic benefits will also benefit iwi. Both stocks have incurred significant deemed value invoices over recent years ranging from \$53,530 to \$391,791 for SKI 1 and \$86,935 to \$304,558 for SKI 2. The increases proposed under Options 2 and 3 may result in lower deemed value invoices and cost reductions for commercial fishers in SKI 1 and SKI 2.

10 Deemed values

850. FNZ is satisfied that the current deemed values for SKI 1 and SKI 2 are consistent with section 75(2)(a) of the Act in that they provide sufficient incentive for fishers to balance their catch with ACE. FNZ therefore did not propose any deemed value rate changes as part of this review. None of the submissions received commented on the SKI 1 or SKI 2 deemed value rates.

11 Conclusions and recommendations

- 851. FNZ consulted on increasing the TAC, including the TACC and allowance for all other mortality caused by fishing, for both SKI 1 and SKI 2 stocks, based on a 2023 stock assessment that estimates gemfish biomass to be well above the interim B_{MSY} reference level (40% SB₀).
- 852. FNZ engaged with and sought feedback from several North Island Iwi Fisheries Forums with an interest in the SKI 1 and SKI 2 stocks. While several of the Iwi Fisheries Forums did not support an increase to the TAC for SKI 1 and/or SKI 2, FNZ considers all proposed options to be precautionary given the status of the stock, which is estimated to be 104% *SB*₀.
- 853. FNZ also acknowledges that some concerns were raised by Forum members regarding the impacts of Cyclone Gabrielle on the stock. FNZ considers that both Options 2 and 3 are precautionary enough to account for any impacts of the cyclone to the stocks while allowing for increased utilisation. Much larger increases would have also been sustainable for the stock but FNZ did not propose them given the uncertainities of the impacts, which are now expected to be minor. Mainitaing *status quo* would also mean there is likely a missed opportunity for utilisation and economic, social and cultural benefit.
- 854. A total of nine submissions were received during public consutation. Of these, one opposed proposed changes to catch limits, three supported retaining *status quo* and four supported alternative options proposed by Seafood NZ Inshore Council (including larger increases for SKI 1 than consulted on) for SKI 1 or SKI 2 or both stocks. FNZ has considered this feedback in making our reccomendation but has not included the Inshore Councils alternative proposals as formal options for you to consider as the increases proposed for SKI 1 are not within the bounds of what was consulted on during engagement with tangata whenua and public consultation.
- 855. FNZ concludes that all options presented for SKI 1 and SKI 2 satisfy your obligations under section 13 of the Act and will maintain the stock above the target biomass level while allowing for utilisation. However, FNZ recommends you increase the TAC for SKI 1 and SKI 2, with FNZ's preferred option being Option 3. This option will provide for increased utilisation of both stocks, that will have benefits for fishers and lwi, while ensuring the sustainability of the stocks.
- 856. FNZ considers that the impact of the cyclone on the SKI 1 and 2 stock will be minor as spawning grounds for the northern gemfish stock are thought to be north of the Bay of Plenty and North Cape, and young gemfish are most often recorded in the Bay of Plenty. Furthermore, gemfish generally inhabit deeper waters than other inshore species (between 50 and 550 metres in depth) and are a highly mobile species that is not dependant on nearshore reef habitat that may have been impacted by the cyclone.
- 857. The recommended increases are unlikely to markedly alter fisher behaviour and increase the level of fishing effort as gemfish in SKI 1 and SKI 2 are primarily taken as bycatch and industry

¹⁵⁷ Free on board 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. FOB does not include storage, export transport or insurance cost to get the goods to the export market.

have indicated that there is little interest in expanding the target fishery as there is low market potential for gemfish. As such, the effects on associated species and the wider ecosystem under the recommended option are likely to be negligible. However, FNZ will continue to carefully monitor the catch of gemfish in SKI 1 and SKI 2 to confirm that catch remains as a bycatch of other target fisheries.

12 Decision for SKI 1

Option 1

Agree to retain the SKI 1 TAC at 307 tonnes and, within the TAC, to:

- i. Retain the allowance for Māori customary non-commercial fishing interests at 3 tonnes;
- ii. Retain the allowance for recreational fishing interests at 27 tonnes;
- iii. Retain the allowance for all other sources of mortality to the stock caused by fishing at 25 tonnes;
- iv. Retain the SKI 1 TACC at 252 tonnes.

Agreed / Agreed as Amended / Not Agreed

<u>OR</u>

Option 2

Agree to set the SKI 1 TAC at 362 tonnes and, within the TAC, to:

- i. Retain the allowance for Māori customary non-commercial fishing interests at 3 tonnes;
- ii. Retain the allowance for recreational fishing interests at 27 tonnes;
- iii. Increase the allowance for all other sources of mortality to the stock caused by fishing from 25 to 30 tonnes;
- iv. Increase the SKI 1 TACC from 252 to 302 tonnes.

Agreed / Agreed as Amended / Not Agreed

<u>OR</u>

Option 3 (Fisheries New Zealand preferred option)

Agree to set the SKI 1 TAC at 418 tonnes and, within the TAC, to:

- i. Retain the allowance for Māori customary non-commercial fishing interests at 3 tonnes;
- ii. Retain the allowance for recreational fishing interests at 27 tonnes;
- iii. Increase the allowance for all other sources of mortality to the stock caused by fishing from 25 to 35 tonnes;
- iv. Increase the SKI 1 TACC from 252 to 353 tonnes.



13 Decision for SKI 2

Option 1

Agree to retain the SKI 2 TAC at 325 tonnes and, within the TAC, to:

- i. Retain the allowance for Māori customary non-commercial fishing interests at 3 tonnes;
- ii. Retain the allowance for recreational fishing interests at 5 tonnes;
- iii. Retain the allowance for all other sources of mortality to the stock caused by fishing at 29 tonnes;
- iv. Retain the SKI 2 TACC at 288 tonnes.

Agreed / Agreed as Amended / Not Agreed

Option 2

Agree to set the SKI 2 TAC at 389 tonnes and, within the TAC, to:

- i. Retain the allowance for Māori customary non-commercial fishing interests at 3 tonnes;
- ii. Retain the allowance for recreational fishing interests at 5 tonnes;
- iii. Increase the allowance for all other sources of mortality to the stock caused by fishing from 29 to 35 tonnes;
- iv. Increase the SKI 2 TACC from 288 to 346 tonnes.

Agreed / Agreed as Amended / Not Agreed

<u>OR</u>

Option 3 (Fisheries New Zealand preferred option)

Agree to set the SKI 2 TAC at 451 tonnes and, within the TAC, to:

- i. Retain the allowance for Māori customary non-commercial fishing interests at 3 tonnes;
- ii. Retain the allowance for recreational fishing interests at 5 tonnes;
- iii. Increase the allowance for all other sources of mortality to the stock caused by fishing from 29 to 40 tonnes;
- iv. Increase the SKI 2 TACC from 288 to 403 tonnes.

Agreed / Agreed as Amended / Not Agreed

Hon Rachel Brooking Minister for Oceans and Fisheries

/ 2023

Trevally (TRE 2) - East Cape, Hawke Bay, East Coast of Wellington



Trevally – Pseudocaranx dentex, Araara



Figure 1: Quota Management Areas (QMAs) for trevally, with TRE 2 highlighted.

1 Why are we proposing a review?

- 858. The last Total Allowable Commercial Catch (**TACC**) adjustment for TRE 2 was in 1992. Since then, the TACC has been consistently caught. In the last decade catches have regularly exceeded the TACC, where yearly commercial catch has averaged 260 tonnes, 19 tonnes above the TACC.
- 859. Over the same period there has been a general decline in the targeting of trevally in TRE 2. Commercial fishers have reported high abundance of trevally and find it difficult to avoid as bycatch when targeting other inshore species.
- 860. Trevally is caught commercially as by-catch throughout TRE 2, with the majority taken in the mixed-species (red gurnard, snapper and tarakihi) bottom trawl fishery in the waters of Hawke Bay and Poverty Bay.
- 861. Catch per unit effort (**CPUE**)¹⁵⁸ indices for TRE 2 have been relatively stable, with an increasing trend from 2008/09 to 2016/17.
- 862. In 2022, following the TRE 1 Bay of Plenty sub-stock assessment, the Inshore Science Working Group concluded that this sub-stock and TRE 2 can be considered the same stock.
- 863. The 2022 assessment concluded that the TRE 1 Bay of Plenty sub-stock spawning biomass was Likely (>60% probability) to be above the target of 40% SB₀.¹⁵⁹ following an increasing trajectory from the 1980s. A model run combining the TRE 1 Bay of Plenty sub-stock with

¹⁵⁸ 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 1,000 hooks per day or the weight of fish taken per hour of trawling. CPUE is often assumed to be a relative measure of fish abundance.

¹⁵⁹ SBo, known as virgin spawning biomass (also referred to in the paper as unfished biomass), is the theoretical carrying capacity of the spawning biomass of a fish stock. In some cases, it refers to the average spawning biomass of the stock in the years before fishing started. More generally, it is the average over recent years of the biomass that theoretically would have occurred if the stock had never been fished.

northern portion of TRE 2 (including Hawke Bay) revealed identical results to the Bay of Plenty only assessment.

- 864. Cyclone Gabrielle is expected to have had a significant impact on parts of the TRE 2 marine environment. The associated long-term effects of this cyclone on TRE 2 represent a source of uncertainty regarding stock abundance in the future. However, Fisheries New Zealand (**FNZ**) considers that the TRE 2 stock is expected to have some resilience to these impacts based on its links to the TRE 1 sub-stock in Bay of Plenty, which is known to contain larger nursery areas for trevally (discussed further under section 3.2 below).
- 865. FNZ is seeking your decision on options for a modest increase to the Total Allowable Catch (TAC) of TRE 2 under section 13(2)(a) of the Fisheries Act 1996 (the Act), which maintains the stock at or above a level that can produce the maximum sustainable yield (MSY),¹⁶⁰ having regard to the interdependence of stocks.

1.1 Summary of proposed options

Table 1: Summary of options proposed for TRE 2 from 1 October 2023. Figures are all in tonnes. The preferred option of Fisheries New Zealand is highlighted in blue.

		TACC	Allowances			
Option	TAC		Customary Māori	Recreational	All other mortality caused by fishing	
Current settings	349	241	1	100	7	
Option 1 (modified status quo)	366 (🛧 17 t)	241	1	100	24 (个 17 t)	
Option 2	387 (↑ 38 t)	260 (个 19 t)	1	100	26 (↑ 19 t)	
Option 3	408 (↑ 59 t)	279 (个 38 t)	1	100	28 (↑ 21 t)	

In total, 9 submissions were received on the proposed options.

2 About the stock

2.1 Biology¹⁶¹

- 866. Trevally have a wide sub-tropical and temperate geographic distribution, and is a common coastal species around the North Island and the north-west of the South Island, mainly in waters less than 100 m depth.
- 867. Trevally are both pelagic (open water) and demersal (living close to the sea floor) in behaviour. Juvenile fish up to two years old are found in shallow inshore areas including estuaries and harbours. Young fish enter a demersal phase from about one year old until they reach sexual maturity. At this stage adult fish move between demersal and pelagic phases.
- 868. Schools occur at the surface, in midwater and on the bottom, and are often associated with reefs and rough substrate. Schools of trevally are sometimes mixed with other species such as koheru and kahawai.
- 869. Trevally appear to have a broad dietary preference. Common prey includes pelagic crustaceans, small squid, juvenile and larval fish (Morrison et al., 2014). Surface-schooling trevally feed on planktonic organisms, particularly euphausiids (krill). On the bottom, trevally feed on a wide range of invertebrates.
- 870. Trevally are known to reach >40 years of age. The growth rate is moderate during the first few years, but after sexual maturity at 32 to 37 cm fork length (FL),¹⁶² the growth rate becomes very slow. The largest fish are typically around 60 cm FL and weigh about 4.5 kg; however, larger fish of 6 to 8 kg are occasionally recorded.

¹⁶⁰ Maximum sustainable yield is the largest long-term average catch or yield that can be taken from a stock under prevailing ecological and environmental conditions, and the current selectivity patterns exhibited by fisheries. It is the maximum amount of fishing that a stock can sustain without impairing its renewability through natural growth and reproduction.

¹⁶¹ Information in this section references the FNZ Fisheries Assessment Plenary 2023.

¹⁶² Fork length is measured from the tip of the nose to the middle caudal fin ray, or 'V' in the tail.

- 871. Fecundity (the potential to produce offspring) is relatively low until females reach about 40 cm FL. They appear to be batch serial spawners, releasing multiple small batches of eggs over periods of several weeks or months during the summer (Morrison et al., 2014). Clearly defined spawning grounds have not been identified in New Zealand.
- 872. Trevally eggs are pelagic, and hatch about 28 hours after fertilisation. In both New Zealand and Australia, trevally larvae are common in near shore coastal waters during late summer. While little is known about the distribution of trevally eggs and larvae in New Zealand, they are thought to be widely distributed seasonally around the North Island's near-shore coastal waters (Morrison et al., 2014).

2.2 Fishery characteristics

- 873. The TRE 2 QMA comprises of waters off the eastern and southern North Island, from Cape Runaway (eastern Bay of Plenty) south and around to Mana Island off the west coast of the Wellington region (Figure 1).
- 874. Within TRE 2, there are two main commercial fisheries: a mixed trawl fishery targeting either red gurnard or snapper, and a tarakihi targeted bottom trawl fishery.
- 875. Both commercial and recreational harvest of trevally are subject to a minimum legal-size limit of 25 cm. Any trevally smaller than the minimum legal size must be returned to the water.
- 876. Rod or line from a watercraft is the preferred recreational fishing method in TRE 2 (Wynne-Jones et al., 2019).

2.3 Management background

- 877. Trevally was introduced into the QMS in 1986 with five QMAs. Prior to 1986, trevally had a TAC set under the provisions of the Fisheries Act 1983, initially at 3,220 tonnes nationally.
- 878. Upon QMS introduction in 1986, a TACC of 190 tonnes was set for TRE 2 with no recreational, customary or all other sources of fishing mortality allowances. The TACC was increased incrementally to 241 tonnes by 1992 and has since remained at this setting.
- 879. In 2010, the stock was reviewed and was allocated a 100-tonne recreational catch allowance, a one-tonne customary catch allowance, and a seven-tonne allowance for other sources of fishing mortality, combining to make a 349-tonne TAC.



Figure 2: Reported commercial landings (tonnes) and TACC (red line) of TRE 2 since 1986 (year of introduction to the QMS).

880. TRE 2 TACC has either been fully caught or overcaught for 23 of the 36 fishing years since the introduction of trevally to the QMS in 1986 (Figure 2). Since October 2012, the TACC has been

overcaught in six of the ten fishing years, with commercial catch exceeding 300 tonnes in two of those years.

3 Status of the stock

3.1 Trevally (TRE) 2 stock

- 881. There have been no published genetic studies looking at trevally stock separation. Historically, trevally fisheries were divided into three spatial areas: west coast of the North and upper South Island (TRE 7); northern east coast fishery including Hauraki Gulf and Bay of Plenty (TRE 1); and the east Wairarapa Coast (TRE 2).
- 882. Spatial patterns in CPUE and age composition data indicate that trevally within the Bay of Plenty area, and trevally within the East Northland, Hauraki Gulf and Ninety-Mile beach area, are two separate stocks.
- 883. Spatial patterns in CPUE and a single year of catch-at-age¹⁶³ data indicate that trevally found in the northern portion of TRE 2 (including Hawke Bay) are part of the TRE 1 Bay of Plenty substock.
- 884. There is no accepted stock assessment specifically for TRE 2 (FNZ Fisheries Assessment Plenary, 2023). However, TRE 2 CPUE indices (covering the 1989/90 to 2016/17 fishing years) have been relatively stable, with an increasing trend from 2008/09 to 2016/17. This increase was corroborated by a tow-based series using data collected on Trawl Catch Effort Returns (Schofield et al, 2022).¹⁶⁴
- 885. The Northern Inshore Working Group (a Science Working Group convened by FNZ) concluded that the magnitudes of changes in the previous TRE 2 CPUE indices were greater than could be expected if TRE 2 was a closed (separate) population, taking into account the longevity of the species. Therefore, these indices were rejected by the Working Group as an index of relative biomass for TRE 2 due to some years showing the annual variation as implausible for a separate stock. This information, in conjunction with other evidence, led to the Working Group concluding that trevally move between the TRE 1 Bay of Plenty sub-stock and TRE 2, and that they are the same stock (Schofield et al, 2022).
- 886. In 2022, following the TRE 1 Bay of Plenty sub-stock assessment, the Inshore Science Working Group concluded that TRE 2 is part of this sub-stock, where a separate analysis with the inclusion of catch data from the northern part of TRE 2 (including Hawke Bay) revealed identical results to the Bay of Plenty only assessment. The combined model run was included as a sensitivity to investigate the impact of including TRE 2 in the stock assessment.
- 887. Based on the results of the stock assessment, it was decided that future stock assessments for TRE 2 will be done in conjunction with TRE 1.
- 888. The 2022 stock assessment for the TRE 1 Bay of Plenty sub-stock showed that it was likely (>60% probability) to be at or above the target (40% of SB_0), with the study concluding that the spawning biomass was at 66.4% SB_0 , following an increasing trajectory from the 1980s. Model projections indicate that this biomass will decline slightly at current catch levels, but with a low probability of dropping below 40% SB_0 by 2027 (when the next stock assessment is due).
- 889. TRE 2 comes under Group 1 of the National Inshore Finfish Fisheries Plan (discussed further in section 6.5.5 below) due to the intention that future stock assessments for TRE 2 are completed in conjunction with TRE 1 (Fisheries New Zealand, 2022a).
- 890. Given the status of TRE 1 Bay of Plenty sub-stock in relation to reference points is known,¹⁶⁵ and that TRE 2 is considered to be the same stock, it is deemed that the stock's current biomass is likely to be above that which can produce the maximum sustainable yield.
- 891. Under section 13(2)(a) of the Act, you must set a TAC that maintains the stock at or above a level that can produce the MSY, having regard to the interdependence of stocks. This section applies when maintaining the *status quo* or when increasing the TAC.

¹⁶³ Statistical analysis on the age of fish captured in scientific surveys and commercial fisheries.

¹⁶⁴ A report that trawl fishers are required to complete after a trawl fishing event.

¹⁶⁵ Under the Harvest Strategy Standard, the default management target is 40% *B*₀ (unfished biomass), the soft limit is 20% *B*₀, and the hard limit is 10% *B*₀.

3.2 Cyclone Gabrielle

- 892. On 12-16 February 2023, Cyclone Gabrielle caused unprecedented damage across parts of the North Island, especially the Gisborne and Hawke's Bay regions.
- 893. Cyclone Gabrielle produced strong winds and torrential rainfall causing loss of life, significant flooding, and damage to the environment (land and marine). Its effects have impacted several communities and industries, including fisheries in Fisheries Management Area (FMA) 2.¹⁶⁶
- 894. The environmental impacts of the cyclone are believed to be extensive and are considered to have long-term fishery implications. These include:
 - Physical debris (such as logs of wood) has been widespread along the Gisborne and Hawke Bay coastline. This has caused navigational issues for fishing vessels, and fishing gear issues where nets have been caught and damaged. In turn this has changed fisher behaviour, such as travelling further out to new grounds or spending significant time repairing damaged gear.
 - The discharge of chemicals, sewage, and debris into the marine environment may cause polluted and anoxic conditions, potentially leading to localised mass die-off events of local benthic sea life.
 - Sedimentation will have wide-ranging impacts on inshore fisheries due to loss of habitat and productivity (such as smothering of rocky reefs, suspension in the water column and resettlement to new areas) resulting in disruption to the food web and potential displacement of fish stocks.
- 895. Since Cyclone Gabrielle, the National Institute of Water and Atmospheric Research (**NIWA**) has conducted two surveys within FMA 2 to understand the immediate impacts of the cyclone and establish a baseline to monitor ongoing changes in the marine environment within this FMA.
- 896. In April 2023 the NIWA research vessel *lkatere* was deployed to specifically map the seabed between Cape Kidnappers and Mohaka using multibeam echosounder equipment.
- 897. In June 2023 the NIWA research vessel *Kaharoa* was deployed within the wider FMA 2 region (Cape Turnagain to East Cape) and sampled benthic sediment, videoed the seafloor, provided further mapping of the seafloor using multibeam sonar equipment and on the final survey day conducted three research beam trawls. Sites targeted for investigation were selected after consultation with local and national stakeholders that included iwi, Hawke's Bay Regional Council, Gisborne District Council, the Department of Conservation, FNZ and the wider Ministry for Primary Industries.
- 898. NIWA do not expect the data gathered from these two voyages to be quantitatively analysed and ready for dissemination until later this year. However, preliminary observations from these surveys to date include:
 - Visibility above the seabed was poor at most locations due to the presence of a layer of suspended sediments, particularly at sites less than 50 metres deep;
 - Sites further offshore and in deep waters (greater than 70 metres) had better underwater visibility and less suspended sediments. Offshore sites examined around the Poverty Bay area appeared very similar in seafloor habitats and fauna to those seen previously in 2011. The Tolaga Bay offshore area examined was notable for a range of sponge species that also included glass sponges;
 - South of East Cape camera transects were taken with excellent sea floor visibility where healthy sponges, some sleeping pink maomao, butterfly perch, and black coral with a multitude of basket stars were seen;
 - At some sites, kelp was seen protruding out of turbid water, along with larger sponges. These were too large to have been recent recruits, suggesting that they survived through Cyclone Gabrielle. Some sites across Pania Reef (just outside Napier and within Hawke Bay) had sufficient visibility to suggest that the fauna and flora previously reported for this reef system were still present and in good condition;
 - Nearly all substrates, sampled by the sediment multicorer, were land-derived silty muds, with varying amounts of fine sand. Swell waves were likely resuspending fine-grained

¹⁶⁶ The FMA that encompasses the TRE 2 Quota Management Area.

sediment at shallow sites and winnowing the seabed, as was evident with the poor visibility experienced by the survey team; and,

- The Wairoa Hard¹⁶⁷ in Hawke Bay, returned no sponges, macroalgae, bryozoans, or other species that are associated with biogenic habitat. Some larger robust shelled sea snails characteristic of hard seafloor habitat were caught alive. The fish assemblage present was dominated by small bastard red cod (a structure-associated species), ahuru and soles (soft-sediment associated species), with other expected finfish species absent. Wood debris was caught in all three beam trawl tows conducted at Wairoa Hard.
- 899. These preliminary observations from the NIWA surveys suggest that some parts of FMA 2 have been highly impacted (such as Wairoa Hard), some parts have been barely impacted at all (south of East Cape) and some parts have shown resilience to the effects of the cyclone (identified kelp and sponge areas). FNZ will continue to review data and conclusions provided by the NIWA surveys as it is disseminated.
- 900. It is expected that the full impact of Cyclone Gabrielle on FMA 2 can only be properly evaluated in four to five years' time. This creates a source of uncertainty for the long-term trends in TRE 2 recruitment as there is limited understanding of how the cyclone has affected nursery areas and recent trevally recruitment. However, if there has been a one-year reduction in the proportion of trevally recruitment in this area (caused by the cyclone), it is considered unlikely to have had a large impact on the stock as a whole given the number of year classes in this population.
- 901. Given the link between TRE 2 and the TRE 1 biological sub-stock in the Bay of Plenty, there are larger nursery areas in the Bay of Plenty that should provide some resilience to the TRE 2 stock from the effects of Cyclone Gabrielle. Trawl surveys have shown that juveniles (0+ and 1+ year class) occur mainly at depths shallower than 50 m around the northern North Island and occasionally off East Cape. Reported immature trevally catches along the northeast coast of the North Island are highest in the Bay of Plenty (Morrison et al., 2014), with Tauranga Harbour considered to be an important nursery area.

4 Catch information and current settings within the TAC

4.1 Commercial

- 902. The commercial harvesting of TRE 2 is primarily by trawling, with bottom trawl and precision harvest bottom trawl responsible for over 95% of the TRE 2 catch since October 2012.
- 903. The current TACC, last modified in 1992, is 241 tonnes. While there is no clear trend, most years since 1992 have seen commercial catch exceed the TACC.
- 904. The average commercial catch over the last 10 fishing years in TRE 2 (October 2012 to September 2022) has been 260 tonnes, which is 19 tonnes over the current allowance. Over the same period, TRE 2 catch has exceeded 300 tonnes in two of those years (303 tonnes in 2013/14 and 304 tonnes in 2016/17).
- 905. The FMA 2 trawl fleet operates between Cape Runaway and Palliser Bay, with the majority of catch and effort focused within the inshore waters of Poverty Bay and Hawke Bay.
- 906. There are two distinct trawl fisheries in TRE 2; a mixed trawl fishery, which targets red gurnard and snapper, and a tarakihi targeted bottom trawl fishery. This is further demonstrated in Figure 3 where most TRE 2 catch over the last decade has been through the targeting of red gurnard and tarakihi. Specifically, over the previous 10 years, 53% of the TRE 2 catch has been through the red gurnard target fishery and 29% has been through the tarakihi target fishery.
- 907. Figure 3 shows, over the last decade, that the proportion of TRE 2 catch through the targeting of snapper (SNA 2) initially increased and then generally declined. The proportion of TRE 2 catch through the targeting of trevally (15% in 2012/13 fishing year) has gradually declined to the point that in the previous fishing year no TRE 2 was targeted, demonstrating that TRE 2 is primarily a bycatch fishery.
- 908. Commercial fishers have reported difficulties avoiding trevally catch while targeting other inshore finfish species because of the stock's high abundance.

¹⁶⁷ Area of near-shore marine habitat between the Moeangiangi and Wairoa Rivers that goes out to a 30m depth.





4.2 Customary Māori

- 909. Trevally is an important traditional and customary food fish for Māori.
- 910. There is limited quantitative information available on the current level of customary noncommercial take for most fish stocks.
- 911. Reviewing reported customary catch data in TRE 2 over the last five years shows that in 2020, eleven bins of trevally were harvested. Assuming an average bin weight of 20 kg suggests that 220 kg of trevally have been harvested for customary purposes over the last five years.
- 912. In some cases, customary harvest might also be conducted through the amateur fishing regulations (which provide to harvest for hui and tangi and do not require catch to be reported).
- 913. The customary allowance for TRE 2 is set at one tonne.
- 914. FNZ considers there is uncertainty in the estimation of current customary use in TRE 2. Despite this uncertainty, FNZ considers the customary allowance for TRE 2 appropriate because the best available information on current customary use indicates customary harvest is much lower than the allowance.
- 915. FNZ have consulted iwi and no concerns were raised around the proposal to retain the allowance at one tonne

4.3 Recreational

- 916. Trevally is highly regarded as a table fish, with some amateur fishers using trevally as bait.
- 917. The daily bag limit is 20 trevally per person in the combined daily bag limit for finfish (20 finfish per fisher, excluding specified baitfish and freshwater eels) within the Central Recreational Management Area.
- 918. The National Panel Survey of Marine Recreational Fishers (NPS) represents the current available estimate of recreational harvest. The NPS in 2017/18 (Wynne-Jones et al., 2019), showed that virtually all recreational trevally harvest is by fishing rod or line whilst on watercraft. The survey also showed that recreational bag sizes for TRE 2 were small, with 60% of fishing trips reporting just one fish caught.
- 919. The NPS in 2011/12 (Wynne-Jones et al., 2014) estimated that for the 2011/12 fishing year the recreational harvest of TRE 2 was 11.15 tonnes. The 2017/18 survey estimated that for the

2017/18 fishing year the recreational harvest of TRE 2 was 16.97 tonnes (Table 2). This implies that recreational harvest is increasing.

Table 2: Recreational harvest estimates of trevally in TRE 2 from 2011/12 NPS and 2017/18 NPS. Numbers are in tonnes unless specified.

Year	Total weight	95% CV ¹⁶⁸
2011/12	11.15	± 2.68
2017/18	16.97	± 4.07

920. The recreational allowance for TRE 2 is 100 tonnes (set in 2010), suggesting that this allowance is considerably underutilised. However, the NPS is currently being run for the 2022/23 fishing year and will provide updated estimates of recreational trevally catch in TRE 2. As this current survey could inform a future review of the recreational allowance settings for TRE 2 FNZ does not propose reviewing this setting at the current time.

4.4 Other sources of mortality caused by fishing

- 921. No quantitative estimates are available regarding the impact of other sources of fishing mortality on trevally stocks. The allowance for other sources of mortality caused by fishing is currently set at seven tonnes, which equates to approximately 3% of the TACC.
- 922. The allowance for other sources of mortality caused by fishing is intended to provide for unrecorded mortality of fish associated with fishing, including incidental mortality from fishing methods or illegal fishing. This is naturally difficult to quantify when considering the range of contributing sources and as a result there is uncertainty in the estimates used to set this allowance.
- 923. For deepwater fisheries with high observer coverage, the other mortality caused by fishing allowance might be set at 1% of the TACC because data suggests that there is very little other mortality occurring. For inshore trawl fisheries with low coverage, there is generally more uncertainty, which is why the previous Minister of Fisheries in 2018 decided that the allowance should be set at an amount that equates to around 10% of the TACC for inshore trawl caught stocks, unless there is evidence to suggest otherwise.
- 924. The 2018 Inshore Science Working Group also used 10% of the commercial catch for estimating other mortality in their assessment of tarakihi (a commercially important inshore fish that is predominantly caught by trawl). There is no new evidence to suggest that different levels would be more appropriate for trevally.
- 925. As discussed in section 4.1 above, TRE 2 commercial harvest is predominantly by trawl, suggesting that the current setting of 3% of the TACC (that was set in 2010) is not appropriate.
- 926. Based on fishing event level data, ¹⁶⁹ observer coverage for TRE 2 has been below 10% (between 0.6% and 7.5%) over the last five fishing years. FNZ deems that based on this low coverage and generally high associated uncertainty, an allowance for other mortality equating to around 10% of the TACC would be appropriate for TRE 2. The current camera rollout is likely to improve our understanding of other sources of mortality caused by fishing, which may provide an opportunity to review this setting in future.

5 Treaty of Waitangi obligations

5.1 Input and participation of tangata whenua

927. Section 12(1)(b) of the Act requires that before undertaking any sustainability process you shall provide for the input and participation of tangata whenua who have a non-commercial interest in the stock or an interest in the effects of fishing on the aquatic environment in the area

¹⁶⁸ The coefficient of variation (CV) measures the extent of variability in relation to the mean (It is the ratio of the standard deviation to the mean).

¹⁶⁹ This coverage was calculated based on fishing events in which the fish stock was recorded as caught and an observer was on board. This metric does not reflect the overall level of monitoring in the fishery.

concerned. In considering the views of tangata whenua, you are required to have particular regard to kaitiakitanga.¹⁷⁰

- 928. Input and participation of tangata whenua into the sustainability decision-making process is provided mainly through lwi Fisheries Forums, which have been established for that purpose. Each lwi Fisheries Forum can develop an lwi Fisheries Forum Plan that describes how the iwi in the Forum exercise kaitiakitanga over the fisheries of importance to them, and their objectives for the management of their interest in fisheries. Iwi Fisheries Forums may also be used as entities to consult iwi with an interest in fisheries.¹⁷¹
- 929. TRE 2 covers the rohe of Mai i Ngā Kuri a Whārei ki Tihirau (Bay of Plenty), Ngāti Porou (East Cape) and Mai Paritu tae atu ki Turakirae (Mahia to Wairarapa) lwi Fisheries Forums.
- 930. Prior to and during consultation, feedback was sought from tangata whenua on how the proposed options for TRE 2 may or may not assist tangata whenua to provide kaitiakitanga, and how tangata whenua consider the proposal may affect their rights and interests in this stock.
- 931. FNZ's engagement with relevant lwi Fisheries Forums and understanding of the views from these Forums are outlined in Table 3.

lwi Fisheries Forum	Engagement on TRE 2
Mai i Ngā Kuri a Whārei ki Tihirau (Bay of Plenty)	FNZ provided the Forum with a one-pager on the proposed options for TRE 2 and attended an in-person hui with the Forum in June. No feedback for TRE 2 was received.
Ngāti Porou (East Cape)	FNZ provided Forum members with a one-pager on the proposed options for TRE 2 via email in May and provided an overview of the proposals at an online hui in July. No specific feedback for TRE 2 was received, No feedback was provided by the trust as whole, but some trust members provided written submissions.
Mai Paritu tae atu ki Turakirae (Mahia to Wairarapa)	FNZ provided the Forum with a one-pager on the proposed options for TRE 2 and attended an in-person hui with the Forum in June. No feedback for TRE 2 was received.

Table 3: Summary of engagement with Iwi Fisheries Forums.

932. Te Aitanga a Mate Te Aowera and Te Whanau a Hinekehu Takutai Kaitiaki Trust and Ngati Wakarara Ngati Hau Takutai Kaitiaki Trust (both part of Ngā Hapū o Ngāti Porou Management Trust) provided written submissions, summarised in *Submissions*.'

5.2 Kaitiakitanga

- 933. Information provided by forums, and iwi views on the management of fisheries resources and fish stocks, as set out in Iwi Fisheries Plans, are some ways that tangata whenua can express and exercise kaitiakitanga in respect of fish stocks.
- 934. There is currently no plan for Ngāti Porou and the plan for Mai Paritu tae atu ki Turakirae is currently being developed.
- 935. Some iwi in the Te Tai Hauāuru Iwi Fisheries Forum have interests in the TRE 2 fishery, and the associated Forum Plan contains management objectives relevant to the proposal to review the TRE 2 stock. The Rangitaane iwi and the Mai i Ngā Kuri a Whārei ki Tihirau Iwi Fisheries Forum have an Iwi Fishery Plan for FMA 2 that also contains relevant management objectives. These management objectives are summarised in Table 4 below.

Iwi Fisheries Forum	Relevant Management Objectives contained in Iwi Fisheries Forum Plan
Mai i Ngā Kuri a Whārei	 Iwi are actively engaged with others to increase their fisheries potential within
ki Tihirau (Bay of	environmental limits.
Plenty)	• The fisheries environment is healthy and supports a sustainable fishery.
Te Tai Hauāuru	 Our customary non-commercial fisheries are healthy, sustainable and supports the
(Taranaki to Titahi Bay)	cultural wellbeing of Te Tai Hauāuru Iwi.

Table 4: TRE 2 relevant lwi Fisheries Forums with lwi Fisheries Plan management objectives.

¹⁷⁰ 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.

¹⁷¹ However, FNZ also engages directly with Iwi (outside of Forums) on matters that affect their fisheries interests in their takiwa and consults with any affected Mandated Iwi Organisations and Iwi Governance Entities where needed.
Iwi Fisheries Forum	Relevant Management Objectives contained in Iwi Fisheries Forum Plan				
	• Our commercial fisheries are sustainable and support the economic wellbeing of Te Tai Hauāuru Iwi.				
	• Mana and rangatiranga over our fisheries is restored, preserved and protected for future generations.				
	Iwi collaborate in fisheries and environmental resource management to achieve iwi driven objectives.				
lwi	Relevant Management Objectives contained in Iwi fisheries Plan				
	• Mana and rangatiratanga over Rangitaane (North Island) Fisheries is restored, preserved and protected for future generations.				
	• Collaborative iwi partnerships in fisheries and environmental resource management are realised.				
Rangitaane (North Island)	• Rangitaane (North Island) have sufficient capacity to meet their individual and collective responsibilities as tiaki tangata/kaitiaki in partnership with others.				
	• Our customary non-commercial fisheries are healthy, sustainable and support the cultural wellbeing of nga iwi o Rangitaane (North Island).				
	Our commercial fisheries are sustainable and support the economic wellbeing of Rangitaane (North Island) hapu and whanau.				

936. FNZ considers that the proposed management options are in keeping with the objectives of the above-mentioned lwi Fisheries and lwi Fisheries Forum Plans, which generally relate to active engagement with iwi and the maintenance of healthy and sustainable fisheries.

5.3 Mātaitai reserves and other customary management tools

- 937. Section 21 (4) of the Act requires that, when allowing for Māori customary non-commercial interests, you must take into account
 - a) any mātaitai reserve in TRE 2 that is declared by notice in the Gazette under regulations made for the purpose under section 186A.
 - b) any area closure or any fishing method restriction or prohibition in TRE 2 that in imposed by the Minister by notice in the Gazette made under section 186A.
- 938. There are a number of customary fisheries management areas within TRE 2. These include seven mātaitai reserves, two taiāpure and one temporary closure made under section 186A (Table 5). As the TRE 2 commercial fishery is primarily bycatch and that the options proposed are either to maintain the *status* quo or allow for a moderate increase in utilisation, it is not anticipated that the options proposed would negatively impact the availability of trevally in these areas. However, any positive impacts are unknown.

Customary Area	Management Type
Porangahau Taiāpure Palliser Bay Taiāpure	Taiāpure All types of fishing are permitted within a Taiāpure. The management committee can recommend regulations for commercial, recreational and customary fishing.
Waimārama Temporary Closure - blackfoot pāua	Section 186A temporary closures Section 186A temporary closures are used to restrict or prohibit fishing of any species of fish, aquatic life or seaweed or the use of any fishing method.
Te Kopa o Rongokānapa Mātaitai Hakihea Mātaitai Horokaka Mātaitai Toka Tamure Mātaitai Te Hoe Mātaitai Moremore Mātaitai (a) Moremore Mātaitai (b)	Mātaitai reserve Commercial fishing is not permitted within mātaitai reserves unless regulations state otherwise.

6 Environmental and sustainability considerations under the Act

6.1 Overview

- 939. You are being asked to make a decision under section 13 of the Act, to set the TAC for trevally in TRE 2. This is a sustainability measure. Before setting or varying a sustainability measure, you must adhere to section 11 of the Act. When making your decision you must also act consistently with the requirements in section 5 of the Act, and sections 8-10 (Purpose and Principles of the Act).
- 940. The requirements and details of each of these sections are set out below, in the following order:
 - a) Section 5 (Application of international obligations and Treaty of Waitangi (Fisheries Claims) Settlement Act 1992);
 - b) Section 8 (Purpose);
 - c) Section 9 (Environmental principles);
 - d) Section 11 (Sustainability measures);
 - e) Section 13 (Setting a Total Allowable Catch); and
 - f) Section 10 (Information principles).

6.2 Application of international obligations and the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992 – section 5 of the Act

941. You must act in a manner consistent with the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992. This is discussed in more detail under Heading 2.2.1 of the *Introduction and Legal Overview* chapter of this document. You must also act in a manner consistent with New Zealand's international obligations relating to fishing. Discussion of these relevant obligations is provided under Heading 2.2.2 of the *Introduction and Legal Overview*.

6.3 Purpose of the Act – section 8 of the Act

942. The Act's purpose is to "provide for the utilisation of fisheries resources while ensuring sustainability." Guidance for you on the meaning of section 8 and how it should be applied for decision making (for all the stocks being reviewed as part of this round) is provided under Heading 2.2.3 in the *Introduction and legal overview* chapter.

6.4 Environmental principles – section 9 of the Act

- 943. The environmental principles that you must take into account when considering sustainability measures for TRE 2 are as follows:
 - Associated or dependent species should be maintained above a level that ensures their long-term viability.
 - Biological diversity of the aquatic environment should be maintained; and
 - Habitats of particular significance for fisheries management should be protected.
- 944. It is important to note that in some cases FNZ has made assumptions about environmental interactions based on fisher reported data that may not have been independently verified (for example, by an on-board FNZ observer).
- 945. FNZ is currently coordinating a nationwide rollout of cameras on commercial fishing vessels. It is expected that the on-board camera rollout will enhance our understanding of the TRE 2 stock by providing better verified information to underpin fisheries management decisions and encourage better fishing practices.
- 946. It is expected that cameras operating in the TRE 2 fishery will be installed and transmitting footage on fishing vessels within the following schedule:
 - Fishing vessels that trawl or longline by December 2024; and
 - Fishing vessels that setnet, purse seine, or danish seine by February 2025.

- 947. With TRE 2 considered to be largely a bycatch fishery (see 4.1 above), the proposed actions are unlikely to impact environmental interactions because fishing effort is unlikely to change. That is the proposed TAC changes for each option are not considered large enough to incentivise fishers to change their fishing behaviours.
- 948. Consideration of Cyclone Gabrielle is discussed in 'Status of the stock' above.
- 949. FNZ consider the proposed options take all of the above principles into account.

6.4.1 Associated or dependent species – section 9(a) of the Act

950. Associated or dependent species include marine mammals, seabirds, fish, and invertebrate species caught as bycatch in the trevally fishery.

Protected species interactions

- 951. Since October 2008 there have been no reported protected species interactions within the TRE 2 target fishery.
- 952. Fisheries measures have been put in place under the Hector's and Māui dolphin Threat Management Plan (**TMP**), which incorporate part of the TRE 2 QMA. Covering the whole of the west coast of the North Island, in TRE 2 the TMP starts within four nautical miles of the shore from Titahi Bay (Porirua) and continues round to Palmer Head (Wellington). This includes an extensive recreational and commercial set net fishing closure (Department of Conservation and Fisheries New Zealand, 2020a).
- 953. Management of seabird interactions with New Zealand's commercial fisheries is guided by the National Plan of Action Seabirds 2020 (**NPOA-Seabirds**). The NPOA-Seabirds sets out the New Zealand government's commitment to reducing fishing-related captures and associated mortality of seabirds. The vision of the NPOA-Seabirds is that New Zealanders work towards zero fishing-related seabird mortalities (Department of Conservation and Fisheries New Zealand, 2020b).
- 954. Management actions and research under the NPOA-Seabirds are guided and prioritised based on the seabird risk assessment that breaks down the risks to seabird populations by fishery groups. The most recent seabird risk assessment was published in 2020, with a 2023 assessment due to be published in the coming months.
- 955. New Zealand's inshore trawl fishery is considered responsible for a substantial portion of seabird capture risk.
- 956. There are a range of initiatives in place to reduce the risk of seabird captures in inshore trawl fisheries. These include work done by the black petrel working group and the development of Mitigation Standards to support fishers to identify the most effective mitigation techniques for their operations. For trawl vessels greater than 28 metres in length, there are also mandatory requirements for seabird mitigation set out in the <u>Seabird Scaring Devices Circular 2010 No.</u> F517, which is issued pursuant to regulation 58A of the Fisheries (Commercial Fishing) Regulations 2001.
- 957. FNZ considers the number of incidental protected species interactions is unlikely to increase under the options proposed in this chapter as TRE 2 is primarily a bycatch fishery. FNZ will continue to closely monitor protected species interactions in this fishery.

Fish and invertebrate bycatch

- 958. Fish species most commonly caught in association with trevally in TRE 2 are red gurnard (GUR 2) and tarakihi (TAR 2). GUR 2 has no sustainability concerns, with the stock biomass considered to be About as Likely as Not (40%–60%) to be at or above the target and overfishing is Unlikely (<40%) to be occurring.
- 959. TAR 2 is part of the East Coast tarakihi stock, which is currently subject to a time-constrained rebuild plan¹⁷² due to low abundance (currently below the biomass soft limit). As part of the FMA 2 mixed trawl fishery TAR 2 is highly monitored and, as TRE 2 itself is primarily a bycatch fishery, it is unlikely any TRE 2 TAC increase proposed will lead to an increase in tarakihi catch.
- 960. There are no records of invertebrate bycatch in the TRE 2 target fishery.

¹⁷² Eastern Tarakihi Management Strategy and Rebuild Plan.

6.4.2 Biological diversity of the aquatic environment – section 9(b) of the Act

- 961. TRE 2 trevally are predominantly caught as bycatch by bottom trawl, which can directly impact the biological diversity of the benthic environment. However, as it is primarily a bycatch fishery it is considered that the proposed changes are unlikely to lead to an increase in trawl effort. Bottom trawling in this fishery is also typically confined to areas that have been consistently fished over time (rather than areas of relatively undisturbed biodiversity).
- 962. FNZ will continue to monitor all commercial fishing activity in TRE 2, including any shifts in behaviour. In regard to trawling this includes improving predictive modelling to map seabed habitats and develop decision support tools for management, as well as refining methods to estimate the extent and effects of bottom fishing, as well as recovery.
- 963. Research has characterised both New Zealand's benthic environment and the level of benthic impact from fishing activity, which is summarised in the Aquatic Environment and Biodiversity Annual Review (Fisheries New Zealand, 2022b). The environmental impacts of fishing are summarised annually by FNZ and we will continue to monitor the bottom trawl footprint of fisheries.
- 964. Bottom contact fishing activity is likely to have some impact on benthic habitats that are also likely to be subjected to land-based stressors such as pollution and sedimentation.
- 965. The recent Cyclone Gabrielle is expected to have affected both trevally nursery grounds and adult demersal habitats, especially within the Poverty Bay and Hawke Bay areas. This represents a source of uncertainty for TRE 2 recruitment in the next five or so years. Potential cyclone impacts, resilience from those impacts and preliminary findings from recent surveys, are all discussed in section 3.2.
- 966. There are three marine reserves within TRE 2: Te Tapuwae o Rongokako Marine Reserve (Gisborne), Te Angiangi Marine Reserve (Hawke's Bay) and Taputeranga Marine Reserve (Wellington). These reserves are free from fishing activity that could potentially impact their respective habitats. Commercial and recreational take from these areas is prohibited.

6.4.3 Habitats of particular significance for fisheries management – section 9(c) of the Act

- 967. There are no specific habitats of particular significance identified for TRE 2 at this time. What is known is outlined in Table 6.
- 968. Trevally eggs are pelagic, and hatch about 28 hours after fertilisation. Little is known about the distribution of eggs and larvae and there are no clearly defined spawning grounds (Morrison et al., 2014).
- 969. From about 4 cm length, juvenile fish up to two years old are found in shallow inshore areas including estuaries and harbours, these habitats and their attributes might be critical for successful recruitment and maintaining stock productivity (FNZ Fisheries Assessment Plenary, 2023). Sampling in estuaries has found juvenile trevally to be particularly associated with subtidal seagrass meadows, while also showing association with horse mussel beds, kelp forests and shallow sandy areas. However, it is unclear how differentially abundant they are across different estuarine and coastal habitats (Morrison et al., 2014).
- 970. Shallow inshore areas can be vulnerable to land-based stressors, such as pollution and sedimentation. This can potentially impact the survival of juvenile trevally and hence recruitment to TRE 2.
- 971. Young fish enter a demersal phase from about one year old until they reach sexual maturity (3-4 years). At this stage adult fish move between demersal and pelagic phases. Schools occur at the surface, in mid-water and on the bottom, and are often associated with reefs and rough substrate (FNZ Fisheries Assessment Plenary, 2023). Pelagic schooling of adult trevally is more common during the winter months and is related to feeding (Morrison et al., 2014).
- 972. Surface schooling trevally feed on planktonic organisms, while on the bottom trevally feed on a wide range of invertebrates (FNZ Fisheries Assessment Plenary, 2023).
- 973. As TRE 2 is essentially a bycatch fishery, FNZ considers that the options proposed are unlikely to pose a threat to areas identified as potential habitats of significance as it is unlikely they will result in increased targeting of trevally. There is no confirmed habitat of particular significance for fisheries management for TRE 2. Table 6 summarises the available information on potential habitats of significance for TRE 2, the threats faced, and the existing protection in place.

Table 6: Summary of information on potential habitats of particular significance for fisheries management for TRE 2.

Fish stock	Trevally - TRE 2
Potential habitat of particular significance	 Water column – spawning and larval transport Biogenic habitats in shallow inshore waters including estuaries and harbours – juveniles.
Attributes of habitat	 Biogenic habitats – structured habitat types are likely to provide shelter, refuge from predation, and access to food for juveniles. Connectivity with spawning areas is likely to be important for iuvenile habitats.
Reasons for particular significance	 Water column: Spawning habitat. Eggs and larvae are transported in the surface plankton. Adult migration. Inshore biogenic habitat: Potential juvenile nursery area. Successful spawning and growth/survival of juveniles is critical to maintaining the productivity of the stock.
Risks/threats	 Climate change can modify temperature regime of water column, affecting spawning and larval transport. Climate change can also induce unusual storm events (such as Cyclone Gabrielle), destroying or modifying inshore biogenic habitats. Mobile bottom-contact fishing methods can impact biogenic habitats, however there is limited understanding of the specific habitat attributes important for trevally. Inputs of pollutants and sediments from land-based sources. High nutrient load can lead to eutrophication. Sedimentation can smother biogenic habitats.
Existing protection measures	 Several areas within the shallower inshore waters are closed to mobile bottom-contacting fishing methods and may provide some protection to potential nursery habitat.¹⁷³ Specifically: Several areas within Hawke Bay closed to both trawl and danish seine fishing. Prohibition of paired trawling along the North Island East Coast. Prohibition of danish seining around the lower North Island. Within FMA 2 there are four voluntary trawl closed areas.¹⁷⁴ Cook Strait Cable Protection Zone prohibits most fishing methods in this area. The National Policy Statement on Freshwater Management and the National Environmental Standards for Freshwater, which came into effect on 3 September 2020, should lead to improved water quality in shallow harbours and estuaries and other shallower inshore waters. The FNZ Coastal Planning Team engages with the RMA coastal planning processes to support marine management decisions to manage land-based impacts on habitat of particular significance for fisheries management
Evidence	 Morrison, M.A.; Jones, E.G.; Parsons, D.P.; Grant, C.M. (2014). Habitats and areas of particular significance for coastal finfish fisheries management in New Zealand: A review of concepts and life history knowledge, and suggestions for future research. New Zealand Aquatic Environment and Biodiversity Report No. 125. 202 p. Fisheries New Zealand (2022). Fisheries Assessment Plenary, May 2022: stock assessments and stock status. Compiled by the Fisheries Science Team, Fisheries New Zealand, Wellington, New Zealand. 1886 p.

6.5 Considerations for setting sustainability measures under section 11 of the Act

- 974. Section 11 of the Act sets out various matters that you must take into account or have regard to when setting or varying sustainability measures (such as the TAC change proposed as part of this chapter). These include:
 - a) any effects of fishing on any stock and the aquatic environment; and
 - b) any existing controls under the Act that apply to the stock or area concerned; and
 - c) the natural variability of the stock concerned; and

¹⁷³ Fisheries (Central Area Commercial Fishing) Regulations 1986.

¹⁷⁴ As part of the <u>Eastern Tarakihi Management Strategy and Rebuild Plan</u> over 90% of quota shareholders for TAR 2 have agreed not to trawl in four voluntary closed areas within FMA 2.

d) any relevant planning instruments, strategies, or services.¹⁷⁵

6.5.1 Effects of fishing on any stock and the aquatic environment – section 11(1)(a)

- 975. You must take into account any effects of fishing on any stock and the aquatic environment when making your decision about the TRE 2 TAC.
- 976. "Effect" is defined widely in the Act.¹⁷⁶ You must take into account the broader effects of removing trevally from the ecosystem as well as the more direct effects of fishing (virtually all trawling).
- 977. All information relevant to your decision with regard to the effects of removing trevally on any stock and the aquatic environment is discussed above in *Environmental Principles*.
- 978. All information relevant to your decision with regard to the effect of fishing for trevally on any other stock is discussed below in 'Setting a Total Allowable Catch' (section 13 of the Act).

6.5.2 Existing controls that apply to the stock or area – section 11(1)(b)

- 979. You must take into account any existing controls under the Act (including rules and regulations made under the Act (section 2(1A)) that apply to the stock when setting or varying the TAC.
- 980. Along with the catch limits and allowances set under the TAC, there are several management controls currently in place for TRE 2. There is a Minimum Legal Size (**MLS**) in place for commercial and recreational fishers and a maximum daily bag limit for recreational take (Table 7).

Fishery	Restrictions
Recreational	 MLS of 25 centimetres fork length. Minimum net mesh size of 100 millimetres. Daily bag limit is 20 trevally per person in the combined daily bag limit for finfish (20 finfish per fisher, excluding specified baitfish and freshwater eels) in the Central Recreational Management Area.
Commercial	 MLS of 25 centimetres fork length. Minimum net mesh size of 100 millimetres. Spatial gear restrictions:¹⁷⁷ Several areas within Hawke Bay closed to both trawl and danish seine fishing. Prohibition of paired trawling along the North Island East Coast. Prohibition of danish seining around the lower North Island.

Table 7: Recreational and commercial restrictions for TRE 2.

981. Spatial restrictions set under the Act can be put in place to ensure sustainable utilisation or to protect habitats of particular significance for fisheries management. These can apply to both recreational and commercial fishers. There are no general spatial restrictions currently in place for trevally in TRE 2. There are, however, a number of mātaitai reserves, taiāpure, and section 186A area closures that fall within TRE 2 (see section 5.3 above).

6.5.3 The natural variability of the stock – section 11(1)(c)

- 982. You must take into account the natural variability of the stock when setting or varying its TAC.
- 983. As highlighted in section 3, TRE 2 is considered to be part of the TRE 1 Bay of Plenty substock. The 2022 stock assessment for the TRE 1 sub-stock concluded that spawning biomass was at 66.4% *SB*₀ and that model projections indicated that the biomass will decline slightly at current catch levels, but with low probability of dropping below 40% *SB*₀ by 2027 (when the next stock assessment is due). Overfishing was about as likely as not (40–60%) to be occurring.
- 984. Given the status of TRE 1 Bay of Plenty sub-stock in relation to reference points is known, and that TRE 2 is deemed to be the same stock, it is considered the stock's current level is above that which can produce the maximum sustainable yield.

¹⁷⁵ Sections 11(2) and (2A).

 ¹⁷⁶ Section 2(1) of the Act defines "effect" to mean the direct or indirect effect of fishing, and includes any positive, adverse, temporary, permanent, past, present, or future effect. It also includes any cumulative effect, regardless of the scale, intensity, duration, or frequency of the effect, and includes potential effects.
 ¹⁷⁷ Eicherse (Control Area Commercial Eiching) Pagulations 1086.

¹⁷⁷ Fisheries (Central Area Commercial Fishing) Regulations 1986.

6.5.4 Relevant statements, plans, strategies, provisions, and documents - section 11(2)

- 985. In setting or varying the TAC of this stock, you must have regard to the following statements, plans, strategies, provisions and planning documents under section 11(2) of the Act, that apply to the coastal marine area and that you consider to be relevant.
- 986. The following plans and strategies are relevant for TRE 2.

Regional Plans – section 11(2)(a)

- 987. There are four regional councils and one unitary authority that have coastlines within the boundaries of TRE 2: Greater Wellington, Manawatu-Wanganui, Hawke's Bay, Gisborne, and Bay of Plenty. Each of these regions have policy statements and plans to manage the coastal and freshwater environments, including terrestrial and coastal linkages, ecosystems, and habitats.
- 988. The provisions of these various documents are, for the most part, of a general nature and focus mostly on land-based stressors on the marine environment. There are no provisions specific to trevally.
- 989. FNZ has reviewed these documents and the provisions that might be considered relevant can be found in Table A1 of Addendum 1. FNZ considers that the proposed options in this chapter are consistent with the objectives of these relevant regional plans.
- 990. The FNZ Coastal Planning Team engages with the RMA coastal planning processes (including regional authorities) to support marine management decisions to manage not only the fishing effects on the coastal environment but also land-based impacts on fisheries.

6.5.5 Relevant services or fisheries plans – section 11(2A)

- 991. Under section 11(2A), before setting or varying any sustainability measure or making any decision or recommendation under the Act to regulate or control fishing, you must take into account
 - a) any conservation services or fisheries services; and
 - b) any relevant fisheries plan approved under this Part; and
 - c) any decisions not to require conservation services or fisheries services.
- 992. Fisheries services of relevance to the options in this chapter include the research used to monitor the fishery and the tools used to enforce compliance of management controls in the fishery. These are discussed under '*Management background*', '*Catch information and current settings within the TAC*', and above under '*Existing controls that apply to the stock or area* section 11(1)(b).'
- 993. Observer and onboard camera coverage relevant to the TRE 2 fishery is also described above under the 'Other sources of mortality caused by fishing' and Environmental principles section 9 of the Act' sections.
- 994. There are no applicable conservation services that specifically relate to TRE 2, or any decisions not to require conservation services or fisheries services.

National Inshore Finfish Fisheries Plan

- 995. The National Inshore Finfish Fisheries Plan provides guidance on management objectives and strategies for finfish species, including trevally (Fisheries New Zealand, 2022a). The Plan will guide the operational management of inshore finfish fisheries for the next five years and is aimed at progressing New Zealand towards more ecosystem-based fisheries management.
- 996. Stocks are grouped within the Plan, with management approaches and objectives tailored accordingly for each group.
- 997. TRE 2 is considered part of the TRE 1 Bay of Plenty sub-stock and so falls under Group 1. Placement in Group 1 recognises that the stock will be subject to more commercial utilisation than some stocks, and that its management is going to be supported by more comprehensive management. This will be addressed by conducting future stock assessments for TRE 2 in conjunction with TRE 1.

6.5.6 Other plans and strategies

998. The following plans and strategies are not mandatory considerations under section 11 of the Act, but they may be considered relevant to this review.

Te Mana o te Taiao (Aotearoa New Zealand Biodiversity Strategy)

- 999. FNZ considers that the sustainability measures proposed for trevally are generally consistent with relevant objectives of the Te Mana o te Taiao the Aotearoa New Zealand Biodiversity Strategy including Objective 10, which is to ensure that ecosystems are protected, restored, resilient and connected from mountain tops to ocean depths; and Objective 12, which is to manage natural resources sustainability.
- 1000. For more information on Te Mana o te Taiao see section 3.3 of the *Introduction and Legal Overview.*

6.6 Total Allowable Catch - section 13 of the Act

- 1001. Given the stock level is estimated to be at or above a level that can produce the MSY, you are being asked to make decisions to set a TAC for TRE 2 under section 13(2)(a) of the Act.
- 1002. Section 13(2)(a) enables you to set a TAC that maintains the stock at or above a level that can produce the MSY, having regard to the interdependence of stocks.
- 1003. FNZ considers that all proposed options (discussed in section 8 below) would not be inconsistent with the objective of maintaining the stock at or above a level that can produce the maximum sustainable yield.

6.6.1 Interdependence of stocks

- 1004. When setting the TRE 2 TAC under section 13, you must have regard to the interdependence of stocks. The interdependence of stocks involves the consideration of the effects of fishing on associated stocks affected by fishing for the target stock (also discussed above in *'Environmental and sustainability concerns under the Act'*).
- 1005. Examples include non-target fish species (bycatch) or benthic species that are incidentally taken or impacted by fishing gear. The role of the trevally in the food chain should also be considered. In particular, interdependence involves direct trophic relationships between stocks (i.e., one stock is likely to be directly affected through a predator-prey relationship by the abundance of another stock).
- 1006. There is little information available regarding predator/prey interdependency for trevally.
- 1007. Trevally feed both in benthic habitats and at the surface and have a broad dietary preference with common prey including pelagic crustaceans, small squid, juvenile and larval fish. The impact of changing trevally abundance on the abundance of their prey or predators is not well understood, and significant predators of trevally have not been identified. Altering the TAC for TRE 2 on the abundance of trevally prey is not well understood and it is possible that increasing the TAC could decrease food abundance for trevally predators.
- 1008. Trevally in TRE 2 is primarily taken as bycatch, the proposed increases to the TAC for all FNZ proposed options are all considered modest and FNZ considers it unlikely that these increases will lead to an increase targeting of trevally in TRE 2. Therefore, FNZ considers that increasing the TAC would not have a strong effect on the relationship between trevally and their prey and predators within TRE 2.

6.6.2 Harvest Strategy Standard

- 1009. Section 13 of the Act provides for the setting of a TAC for TRE 2, and guidance is provided by the Harvest Strategy Standard for New Zealand Fisheries (**HSS**).¹⁷⁸
- 1010. The High Court has held that the HSS is a mandatory relevant consideration that you must have regard to when setting a TAC under section 13 of the Act. ¹⁷⁹

147 • Review of sustainability measures for the 2023 October round: TRE 2

¹⁷⁸ <u>Harvest Strategy Standard for New Zealand Fisheries</u>. October 2008. Ministry for Primary Industries.

¹⁷⁹ Fisheries Inshore New Zealand Ltd v Royal Forest and Bird Protection Society of New Zealand Incorporated [2023] NZCA 359.

- 1011. The 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.
- 1012. The HSS outlines the Ministry's approach to relevant sections of the Act and forms a core input to the Ministry's advice to the Minister on the management of fisheries. The HSS defines a hard limit as a biomass limit below which fisheries should be considered for closure and a soft limit as a biomass limit below which the requirement for a formal time-constrained rebuilding plan is triggered.
- 1013. As highlighted in 'Status of the stock', TRE 2 is considered part of the TRE 1 Bay of Plenty substock. The 2022 stock assessment for the TRE 1 Bay of Plenty sub-stock concluded that spawning biomass was at 66.4% SB_0 and that model projections indicated that the biomass will decline slightly at current catch levels, but with low probability of dropping below 40% SB_0 by 2027 (when the next stock assessment is due). Overfishing was about as likely as not (40–60%) to be occurring.
- 1014. In respect to this TRE 2 review, the Harvest Strategy Standard assists in meeting the requirements of sections 13(2)(a) by providing that stocks should be managed to fluctuate around a specified target based on MSY-compatible reference points or better.

6.7 Information principles: Uncertainties and unknowns - section 10 of Act

- 1015. Under section 10 of the Act, decision-makers are required to take into account four information principles:
 - a) decisions should be based on the best available information.¹⁸⁰
 - b) decision makers should consider any uncertainty in the information available in any case;
 - c) decision makers should be cautious when information is uncertain, unreliable, or inadequate;
 - 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 this Act.
- 1016. FNZ considers that the information presented in this chapter represents the best available information.
- 1017. In various sections of this chapter, FNZ has pointed out where information is uncertain and warrants caution for your decision making, in line with the principles above. In particular, uncertainty around the effects of Cyclone Gabrielle on coastal habitat and fisheries status in parts of TRE 2 is discussed above in *'Status of the stock'* above.
- 1018. You should therefore be cautious in light of this uncertainty.
- 1019. However, it is important to note that (as emphasised by section 10(d)) uncertainty should not be used as a reason for postponing or failing to take any measure to achieve the purpose of the Act.
- 1020. A precautionary approach to ensure sustainability of both the stock and the aquatic environment would be consistent with both the purpose of the Act and New Zealand's international obligations.¹⁸¹

¹⁸⁰ Section 2(1) of the Act defines "best available information" to mean "the best information that, in the particular circumstances, is available without unreasonable costs, effort, or time"

¹⁸¹ In particular, the Contracting Parties to the Biodiversity Convention (including New Zealand) note that where there is a threat of significant reduction or loss of biodiversity, lack of full scientific certainty should not be used as a reason for postponing measures to avoid or minimize such a threat.

7 Submissions

- 1021. Nine submissions were received on the proposed options for TRE 2. Table 8 summarises the submissions received and shows submitters' support for each option.
- 1022. Three submitters supported Option 1, two submitters supported Option 3, two submitters opposed modifying the TAC at all, and another submitter proposed an alternative option.

Table 8: Written submissions and responses received for TRE 2.

Cubmitter	Option supported				
Submitter	1	2	3	Other	Notes
Ngati Wakarara Ngati Hau Takutai Kaitiaki Trust	~				Supports Option 1
Te Aitanga a Mate Te Aowera & Te Whanau a Hinekehu Takutai Kaitiaki Trust	~				Find it hard to support an increase in take in light of Cyclone Hale and Cyclone Gabrielle.
New Zealand Sport Fishing Council (NZSFC) and LegaSea, joint recreational submission with the New Zealand Angling & Casting Association (NZACA)	V				Does not support Option 2 or Option 3.
Te Ohu Kaimoana			~		Also supports the Seafood NZ Inshore Council's alternative option of increasing TACC by 20%.
Iwi Collective Partnership (ICP)			\checkmark		Considers there are no sustainability concerns with increasing the TACC to promote greater utilisation.
Seafood New Zealand – Inshore Council (Inshore Council).				~	Proposes an alternative option of a 20% increase to the TACC.
NZ Federation of Commercial Fishermen Inc.				~	Support proposal made by Inshore Council.
Royal New Zealand Society for the Prevention of Cruelty to Animals Inc.				~	Does not support any of the options provided because they only provide options to increase TAC and TACC.
Ben				~	Generally opposed proposed changes to catch limits.

8 Options and analysis

8.1 Current settings

TAC: 349 tTACC: 241 tCustomary: 1 tRecreational: 100 tOther mortality: 7 t
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- 1023. The *status quo* is not proposed as an option in this review. Retaining the current catch settings would not align with the current practice of setting the other sources of mortality caused by fishing allowance at an amount that equates to around 10% of the TACC for inshore trawl caught stocks (unless evidence suggests that an alternative is more appropriate, see section 4.4). Currently the allowance is 7 tonnes, which is 3% of the TACC.
- 1024. The Royal New Zealand Society for the Prevention of Cruelty to Animals Inc. (**RNZSPCA**) states that it does not support any of the options provided because they only provide options to increase TAC and TACC, which it opposes. The RNZSPCA submits that not changing the TAC represents a precautionary approach to fisheries management, that gives weight to the uncertainty of how the fishery and the habitat that it supports may respond to increases in

fishing effort, and also acknowledges the lack of consideration of fish welfare in the review. This position is also echoed by an individual submitter.

1025. FNZ does not consider the current allowance for other sources of mortality caused by fishing to be appropriate, and therefore considers that maintaining the *status quo* is not appropriate.



Figure 4: Reported yearly commercial landings (tonnes) from 2012/13 to 2012/22. Each Option's proposed TACC is illustrated.

8.2 Option 1 – modified status quo

	TAC : 366 t (↑ 17 t)	TACC: 241 t	Customary: 1 t	Recreational: 100 t	Other mortality: 24 t (17 t)
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Option 1 TAC

- 1026. Under Option 1 the TAC would increase from 349 to 366 tonnes, a 17-tonne increase pursuant to section 13(2)(a) of the Act.
- 1027. As detailed earlier (in '*Status of the stock*') TRE 2 is considered part of the TRE 1 Bay of Plenty sub-stock. This is deemed to be at or above its biomass target and projected to remain above the biomass target until 2027 (when the next stock assessment is due).
- 1028. Best available information indicates the stock appears to have remained at a stable level of biomass for an extended period of time (as discussed in '*Status of the stock*' above).
- 1029. It is not expected that this TAC change will alter fisher behaviour so it is considered extremely unlikely that adopting this option will lead to an increase in fishing effort. Therefore, it is considered extremely unlikely that this option will lead to an increase impact on aquatic environments (see '*Environmental and sustainability considerations*'), or interdependent stocks.
- 1030. As mentioned, fecundity is relatively low until females reach about 40 cm FL. The proposed TAC increase is not expected to lead to an overall reduction in the fecundity of the stock.
- 1031. Because it is the most conservative increase to the TAC proposed, this approach takes into account, to a high degree, the uncertainty associated with the recent impacts of Cyclone Gabrielle on the local marine environment (discussed in '*Status of the stock*').
- 1032. There is no information to suggest that this option would present a sustainability concern, however there is uncertainty in the considerations discussed above in relation to this option.
- 1033. The NZ Sport Fishing Council (**NZSFC**) and its associates support this option, as do the Ngati Wakarara and Ngati Hau Takutai Kaitiaki Trust.

1034. The Seafood New Zealand Inshore Council (**Inshore Council**) does not support this option, stating it does not adequately consider the potential for utilisation of the stock, it ignores the latest scientific evidence and questions why this option was consulted on.

Option 1 Allowances

- 1035. As discussed in 'Customary Māori' above, customary reporting reveals that customary harvest of TRE 2 has been 220 kg over the last five years. Customary Māori allowance is considered to be appropriate and is proposed to remain at one tonne for all options.
- 1036. Recreational allowance is proposed to remain at one hundred tonnes. As discussed in section 4.3 of this chapter, the previous two NPSs shows that this allowance is considerably underutilised (less than 20% harvest of the allowance during both surveys). However, this option suggests reviewing the TRE 2 recreational allowance after the current 2022/23 survey is completed, that could inform such a review.
- 1037. The TRE 2 current allowance for 'All other mortality caused by fishing' does not align with the current practice of setting this allowance at an amount that equates to around 10% of the TACC for inshore trawl caught stocks, unless evidence suggests that an alternative is more appropriate (see section 4.4 of this chapter). Currently the allowance is 7 tonnes, which is 3% of the TACC. Option 1 proposes increasing this allowance to 24 tonnes so that it equates to around 10% of the current TACC (a 17-tonne increase).
- 1038. The NZSFC states that it supports the increase in the 'other mortality caused by fishing' allowance and retention of the existing non-commercial allowances for Māori customary and recreational fishing interests.

Option 1 TACC

- 1039. Under Option 1 the TACC would remain at 241 tonnes, reflecting a cautious approach as discussed above.
- 1040. It carries the lowest sustainability risk of the options presented. However, it carries a higher risk of constraining commercial utilisation and places less weight on the fact that the current stock biomass is likely to be above target.
- 1041. The NZSFC states that it did not support increasing the TACC.
- 1042. Te Aitanga a Mate Te Aowera and Te Whanau a Hinekehu Takutai Kaitiaki Trust supports Option 1, stating that they find it hard to support an increase in take in light of the last two severe weather events of Cyclones Hale and Gabrielle.

8.3 Option 2

TAC: 387 t (↑ 38 t) TACC: 260 t (↑ 19 t) Customary: 1 t Recreational: 100 t Other mortality: 26 t (↑ 19 t)	l9 t)
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Option 2 TAC

- 1043. Under Option 2 the TAC would increase from 349 to 387 tonnes, a 38-tonne increase pursuant to section 13(2)(a) of the Act.
- 1044. As detailed earlier TRE 2 itself is considered to be part of the TRE 1 Bay of Plenty sub-stock which is deemed to be at or above its biomass target, and is projected to remain like this until 2027 (when the next stock assessment is due).
- 1045. Best available information indicates the stock appears to have remained at a stable level of biomass for an extended period of time (as discussed in section 3.1 of this chapter).
- 1046. It is not expected that this TAC change will markedly alter fisher behaviour so it is considered very unlikely that the proposed TAC increase will lead to an increase in fishing effort. Therefore, it is considered extremely unlikely that this option will lead to an increase in impact on aquatic environments (see section 6 of this chapter) or interdependent stocks.
- 1047. As mentioned, fecundity is relatively low until females reach about 40 cm FL. While the proposed TAC increase is higher than Option 1, it is not expected to lead to an overall reduction in the fecundity of the stock.

- 1048. This option makes some assumption that any impacts associated with Cyclone Gabrielle may have been modest, and that the stock has had some reasonable resilience to this weather event (discussed in section 3.2 of this chapter).
- 1049. There is no information to suggest that this option would present a sustainability concern, however there is uncertainty in the considerations discussed above in relation to this option.
- 1050. FNZ considers an opportunity exists to allow further utilisation of the stock and this option proposes a modest increase to the TRE 2 TAC that is considered adherent to section 13(2)(a) of the Act.

Option 2 Allowances

- 1051. Customary Māori allowance is proposed to remain at one tonne.
- 1052. Recreational allowance is proposed to remain at one hundred tonnes. This option suggests reviewing the TRE 2 recreational allowance after the current 2022/23 NPS that could inform such a review.
- 1053. Under Option 2, the allowance for all other mortality caused by fishing is proposed to be increased to 26 tonnes (a 19-tonne increase). This aligns with the current practice of setting this allowance at an amount that equates to around 10% of the TACC for inshore trawl caught stocks.

Option 2 TACC

- 1054. Under Option 2, the TACC would increase from 241 tonnes to 260 tonnes, a 19-tonne (8%) increase. This is a modest approach to provide for utilisation. It proposes to increase the TACC to the approximate average catch over the last ten years (260 tonnes) to reflect the actual catch over that time. Note that this proposed setting is below last year's reported commercial catch of 275 tonnes (see Figure 4).
- 1055. With catch exceeding the commercial allowance for most years, this option considers a TACC setting that is in line with levels of utilisation over the last decade. However, as TRE 2 is primarily a bycatch fishery, it is unlikely this will lead to an increase targeting of trevally in TRE 2.
- 1056. This option recognises that trevally is a choke species¹⁸² in FMA 2, by increasing TRE 2 Annual Catch Entitlement (**ACE**)¹⁸³ available to fishers who in turn can balance their catch more effectively when targeting other species (discussed further in section 9 of this chapter).
- 1057. The Inshore Council acknowledges that this option allows for greater utilisation than Option 1 but mention that this option falls short by failing to recognise that operators are already taking actions to avoid catching TRE 2. It goes on to say that it is physically impossible for fishers to avoid trevally catch when targeting tarakihi and red gurnard in FMA 2.
- 1058. By allowing more utilisation Option 2 presents a higher level of risk (in terms of potential fishing impacts and stock biomass) than Option 1 but does acknowledge historical over catch by aligning the TACC to actual catch over the last decade.

8.4 Option 3

TAC: 408 t (↑ 59 t) TACC: 279 t (↑ 38 t) Customary: 1 t Recreational: 100 t Other mortality: 28 t (↑ 21 t)
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Option 3 TAC

- 1059. Under Option 3, the TAC would increase from 349 to 408 tonnes, a 59-tonne increase pursuant to section 13(2)(a) of the Act.
- 1060. As detailed earlier TRE 2 itself is considered to be part of the TRE 1 Bay of Plenty sub-stock which is deemed to be at or above its biomass target, and this is projected to remain like this until 2027 (when the next stock assessment is due).

¹⁸² In a mixed fishery, a choke species is a stock whose available quota is exhausted while other stocks still have quota

available to the fisher. In this instance it restricts the fisher's ability to continue to fish for stocks where quota is still available. ¹⁸³ The right to harvest a quantity (kg) of a fishstock for one year. ACE (the catching right) is generated annually for each quota share (the property right) and may vary from year to year in line with the TACC.

- 1061. Best available information indicates the stock appears to have remained at a stable level of biomass for an extended period of time (as discussed in section 3.1 of this chapter).
- 1062. The TAC increase proposed under Option 3 is higher than under Options 1 and 2, which means there is a relatively higher level of risk (in terms of potential fishing impacts and stock biomass).
- 1063. This proposed TAC increase could alter fisher behaviour. Most TRE 2 harvest is bycatch so it is considered unlikely that the proposed TAC increase will lead to a significant increase in fishing effort. However, if there is an increase in fishing effort, then there is an elevated risk of increased impact on the aquatic environment (see section 6 of this chapter) or interdependent stocks, in comparison with Options 1 and 2.
- 1064. As mentioned, fecundity is relatively low until females reach about 40 cm FL. While the proposed TAC increase for this option is higher than Options 1 and 2, it is not expected to lead to an overall reduction in the fecundity of the stock.
- 1065. This option makes some assumption that any impacts associated with Cyclone Gabrielle may have been minimal, and that the stock has had significant resilience to this weather event (discussed in section 3.2).
- 1066. Te Ohu Kaimoana supports Option 3, noting that this option reflects the abundance of TRE 2 biomass that has been consistently caught in the last 10 years. The submission highlighted that the best available information, as well as past catch efforts, reflects the need and opportunity for further utilisation.
- 1067. The lwi Collective Partnership (**ICP**) supports Option 3, highlighting that scientific evidence, catch history and anecdotal information suggests there are no sustainability concerns with increasing the TACC to promote greater utilisation.
- 1068. There is no information to suggest that this option would present a sustainability concern, however there is a higher level of uncertainty compared with the other options proposed, as discussed above in relation to this option.
- 1069. FNZ considers an opportunity exists to allow further utilisation of the stock, and that the TAC increase proposed under this option adheres to section 13(2)(a) of the Act.

Option 3 Allowances

- 1070. Customary Māori allowance is proposed to remain at one tonne.
- 1071. Recreational allowance is proposed to remain at one hundred tonnes. This option suggests reviewing the TRE 2 recreational allowance after the current 2022/23 survey, as this survey could inform such a review.
- 1072. Under Option 3, the allowance for 'all other mortality caused by fishing is proposed to be increased to 28 tonnes (a 21-tonne increase). This aligns with the current practice of setting this allowance at an amount that equates to around 10% of the TACC for inshore trawl caught stocks. Te Ohu Kaimoana stated it considers that this allowance is appropriate.

Option 3 TACC

- 1073. Under Option 3, the TACC would increase from 241 tonnes to 279 tonnes, a 38-tonne (16%) increase. This proposed TACC is just above last year's reported catch (275 tonnes). The increase in allowance provides for more utilisation opportunity than Option 2.
- 1074. This option sets the TACC above the average annual catch over the last 10 years, potentially allowing for a moderate increase to the level of utilisation, and is within the bounds of the highest reported catch over that time (see Figure 4, 304 tonnes in the 2016/17 fishing year). However, as TRE 2 is primarily a bycatch fishery, it is not expected that this will lead to an increase targeting of trevally in TRE 2.
- 1075. This option provides greater recognition than Option 2 that trevally is a choke species in FMA 2. Option 3 provides for an increase in TRE 2 ACE that in turn can allow fishers to balance their catch more effectively when targeting other species (discussed further in section 9 of this chapter).
- 1076. The TACC change under this option imposes a relatively higher level of risk (in terms of potential fishing impacts and stock biomass) compared to Options 1 and 2. However, the proposed allowance is within the bounds of previous reported catch over the last decade.

- 1077. There is no information to suggest that this option would present a sustainability concern, however there is uncertainty.
- 1078. Te Ohu Kaimoana considers the proposed TACC increase under this option to be modest.
- 1079. The Inshore Council submits that it sees this option as the minimum acceptable increase in TACC for TRE 2.

8.5 Other options proposed by submitters

TAC: 418 t (↑ 69 t)	TACC: 289 t (1 48 t)	Customary: 1 t	Recreational: 100 t	Other mortality: 29 t (1 22 t)
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- 1080. The Inshore Council proposes an alternative option of increasing the TACC by 20%. Specifically, increasing the TACC from 241 tonnes to 289 tonnes (48 tonne increase), the other sources of mortality allowance from 7 tonnes to 29 tonnes (22 tonne increase) and increasing the TAC from 349 tonnes to 418 tonnes (69 tonne increase).
- 1081. The Inshore Council rationalise this alternative option by drawing attention to the 2022 TRE 1 Bay of Plenty sub-stock assessment. In this assessment projection modelling to 2027 (when the next stock assessment is due) was run and used assumed catch in the 2021/22 fishing year (refer to section 3.1 above). A separate model run of current catch plus 20% (not the TACC) was also completed during this assessment and projected that this stock would still remain at or above the target biomass level with this increased level of catch.
- 1082. The Inshore Council also draws attention to the evidence of stock resilience to the Cyclone Gabrielle (discussed in section 3.2 above) and that anecdotal feedback from FMA 2 fishers support this.
- 1083. Te Ohu Kaimoana and the NZ Federation of Commercial Fishermen submit their support for the Inshore Council's alternative option, noting there is a likelihood that catch will further exceed the proposed 279 tonnes (proposed TACC for Option 3). It goes on to say that this alternative option is supported by the best available information for the TRE 2 stock and better reflects the current abundance levels.
- 1084. Notwithstanding that the projection modelling completed for the Bay of Plenty assessment used current catch plus 20%, not TACC plus 20%, FNZ acknowledges that evidence suggests that the trevally stock has had some resilience to the impacts from Cyclone Gabrielle.
- 1085. However, there is still uncertainty in the extent of TRE 2 resilience to Cyclone Gabrielle and FNZ has taken a precautionary approach in forming all of its proposed options (that were consulted on) in light of this uncertainty. FNZ acknowledges that had Cyclone Gabrielle not occurred then options with greater TAC and TACC increases may have been consulted on. In light of Cyclone Gabrielle then caution is warranted, which underpins all FNZ's proposed options.
- 1086. FNZ also considers that as the Inshore Council proposed option is outside of the range of TAC modifications that were consulted on, there is an elevated risk of stakeholders seeking a judicial review if you proceeded with this proposal.

8.6 Other matters raised

8.6.1 Cyclone Gabrielle

- 1087. The NZSFC and Te Ohu Kaimoana mention Cyclone Gabrielle, with both parties emphasising the importance of ongoing monitoring in FMA 2.
- 1088. In its response Te Ohu Kaimoana states that there is a source of concern in the gaps of knowledge, particularly in FMA 2 fish stocks, in light of the environmental impacts of Cyclone Gabrielle. The submission goes on to say it is critical that scientific and localised mātauranga research is undertaken to mitigate the uncertainty in long-term trends in TRE 2 recruitment.
- 1089. Te Ohu Kaimoana note there is a need to prioritise and commit funding to a long-term research plan addressing the cyclone impacts upon the marine environment, and they urge FNZ to work collaboratively with the impacted coastal communities, iwi quota holders, and the commercial sector to do so.
- 1090. The NZSFC mention that to understand the effects of the cyclone and subsequent storms, there is a need to monitor the stocks and the ongoing impacts of sediment influx from land run-off on

the marine environment. They note the importance of you applying precaution in this circumstance. The NZSFC also note that there is no trawl survey data for FMA 2.

- 1091. The RNZSPCA advocates that FNZ should take an ecosystems approach to commercial fishing, stating that this recognises the range and severity of anthropogenic threats to the environment. The submission goes on to say that these threats reduce the resilience of aquatic animals and the marine environment to climate change.
- 1092. The ICP acknowledges the significant impacts of Cyclone Gabrielle in its submission, and encourages targeted research and monitoring projects to assess the cyclone's effects on the marine environment. The ICP emphasises the importance of considering and supporting hapu kapata kai areas affected by the cyclone.
- 1093. FNZ will continue to work with tangata whenua and stakeholders to monitor the marine environment, fish stocks and fishing behaviour in FMA 2 in response to the cyclone.

8.6.2 Observer and camera coverage

- 1094. The RNZSPCA advocate that fishing activities that pose risks to non-targeted animals have 100% observer or camera coverage. It goes on to say it "supports the rapid rollout of on-board cameras on 100% of New Zealand's commercial fishing fleet to improve the level of monitoring, compliance, and verification of catch and thus quality of fishing data".
- 1095. As discussed in section 4.4 above, observer coverage in TRE 2 is considered low. However, as highlighted in section 6.4 above, FNZ has committed to a schedule for the installation of cameras in TRE 2 as part of the rollout of cameras on commercial fishing vessels.

8.6.3 CPUE and stock status

- 1096. The NZSFC states that you should exercise caution "against relying on the TRE 2 standardised CPUE indices as a reliable indicator of abundance, as the large fluctuations in abundance between years are not possible or plausible at a population level for a species that live in excess of 40 years".
- 1097. As mentioned in section 3.1 above the CPUE indices developed for TRE 2 (covering the 1989/90 to 2016/17 fishing years) were rejected by the Working Group as an index of relative biomass for TRE 2, due to some years showing the annual variation as implausible for a separate stock.
- 1098. The NZSFC also made note that a model that included the TRE 2 North stock within the Bay of Plenty sub-stock assessment was attempted but was not accepted by the FNZ Working Group.
- 1099. As highlighted in section 3.1 above, in conjunction with the 2022 Bay of Plenty sub-stock assessment a separate assessment that also included TRE 2 was accepted by the Inshore Science Working Group as a sensitivity run. This assessment showed strong similarities with the separate Bay of Plenty sub-stock assessment and the Working Group considered that the TRE 1 Bay of Plenty and TRE 2 are the same stock.
- 1100. Based on the evidence (that has been peer reviewed and accepted by the Inshore Working Group) discussed in section 3.1 above, TRE 2 is considered part of the TRE 1 Bay of Plenty sub-stock.
- 1101. FNZ considers the science discussed in section 3.1 above, that has been peer-reviewed and accepted by the Inshore Working Group, constitutes the best available information to inform your decision.
- 1102. The Inshore Council submitted there is a need to reinstate a fishery-independent abundance indices through a specific FMA 2 trawl survey to provide increased confidence in CPUE and stock assessment results, and highlighted previous requests for this.
- 1103. FNZ acknowledge that with CPUE analysis constituting an important source of information for TRE 2, changes in fisher behaviour in response to Cyclone Gabrielle means that future studies of CPUE must be interpreted with caution.

8.6.4 Targeting TRE 2 and ACE

1104. The NZSFC states in its submission, that "most of the previous TACC increases in FMA 2 have come about after the TACC has been over-caught for a few years. In some cases, it is the entities with the most quota targeting a species so there is insufficient ACE to cover the bycatch caught by other fishers". They then go on to say that "the QMS incentivises this behaviour

because it achieves two outcomes; major quota holder squeezes the ACE fishers or smaller quota holder out of the fishery, and/or it is a deliberate ploy, and a successful strategy in the past, to insist on an increased TACC".

- 1105. As discussed in section 4.1 above, the proportion of TRE 2 catch through the specific targeting of trevally has declined over the last decade, and over the same time frame 82% of trevally catch can be accredited to the red gurnard and tarakihi target fisheries. Also, reviewing entities that held ACE (discussed in section 9 below) as well as those subjected to deemed value payments (discussed in section 10 below) in previous fishing years does not suggest that fisher behaviour mentioned in the previous point has occurred.
- 1106. The Inshore Council highlight the difficulty fishers have in avoiding catching trevally in TRE 2 and that trevally are a choke species in the FMA 2 mixed trawl fishery. They go on to say that historical inaction to address this has resulted in significant deemed value payments.

9 Economic context

- 1107. The TRE 2 fishery supports many people, including quota holders, commercial fishers, licensed fish receivers, and seafood processing facilities. To give a sense of scale and distribution, based on the 2021/22 fishing year, 56% of TRE 2 quota was owned by four entities, and the remaining 44% of quota was owned by 32 entities. As at the end of the 2021/22 fishing year, there were 36 commercial entities holding ACE: 64% held by four entities, and the remaining 36% held by 32 entities.
- 1108. The economic impacts associated with all options proposed for TRE 2 are likely to be minimal. This stock is caught as bycatch, implying fishers are not actively targeting it, and that the TACC has been overcaught for the majority of the time since the stock's last TACC modification in 1992.
- 1109. Provided recent catch trends continue Option 1 will maintain the *status quo* for commercial fishers, Option 2 is expected to provide for existing levels of utilisation, and Option 3 will allow for a moderate increase in utilisation. It is therefore unlikely that fishers would be required to adjust their fishing behaviour in response to the proposed changes.
- 1110. Any increase in TACC will result in more available TRE 2 ACE to trade, which would be expected to result in fewer deemed value payments as fishers are able to balance their catch more effectively. This is expected to result in a minor decrease in some fishers' expenses. If you decide to set the TAC as proposed for Option 1 then the *status quo* will likely remain.
- 1111. Furthermore, if the TRE 2 TACC is increased then an increase in TRE 2 ACE may alleviate trevally as a constraint somewhat in targeting desirable species in the FMA 2 mixed trawl fishery (such as red gurnard), and in turn realising greater economic benefit for fishers.
- 1112. Whilst practically a bycatch species, there is potential that any increase in TRE 2 ACE may incentivise fishers to target TRE 2 more frequently in future. To what degree if any, and what economic impacts that may have, are unknown. FNZ will continue to monitor fishing activity regardless of which option is adopted.

10 Deemed values

- 1113. FNZ is satisfied that the current deemed values are consistent with section 75(2)(a) of the Act in that they provide sufficient incentive for fishers to balance their catch with ACE. FNZ is therefore not recommending any changes to deemed value rates for TRE 2 at this time.
- 1114. FNZ acknowledges that if the TACC is increased, subsequent changes in fishing behaviour and the ACE market may result in the need for the deemed value to be re-evaluated in the future. FNZ will continue to monitor TRE 2 deemed values payments for any changes in fisher behaviour.

11 Conclusions and recommendations

1115. Over the last decade there has been a general decline in the targeting of trevally in TRE 2, yet over the same period catches have regularly exceeded the TACC. Commercial fishers have reported high abundance of trevally and find it difficult to avoid as by-catch when targeting other inshore species (with fishers reporting trevally to be a choke species).

- 1116. TRE 2 is considered part of the TRE 1 Bay of Plenty sub-stock. The 2022 assessment concluded that the TRE 1 Bay of Plenty sub-stock spawning biomass was Likely (>60%) to be above the target of 40% *SB*₀.
- 1117. Cyclone Gabrielle is expected to have had a significant impact on parts of the TRE 2 marine environment, though initial observations have shown this varies considerably across FMA 2 with some locations showing substantial impact and other areas being barely impacted at all.
- 1118. While the associated long-term effects of this cyclone on TRE 2 represent a source of uncertainty regarding TRE 2 abundance in the future, information suggests that TRE 2 should have some resilience to these effects (noting the number of year classes in the TRE 2 population and the link between TRE 2 and the TRE 1 biological sub-stock in the Bay of Plenty).
- 1119. The best available information indicates that TRE 2 is currently above a level which can produce the MSY, and that there is an opportunity to set the TAC at a higher level which will result in the stock moving towards (or above) a level that can produce the maximum sustainable yield.
- 1120. FNZ recommends that you increase the TAC for TRE 2, with FNZ's preferred option being Option 2. This option recognises that there is a utilisation opportunity by providing a modest increase to the TACC that aligns to actual catch levels over the last decade, while also acknowledging that despite some expected resilience to the cyclone there is still long-term uncertainty associated with its impacts.
- 1121. FNZ considers that all of its proposed options are underpinned by a precautionary approach in light of the long-term impacts of Cyclone Gabrielle.
- 1122. Regardless of which option is selected FNZ is committed to regular monitoring of TRE 2 and the wider FMA 2 area.
- 1123. In light of the importance of ongoing research in FMA 2, FNZ will continue to work with tangata whenua and stakeholders to monitor the marine environment, fish stocks and fishing behaviour in response to Cyclone Gabrielle.

Decision for TRE 2 12

Option 1

Agree to set the TRE 2 TAC at 366 tonnes and, within the TAC, to:

- Retain the allowance for Māori customary non-commercial fishing interests at 1 tonne;
- Retain the allowance for recreational fishing interests at 100 tonnes; Increase the allowance for all other sources of mortality to the stock caused by fishing from 7 ί.
- ü.
- iii. to 24 tonnes;
- Retain the TRE 2 TACC at 241 tonnes. iv.

Agreed / Agreed as Amended / Not Agreed

OR

Option 2 (Fisheries New Zealand preferred option)

Agree to set the TRE 2 TAC at 387 tonnes and, within the TAC, to:

Retain the allowance for Māori customary non-commercial fishing interests at 1 tonne;

- i.
- Retain the allowance for recreational fishing interests at 100 tonnes; ii.
- Increase the allowance for all other sources of mortality to the stock caused by fishing from 7 üi. to 26 tonnes;
- Increase the TRE 2 TACC from 241 to 260 tonnes. iv.

Agreed //Agreed as Amended / Not Agreed

OR

Option 3

Agree to set the TRE 2 TAC at 408 tonnes and, within the TAC, to:

- Retain the allowance for Maori customary non-commercial fishing interests at 1 tonne;
- Retain the allowance for recreational fishing interests at 100 tonnes; İ.
- Increase the allowance for all other sources of mortality to the stock caused by fishing from 7 ij.
- iii. to 28 tonnes;
- Increase the TRE 2 TACC from 241 to 279 tonnes. iv.

Agreed / Agreed as Amended / Not Agreed

Hon Rachel Brooking Minister for Oceans and Fisheries

/ 2023

Red gurnard (GUR 3) – East Coast South Island, Chatham Rise, sub-Antarctic, Southland, Rakiura, and Fiordland



Figure 1: Quota Management Areas (QMAs) for red gurnard, with GUR 3 highlighted.

1 Why are we proposing a review?

- 1124. A stock assessment in 2022 concluded that GUR 3 abundance was very likely (>90%) to remain above the target biomass level over the next five years. The subsequent five percent increase in the Total Allowable Catch (**TAC**) in 2022/23 was a precautionary response to a trend of increasing abundance.
- 1125. A recent trawl survey (2023) indicated red gurnard biomass has continued to increase, with results providing greater confidence in the 2022 stock assessment and suggesting a further utilisation opportunity exists for GUR 3 in 2023/24. However, the trawl survey indicated that pre-recruit biomass is lower than previously, suggesting recruitment to the fishery will be lower in coming years. In addition, the survey did not show the impacts of the 2022/23 TAC increase. Acknowledging these factors, FNZ's review of GUR 3 is proposing only a modest increase to the TAC for 2023/24.
- 1126. FNZ is advising you on options to either retain the *status quo*, or to increase the TAC of GUR 3 under section 13(2)(a) of the Fisheries Act 1996 (**the Act**) and within this, to increase the allowances and Total Allowable Commercial Catch (**TACC**) to allow for greater utilisation of the stock.

1.1 Summary of proposed options

			Allowances				
Option	TAC	TACC	Customary Māori	Recreational	All other mortality caused by fishing		
Option 1 (Status quo)	1,695	1,575	3	6	111		
Option 2	1,779 (↑ 84 t)	1,654 (个 79 t)	3	6	116 (个 5 t)		

Table 1: Summary of options proposed for GUR 3 from 1 October 2023. Figures are all in tonnes. The preferred option of Fisheries New Zealand is highlighted in blue.

In total, eight submissions were received on the proposed options.

2 About the stock

2.1 Biology

- 1127. Red gurnard occur throughout New Zealand coastal waters at depths of 10-200 m, with a preference for mud and sandy seafloor habitat. They feed mainly on crustaceans (especially small crabs and shrimps), small fishes, worms, and squid.
- 1128. Red gurnard grow to a maximum length of 55 cm, with females growing faster and larger than males. They have a maximum age of 16 years and reach maturity at 23 cm in length and 2-3 years of age. Spawning occurs in spring-summer.

2.2 Fishery characteristics

- 1129. Red gurnard is a common species, predominantly caught in the Fisheries Management Area 3 (**FMA 3**) inshore multispecies trawl fishery, along with flatfishes, elephantfish, red cod, tarakihi, blue moki, rig, barracouta, and leatherjacket.
- 1130. In the 2020/21 and 2021/22 fishing years, 76% and 80%, respectively, of the estimated catch of red gurnard in GUR 3 was recorded from the inshore waters of FMA 3 (Figure 2). During the same period, 23% and 20%, respectively, of estimated red gurnard catch was recorded from the inshore waters of Fisheries Management Area 5 (**FMA 5**).



Figure 2: Heat-maps showing fishing effort (all methods) for red gurnard in FMAs 3, 4, 5, and 6 during 2020/21 (left) and 2021/22 fishing years (right).

- 1131. While bottom trawling is the main commercial fishing method for red gurnard, Danish seine is also used. Some red gurnard is also taken in the offshore target tarakihi and giant stargazer bottom trawl fisheries. The level of fishing targeting red gurnard within the east coast South Island (**ECSI**) multispecies trawl fishery was historically low, averaging less than 10%, but has increased to approximately 25% since 2017/18.
- 1132. Rod and line fishing is the preferred recreational fishing method in FMA 3, with smaller amounts of other recreational methods also used (e.g., longlining).

2.3 Management background

1133. GUR 3 entered the Quota Management System (QMS) in 1986, with an October fishing year (1 October – 30 September). This will be the fourth review of management settings since 2015/16 after reviews in 2018/19, 2020/21, and 2022/23.

3 Status of the stock

- 1134. The best available information on the status of GUR 3 can be found within the May 2023 Fisheries Assessment Plenary report (FNZ – Fisheries Assessment Plenary, 2023).
- 1135. The first fully quantitative stock assessment of GUR 3 was completed in May 2022 (Langley, 2022). The assessment concluded that, at the 2021/22 TAC settings, GUR 3 abundance was projected as very likely (>90%) to remain above the target biomass level over the next five years (Figure 3). The probability of the catch or TAC at the time causing biomass to decline below soft and hard limits was considered very unlikely (<10%) and exceptionally unlikely (<1%), respectively.



- Figure 3: Annual biomass trend by year for GUR 3. The black solid line represents the median and the shaded area represents the 95% credible interval. The dashed line represents the interim target level (35% SB₀). The red and orange dashed lines represent the hard and soft biomass limits, respectively.
- 1136. Prior to the 2022 stock assessment, GUR 3 was assessed using partial quantitative stock assessments based on standardised Catch Per Unit Effort (CPUE) indices. CPUE trends and the results of the 2022 fishery-independent ECSI trawl survey show an increase in abundance since 2000, but with large confidence intervals (CIs) (Figure 4). The large CIs for the trawl survey are related to the ECSI trawl survey not being optimised to accurately survey red gurnard prior to 2007, as the original survey area excluded depths shallower than 30 m. Abundance trends are also reflected in CPUE indices from Southland and Otago (Figure 5).



Figure 4: A comparison of the standardised bottom trawl-mix CPUE indices and the trawl survey biomass estimates for red gurnard from the winter ECSI inshore trawl survey for the 30–400 m depth strata. Error bars show ±95% confidence intervals. Both sets of indices have been normalised to the average for the years with a survey biomass index.



Figure 5: A comparison of the standardised bottom trawl-mix, bottom trawl-flatfish, and Southland/Otago flatfish (BTSouthFLA) red gurnard CPUE indices.

1137. Results of the 2022 ECSI trawl survey, which became available after the 2022 stock assessment, afford greater confidence in the 2022 stock assessment and CPUE trends indicating continued growth in red gurnard biomass. The 2022 core strata (30-400 m) biomass was the highest recorded in the survey time-series, with the core plus shallow strata (10-400 m), biomass trend mirroring those in the core strata, except that biomass was much higher (Figure 6). The core-plus-shallow strata are considered the most appropriate for red gurnard, incorporating important shallow water habitat.



- Figure 6: Red gurnard total biomass for all ECSI winter surveys in core strata (30–400 m) and core plus shallow strata (10–400 m) for species found in less than 30 m in 2007, 2012, 2014, 2016, 2018, 2021, and 2022 (preliminary results). Error bars are +/- two standard errors.
- 1138. It is important to note that the additional catch of red gurnard, by way of the 2022/23 TACC increase, was taken after the 2022 ESCI trawl survey. Therefore, while the five percent TAC increase in 2022/23 was a modest increase underpinned by the 2022 stock assessment, the results of the 2022 ECSI trawl survey do not reflect the impact of this increase.
- 1139. Results from the 2022 ECSI trawl survey also indicate that the increasing trend in red gurnard biomass is accompanied by a decrease in red gurnard pre-recruited biomass (Figure 7). This suggests that recruitment to the fished portion of the population will be lower in coming years.



Figure 7: Red gurnard pre-recruited biomass and 95% confidence intervals for 2007-2022 ECSI winter surveys in core plus shallow strata (10–400 m).

1140. Given the stock level is estimated to be at or above the interim B_{MSY} reference level (35% SB_0), catch settings can be altered under section 13(2)(a) of the Act. Section 13(2)(a) allows the TAC to be altered in a way that maintains the stock at or above a level that can produce the maximum sustainable yield, having regard to the interdependence of stocks. This section applies when maintaining the *status quo* or when increasing the TAC.

4 Catch information and current settings within the TAC

4.1 Commercial

1141. GUR 3 landings regularly exceeded the TACC between 1988/89 and 1995/96. Ageing of fish collected during the ECSI trawl surveys at this time suggests relatively strong year classes moving through the fishery. However, from the 1996/97 fishing year, landings declined. In 2002/03, the TACC for GUR 3 was reduced to 800 tonnes. Since 2000, catch has steadily increased and has been consistently overcaught since 2004, reaching catch levels previously attained in the 1960s (Figure 8).



Figure 8: Reported commercial landings and TACCs for GUR 3 (South East Coast).

1142. Commercial fishing stakeholder groups (Southern Inshore Fisheries Management Co. and Seafood New Zealand – Inshore Council) have noted that commercial fishers find it difficult to avoid catching red gurnard in GUR 3 and that the species' abundance has increased over the last several years, especially along the east coast of the South Island.

4.2 Customary Māori

- 1143. Red gurnard is an important species for Māori customary, non-commercial fishing interests, by virtue of its wide distribution in shallow coastal waters. Under the Fisheries (South Island Customary Fishing) Regulations 1999, red gurnard (kumukumu, pūwhaiau) has been reported as taken in small amounts from GUR 3, with approximately 800 kg recorded as harvested between 2009 and 2018. The small amount of customary reporting may reflect that tangata whenua are using recreational fishing regulations for their harvest.
- 1144. The customary allowance for GUR 3 is currently set at three tonnes, based on customary reporting volumes (discussed above) and possible tangata whenua use of recreational regulations for harvesting red gurnard in the QMA.

4.3 Recreational

- 1145. Red gurnard is a popular recreational fish species across New Zealand. The main recreational fishing method is rod and line, and the recreational daily bag limit for red gurnard in FMA 3 is 30 per person per day as part of the mixed species daily limit. A 25 cm minimum size is in place, alongside a 100 mm minimum net mesh size for set nets used to catch red gurnard. The recreational allowance for GUR 3 is currently set at six tonnes.
- 1146. Based on the National Panel Survey of Marine Recreational Fishers (**NPS**) 2017/18, recreational catch of GUR 3 decreased between the 2011/12 and 2017/18 surveys (Table 2) (Wynne-Jones *et al.*, 2014; Wynne-Jones *et al.*, 2019).

 Table 2: Summary of the National Panel Survey of Marine Recreational Fishers results from GUR 3 for red gurnard.

 Figures are all in tonnes.

Fish stock	2011/12 Estimated harvest	CV	2017/18 Estimated harvest	CV
GUR 3	2.01	± 1.24	1.7	± 0.7

1147. The NPS is, however, a snapshot of fishing activity over a fishing year. It is not appropriate to draw robust conclusions around increases or reductions in recreational harvest solely from this information. Factors such as weather, wind, swell, water temperature and fuel prices all determine how much fishing occurs in any given year.

4.4 Other sources of mortality caused by fishing

- 1148. This allowance accounts for mortality that occurs due to any fishing activity that is not otherwise accounted for in the TAC, such as incidental mortality, illegal catch and discarding, among other potential sources.
- 1149. For inshore trawl fisheries with low levels of observer coverage, there is generally more uncertainty in the level of other mortality occurring. This is reflected in the setting of the 'other mortality' allowance. In 2020, the then Minister of Fisheries decreased the 'other mortality' allowance for GUR 3 from a level equivalent to 20% of its TACC to a level equivalent to 7% of the TACC (from 264 tonnes to 105 tonnes). While an 'other mortality' allowance equating to 10% of the TACC was proposed for inshore trawl caught stocks, the 2020 decision to decrease the 'other mortality' allowance for GUR 3 to 7% noted the improvements in commercial fishing practices in FMA 3 and FMA 5 (e.g. use of lighter gear and larger mesh size).
- 1150. The 'other mortality' allowance continues to be set at a level equivalent to 7% of the TACC and is currently 111 tonnes. There is no new information available to quantify all 'other mortality' to the stock caused by fishing for GUR 3.
- 1151. Observer coverage in GUR 3 is low, averaging just over five percent over the past five full fishing years, based on event-level data.¹⁸⁴ Observer coverage is determined annually according to a number of factors, including risk posed to protected species and fishery-specific issues.
- 1152. With the introduction of onboard cameras across the inshore trawl fleet on the north, south and east coasts of the South Island in 2023, increased monitoring of this fleet will substantially improve verification of catch reporting and reduce uncertainty around other sources of mortality caused by fishing.

5 Treaty of Waitangi obligations

5.1 Input and participation of tangata whenua

- 1153. Section 12 (1)(b) of the Act requires that before undertaking any sustainability process you shall provide for the input and participation of tangata whenua who have a non-commercial interest in the stock or an interest in the effects of fishing on the aquatic environment in the area concerned. In considering the views of tangata whenua, you are required to have particular regard to kaitiakitanga.¹⁸⁵
- 1154. Input and participation of tangata whenua into the sustainability decision-making process is provided mainly through Iwi Fisheries Forums, which have been established for that purpose. Each Iwi Fisheries Forum can develop an Iwi Fisheries Forum Plan that describes how the iwi in the Forum exercise kaitiakitanga over the fisheries of importance to them, and their objectives for the management of their interest in fisheries. Iwi Fisheries Forums may also be used as entities to consult iwi with an interest in fisheries.¹⁸⁶

¹⁸⁴ This coverage was calculated based on fishing events in which the fish stock was recorded as caught and an observer was on board. This metric does not reflect the overall level of monitoring in the fishery.

¹⁸⁵ 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.

¹⁸⁶ However, FNZ also engages directly with iwi (outside of Forums) on matters that affect their fisheries interests in their takiwa and consults with any affected Mandated lwi Organisations and lwi Governance Entities where needed.

- 1155. GUR 3 covers the rohe of iwi comprising Te Waka a Māui me Ōna Toka Iwi Fisheries Forum, which represents all nine tangata whenua iwi of Te Waipounamu (South Island): Ngāti Apa ki Ratō, Ngāti Kōata, Ngāti Kuia, Ngāti Rarua, Ngāti Tama, Ngāti Tōarangatira, Rangitāne ō Wairau, Te Ati Awa and Ngai Tahu. Their Iwi Fisheries Forum Plan is titled *Te Waipounamu Iwi Forum Fisheries Plan*.
- 1156. At a hui in March 2023, FNZ discussed the October sustainability round generally with the Forum. At that time, South Island stocks to proceed to review were not finalised, as trawl survey biomass estimates were not available to inform options for GUR 3 for forum members' input.
- 1157. The options presented in this chapter were subsequently discussed with Te Waka a Māui me Ōna Toka lwi Forum at a hui in July 2023. In response, forum members voiced support for Option 2 proposed in the *Review of sustainability measures for red gurnard (GUR 3) for* 2023/24 discussion paper.
- 1158. Fisheries New Zealand also received a formal submission from the Ngāti Mutunga o Wharekauri Iwi Trust, representing Ngāti Mutunga in Wharekauri (Chatham Islands). Feedback from this submission is discussed later in the 'Submissions' section of this document.
- 1159. During consultation, feedback was sought from tangata whenua on how the proposed options for GUR 3 may or may not assist tangata whenua to provide kaitiakitanga, and how tangata whenua consider the proposal may affect their rights and interests in this stock.

5.2 Kaitiakitanga

- 1160. Information provided by forums, and iwi views on the management of fisheries resources and fish stocks, as set out in Iwi Fisheries Plans, are ways that tangata whenua can exercise kaitiakitanga in respect of fish stocks.
- 1161. Kumukumu (pūwhaiau, red gurnard) is identified as a taonga species in Te Waipounamu lwi Forum Fisheries Plan, which contains objectives to support and provide for the interests of South Island iwi.
- 1162. Fisheries New Zealand considers that the management options presented in this advice paper contribute towards the objectives of Te Waipounamu lwi Forum Fisheries Plan, supporting and providing for the interests of South Island iwi, while maintaining healthy and sustainable fisheries. FNZ therefore considers the options broadly align with the following objectives:
 - **Management objective 1:** To create thriving customary, non-commercial fisheries that support the cultural wellbeing of South Island iwi and whanau;
 - Management objective 2: South Island iwi are able to exercise kaitiakitanga;
 - **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
 - **Management objective 5:** to restore, maintain and enhance the mauri and wairua of fisheries throughout the South Island.
- 1163. Fisheries New Zealand acknowledges support voiced by Te Waka a Māui me Ōna Toka Iwi Forum for the modest increase in TAC proposed in Option 2, reinforcing the alignment of this option with Te Waipounamu Iwi Forum Fisheries Plan objectives listed above.

5.3 Mātaitai reserves and other customary management tools

- 1164. Section 21(4) of the Act requires that, when allowing for Māori customary non-commercial interests, you must take into account
 - a) any mātaitai reserve in GUR 3 that is declared by notice in the Gazette under regulations made for the purpose under section 186;
 - b) any area closure or any fishing method restriction or prohibition in GUR 3 that is imposed under section 186A or 186B.¹⁸⁷

¹⁸⁷ Section 21(4) does not refer to section 186B, but this is the provision used for temporary closures or fishing method restrictions or prohibitions in South Island fisheries waters.

1165. There are a number of mātaitai reserves, taiāpure, and a section 186B area closure that fall within GUR 3. These are set out in Table 3.

Name	Management type
Te Taumanu o Te Waka a Māui Oaro-Haumuri Akaroa Harbour East Otago	Taiāpure All types of fishing are permitted within a Taiāpure. The management committee can recommend regulations for commercial, recreational, and customary fishing.
Te Waha o te Marangai Mangamaunu Kahutara Oaro Tūtaeputaputa Lyttleton Harbour/Whakaraupo Rapaki Bay Koukourārata Te Kaio Õpihi Extension Õpihi Extension Õpihi Waitarakao Te Ahi Tarakihi Tuhawaiki Waihao Moeraki Otakou Puna-wai-Toriki (Hays Gap) Waitutu Oreti Motupohue Te Whaka a Te Wera Horomamae Pikomamaku Kaihuka	Mātaitai reserve Commercial fishing is not permitted within mātaitai reserves unless regulations state otherwise.
Waiopuka Temporary Closure	Temporary Closures Section 186B temporary closures are used to restrict or prohibit fishing of any

1166. Fisheries New Zealand considers the options proposed in this chapter will not have an impact on customary fisheries management areas in GUR 3. Commercial fishing is prohibited in the mātaitai listed above. There are no regulations relating to either red gurnard in taiāpure, or bylaws in any of the mātaitai. Customary fisheries management areas were primarily created for the management of inshore rocky reef species such as pāua, blue cod, crayfish, and kina. As such, there is little overlap between these areas and red gurnard commercial fisheries.

species of fish, aquatic life or seaweed or the use of any fishing method

6 Environmental and sustainability considerations under the Act

6.1 Overview

- 1167. You are being asked to make a decision under section 13 of the Act, to set the TAC for red gurnard in GUR 3. This is a sustainability measure. Before setting or varying a sustainability measure, you must adhere to section 11 of the Act. When making your decision you must also act consistently with the requirements in section 5, and sections 8-10 (Purpose and Principles of the Act).
- 1168. The requirements and details of each of these sections are set out below, in the following order:

- a) Section 5 (Application of international obligations and Treaty of Waitangi (Fisheries Claims) Settlement Act 1992);
- b) Section 8 (Purpose);
- c) Section 9 (Environmental principles);
- d) Section 11 (Sustainability measures);
- e) Section 13 (Setting a Total Allowable Catch); and
- f) Section 10 (Information principles).

6.2 Application of international obligations and the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992 – section 5 of the Act

1169. You must act in a manner consistent with the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992. This is discussed in more detail under Heading 2.2.1 of the *Introduction and Legal Overview*. You must also act in a manner consistent with New Zealand's international obligations relating to fishing. Discussion of these relevant obligations is provided under Heading 2.2.2 of the *Introduction and Legal Overview*.

6.3 Purpose of the Act – section 8 of the Act

1170. The Act's purpose is to "provide for the utilisation of fisheries resources while ensuring sustainability." Guidance for you on the meaning of section 8 and how it should be applied for decision making (for all the stocks being reviewed as part of this round) is provided under Heading 2.2.3 in the *Introduction and Legal Overview*.

6.4 Environmental principles – section 9 of the Act

- 1171. The environmental principles that you must take into account when considering sustainability measures for GUR 3, are as follows:
 - Associated or dependent species should be maintained above a level that ensures their long-term viability.
 - Biological diversity of the aquatic environment should be maintained; and
 - Habitats of particular significance for fisheries management should be protected.
- 1172. It is important to note that in some cases FNZ has made assumptions about environmental interactions based on fisher-reported data that may not have been independently verified (for example by an onboard FNZ observer). Observer coverage in GUR 3 has averaged just over five percent in the past five full fishing years, based on event-level data, with observer effort prioritised to monitor protected species interactions in other fisheries considered to be of higher risk.
- 1173. While historically low, targeting of red gurnard in GUR 3 has increased to approximately 25% since 2017/18. However, red gurnard remains predominantly taken as a bycatch in the inshore multispecies bottom trawl fishery targeting red cod, barracouta and flatfishes. Given the modest increase to the TAC proposed under Option 2 of this chapter, the amount of bottom trawling is not expected to increase significantly. Likewise, the amount of trawl effort targeting other fish species within the fishery is not expected to change significantly as a consequence of the proposed options.
- 1174. The rollout of onboard cameras on commercial fishing vessels in GUR 3 will substantially improve verification of catch reporting and enhance FNZ's abilities to monitor environmental interactions in the fishery. It is expected that the independent information provided by cameras will support sustainability in New Zealand fisheries and provide for more confident management decisions. Cameras are scheduled to be installed on, and transmitting footage from, all inshore trawl vessels operating in GUR 3 before the start of the 2023/24 fishing year.

6.4.1 Associated or dependent species – section 9(a) of the Act

- 1175. Associated or dependent species include marine mammals, seabirds, fish, and invertebrate species caught as bycatch in the red gurnard bycatch and target fisheries.
- 1176. Because red gurnard is predominantly taken in GUR 3 as non-target catch in bottom trawl fisheries, and Option 2 contained in this chapter proposes a modest increase in TAC that is not

expected to significantly increase the amount of bottom trawling in GUR 3, FNZ does not anticipate any significant increase in the key environmental interactions outlined in the sections below.

Marine mammals

- 1177. Marine mammals are sometimes accidentally caught during commercial fishing. In general, trawl fisheries have been assessed as posing a substantially lesser risk to dolphins than commercial set-net fisheries. The <u>Hector's and Māui Dolphin Threat Management Plan</u> guides management approaches for addressing both non-fishing and fishing-related impacts on Hector's and Māui dolphins.
- 1178. The risk to Hector's dolphins posed by trawling around the South Island, including in GUR 3, is largely managed under the current trawl restrictions. In November 2022, two Hector's dolphin deaths were recorded in FMA 3 following capture in an inshore bottom trawl net; a further Hector's dolphin death, following capture in an inshore bottom trawl, was recorded in FMA 3 in June 2023. Prior to this, between 2006/07 and 2019/20, there were eight recorded Hector's dolphin deaths following capture in inshore trawl fisheries in east coast South Island waters. Restrictions are in place on the use of trawl gear inside two nautical miles from the coast between Cape Jackson in the Marlborough Sounds and Slope Point in the Catlins: only trawl nets with defined low headline heights¹⁸⁸ may be used.
- 1179. New Zealand sea lions, New Zealand fur seals, common dolphins, and other marine mammals also inhabit the marine environment where red gurnard are caught in GUR 3. These species periodically interact with trawl vessels. Between 2020/21 and 2021/22, 21 New Zealand fur seal deaths were reported by commercial fishers or observed by FNZ observers in the ECSI inshore waters of GUR 3 where red gurnard is predominantly caught (see '*Fishery characteristics*' above.). Other than the Hector's dolphin deaths discussed above, there were no observed captures of other marine mammals or cetaceans by small vessels in trawl fisheries in the east coast South Island area during this period. However, observer coverage in GUR 3 has averaged just over five percent in the past five fishing years based on event-level data, as such the total number of interactions is uncertain.

Seabirds

- 1180. The management of seabird interactions with New Zealand's commercial fisheries is guided by the National Plan of Action-Seabirds 2020 (**NPOA-Seabirds**), which sets out the New Zealand government's commitment to reducing fishing-related captures and associated mortality of seabirds. The NPOA-Seabirds, with its focus on education and ensuring fishers take all practicable steps to minimise risk to seabirds, will drive significant changes in fisher behaviour and help to ensure that fishing does not adversely impact the health of seabird populations.
- 1181. FNZ and the fishing industry have worked collaboratively for over a decade, more recently with the inshore fleet, to ensure vessels have, and follow, a Protected Species Risk Management Plan (**PSRMP**). A PSRMP specifies the measures that must be followed onboard each vessel to reduce the risk of incidental seabird captures. While there is no legal requirement that fishers have a PSRMP, more than 90% of the full-time vessels that operate in the GUR 3 trawl fishery have, and follow, one. For trawl vessels greater than 28 metres in length, there are also mandatory requirements for seabird mitigation set out in the <u>Seabird Scaring Devices Circular 2010 No. F517</u>, which is issued pursuant to regulation 58A of the Fisheries (Commercial Fishing) Regulations 2001.
- 1182. Within the GUR 3 area, red gurnard is predominantly caught in FMAs 3 and 5. Focusing on trawlers operating in these FMAs, seabird interactions reported by commercial fishers over the last three fishing years (2019/20, 2020/21 and 2021/22) were 401 (264 deaths, 137 released alive), 269 (190 deaths, 79 released alive) and 188 (130 deaths, 58 released alive), respectively. It should be noted that these figures are representative of trawling activity throughout the entirety of both FMAs the majority of which is beyond the continental shelf where red gurnard is predominantly caught. As discussed above, only a small proportion of trawls are observed by FNZ observers.

Fish and invertebrate bycatch

1183. Fish and invertebrate bycatch information in the mixed-species trawl fishery is primarily from trawl surveys. Trawl surveys along the east coast of the South Island have captured more than

¹⁸⁸ The distance from the net's groundrope to the headline.

^{169 •} Review of sustainability measures for the 2023 October round: GUR 3

50 finfish species including spiny dogfish, red cod, barracouta, tarakihi, hake, and jack mackerel. Invertebrates captured included sponges, mussels, octopus, and arrow squid.

- 1184. In 2019, FNZ took a multispecies approach to reviewing those stocks (where appropriate) caught together in FMA 3. At that time, analysis of the interdependencies between the stocks identified three tiers of interdependency (where target catch influences bycatch):
 - blue moki and red gurnard;
 - leatherjacket and red gurnard; and
 - red gurnard and rig.
- 1185. Increases to catch limits for GUR 3 will increase the ability of fishers to target red gurnard and may allow them to avoid bycatch of other, less abundant species with overlapping depth profiles. This is of particular importance for east coast tarakihi, as it is currently undergoing a rebuild due to low abundance. While tarakihi has a wide depth profile that incorporates many species (including red gurnard), red gurnard is taken inshore of the main tarakihi distributions. The increase to the GUR 3 TAC proposed under Option 2 will allow fishers to move into shallower waters, away from traditional tarakihi habitat and undertake more targeted fishing.
- 1186. Trawlers rarely interact with protected fish species in FMAs 3 and 5. Over the last three complete fishing years (2019/20, 2020/21, 2021/22), commercial fishers reported one white pointer shark interaction (shark released alive) and 11 basking shark interactions (three deaths, eight released alive).
- 1187. Invertebrate species most commonly caught as bycatch by trawlers in FMAs 3 and 5 where red gurnard is predominantly caught in GUR 3 include bryozoans and true corals. Over the last three complete fishing years (2019/20, 2020/21, 2021/22), commercial fishers reported catching 185 kg, 1,048 kg and 739 kg, respectively, of invertebrate species. It should be noted that these figures are representative of trawling activity throughout the entirety of both FMAs the majority of which is beyond the continental shelf where red gurnard is predominantly caught.

6.4.2 Biological diversity of the aquatic environment – section 9(b) of the Act

- 1188. GUR 3 is primarily caught in bycatch fisheries by vessels using bottom trawl gear. Bottom trawling can damage the marine environment, particularly when it occurs in benthic habitats supporting high biodiversity. However, the proposed increase to the catch limit is modest and is not likely to produce a significant increase in trawl effort, as it reflects increased fish abundance and CPUE. Trawling in this fishery is also typically confined to areas that have been consistently fished over time (i.e., not areas of high biodiversity).
- 1189. Concerns have been raised about catch being taken in "hay paddocks" on the south-eastern continental shelf. These are polychaete worm beds that are biologically sensitive, habitat-forming areas which may be vulnerable to disturbance by commercial fishing. As noted above, FNZ does not expect an increase in the amount or extent of bottom trawling as a result of the proposed increase to the catch limit. If an increase in fishing activity does occur, we will examine appropriate measures to manage any issues that may arise.
- 1190. Aquatic environment and biodiversity research has characterised both New Zealand's benthic environment and the level of benthic impact from fishing activity (FNZ AEBAR, 2021). The environmental impacts of fishing are summarised annually by FNZ, and FNZ will continue to monitor the bottom trawl footprint of fisheries.

6.4.3 Habitats of particular significance for fisheries management – section 9(c) of the Act

- 1191. Red gurnard is one of the most frequently encountered finfish species in New Zealand inshore waters, exhibiting wide latitudinal and depth range. Red gurnard is broadly distributed in FMAs 3 and 5 and there is limited information regarding what specific areas of habitat are of particular significance to the stocks.
- 1192. FNZ is progressing towards ecosystem-based management. This progress is supported by a number of initiatives, including our proposed draft guidelines for identifying a habitat of particular significance for fisheries management. The guidelines will inform habitat identification and provide greater transparency on our fisheries management advice. Public consultation on the guidelines closed in November 2022; we are currently considering feedback received and revising the guidelines.

1193. There is no confirmed habitat of particular significance for fisheries management for GUR 3. Information that may inform our understanding of potential habitats of particular significance to GUR 3 is discussed in Table 4 below.

Fish stock	Red gurnard - GUR 3		
Potential habitat of particular significance	Spawning areas are widespread throughout much of New Zealand, including in GUR 3. Running ripe red gurnard are found throughout the fishery. However, general areas where spawning occurs include the Canterbury Bight and Pegasus Bay, where there are also high catches of juveniles. This suggests bays, more generally, may serve as spawning and nursery areas which, in turn, might supply east coast South Island waters. Egg and larval development occurs in surface waters.		
Attributes of habitat	Spawning areas are more common in shallow coastal waters (inner and central continental shelf) over muddy or sandy bottoms. Information suggests juveniles prefer rough or weed covered ground in shallow embayments.		
Reasons for particular significance	 Successful spawning and development through juvenile stages is critical to supporting the productivity of the stock and ensuring juveniles recruit into the fishery. Juvenile habitats are likely to provide shelter and protection from predation and harvesting, as well as providing suitable food while growth and development proceeds. 		
Risks/threats	 Changes in water temperature and water circulation could impact spawning and egg/larval development. Bottom-contact fishing methods impacting inshore biogenic habitats. Land-based impacts, for example sedimentation on habitats with benthic structure and aquatic plants that provide juvenile habitat. 		
Existing protection measures	Although not specific to GUR 3, within the GUR 3 management area there are several habitats that may have particular significance to other species and are currently protected by regulatory and non-regulatory (voluntary) measures.		
Evidence	 Morrison, M.A.; Jones, E.G.; Parsons, D.P.; Grant, C.M. (2014). Habitats and areas of particular significance for coastal finfish fisheries management in New Zealand: A review of concepts and life history knowledge, and suggestions for future research. New Zealand Aquatic Environment and Biodiversity Report No. 125. 202 p. Fisheries New Zealand (2023). Fisheries Assessment Plenary, May 2023: stock assessments and stock status. Compiled by the Fisheries Science Team, Fisheries New Zealand, Wellington, New Zealand. 1886 p. 		

Table 4: Summary of information on potential habitats of particular significance for fisheries management for GUR 3.

1194. While the impacts of climate change on red gurnard stocks remain uncertain, documented increases in sea surface temperature off the east coast of the South Island (NIWA, 2022) correspond with an increase in recruitment in GUR 3 since 2007. While this suggests changes in prevailing oceanographic conditions may have contributed to the increased productivity of the stock from the mid-2000s, FNZ notes recent declines recorded in pre-recruit biomass coincide with above average sea surface temperatures, reiterating the uncertainty surrounding the impact of climate change on red gurnard stocks. Continued monitoring of the impact of increasing sea surface temperature is essential, as there is likely an upper limit to the level of warming or current changes that are beneficial to red gurnard.

6.5 Considerations for setting sustainability measures under section 11 of the Act

- 1195. Section 11 of the Act sets out various matters that you must take into account or have regard to when setting or varying sustainability measures (such as the TAC change proposed as part of this chapter). These include:
 - a) any effects of fishing on any stock and the aquatic environment; and
 - b) any existing controls under the Act that apply to the stock or area concerned; and
 - c) the natural variability of the stock concerned; and
 - d) any relevant planning instruments, strategies, or services.¹⁸⁹

¹⁸⁹ Sections 11 (2) and 11 (2A).

^{171 •} Review of sustainability measures for the 2023 October round: GUR 3

6.5.1 Effects of fishing on any stock and the aquatic environment – section 11(1)(a)

- 1196. You must take into account any effects of fishing on any stock and the aquatic environment when making your decision about the GUR 3 TAC.
- 1197. "Effect" is defined widely in the Act.¹⁹⁰ The broader effects of removing red gurnard from the ecosystem, as well as the more direct effects of bottom trawling, must be taken into account.
- 1198. All information relevant to your decision with regard to the effects of bottom trawling for GUR 3 on any stock and the aquatic environment is discussed above in *Environmental Principles*'.
- 1199. All information relevant to your decision with regard to the effect of fishing for red gurnard on any other stock is discussed above in '*Environmental Principles*', and below in '*Setting a Total Allowable Catch*' (section 13 of the Act).

6.5.2 Existing controls that apply to the stock or area – section 11(1)(b)

- 1200. You must take into account any existing controls under the Act (including rules and regulations made under the Act (section 2(1A)) that apply to the stock when setting or varying the TAC.
- 1201. Along with the catch limits and allowances set under the TAC, there are three management controls in place regarding recreational take of red gurnard in GUR 3: a minimum legal size (MLS), a maximum daily bag limit (as part of the mixed species daily limit), and a minimum net mesh size for red gurnard caught using set-nets (see section 4.3 above).
- 1202. Spatial restrictions prevent commercial fishing (including for red gurnard) in customary areas (see Table 5).

Fishery	Restrictions	
Recreational	 Daily bag limit is 30 red gurnard per fisher, per day, as part of the South-East (north and south) and Southland mixed species daily bag limits for finfish. Minimum net mesh size of 100 millimetres. 	
Commercial	 Minimum net mesh size of 100 millimetres. Spatial gear restrictions.¹⁹¹ Prohibition of trawling in several areas in GUR 3. Trawl restrictions in several areas in GUR 3. Trawling by vessels over 46 m prohibited in certain waters. 	

Table 5: Recreational and commercial restrictions GUR 3.

1203. Spatial restrictions set under the Act can be put in place to ensure sustainable utilisation or to protect habitats of particular significance for fisheries management. These can apply to both recreational and commercial fishers. There are no general spatial restrictions currently in place for red gurnard in the GUR 3 fishery. There are, however, a number of mātaitai reserves, taiāpure, and section 186B area closures that fall within GUR 3 (see section 5.3 above).

6.5.3 The natural variability of the stock – section 11(1)(c)

- 1204. You must take into account the natural variability of the stock when setting or varying its TAC.
- 1205. Results from the ECSI trawl survey time series indicate red gurnard exhibits natural variability in abundance. With regards to GUR 3, the 2022 stock assessment estimates that abundance has increased considerably from the late 2000s.
- 1206. Results from the 2022 ECSI trawl survey also indicate that the increasing trend in red gurnard biomass is accompanied by a decrease in red gurnard pre-recruited biomass (see section 3). This suggests that recruitment to the fished portion of the population will be lower in coming years.
- 1207. As noted in section 6.4.3 above, documented increases in sea surface temperature off the east coast of the South Island (NIWA, 2022) correspond with an increase in recruitment in GUR 3 since 2007. This suggests changes in prevailing oceanographic conditions may have

¹⁹⁰ Section 2(1) of the Act defines "effect" to mean the direct or indirect effect of fishing, and includes any positive, adverse, temporary, permanent, past, present, or future effect. It also includes any cumulative effect, regardless of the scale, intensity, duration, or frequency of the effect, and includes potential effects.

¹⁹¹ Pursuant of the Fisheries (South-East Area Commercial Fishing) Regulations 1986; Fisheries (Southland and Sub-Antarctic Areas Commercial Fishing) Regulations 1986.

contributed to the increased productivity of the stock from the mid-2000s. However, more recent trends reiterate the uncertainty surrounding the impact of climate change on red gurnard stocks.

- 1208. Information on variability in growth, maturity, available abundance, mortality and recruitment is incorporated into the stock assessments that inform red gurnard management. This information informed the development of options discussed in this chapter.
- 1209. FNZ will continue to monitor the fishery, including via the ECSI trawl survey and review of CPUE indices.

6.5.4 Relevant statements, plans, strategies, provisions, and documents - section 11(2)

1210. In setting or varying the TAC of this stock, you must have regard to the following statements, plans, strategies, provisions and planning documents under section 11(2) of the Act, that apply to the coastal marine area and that you consider to be relevant.

Regional Plans – section 11(2)(a)

- 1211. Three Regional Councils and one unitary authority have coastlines within the boundaries of GUR 3: *Environment Canterbury*, *Otago Regional Council, Environment Southland*, and the *Chatham Islands Council*. Each of these regions have policy statements and plans to manage the coastal and freshwater environments, including terrestrial and coastal linkages, ecosystems, and habitats.
- 1212. The provisions of these various documents are, for the most part, of a general nature and focus mostly on land-based stressors on the marine environment. There are no provisions specific to red gurnard. Fishers are subject to the rules in the plans (for example, small-scale restrictions on fishing methods in Fiordland). FNZ considers that the small scale of the restrictions in relation to the large area of GUR 3 means these rules do not, in general, stop fishers taking their catch from other areas within GUR 3.
- 1213. FNZ has reviewed these documents and the provisions that might be considered relevant can be found in Table A1 of Addendum 1. FNZ considers that the proposed options in this chapter are consistent with the objectives of these relevant regional plans.
- 1214. The FNZ Coastal Planning Team engages with the Resource Management Act 1991 coastal planning processes (including regional authorities) to support marine management decisions to manage not only the fishing effects on the coastal environment but also land-based impacts on fisheries.

6.5.5 Relevant services or fisheries plans – section 11(2A)

- 1215. Under section 11(2A), before setting or varying any sustainability measure or making any decision or recommendation under the Act to regulate or control fishing, you must take into account
 - a) any conservation services or fisheries services; and
 - b) any relevant fisheries plan approved under this Part; and
 - c) any decisions not to require conservation services or fisheries services.
- 1216. Fisheries services of relevance to the options in this chapter include the research used to monitor the fishery and the tools used to enforce compliance of management controls in the fishery. These are discussed under 'Management background', 'Catch information and current settings within the TAC', and above under 'Existing controls that apply to the stock or area section 11(1)(b).'
- 1217. Observer and onboard camera coverage relevant to the GUR 3 fishery is also described above under the 'Other sources of mortality caused by fishing' and Environmental principles section 9 of the Act' sections.
- 1218. There are no applicable conservation services that specifically relate to GUR 3, or any decisions not to require conservation services or fisheries services.

National Inshore Finfish Fisheries Plan

1219. The National Inshore Finfish Fisheries Plan (**the Plan**) (FNZ, 2022) sets management objectives and strategies for finfish species, including red gurnard. The Plan will guide the operational management of inshore finfish fisheries including GUR 3 for the next five years and is aimed at progressing New Zealand towards more ecosystem-based fisheries management.

- 1220. Stocks are grouped within the Plan, with management approaches and objectives tailored accordingly for each group.
- 1221. GUR 3 falls under Group 2 which recognises the need to manage it to provide for moderate levels of use, with moderate levels of information to monitor its stock status (i.e., a partial quantitative assessment comparing against trends over time). However, given the importance of GUR 3 in the east coast South Island multispecies trawl fishery, the first fully quantitative stock assessment of GUR 3 was completed in May 2022, providing comprehensive information for management of the stock.

6.5.6 Other plans and strategies

- 1222. The following plans and strategies are not mandatory considerations under section 11 of the Act, but they may be considered relevant to this review.
- Te Mana o te Taiao (Aotearoa New Zealand Biodiversity Strategy)
- 1223. FNZ considers that the sustainability measures proposed for GUR 3 are generally consistent with relevant objectives of the Te Mana o te Taiao the Aotearoa New Zealand Biodiversity Strategy including objective 10, which is to ensure that ecosystems are protected, restored, resilient and connected from mountain tops to ocean depths, and objective 12, which is to manage natural resources sustainability.
- 1224. For more information on Te Mana o te Taiao see section 3.3 of the *Introduction and Legal Overview*.

6.6 Total Allowable Catch - section 13 of the Act

- 1225. Given the GUR 3 stock is estimated to be at or above the interim B_{MSY} reference level (35% SB_0), you are being asked to make decisions under section 13(2)(a) of the Act. This offers you wide discretion on how you vary the TAC. Section 13(2)(a) is relevant if you choose to maintain status *quo* or increase the TAC, in both instances maintaining the stock at or above a level that can produce the maximum sustainable yield while having regard to the interdependence of stocks.
- 1226. As outlined in section 3 (Status of the stock), above, the 2022 stock assessment concluded that GUR 3 abundance was very likely (>90%) to remain above the target biomass level over the next five years. A more recent trawl survey indicated red gurnard biomass has continued to increase, with results providing greater confidence in the 2022 stock assessment and suggests a modest utilisation opportunity exists for GUR 3 in 2023/24. FNZ considers that the two options proposed below would not be inconsistent with the objective of moving the stock towards or above a level that can produce the maximum sustainable yield.

6.6.1 Interdependence of stocks

- 1227. When setting the TAC for GUR 3 under section 13, you must have regard to the interdependence of stocks. The interdependence of stocks involves consideration of the effects of fishing on associated stocks affected by fishing for the target stock (as discussed above in section 6.4).
- 1228. As noted in section 6.4, trawl surveys along the east coast of the South Island have captured more than 50 finfish species including spiny dogfish, red cod, barracouta, tarakihi, hake, and jack mackerel.
- 1229. There is little information available regarding predator/prey interdependency for red gurnard. The Plenary report does not contain any information on the importance of red gurnard as a food source.
- 1230. Red gurnard feed mainly on crustaceans (especially small crabs and shrimps), small fishes, worms, and squid. The impact of altering the TAC for red gurnard on the abundance of their prey is not well understood. However, FNZ considers it unlikely that the options proposed in this chapter would have a strong effect on the abundance of prey species, as they are common prey for many other fish species and the increase in TAC proposed under Option 2 is small.
- 1231. Significant predators of red gurnard have not been identified. It is possible that altering the TAC for red gurnard could decrease food abundance for their predators. However, as red gurnard in GUR 3 is primarily taken as bycatch, FNZ does not anticipate that the modest increase in TAC proposed under Option 2 would result in increased targeting of red gurnard in GUR 3.

Therefore, FNZ considers that increasing the TAC would not have a strong effect on the relationship between red gurnard and their predators in GUR 3.

6.6.2 Harvest Strategy Standard

- 1232. Section 13 of the Act provides for the setting of a TAC for GUR 3, and guidance is provided by the Harvest Strategy Standard for New Zealand Fisheries (**HSS**) (FNZ, 2011).
- 1233. The High Court has held that the HSS is a mandatory relevant consideration that you must have regard to when setting a TAC under section 13 of the Act.¹⁹²
- 1234. The 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.
- 1235. The HSS outlines the Ministry's approach to relevant sections of the Act and forms a core input to the Ministry's advice to the Minister on the management of fisheries. The HSS defines a hard limit as a biomass limit below which fisheries should be considered for closure and a soft limit as a biomass limit below which the requirement for a formal time-constrained rebuilding plan is triggered.
- 1236. In the case of GUR 3, there are no alternative management targets. Therefore, the HSS default limits apply to this stock. Under the HSS, the default management target is $35\% B_0$ (unfished biomass), the soft limit is $20\% B_0$, and the hard limit is $10\% B_0$. In respect to this review, the Harvest Strategy Standard assists in meeting the requirements of sections 13(2)(a) by providing that stocks should be managed to fluctuate around a specified target based on MSY-compatible reference points or better. As highlighted above under '*Status of the stock*', GUR 3 is very likely (>90%) to be above the target level of 35% of B_0 .

6.7 Information principles: Uncertainties and unknowns - section 10 of Act

- 1237. Under section 10 of the Act, decision-makers are required to take into account four information principles:
 - a) decisions should be based on the best available information.¹⁹³
 - b) decision makers should consider any uncertainty in the information available in any case;
 - c) decision makers should be cautious when information is uncertain, unreliable, or inadequate;
 - 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 this Act.
- 1238. FNZ considers that the information presented in this chapter represents the best available information.
- 1239. In various sections of this chapter, FNZ has pointed out where information is uncertain and warrants caution for your decision-making, in line with the principles above.
- 1240. Uncertainties in the information regarding the status of the stock are noted above in '*Status of the stock*'.
- 1241. Uncertainties in the level of customary Māori harvest, recreational harvest, and other sources mortality caused by fishing for red gurnard are noted above in sections 4.2, 4.3 and 4.4, respectively.
- 1242. Uncertainty regarding the total number of marine mammal, seabird and protected fish interactions, as well invertebrate (e.g. bryozoans and true corals) bycatch, is noted in section 6.4.1 above.

 ¹⁹² Fisheries Inshore New Zealand Ltd v Royal Forest and Bird Protection Society of New Zealand Incorporated [2023] NZCA 359.
 ¹⁹³ Section 2(1) of the Act defines "best available information" to mean "the best information that, in the particular circumstances, is available without unreasonable costs, effort, or time"

^{175 •} Review of sustainability measures for the 2023 October round: GUR 3
7 Submissions

- 1243. A total of six submissions addressed the proposal to review the TAC for GUR 3. Additionally, the New Zealand Federation of Commercial Fishermen Inc. supports the submission made by Southern Inshore Fisheries Management Co. Ltd. (**Southern Inshore Fisheries**), and one submitter generally opposes the proposed changes to catch limits.
- 1244. Table 6 summarises the submissions received and shows submitters' support for each option.

Table 6. \	Nritten	submissions	and r	esnonses	received fo	or GUR 3
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Culturitter	Option supported					
Submitter	1	1 2 Other Notes		Notes		
Ngāti Mutunga o Wharekauri Iwi Trust	~			Supports maintaining <i>status quo</i> ; there should be no increase in TAC, given decline recorded in pre-recruit biomass, suggesting recruitment to the fishery will decline in coming years.		
Royal New Zealand Society for the Prevention of Cruelty to Animals Inc. (RNZSPCA)	~			Supports maintaining <i>status quo</i> ; does not provide rationale specific to red gurnard.		
Te Ohu Kaimoana		~		Supports a modest TAC increase, while noting a cautious approach is necessary due to decrease in red gurnard pre-recruit biomass.		
Chatham Islands Enterprise Trust		~		Notes the revenue generated from GUR 3 quota holdings makes a significant contribution to the wellbeing of the entire island population, therefore maintaining healthy and abundant fish stocks is mission critical.		
New Zealand Sport Fishing Council (NZSFC) and LegaSea, joint recreational submission with the New Zealand Angling & Casting Association (NZACA)			~	Supports an amended Option 1: provide for an increase in the TAC, in order to increase the allowance for fishing related mortality to equate to 10% of the TACC.		
Southern Inshore Fisheries Co. Ltd. (Southern Inshore Fisheries)			~	Supports an amended Option 2: the TACC be set at 1,750 tonnes to provide for the utilisation opportunity and minimise the risk of fishers' incurring deemed values.		
New Zealand Federation of Commercial Fishers Inc.			~	Supports the view of Southern Inshore Fisheries.		
Ben			\checkmark	Generally opposed proposed changes to catch limits.		

8 Options and analysis

8.1 Option 1 – status quo

TAC: 1,695 tTACC: 1,575 tCustomary: 3 tRecreational: 6 tOther mortality: 111 t
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- 1245. Option 1 is to retain the current TAC and other settings (the *status quo*) under section 13(2)(a) of the Act. This is the most cautious approach. This option takes into account the uncertainty associated with the ECSI trawl survey biomass estimates (including a decrease in red gurnard pre-recruited biomass), that current fishing effort is high relative to the commercial catch data time-series which dates from the 1960s, and that a TAC increase of 81 tonnes has already been implemented on the basis of the 2022 stock assessment.
- 1246. This option would forgo the modest utilisation opportunity that the best available information indicates is likely to exist for GUR 3. It also potentially constrains the catch of other species caught with red gurnard, given the difficulty fishers experience in avoiding this species.
- 1247. This option is supported by two submissions. Ngāti Mutunga o Wharekauri note that, given the decline recorded in pre-recruit biomass, suggesting recruitment to the fishery will be lower in

coming years, there should be no increase in TAC. The RNZSPCA rationale for supporting the *status quo* is more general, and includes concerns that sustainability reviews do not address more "systemic issues" such as the use of destructive, bulk fishing methods (e.g. trawling).

1248. Fisheries New Zealand notes that the concerns raised by the RNZSPCA apply broadly to all stocks in the October 2023 sustainability round and are outside the scope of what can be considered.

8.2 Option 2

TAC : 1,779 t (↑ 84 t) TACC : 1,654 t (↑ 79	Customary: 3 t Recreational: 6 t	Other mortality: 116 t (1 5 t)
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8.2.1 TAC

- 1249. Under Option 2, the TAC would be set at 1,779 tonnes, pursuant to section 13(2)(a) of the Act, which maintains the stock at or above a level that can produce the maximum sustainable yield while having regard to the interdependence of stocks. This represents a five percent increase to the current GUR 3 TAC.
- 1250. This option acknowledges the modest utilisation opportunity for the stock noted in section 1 above, taking into consideration the results of the 2022 stock assessment for GUR 3, biomass estimates from the ECSI trawl survey, and increasing trends in CPUE indices.
- 1251. As discussed in Section 6.6 above, the modest increase in TAC associated with this option is not expected to have an impact on the long-term viability of other interdependent stocks, or on those species with which red gurnard interact as predators and prey.
- 1252. As noted in Section 6.4 above, the modest increase in TAC proposed under this option is not expected to drive a substantial increase in the amount of bottom trawling in GUR 3, with no significant impacts on biological diversity or on habitats of significance anticipated. Similarly, FNZ does not anticipate any significant increase in interactions with associated or dependent species (e.g. marine mammals, seabirds).
- 1253. This option takes into account that the approach applied in last year's 2022/23 Review of sustainability measures for red gurnard (GUR 3) (FNZ, 2022b), was cautious and that FNZ signalled that the TAC would be reviewed again following results from the 2022 ECSI trawl survey. Consecutive, modest increases to the TAC in 2022/23 and 2023/24 would provide a precautionary approach to a utilisation opportunity.

8.2.2 Allowances

1254. This option assumes that with an increase in red gurnard abundance, the success and levels of harvest of customary and recreational fishing will also likely increase. However, given recreational and customary catch estimates are below current allowances, based on customary returns and NPS 2017/18 estimates, no increase to either allowance is proposed.

8.2.3 TACC

- 1255. Under Option 2, the TACC would increase by 79 tonnes, to 1,654 tonnes (a five percent increase). As noted in section 8.2.1 above, this is precautionary approach building on the preceding 2022/23 sustainability review, providing benefits in terms of the overall value of GUR 3, and increased utilisation opportunity for commercial fishers in line with the increase in abundance.
- 1256. Although the 2022 ESCI trawl survey estimates pre-recruit red gurnard are declining, suggesting that recruitment to the fishery will be lower in the short-term, ECSI trawl surveys are conducted every second year, enabling FNZ to react responsively should the stock decline below the target.

8.2.4 Discussion

1257. Option 2 is supported by two submissions. The Chatham Islands Enterprise Trust notes that revenue generated from GUR 3 quota holdings makes a significant contribution to the wellbeing of the entire Chatham Islands population. Alongside this, the submission stresses the critical importance of maintaining healthy and abundant fish stocks. The second supporting submission, from Te Ohu Kaimoana, supports a modest TAC increase, noting a cautious approach is necessary due to decrease in red gurnard pre-recruit biomass.

1258. Kumukumu (pūwhaiau, red gurnard) is identified as a taonga species in Te Waka a Māui me Ōna Toka Iwi Forum Fisheries Plan. Option 2 aligns with Fisheries Plan objectives, in particular 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. As noted in section 5.1 above, Te Waka a Māui me Ōna Toka Iwi Forum has expressed support for Option 2.

8.3 Other options proposed by submitters

8.3.1 Alternative option proposed by the NZSFC joint recreational submission

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1259. The NZSFC supports an amended Option 1, which provides for an increase in the TAC, to increase the allowance for other mortality caused by fishing to equate to ten percent of the TACC. The TACC and customary Māori and recreational fishing allowances remain as per the *status quo*.

1260. The NZSFC notes that, regarding the multispecies trawl fishery in which GUR 3 sits, maximising the catch of the most productive species will have a negative impact on all the less productive species in the fishery. The submission states that, until the impacts on other species are assessed and taken into account, the only justified increase to the TAC is in order to provide for an increase in the allowance for other mortality, to equate to ten percent of the TACC in this trawl fishery.

Discussion

- 1261. This option builds on Option 1, with the proposed increase to the 'other mortality' allowance equivalent to ten percent of TACC. This would give greater weighting to the uncertainty around the level of other red gurnard mortality not otherwise accounted for in the TAC.
- 1262. Fisheries New Zealand notes that in 2020, the then Minister of Fisheries decreased the 'other mortality' allowance for GUR 3 from a level equivalent to 20% of its TACC to a level equivalent to 7% of the TACC, based on improvements in commercial fishing practices in FMA 3 and FMA 5 (see section 4.4).
- 1263. However, FNZ notes there is no new information available quantifying all other mortality to the stock caused by fishing for GUR 3 that would support an increase to this allowance.
- 1264. Fisheries New Zealand acknowledges that while observer coverage in GUR 3 is low, (see Section 4.4), the introduction of onboard cameras across the multispecies trawl fleet on the north, south and east coasts of the South Island in 2023, will reduce uncertainty around other sources of mortality caused by fishing.

8.3.2 Alternative option proposed by Southern Inshore Fisheries

	TAC : 1,882 t (↑ 187 t)	TACC : 1,750 (↑ 175 t)	Customary: 3 t	Recreational: 6 t	Other mortality: 123 t (1 12 t)
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1265. Southern Inshore Fisheries supports an amended Option 2, whereby the TACC is set at 1,750 tonnes, representing an 11% increase on the *status quo*; Southern Inshore Fisheries' submission is endorsed in its entirety by the New Zealand Federation of Commercial Fishers Inc. As Southern Inshore Fisheries' proposal only included the TACC, the TAC and allowances have been inferred by FNZ.

1266. Rationale for Southern Inshore Fisheries' alternative option include:

- Setting the TACC at 1,750 tonnes provides for the utilisation opportunity and minimises the risk of fishers incurring deemed values.
- Industry is consistently playing 'catch up' in this fishery due to TACC settings lagging behind increases in abundance.
- Southern Inshore Fisheries disagree with FNZ's assessment that "pre-recruit biomass has declined, suggesting recruitment to the fishery will decline in coming years." Southern Inshore Fisheries notes that, whilst there is a small decrease from the last survey, the trend in pre-recruit biomass is cyclical.

- 1267. While FNZ acknowledges that the fishery is well above the HSS target level of 35% *SB*₀, FNZ does not consider that the 11% increase in TACC proposed in this alternative option aligns with the best available scientific evidence. FNZ offers the following rationale for this position:
 - Following the 2022 fully quantitative stock assessment, the subsequent five percent increase in TAC for the 2022/23 October fishing year was a cautious response to a trend of increasing abundance.
 - While results from the June 2022 ECSI trawl survey indicated red gurnard biomass has continued to increase, the trawl survey also indicated that pre-recruit biomass has declined, suggesting recruitment to the fishery will decline in coming years.
 - Further, the additional catch of red gurnard, by way of the 2022/23 TAC increase, was taken after the 2022 ESCI trawl survey. Therefore, the results of the trawl survey do not account for the impact of 2022/23 TAC increase.
- 1268. Taking the above into account, FNZ considers that consecutive, modest, five-percent increases to the TAC, initially in 2022/23, and repeated in the upcoming 2023/24 fishing year (Option 2 proposed in this chapter), is a necessarily precautionary approach to this utilisation opportunity.

9 Economic considerations

- 1269. The Fisheries Management Area 3 (FMA 3) inshore mixed species trawl fishery, in which red gurnard is predominantly caught, supports a number of associated people and businesses. This includes, but is not limited to:
 - Quota holders
 - Commercial fishers
 - Seafood processing facilities and licensed fish receivers
- 1270. To give a sense of scale and distribution for GUR 3, based on the 2021/22 fishing year, 64% of GUR 3 quota was owned by four entities, and the remaining 36% of quota was owned by 41 entities. As at the end of the 2021/22 fishing year, there were 63 commercial entities holding ACE, down from 75 entities the previous year. Thirty-nine percent of ACE was held by four entities, and the remaining 61% was held by 59 entities.
- 1271. Under Option 2 in this chapter, increasing the maximum commercial landed catch under the TACC (1,575 tonnes) to 1,654 tonnes equates to a five percent increase. Based on the 2023/24 port price of \$2.87/kg, this would generate a further \$227,000 per year in commercial fishing revenue potential.
- 1272. It is important to note that port price is an average of what commercial fishers receive across a QMA, not what the fish is worth at market (which is higher). Nor does it reflect the income for Licensed Fish Receivers (including, wholesalers and/or processors) and retailers.
- 1273. Further economic benefits are likely to take the form of a reduction in deemed values. During the 2019/20, 2020/21 and 2021/22 fishing years, total deemed values invoiced for GUR 3 were \$371,486, \$260,720 and \$161,928, respectively. Under Option 2, deemed values incurred for GUR 3 would be expected to decrease.

10 Deemed values

1274. FNZ is satisfied that the current deemed value rates for GUR 3 are consistent with section 75(2)(a) of the Act, in that they provide sufficient incentive for fishers to balance their catch with ACE. FNZ, therefore, did not propose any deemed value rate changes as part of this review. None of the submissions received commented on the GUR 3 deemed value rates.

11 Conclusions and recommendations

1275. A stock assessment in 2022 concluded that GUR 3 abundance was very likely to remain above the target biomass level over the next five years. The subsequent five percent increase in TAC in 2022/23 was a cautious response to a trend of increasing abundance. A recent trawl survey indicated red gurnard biomass has continued to increase, suggesting a modest utilisation opportunity exists for GUR 3 in 2023/24.

- 1276. Te Waka a Māui me Ōna Toka Iwi Forum voiced support for the modest increase in TAC proposed in Option 2, with supporting submissions received from two commercial stakeholders during the consultation process.
- 1277. Based on this information, FNZ recommends Option 2 as an appropriate, precautionary response; that you increase the TAC for GUR 3 by five percent to 1,779 tonnes.

12 Decision for GUR 3

Option 1

Agree to retain the GUR 3 TAC at 1,695 tonnes and, within the TAC, to:

- i. Retain the allowance for Māori customary non-commercial fishing interests at three tonnes;
- ii. Retain the allowance for recreational fishing interests at six tonnes;
- Retain the allowance for all other sources of mortality to the stock caused by fishing at 111 tonnes;
- iv. Retain the GUR 3 TACC at 1,575 tonnes,

Agreed / Agreed as Amended / Not Agreed

Option 2 (Fisheries New Zealand preferred option)

Agree to set the GUR 3 TAC at 1,779 tonnes and, within the TAC, to:

- i. Retain the allowance for Māori customary non-commercial fishing interests at three tonnes;
- ii. Retain the allowance for recreational fishing interests at six tonnes;
- iii. Increase the allowance for all other sources of mortality to the stock caused by fishing from 111 to 116 tonnes;
- iv. Increase the GUR 3 TACC from 1,575 to 1,654 tonnes.

Agreed / Agreed as Amended / Not Agreed

Hon Rachel Brooking Minister for Oceans and Fisheries

2 1 7 1 2023

Monkfish/stargazer (STA 7) - West Coast and top of the South Island



Giant stargazer - *Kathetostoma giganteum* Pūwhara, Monkfish



Figure 1: Quota Management Areas (QMAs) for stargazer, with STA 7 highlighted.

1 Why are we proposing a review?

- 1278. The most recent 2022 stock assessment for STA 7 has indicated a sustainability concern associated with a significant decrease in abundance. The stock has been determined to be about as likely as not (40-60%) below the soft limit, with overfishing likely (>60%) to be occurring (FNZ, Fisheries Assessment Plenary, 2023).
- 1279. Preliminary biomass estimates from the 2023 West Coast South Island (**WCSI**) trawl survey, which is the main input for determining the stock status relative to an historical average, align with the results of the most recent stock assessment and suggest that biomass remains low.
- 1280. FNZ is advising on options to reduce the TAC for STA 7 under section 13(2)(b) of the Act, and within this, reduce the TACC and allowance for all other mortality caused by fishing. These aim to reduce catches to a level that will allow the stock to recover to the target biomass level.

1.1 Summary of proposed options

Table 1: Summary of options proposed for STA 7 from 1 October 2023. Figures are all in tonnes. The preferred option of Fisheries New Zealand is highlighted in blue.

			Allowances			
Option	TAC	TACC	Customary Māori	Recreational	All other mortality caused by fishing	
Current settings	1,271	1,208	1	4	58	
Option 1 (~15% TAC reduction)	1,080 (↓ 191 t)	1025 (✔ 183 t)	1	4	50 (↓ 8 t)	
Modified Option 1 (new) (~20% TAC reduction)	1,017 (↓ 254 t)	966 (V 242 t)	1	4	46 (↓ 12 t)	
Option 2 (~30% TAC reduction)	890 (↓ 381 t)	844 (V 364 t)	1	4	41 (↓ 17 t)	
In total, 7 submissions were received on the proposed options.						

2 About the stock

2.1 Biology¹⁹⁴

- 1281. The stock code STA includes all species of the genus *Kathetostoma*. Previous trawl survey data at a national level suggests that more than 99% of commercial catch is a single species, being giant stargazer (*K. giganteum*). Other *Kathetostoma* species, such as banded stargazer (*K. binigrasella*), are generally not found within STA 7 and have not been recorded by recent WCSI trawl surveys.
- 1282. Giant stargazer are found on muddy and sandy seafloor throughout New Zealand's Exclusive Economic Zone to depths of 500 m, however the species is most common at depths of 50 to 300 m around the South Island (Anderson et al, 1998).
- 1283. Based on WCSI trawl survey data, the majority of STA 7 biomass is found on the West Coast south of Cape Foulwind, in depths of 100 to 200 m. Commercial catch data suggests there is also a smaller, yet considerable, component of biomass on the northeast coast of the South Island, from Cloudy Bay to Clarence Point. This area sits within STA 7 but is not captured by the WCSI trawl surveys.
- 1284. This species is estimated to have a maximum age of at least 25 years, reaching sexual maturity between five and seven years of age (Manning, 2008). A winter spawning season is thought to occur annually in the mid and outer shelf waters around New Zealand.
- 1285. Data from other parts of the South Island indicate that giant stargazer are generalist predators that feed opportunistically on a variety of different fish (including opal fish, silver congers, and red cod), cephalopods (mostly squid), and crustaceans such as crabs (Stevens et al, 2011). There is no available information of the particular diet of giant stargazer within STA 7.

2.2 Fishery characteristics

- 1286. STA 7 supports a moderate value commercial bottom trawl fishery, caught predominantly as bycatch when targeting tarakihi, barracouta, ling, and red gurnard. Commercial catch in this QMA using other fishing methods is negligible.
- 1287. The stock's TACC represents a sizeable portion (approximately one fifth) of the TACC for all STA stocks. In the 2021/22 fishing year, STA 7 landings comprised approximately 45% of overall STA landings nationally, being the largest stargazer fishery.
- 1288. The limited information available on customary and recreational catch (discussed in section 4) suggests there are not substantial customary Māori and recreational fisheries in STA 7. Giant stargazer is not specifically identified as a taonga species under Te Waipounamu (South Island) lwi Forum Fisheries Plan, nor traditionally targeted by recreational fishers.

2.3 Management background

- 1289. STA 7 was introduced into the QMS in 1986 with an October fishing year. The stock was managed as part of an Adaptive Management Programme from 1991 to 2009, seeing substantial increases in TACC to allow for increased utilisation, in exchange for industry collecting logbook data.
- 1290. A TAC and allowances for recreational and customary Māori catch were set for the first time in 2002, with an allowance for all other sources of fishing related mortality introduced in 2010. The stock saw incremental TAC increases in 2010, 2015, and 2020, during a period of consistently high annual catch totals and WCSI trawl survey biomass estimates. The stock has not been subject to a TAC decrease since introduction into the QMS.

3 Status of the stock

1291. STA 7 is assessed using relative biomass estimates from WCSI trawl surveys, against a target derived from the mean of historical survey estimates from 2005 to 2017. This target is the

183 • Review of sustainability measures for the 2023 October round: STA 7

¹⁹⁴ Information in this section references the FNZ Fisheries Assessment Plenary 2023.

agreed proxy for biomass at maximum sustainable yield (B_{MSY}). The soft limits and hard limits are 50% and 25% of the B_{MSY} proxy, respectively.

- 1292. The assessments utilise a partial quantitative methodology, meaning while the stock status in relation to the B_{MSY} proxy can be reliably estimated, projections are not available to predict the outlook for the stock under current and potential management settings.
- 1293. The most recent 2022 assessment (FNZ, Fisheries Assessment Plenary, 2023) made the following determinations for the stock:
 - unlikely (<40%) to be at or above the target;
 - about as likely as not (40-60%) to be below the soft limit;
 - unlikely (<40%) to be below the hard limit;
 - unknown as to the probability of catch or TACC settings causing a decline below the soft or hard limits; and
 - likely (>60%) to be subject to overfishing based on 2020/21 catch levels, with catch or TACC settings likely (>60%) to cause overfishing to continue or commence.



Figure 2: Comparison of WCSI total trawl survey indices with commercial landings (QMR/MHR) and TACC for STA 7, with ± two standard deviation confidence intervals. The green dashed line is the agreed *B_{MSY}* proxy (1,761 t), with dashed purple line is the soft limit (880.5 t), and the grey dashed line is the hard limit (440.25 t). <u>Note</u> that the 2023 WCSI trawl survey index (grey diamond) is preliminary and must still be reviewed by the Inshore Working Group.



- Figure 3: Relative fishing pressure for STA 7, based on the ratio of QMR/MHR landings to the corresponding WCSI total biomass trawl survey index which has been normalised so that the geometric mean=1.0 overall index values. Horizontal green dashed line is the geometric mean fishing pressure from 2005 to 2017 (0.891). Relative fishing pressure for 2023 is not shown as the 2022/23 fishing year is still in progress.
- 1294. The 2021 WCSI trawl survey biomass estimate showed a significant reduction from the 2019 estimate, which was the second highest in the time series (MacGibbon, 2022). The estimate was subject to some uncertainty as to its exact value; however it gave robust evidence of the stock being below the target given that even the upper extent of the confidence interval was below the B_{MSY} proxy target (see Figure 2).
- 1295. Analysis of 2021 WCSI trawl survey results suggested that catchability (a measure of consistency) on the West Coast could be extremely low, however the Inshore Working Group led by FNZ concluded that this may simply reflect an actual decrease in abundance for several West Coast species (MacGibbon, 2022). The findings of the 2021 trawl survey and the resulting 2022 stock assessment for STA 7 were ultimately accepted by the Inshore Working Group, with both being determined as being of high quality.
- 1296. Preliminary results from the 2023 WCSI trawl survey suggest biomass remains low for STA 7, with significantly less uncertainty than in the 2021 estimate, as evidenced by a smaller confidence interval. These results are provisional and must be finalised by researchers and reviewed by the Inshore Working Group, however they reinforce the findings of the 2022 stock assessment, and the 2021 WCSI trawl survey estimate.



- Figure 4: Time series of WCSI trawl survey juvenile STA (<45 cm) biomass indices, with 95% confidence intervals. Note that the 2023 WCSI trawl survey index (grey circle) is preliminary and must still be reviewed by the Inshore Working Group.
- 1297. Comparing biomass trends of juvenile and adult stargazer (see Figure 2 and 4) suggests that high levels of adult biomass and commercial catch from 2005 to 2019 were supported by strong recruitment in the fishery, which began to decline around 2014 to 2015. The juvenile biomass estimate for 2021 was the lowest recorded, with only a slight increase seen in the preliminary 2023 estimate, suggesting that recruitment has remained low.
- 1298. The 2022 stock assessment and WCSI trawl survey biomass estimates represent the best available information on the status of STA 7 in relation to B_{MSY} , given the agreed B_{MSY} target for the stock is a historical average of the trawl survey estimates. Relevant limitations to this information are described in section 6.7 below.

4 Catch information and current settings within the TAC

4.1 Commercial

- 1299. According to fisher-reported catch data, STA 7 is predominantly caught as bycatch (75 to 80% of total annual landings) by bottom trawlers targeting tarakihi, barracouta, ling, and red gurnard, among other species. A very small percentage of catch (<1%) is taken using other methods such as bottom longlining.
- 1300. The majority of catch occurs on the West Coast south of Cape Foulwind, and to a much smaller extent, the East Coast from Cloudy Bay south to Clarence Point.
- 1301. Commercial catch has fluctuated in the range of 1,000 to 1,150 tonnes from the 2004/05 to 2020/21 fishing years, with an increase of approximately 18% from 1,093 to 1,294 tonnes from 2020/21 to 2021/22 (see Figure 5). In the current fishing year (2022/23), the stock has been 73% caught (882 tonnes) up to July, with three months remaining in the fishing year.



Figure 5: Reported commercial landings and Total Allowable Commercial Catch (TACC) in tonnes for STA 7.

- 1302. Record high levels of catch around the 2000/01 fishing year can largely be attributed to the use of a bycatch trade framework, where fishers were able to sell catch in excess of their quota holdings, by offsetting this against quota holdings in other stocks. This system was removed at the start of the 2001/02 fishing year and catch levels reduced accordingly.
- 1303. The significant increase in catch in 2021/22, despite indications of declining abundance from trawl surveys, can be partly attributed to the following factors:
 - **Greater availability of ACE:** the 2020/21 TACC increase was not immediately realised, leading to carryover of underfishing allocations¹⁹⁵ into the following fishing year.
 - **Increased targeting:** from 2020/21 to 2021/22, the percentage of estimated stargazer greenweight caught as part of targeted fishing increased from approximately 20% to 25%. The number of fisher-reported trawl shots targeting stargazer also increased by approximately 29%.
- 1304. Commercial catch is expected to fluctuate annually based on a range of biological, environmental, and local abundance factors, which cause natural variability in total and local biomass and recruitment. It is also subject to variables such as changes in fishing activity, gear selectivity, locations, and effort. For this reason, catch trends alone are not a reliable indicator of abundance.
- 1305. Despite this, a number of fishers have noted that the status of the stock does not correspond with their on-water experience. West Coast fishers generally report no changes in ease of capture or distribution of giant stargazer, or obvious adjustments to location, intensity, or techniques of fishing effort in recent years to maintain catch levels.

4.2 Customary Māori

- 1306. Customary catch in Te Tau Ihu (top of the South Island) occurs under regulation 50 of the *Fisheries (Amateur Fishing) Regulations 2013*, which does not require customary permits or catches to be reported to FNZ. From Kahurangi Point south, which is identified as Ngai Tahu rohe moana, customary catch occurs under the *Fisheries (South Island Customary Fishing) Regulations 1999*, with records of permits and catch maintained and made available to FNZ.
- 1307. No customary Māori catch for pūwhara (giant stargazer) in STA 7 has been recorded since 2019 in areas subject to reporting requirements, suggesting customary catch to be negligible based on the limited information available. However, this may reflect that tangata whenua are using recreational fishing regulations for harvest. The current customary Māori allowance for STA 7 is one tonne and no information has been received to suggest this does not reflect customary harvest.

¹⁹⁵ If fishers catch less than their ACE holdings for the fishing year, their unused holdings are re-issued for the next fishing year as an 'underfishing allocation', at up to 10% of their total holdings for the stock.

^{187 •} Review of sustainability measures for the 2023 October round: STA 7

4.3 Recreational

1308. Giant stargazer is not considered an important target species for recreational fishers, as illustrated by results of recent National Panel Surveys of Marine Recreational Fishers (NPS) in Table 2. These estimates are subject to considerable uncertainty but highlight that recreational catch in STA 7 is likely insignificant.

Table 2: Summary of NPS results for STA 7 (Wynne-Jones et al, 2014; 2019), with figures in number of fish.

Fish stock	2011/12 Estimated catch	CV	2017/18 Estimated catch	CV
STA 7	481	± 0.71	399	± 1.00

1309. There is no minimum legal size (**MLS**), individual bag limit, or accumulation limit for giant stargazer in STA 7. Recreational catch is covered by a combined daily bag limit of 20 fish.

1310. The current recreational allowance for STA 7 is four tonnes. Based on the available recreational data, FNZ considers this is an appropriate reflection of recreational take and has not received any submissions to suggest otherwise.

4.4 Other sources of mortality caused by fishing

- 1311. This allowance accounts for mortality that occurs due to any fishing activity that is not otherwise accounted for in the TAC, such as incidental mortality, illegal catch and discarding, among other potential sources. There are no quantitative estimates available for the level of other sources of mortality for stargazer.
- 1312. In 2020, the allowance for other sources of mortality caused by fishing was increased to 58 tonnes, equating to approximately 5% of the TACC (1,208 tonnes). While inshore trawl-caught stocks generally have this allowance set at a higher level, the then Minister for Oceans and Fisheries decided that a lower allowance is appropriate for STA 7, acknowledging feedback received during consultation that giant stargazer is more robust than other inshore trawl-caught species.¹⁹⁶
- 1313. The level of illegal/misreported catch in STA 7 is uncertain, as observer coverage is relatively low for this fishery (discussed further in section 6.4 below). With the introduction of onboard cameras across the inshore trawl fleet on the north, south, and east coasts of the South Island in October 2023 and the West Coast in December 2024, increased monitoring of this fleet will improve reporting verification and reduce uncertainty around other sources of mortality caused by fishing.

5 Treaty of Waitangi obligations

5.1 Input and participation of tangata whenua

- 1314. Section 12 (1)(b) of the Act requires that before undertaking any sustainability process you shall provide for the input and participation of tangata whenua who have a non-commercial interest in the stock or an interest in the effects of fishing on the aquatic environment in the area concerned. In considering the views of tangata whenua, you are required to have particular regard to kaitiakitanga.¹⁹⁷
- 1315. Input and participation of tangata whenua into the sustainability decision-making process is provided mainly through Iwi Fisheries Forums, which have been established for that purpose. Each Iwi Fisheries Forum can develop an Iwi Fisheries Forum Plan that describes how the iwi in the Forum exercise kaitiakitanga over the fisheries of importance to them, and their objectives for the management of their interest in fisheries. Iwi Fisheries Forums may also be used as entities to consult iwi with an interest in fisheries.¹⁹⁸

¹⁹⁶ Review of Sustainability Measures for selected stocks for 1 October 2020 Fisheries New Zealand Decision Paper (mpi.govt.nz)

¹⁹⁷ 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.

¹⁹⁸ However, FNZ also engages directly with iwi (outside of Forums) on matters that affect their fisheries interests in their takiwa and consults with any affected Mandated Iwi Organisations and Iwi Governance Entities where needed.

1316. STA 7 covers the rohe of Te Tau Ihu and Te Waka ā Maui me Ōna Toka Fisheries Forums. Te Waka ā Maui me Ōna Toka (The Forum) incorporates all Te Tau Ihu members, alongside two members from Ngai Tahu.

lwi Fisheries Forum	Engagement on STA 7
Te Waka ā Maui me Ōna Toka	At a hui in March 2023, FNZ presented a list of potential stocks for review in the October 2023 sustainability round, including STA 7, for input and feedback from Forum members. No specific comments were made regarding the inclusion of the stock.
	FNZ undertook further engagement with the Forum at a hui in July 2023, seeking feedback on the options publicly consulted on. Forum members expressed support for a 15% TAC reduction under Option 1.
Te Tau Ihu	Engagement with Te Tau Ihu members has occurred through Te Waka ā Maui me Ōna Toka, as they also sit on this Forum.

- 1317. During consultation, feedback was also sought from tangata whenua on how the proposed options for STA 7 may or may not assist tangata whenua to provide kaitiakitanga, and how tangata whenua consider the proposal may affect their rights and interests in this stock.
- 1318. FNZ received individual submissions on behalf of Ngāti Tama and Rangitāne o Wairau, both supporting a 15% TAC reduction under Option 1. These submissions are discussed further in section 8 of this chapter.

5.2 Kaitiakitanga

- 1319. Information provided by forums, and iwi views on the management of fisheries resources and fish stocks, as set out in Iwi Fisheries Plans, are ways that tangata whenua can exercise kaitiakitanga in respect of fish stocks.
- 1320. The Forum has produced *Te Waipounamu lwi Forum Fisheries Plan*, which outlines a vision alongside values and objectives to support and provide for the interests of South Island iwi. Pūwhara (giant stargazer) is not specifically identified as a taonga species in this plan, however Te Waipounamu (South Island) iwi consider all fish species taonga.
- 1321. The following management objectives from the Plan are relevant to options proposed in this chapter:
 - **Management objective 1:** To create thriving customary non-commercial fisheries that support the cultural well-being of South Island iwi and our whanau.
 - Management objective 2: South Island iwi are able to exercise kaitiakitanga;
 - **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.
 - **Management objective 4:** To restore, maintain and enhance the mauri and wairua of fisheries throughout the South Island.
- 1322. FNZ considers that all options presented in this advice paper would contribute towards the objectives of the Plan, with each option placing greater weighting on certain objectives. This is discussed in analysis of the options in section 8.

5.3 Mātaitai reserves and other customary management tools

- 1323. Section 21 (4) of the Act requires that, when allowing for Māori customary non-commercial interests, you must take into account
 - a) any mātaitai reserve in STA 7 that is declared by notice in the Gazette under regulations made for the purpose under section 186;

- b) any area closure or any fishing method restriction or prohibition in STA 7 that is imposed under section 186A or 186B.¹⁹⁹
- 1324. There are several mātaitai reserves, taiāpure, and section 186B area closures that fall within STA 7, which are set out in Table 4.

Customary area/s	Management type
Anātori	
Kaihoka	
Okarito Lagoon	Mātaitai reserves
Manakaiaua/Hunts Beach	Commercial fishing is prohibited within these mātaitai reserves unless regulations
Mahitahi/Bruce Bay	state otherwise.
Tauparikaka	
Okuru/Mussel Point	
Popotai Taumaka	Temporary closures
ā.	These areas are temporarily closed to the taking of paua under section 186B of the
Okahu	Act and apply for up to 2 years but can be renewed.
	Taiāpure
Whakapuaka (Delaware Bay)	All types of fishing are permitted within these taiāpure, with no restrictions of the
Whatapaana (Delaware Day)	harvest of stargazer. The management committee can recommend regulations to
	manage commercial, recreational, and customary fishing.

Table 4: Customary fisheries management areas in STA 7.

1325. It is not anticipated that the options proposed would impact the availability of giant stargazer in these areas, given the areas are largely located in shallow coastal inshore waters outside the species' core depth range.

6 Environmental and sustainability considerations under the Act

6.1 Overview

- 1326. You are being asked to make a decision under section 13(2)(b) of the Act, to set the TAC for stargazer in STA 7. This is a sustainability measure. Before setting or varying a sustainability measure, you must adhere to section 11 of the Act. When making your decision you must also act consistently with the requirements in section 5, and sections 8-10 (Purpose and Principles of the Act).
- 1327. The requirements and details of each of these sections are set out below, in the following order:
 - a) Section 5 (Application of international obligations and Treaty of Waitangi (Fisheries Claims) Settlement Act 1992);
 - b) Section 8 (Purpose);
 - c) Section 9 (Environmental principles);
 - d) Section 11 (Sustainability measures);
 - e) Section 13 (Setting a Total Allowable Catch); and
 - f) Section 10 (Information principles).

6.2 Application of international obligations and the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992 – section 5 of the Act

1328. You must act in a manner consistent with the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992. This is discussed in more detail under Heading 2.2.1 of the *Introduction and Legal Overview* chapter of this document. You must also act in a manner consistent with New Zealand's international obligations relating to fishing. Discussion of these relevant obligations is provided under Heading 2.2.2 of the *Introduction and Legal Overview*.

¹⁹⁹ Section 21(4) does not refer to section 186B, but this is the provision used for temporary closures or fishing method restrictions or prohibitions in South Island fisheries waters.

6.3 Purpose of the Act – section 8 of the Act

1329. The Act's purpose is to "provide for the utilisation of fisheries resources while ensuring sustainability." Guidance for you on the meaning of section 8 and how it should be applied for decision making (for all the stocks being reviewed as part of this round) is provided under Heading 2.2.3 in the *Introduction and Legal Overview*.

6.4 Environmental principles – section 9 of the Act

- 1330. The environmental principles that you must take into account when considering sustainability measures for STA 7, are as follows:
 - Associated or dependent species should be maintained above a level that ensures their long-term viability.
 - Biological diversity of the aquatic environment should be maintained; and
 - Habitats of particular significance for fisheries management should be protected.
- 1331. Observer coverage is low in STA 7, with approximately 2.3% of catch events involving the stock observed over the past five years.²⁰⁰ Given this, there is uncertainty associated with estimates of environmental interactions in the fishery. With the introduction of onboard cameras across the inshore trawl fleet on the north, south and east coasts of the South Island in October 2023 and the West Coast of the South Island in December 2024, increased monitoring of this fleet will substantially improve verification of environmental interactions within STA 7.

6.4.1 Associated or dependent species – section 9(a) of the Act

- 1332. Associated or dependent species include marine mammals, seabirds, fish, and invertebrate species caught as bycatch in the giant stargazer target and bycatch fisheries. This includes any non-harvested species taken or otherwise affected by the taking of any harvested species.
- 1333. The options presented in this chapter are very unlikely to increase fishing effort given a reduction in TAC, meaning risks of impacts on associated and dependent species, such as marine mammals, seabirds, fish, and invertebrates will likely decrease proportionally or remain the same. Thus, none of the options presented pose a clear risk to negatively affect their long-term viability. Further analysis is provided in section 8 below.
- 1334. It is important to note that the figures provided in this section cover all inshore trawl activity (vessels less than 43 m in length) on the West Coast, regardless of target species or catch composition.

Marine mammals

- 1335. Bottom trawl fisheries have been assessed as posing a substantially lesser risk to dolphins than setnet fisheries. Any risks to dolphins from trawling within STA 7 are currently managed under the existing trawl restrictions and regulations, as well as the Hector's and Māui Dolphin Threat Management Plan and South Island Hector's Dolphin Bycatch Reduction Plan. There was one observed dolphin capture in the West Coast South Island inshore trawl fishery between 2002 and 2019, being a common dolphin released dead.
- 1336. Other marine mammals with which interactions may occur through inshore bottom trawling activity in STA 7 include fur seals and whale species. Between 2002 and 2019, observers recorded seven alive and 67 dead New Zealand fur seals being released following capture in the West Coast inshore trawl fishery.

Seabirds

1337. A number of seabird species are attracted to trawl fishing activities and may suffer damage through entanglement in wires and nets or flying into trawl warps or vessels themselves. The most recent Spatially Explicit Fisheries Risk Assessment ranks the southern Buller's albatross as the most at-risk seabird, followed by the Salvin's albatross, New Zealand white-capped albatross, black petrel, and Westland petrel (Edwards et al., 2023).

²⁰⁰ This coverage was calculated based on fishing events in which the fish stock was recorded as caught and an observer was on board. This metric does not reflect the overall level of monitoring in the fishery.

^{191 •} Review of sustainability measures for the 2023 October round: STA 7

- 1338. The management of seabird interactions with New Zealand's commercial fisheries is guided by the National Plan of Action-Seabirds 2020 (**NPOA-Seabirds**), which sets out the New Zealand government's commitment to reducing fishing-related captures and associated mortality of seabirds. The NPOA-Seabirds, with its focus on education and ensuring fishers take all practicable steps to minimise risk to seabirds, will drive significant changes in fisher behaviour and help to ensure that fishing does not adversely impact the health of seabird populations.
- 1339. As part of the NPOA-Seabirds, FNZ and the fishing industry have worked collaboratively to ensure all vessels that pose a risk to seabirds have, and follow, a Protected Species Risk Management Plan (**PSRMP**). A PSRMP specifies a range of non-regulatory measures that must be followed on board each vessel to reduce the risk of incidental seabird captures, such as fish waste management practices and the deployment of additional seabird scaring devices at times of heightened risk. While there is no legal requirement that fishers have a PSRMP, more than 90% of the full-time trawl vessels have, and follow, one. Information on adherence to PSRMPs by all vessels is reported in Seabird Annual Reports.²⁰¹
- 1340. For trawl vessels greater than 28 metres in length, there are also mandatory requirements for seabird mitigation set out in the <u>Seabird Scaring Devices Circular 2010 No. F517</u>, which is issued pursuant to regulation 58A of the Fisheries (Commercial Fishing) Regulations 2001.
- 1341. Between 2002 and 2019, observers have recorded six alive and 13 dead Westland petrels; five alive and 19 dead southern Buller's albatrosses; and two dead Salvin's albatrosses released following capture in the West Coast inshore trawl fishery. A total of 50 alive and 80 dead seabirds were observed being released during this period.

Fish and invertebrate bycatch

- 1342. Around 75% to 80% of stargazer is caught by fishers targeting other stocks, including tarakihi, ling, barracouta and red gurnard. The 2021 WCSI trawl survey, which indexes abundance of several inshore finfish species including stargazer, recorded 17 chondrichthyan and 69 teleost species. Those commonly caught in similar depth ranges to stargazer included tarakihi, spiny dogfish, barracouta, and red cod (MacGibbon, 2022).
- 1343. Invertebrate bycatch information in mixed-species trawl fisheries is primarily derived from trawl surveys. During the 2021 WCSI trawl survey, 36 benthic macro-invertebrate species were taken as bycatch, including various sponges, prawn killer, starfish, and sea cucumbers, among others (MacGibbon, 2022).

6.4.2 Biological diversity of the aquatic environment – section 9(b) of the Act

- 1344. Bottom trawling can directly impact on benthic habitats and biodiversity, particularly where trawling occurs outside of the existing trawl footprint and in areas of high biodiversity value. FNZ will continue to monitor the bottom trawl footprint of fisheries.
- 1345. Given the proposed reductions in TAC under all options presented in this chapter, there is no obvious potential for increased benthic impacts or threats to the biological diversity of the aquatic environment. Further analysis is provided in section 8.

6.4.3 Habitats of particular significance for fisheries management – section 9(c) of the Act

1346. There is limited information regarding discrete areas of important habitat for STA 7 and there are no confirmed habitats of particular significance for fisheries management. Information that may inform our understanding of potential habitats of particular significance for STA 7 is discussed in Table 5 below.

Fish stock	STA 7
Potential habitat of particular significance	Spawning: Spawning is thought generally to take place over winter months on the outer continental shelf and adjoining slope. There is no evidence of discrete spawning areas. Juvenile: There is limited information on discrete juvenile habitat areas. In historic trawl surveys, a greater proportion of stargazer in Tasman and Golden Bays have been juvenile fish than on the West Coast, suggesting these areas may potentially support juvenile populations.

Table 5: Summary of information on potential habitats of particular significance for fisheries management for STA 7.

²⁰¹ Seabird Annual Reports are available at <u>https://www.mpi.govt.nz/fishing-aquaculture/sustainable-fisheries/managing-the-impact-of-fishing-on-protected-species/reducing-deaths-of-seabirds/.</u>

Fish stock	STA 7					
	However, the 2021 trawl survey recorded no juvenile or adult stargazer in these areas, a first in the time series.					
Attributes of habitat	Spawning: No information available. Juvenile: There is no information available on specific attributes of juvenile habitat, beyond information for the habitat of the stock across all life stages (sandy or muddy seafloor up to 500 m in depth).					
Reasons for particular significance	Successful spawning and development through juvenile stages is critical to supporting the productivity of the stock and ensuring recruitment into the fishery. Stargazer are known to ambush prey by burying themselves in substrate.					
Risks/threats	Changes in water temperature and circulation could impact spawning and egg/larval development. Sedimentation from land-based activity and seafloor disturbance through fishing activity may lead to changes in sandy and muddy substrate juvenile and adult habitat.					
Existing protection measures	Although not specific to STA 7, within the QMA there are several habitats that may have particular significance to other species and are currently protected by regulatory and non-regulatory (voluntary) measures. There are also general restrictions and prohibitions, which are outlined in Table 9 below.					
Evidence	Morrison, M.A.; Jones, E.G.; Parsons, D.P.; Grant, C.M. (2014). Habitats and areas of particular significance for coastal finfish fisheries management in New Zealand: A review of concepts and life history knowledge, and suggestions for future research. New Zealand Aquatic Environment and Biodiversity Report No. 125. 202 p. Fisheries New Zealand (2023). Fisheries Assessment Plenary, May 2023: stock assessments and stock status. Compiled by the Fisheries Science Team, Fisheries New Zealand, Wellington, New Zealand. 1886 p.					

6.5 Considerations for setting sustainability measures under section 11 of the Act

- 1347. Section 11 of the Act sets out various matters that you must take into account or have regard to when setting or varying sustainability measures (such as the TAC changes proposed as part of this chapter). These include:
 - a) any effects of fishing on any stock and the aquatic environment; and
 - b) any existing controls under the Act that apply to the stock or area concerned; and
 - c) the natural variability of the stock concerned; and
 - d) any relevant planning instruments, strategies, or services.202

6.5.1 Effects of fishing on any stock and the aquatic environment – section 11(1)(a)

- 1348. You must take into account any effects of fishing on any stock and the aquatic environment when making your decision about the STA 7 TAC.
- 1349. Information regarding the effects of stargazer-related bottom trawling effort on other species and the aquatic environment is discussed in section 6.4. The direct effects of fishing on STA 7 are discussed in sections 3 and 4 of this chapter.
- 1350. The effects on other stocks and the aquatic environment of a reduction to TAC and TACC would depend on the ability of fishers to avoid stargazer whilst targeting other species and the extent of the reduction. Further analysis is provided under section 8 of this chapter.

6.5.2 Existing controls that apply to the stock or area – section 11(1)(b)

1351. You must take into account any existing controls under the Act (including rules and regulations made under the Act (section 2(1A)) that apply to the stock when setting or varying the TAC. Relevant recreational and commercial controls are outlined in Table 6.

²⁰² Sections 11 (2) and (2A).

^{193 •} Review of sustainability measures for the 2023 October round: STA 7

Table 6: Recreational and commercial restrictions relevant to STA 7.

Fishery	Restrictions
Recreational	Combined daily bag limit of 20.
Commercial	 Regulated closures to trawling in areas of the Marlborough Sounds, Tasman Bay, and Golden Bay, to protect biogenic habitat and spawning grounds for various species.
	Bottom trawl prohibitions in the Challenger South and North Benthic Protection Areas.
	• Trawling by vessels over 46 m prohibited in the territorial sea of New Zealand.

1352. There are also several mātaitai reserves and section 186B temporary closures in STA 7, as noted in Table 4. These areas largely fall outside of the core depth range of *Kathetostoma* species which comprise STA 7.

6.5.3 The natural variability of the stock – section 11(1)(c)

- 1353. You must take into account the natural variability of the stock when setting or varying its TAC.
- 1354. The time series of historical WCSI trawl survey estimates (as shown in Figure 2) represents the best available information on the natural variability of the stock, noting that it also reflects variability due to fishing pressure and mortality. The time series suggests that stargazer is a moderately variable stock.
- 1355. As noted in Table 5, changes in water temperature and circulation may have the potential to impact on STA 7. Sea surface temperature has been found to be correlated with relative fish abundance indices for giant stargazer (Dunn et al., 2009), however the nature of the relationship between water temperature and stargazer abundance is unclear and requires further investigation.

6.5.4 Relevant statements, plans, strategies, provisions, and documents - section 11(2)

1356. In setting or varying the TAC of this stock, you must have regard to the following statements, plans, strategies, provisions, and planning documents under section 11(2) of the Act, that apply to the coastal marine area and that you consider to be relevant.

Regional Plans – section 11(2)(a)

- 1357. The following authorities have coastlines within the boundaries of STA 7: Environment Canterbury, Nelson City Council, West Coast Regional Council, and Tasman and Marlborough District Councils. Each of these regions have policy statements and plans to manage the coastal and freshwater environments, including terrestrial and coastal linkages, ecosystems, and habitats. There are no provisions in any of these documents specific to stargazer.
- 1358. The provisions of these various documents are, for the most part, of a general nature and focus mostly on land-based stressors on the marine environment. There are no provisions specific to stargazer species. Marlborough District Council has developed a Proposed Marlborough Environment Plan (currently under appeal), which would prohibit trawling and dredging in identified Category A and B Ecologically Significant Marine Sites.
- 1359. FNZ has reviewed these documents and the provisions that might be considered relevant can be found in Table A1 of Addendum 1. FNZ considers that the proposed options in this chapter are consistent with the objectives of these relevant regional plans.
- 1360. The FNZ Coastal Planning Team engages with the RMA coastal planning processes (including regional authorities) to support marine management decisions to manage not only the fishing effects on the coastal environment but also land-based impacts on fisheries.

6.5.5 Relevant services or fisheries plans – section 11(2A)

- 1361. Under section 11(2A), before setting or varying any sustainability measure or making any decision or recommendation under the Act to regulate or control fishing, you must take into account
 - a) any conservation services or fisheries services; and
 - b) any relevant fisheries plan approved under this Part; and

- c) any decisions not to require conservation services or fisheries services.
- 1362. Fisheries services of relevance to the options in this chapter include the research used to monitor the fishery and the tools used to enforce compliance of management controls in the fishery. These are discussed under 'Management background', 'Catch information and current settings within the TAC', and above under 'Existing controls that apply to the stock or area section 11(1)(b).'
- 1363. Observer and onboard camera coverage relevant to the STA 7 fishery is also described above under the 'Other sources of mortality caused by fishing' and Environmental principles section 9 of the Act' sections.
- 1364. There are no applicable conservation services that specifically relate to STA 7, or any decisions not to require conservation services or fisheries services.

National Inshore Finfish Fisheries Plan

- 1365. The National Inshore Finfish Fisheries Plan (**the Finfish Plan**) provides guidance on management objectives and strategies for finfish species, including stargazer. The Finfish Plan will guide the operational management of inshore finfish fisheries for the next five years and is aimed at progressing New Zealand towards more ecosystem-based fisheries management.
- 1366. Stocks are grouped within the Finfish Plan, with management approaches and objectives tailored accordingly for each group. STA 7 falls under Group 2, which recognises that the management of the stock shall provide for moderate levels of use, with moderate levels of information to monitor its status (partial quantitative stock assessments for which projections of stock size under different catch scenarios are not feasible).
- 1367. The Plan also identifies STA 7 as part of the *FMA* 7 *South Island West Coast mixed trawl fishery* stock complex, with the aim of ensuring the integrated management of fish stocks commonly caught together. This complex includes flatfish, ghost shark, gurnard, john dory, red cod, school shark, snapper, spiny dogfish, rig, tarakihi, and blue warehou, with sea perch, smooth skate, and elephant fish included as secondary stocks.
- 1368. FNZ does not currently have information available to quantitatively assess the impact of the proposed options for STA 7 on all of these stocks. The options in this chapter propose to decrease the catch limit for STA 7, which may result in reduced fishing pressure on other stocks in the stock complex, especially those which are strongly associated such as tarakihi, ling, barracouta, and red gurnard. Further analysis is provided in section 8.

6.5.6 Other plans and strategies

- 1369. The following plans and strategies are not mandatory considerations under section 11 of the Act, but they may be considered relevant to this review.
- Te Mana o te Taiao (Aotearoa New Zealand Biodiversity Strategy)
- 1370. FNZ considers that the sustainability measures proposed for STA 7 are generally consistent with relevant objectives of the Te Mana o te Taiao – the Aotearoa New Zealand Biodiversity Strategy – including Objective 10, which is to ensure that ecosystems are protected, restored, resilient and connected from mountain tops to ocean depths; and Objective 12, which is to manage natural resources sustainability.
- 1371. For more information on Te Mana o te Taiao see section 3.3 of the *Introduction and Legal Overview*.

6.6 Total Allowable Catch - section 13 of the Act

- 1372. You are being asked to decide on a TAC for STA 7 under section 13(2)(b) of the Act, given STA 7 is estimated to be unlikely (<40%) at or above the agreed B_{MSY} proxy target level and about as likely as not (40-60%) at or below the soft limit and that overfishing is likely (>60%) to be occurring (FNZ Fisheries Assessment Plenary, 2023).
- 1373. Section 13(2)(b) of the Act requires a TAC to be set that 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

6.6.1 Biological characteristics

1374. STA 7 is a moderate productivity stock, with the available information for giant stargazer suggesting a medium length lifespan of at least 25 years, a wide distribution and age of sexual maturity at 5 to 7 years (Manning, 2008). These characteristics indicate that the stock is able to sustain a moderate amount of fishing pressure and impacts of reduced pressure could be seen in the medium term.

6.6.2 Interdependence of stocks

1375. The interdependence of stocks involves consideration of the effects of fishing on associated stocks affected by fishing for the target stock (as discussed in section 6.4).

Bycatch

- 1376. A wide range of bycatch QMS and non-QMS fish species are caught in the West Coast bottom trawl fishery, with the majority of STA 7 currently caught by fishers targeting other stocks, such as TAR 7 (tarakihi), LIN 7 (ling), BAR 7 (barracouta), and GUR 7 (red gurnard). Relevant macro-invertebrate bycatch information can be derived from trawl surveys, which regularly includes various sponges, prawn killer, starfish, and sea cucumbers, among others (MacGibbon, 2022).
- 1377. A reduction to the STA 7 TAC may also reduce fishing pressure and catch for these associated species with a similar depth range, depending on the extent of the reduction and ability of fishers to selectively avoid stargazer. Therefore, any effects on the long-term viability of associated stocks as a result of a TAC reduction are anticipated to be neutral or positive.

Predator/ prey interdependencies

1378. There is little information available regarding predator/prey interdependencies for giant stargazer. Best available information is that giant stargazer are generalist, opportunistic predators that feed on a variety of different fish (including opal fish, silver congers and red cod), cephalopods (mostly squid), and crustaceans such as crabs (Stevens et al, 2011). There are no known sustainability concerns with interdependent prey or predators that might be exacerbated by a reduction in STA 7 TAC.

6.6.3 Environmental conditions affecting the stock

- 1379. Changes in water temperature and circulation may have the potential to impact on STA 7, however the nature of the relationship between water temperature and stargazer abundance is unclear.
- 1380. Sedimentation by land-based activity and bottom contact fishing methods, including resuspension, may also impact on the abundance of giant stargazer, being a bottom-dwelling species which ambushes passing prey by burying itself (McMillan et al., 2011). There is no information available on what the implications of sediment deposition and resuspension may have specifically for STA 7.

6.6.4 Harvest Strategy Standard

- 1381. 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.
- 1382. The High Court has held that the HSS is a mandatory relevant consideration that the Minister must have regard to when setting a TAC under section 13 of the Act.²⁰³

²⁰³ Fisheries Inshore New Zealand Ltd v Royal Forest and Bird Protection Society of New Zealand Incorporated [2023] NZCA 359.

- 1383. The HSS outlines the Ministry's approach to relevant sections of the Act and forms a core input to the Ministry's advice to the Minister on the management of fisheries. The HSS defines a hard limit as a biomass limit below which fisheries should be considered for closure and a soft limit as a biomass limit below which the requirement for a formal time-constrained rebuilding plan is triggered.
- 1384. In the case of STA 7, a B_{MSY} proxy, soft limit, and hard limit have been agreed based on historical averages of the WCSI trawl survey, as discussed in section 3 of this chapter. The stock was assessed in 2022 to be as likely as not (40-60%) below the soft limit. Further analysis is provided below under Heading 6.6.5.

6.6.5 Appropriate period and way and rate

- 1385. The HSS specifies that when a stock is below the soft limit, a formal, time-constrained rebuilding plan must be implemented with the stock being rebuilt back to at least the target level in a time frame between T_{min}²⁰⁴ and 2* T_{min} with an acceptable probability. The soft limit is considered to be breached if the probability of the stock being below the soft limit is greater than 50%. STA 7 was assessed in 2022 as about as likely as not (40-60%) below the soft limit.
- 1386. Under a partial quantitative stock assessment, we are unable to quantitatively determine rebuild timeframes such as T_{min}, or the way and rate in which TAC changes would achieve this because we do not have adequate information to conduct stock projections. Alternative best practice methods in other countries with strong fisheries management systems are to base this timeframe on multiples of generation times, either defined as the weighted average age of mature females in an exploited or unexploited population (as in New Zealand), or the average age of first maturity. Given the constraints noted above for STA 7, only approaches based on an average age of first maturity generation time are feasible in this instance.
- 1387. After reviewing compatible international approaches and available information on relevant biological and environmental characteristics, a period of 9 to 12 years, or 1.5 to 2 times the average age of first maturity of giant stargazer, is considered appropriate. FNZ has developed options that are considered likely to restore the stock to or above the *B*_{MSY} proxy target within this period. However, without biomass projections these options cannot be quantitively tested or described with confidence in terms of an expected way or rate.
- 1388. A larger TAC reduction under Option 2 provides the greatest certainty of returning the stock to or above the target within this period, and at a faster way and rate. Beyond this, information is limited and any reduction will ultimately rely on continued monitoring of the stock and further action if shown to be necessary.
- 1389. In considering the way and rate, under section 13(3) of the Act you must have regard to such social, cultural, and economic factors you consider relevant. Potential factors are discussed below in sections 8 and 9.

6.7 Information principles: Uncertainties and unknowns - section 10 of Act

- 1390. Under section 10 of the Act, decision-makers are required to take into account four information principles:
 - a) decisions should be based on the best available information.²⁰⁵
 - b) decision makers should consider any uncertainty in the information available in any case;
 - c) decision makers should be cautious when information is uncertain, unreliable, or inadequate;
 - 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 this Act.
- 1391. FNZ considers that the information presented in this chapter represents the best available information on the stock. In various sections of this chapter, FNZ has pointed out where information is uncertain and warrants caution for your decision making, in line with the principles above.

²⁰⁴ The theoretical number of years to rebuild to target in absence of fishing.

²⁰⁵ Section 2(1) of the Act defines "best available information" to mean "the best information that, in the particular circumstances, is available without unreasonable costs, effort, or time."

^{197 •} Review of sustainability measures for the 2023 October round: STA 7

1392. Key uncertainties in information for the stock include:

- The preliminary nature of the 2023 WCSI trawl survey biomass estimate, which reinforces the 2021 estimate and 2022 assessment, and suggests biomass has remained low since. This uncertainty works in both directions.
- The appropriate period of 9 to 12 years for recovering the stock to or above the target level, given the inability to make biomass projections.
- The precise way and rate in which the presented options would recover the stock to or above the target level, given biomass projections are not possible.

7 Submissions

1393. Seven submissions were received, which are summarised in Table 11.

	Option supported					
Submitter	1 (15% reduction)	2 (30% reduction)	Other	ier Notes		
Te Ohu Kaimoana	\checkmark			Supports 15% reduction given the preliminary state of 2023 trawl survey and ability to biennially monitor the stock status with future surveys.		
Rangitāne o Wairau	\checkmark			No rationale provided.		
Ngāti Tama ki Te Waipounamu Trust (Ngāti Tama)	\checkmark			No rationale provided.		
Royal New Zealand Society for the Prevention of Cruelty to Animals Inc. (RNZSPCA)		V		Supports precautionary approach, on the basis of uncertainty and general concerns around animal welfare, environmental impacts and potential protected species interactions associated with trawling.		
Southern Inshore Fisheries Management Co. Ltd. (Southern Inshore Fisheries)			~	Does not support a reduction. Disputes reliability of trawl survey findings and using the preliminary 2023 survey estimate. Proposes to review after 2025 survey results, with greater information and concerns about trawl survey methodology addressed.		
New Zealand Federation of Commercial Fishermen Inc.			~	Endorsed the submission of Southern Inshore Fisheries.		
Ben			\checkmark	Generally opposed proposed changes to catch limits.		

8 Options and analysis

1394. Three options are presented below to reduce the TAC, TACC, and other sources of mortality under section 13(2)(b) of the Act. The appropriate recovery period of 9 to 12 years applies to all proposed options. The relationship of the proposed TACC settings to historical landed catch totals are displayed in Figure 6.





8.1 Current settings

- 1395. The *status quo* is not being proposed as an option in this review. Retaining the current catch settings would not align with your obligation under the Act to set a TAC which enables the stock to return to the B_{MSY} proxy target, given that best available information indicates the stock is unlikely (<40%) to be at or above target, about as likely as not (40-60%) to be below the soft limit and that overfishing is likely to be occurring.
- 1396. Overfishing was determined as likely (>60%) to be occurring in the 2022 stock assessment, based on the 2020/21 commercial catch total of 1,093 tonnes (FNZ Fisheries Assessment Plenary, 2023). Retaining the TAC and TACC at the current level would allow this level of fishing pressure to continue or increase.
- 1397. Southern Inshore Fisheries, the Commercial Stakeholder Organisation with a mandate to represent STA 7 quota owners and fishers, submitted that the TAC should not be reduced currently. The organisation proposed that review of the stock should instead occur following the 2025 WCSI trawl survey, with greater information to detect any trends in abundance and time to address their concerns about survey methodology. The view of Southern Inshore Fisheries was also endorsed by the NZ Federation of Commercial Fishermen.
- 1398. Southern Inshore Fisheries considers that the WCSI trawl survey may not produce reliable results for STA 7, given surveys are subject to varying levels of catchability and do not cover areas of commercially fished rough ground previously deemed untrawlable by survey designers. FNZ recognises that analysis of 2021 results indicated that catchability (a measure of consistency) on the West Coast could be considered extremely low (MacGibbon, 2022). However, the Inshore Working Group concluded that the extreme catchability finding could be due to actual decreases in abundance across a number of species, rather than unrepresentative sampling. The 2021 results were ultimately accepted, with the 2022 assessment determined to be of high quality and subsequent 2023 preliminary estimates appearing to reinforce its accuracy.
- 1399. Concerns were also raised around the procedure for the 2022 stock assessment, based on interpretation of the 2021 WCSI trawl survey results and discussion in the Inshore Working Group of the stock's status in relation to the target, soft and hard limits, and overfishing threshold. Southern Inshore Fisheries considered that this did not constitute a formal assessment of the stock. FNZ notes that this is established procedure in most cases for stock assessed using a partial quantitative methodology, however in cases where a significant increase or decrease in stock status is observed results are generally then reviewed by the

Fisheries Assessment Plenary. Industry representatives were present at the Inshore Working Group for review of the 2021 WCSI trawl survey results and the 2022 stock assessment.

- 1400. Southern Inshore Fisheries also opposed drawing conclusions from the 2023 survey results, noting their preliminary nature. In their view, a reduction would be based on the 2021 survey estimate alone which cannot indicate an ongoing trend in abundance. FNZ acknowledges the inherent uncertainty in the preliminary nature of the 2023 results, but notes that final results generally change little from preliminary results. Further, the 2021 result and 2022 assessment are sufficient information in themselves to justify a review and TAC reduction. The preliminary 2023 results simply allow greater confidence in the accuracy of 2021 results and the 2022 stock assessment findings.
- 1401. Information principles in section 10 of the Act stipulate that decision makers should be cautious when information is uncertain, unreliable, or inadequate, and not use uncertainty in information as a reason for postponing or failing to take any measure to achieve the purpose of the Act. While there may be some concerns around the reliability of science inputs, the best available information indicates a substantial decrease in abundance and the appropriate action is therefore to reduce the TAC accordingly.

8.2 Option 1 ~ 15% reduction

8.2.1 TAC

- 1402. Option 1 would see a reduction of approximately 15% to the TAC for the stock. To reflect that STA 7 is substantially a commercial fishery, this would be realised through a reduction of 183 tonnes to the TACC and eight tonnes to the allowance for other sources of mortality, to maintain it at approximately 5% of TACC. This takes into account the sustainability concern associated with the stock status findings of the 2022 stock assessment. but also places weight on the preliminary nature of the 2023 WCSI trawl survey results and FNZ's ability to monitor effects of incremental reductions, given the regular biennial trawl surveys and associated assessments.
- 1403. FNZ considers this option represents the minimum appropriate reduction to return the stock to target within a period of 9 to 12 years. During the recovery of the fishery in the mid-2000s the TAC was set slightly lower at 1,000 tonnes, however the TACC was set at 997 tonnes and importantly there was no other sources of mortality allowance.

8.2.2 Allowances

- 1404. Given best available information indicates there is very little customary and recreational harvest of STA 7 and that current allowances appropriately reflect customary and recreational take, no changes to the customary Māori allowance of one tonne and recreational allowance of four tonnes are proposed.
- 1405. Option 1 would set the allowance for other sources of mortality at 50 tonnes, which would maintain it at approximately 5% of TACC. As noted in section 4.4, whilst this allowance is often set higher proportionally to the TACC for other trawl caught stocks, previous feedback has been that giant stargazer are more robust than many other trawl-caught species. The rollout of onboard cameras will also improve information on this matter and disincentivise any unauthorised discarding or illegal catch that may be occurring, with greater monitoring.

8.2.3 TACC

- 1406. This option would reverse recent TACC increases, returning it to slightly below the TACC setting in the early 2010's (see Figure 6). For catch to be constrained by the TACC, a reduction of approximately 8% from the mean average landed catch over the past 10 fishing years would be required.
- 1407. Given that around 20 to 25% of STA 7 is caught through targeted fishing, it is anticipated that the 15% reduction in TACC under this option could be realised through decreased targeting of STA 7. This would have less impact than other options on fishing activity for other associated stocks commonly targeted as part of the *West Coast South Island mixed trawl* stock complex.

8.2.4 Discussion

- 1408. This option was supported by three submissions, from Te Ohu Kaimoana, Ngāti Tama, and Rangitāne o Wairau. Te Ohu Kaimoana supported a 15% TAC reduction to recognise indications of declining biomass from recent trawl survey estimates but take into account the preliminary nature of 2023 results and the ability to regularly monitor the fishery moving forward.
- 1409. It is the preferred option of Te Waka ā Maui Ōna Toka Iwi Fisheries Forum and Te Tau Ihu iwi that provided individual submissions. Given this, it is the option that most closely aligns with enabling South Island iwi to exercise kaitiakitanga under *Te Wai Pounamu Iwi Fisheries Plan*. In FNZ's view, it has less certainty than other options to achieve objectives in the Plan around developing a sustainable, productive fishery with long term-term commercial benefits for South Island iwi.
- 1410. FNZ considers that this option would not exacerbate or cause any new impacts on associated or dependent species, the biological diversity of the aquatic environment, or potential habitats of particular significance for fisheries management. It is anticipated that with any reduction to TAC, impacts will reduce proportionally with a reduction in effort.
- 1411. This option places the least weight on preliminary 2023 WCSI trawl survey results suggesting juvenile biomass remains at a low level. It relies on juvenile biomass rebuilding in a similar manner as in the mid-2000s and ultimately recruiting into and supporting the fishery's long-term sustainability. For this reason, there is less certainty that this option will return the stock to or above the target within the appropriate period.
- 1412. This option places the most weight on mitigating the potential short term negative social, cultural and economic impacts of a more significant reduction, which are outlined further in section 9. This option would minimise the impacts of a reduction on targeting of other stocks in the *South Island West Coast mixed trawl fishery* stock complex, given it could be realised through reduction of STA 7 target fishing. However, in doing so it has the least certainty of ensuring ongoing long-term social, cultural and economic benefits derived from a stable fishery capable of producing maximum sustainable yield.
- 1413. Overall, this option takes into account the sustainability concern associated with the stock status findings of the 2022 stock assessment, while balancing the preliminary nature of the 2023 WCSI trawl survey results and FNZ's ability to monitor effects of a reduction with regular biennial trawl surveys and associated assessments. FNZ believes that this option is in line with returning the stock to or above the target within the appropriate period, albeit with the highest level of risk of all the options.

8.3 Modified Option 1 (~20% reduction)

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8.3.1 TAC

1414. Developed following consideration of submissions, this option would see a moderate reduction of approximately 20% to the TAC, realised through a reduction of 242 tonnes to the TACC and 12 tonnes to the allowance for other sources of mortality, to maintain it at approximately 5% of the TACC.

8.3.2 Allowances

1415. According to the same rationale as under Option 1, the other sources of mortality allowance would be reduced to maintain proportionality at approximately 5% of TACC (at 46 tonnes). It would also retain current customary Māori and recreational allowances.

8.3.3 TACC

1416. Under this option the TACC would reduce to 966 tonnes, which is slightly lower than that during recovery of the fishery from low levels of abundance in the mid-2000s. This option would require a reduction of around 13% from the mean average landed catch over the past 10 fishing years.

8.3.4 Discussion

- 1417. During consultation, Option 1 was presented as the minimum appropriate reduction to return the stock to target within 9 to 12 years, while minimising the impact on other target fisheries in which STA 7 is commonly caught as bycatch. Rationale given by those who supported Option 1 included that action is needed to ensure sustainability, but also take into account the preliminary nature of the results and ability to monitor the fishery closely moving forward. Te Waka ā Maui Ōna Toka lwi Fisheries Forum, Ngāti Tama and Rangitāne o Wairau have expressed support for Option 1.
- 1418. While a 20 % TAC reduction was not presented during consultation, it represents an approach based on the same rationale as Option 1 (reducing targeted fishing of STA 7) with more certainty of addressing the sustainability issue at hand. Importantly, it takes greater account of trends in juvenile biomass with less reliance on the assumption that juvenile biomass will increase over time as previously experienced in the mid-2000s.
- 1419. Acknowledging that a cautious approach should be taken given uncertainty around the effect of various TAC reductions without projections, this option would see a larger TAC reduction than under Option 1. However, it remains achievable through removal of the targeted component of the STA 7 commercial fishery alone, which represents 20 to 25% of catch.
- 1420. In relation to environmental considerations, FNZ again considers that this option would not exacerbate or cause any new adverse impacts.
- 1421. In considering potential economic, social, and cultural factors, this option can be seen as a moderate reduction which seeks to mitigate the impacts on other target fishing activity in the *South Island West Coast inshore trawl fishery* stock complex. It would still rely on the ability to monitor the fishery into the future and take further actions if shown to be necessary, however it better aligns with taking a cautious approach given the inability to make biomass projections. For these reasons, FNZ recommends this option.

8.4 Option 2 ~ 30% reduction

8.4.1 TAC

- 1422. Option 2 would see a substantial reduction to the TAC for the stock, realised through a reduction of 364 tonnes to the TACC and 17 tonnes to the allowance for other sources of mortality, to maintain it at approximately 5% of TACC.
- 1423. This option places the greatest weight on the sustainability concerns associated with the preliminary results from the 2023 WCSI trawl survey and the 2022 stock assessment, in particular that overfishing was determined as likely (>60%) to be occurring at 2020/21 catch levels (1,093 tonnes of commercial landings). It also places emphasis on indications that the stock is not supported by strong pre-recruit cohorts currently.

8.4.2 Allowances

1424. Option 2 would again reduce the other sources of mortality allowance to maintain proportionality at approximately 5% of TACC (at 41 tonnes). It would also retain current customary Māori and recreational allowances.

8.4.3 TACC

- 1425. In response to the 2022 stock assessment overfishing findings, this option would see a TACC which is considerably lower than catch levels on which this determination was made. For catch to be effectively constrained by this TACC, an approximate 24% reduction from the mean average landed catch over the past 10 fishing years would be required.
- 1426. It is anticipated that this reduction in TACC would impact targeting of other associated species in the WCSI inshore trawl stock complex, given that targeted fishing of stargazer only represents around 20 to 25% of estimated annual catch. The exact extent of this impact would depend on the ability of fishers to effectively avoid stargazer when fishing for associated species.

8.4.4 Discussion

- 1427. This option was supported by the RNZSPCA, as part of a more general submission raising concerns around animal welfare, environmental impacts and potential protected species interactions associated with all bottom trawling. RNZSPCA broadly supported a precautionary approach to fisheries management, taking into account uncertainty and limited information.
- 1428. Option 2 was not supported by Te Waka ā Maui Ōna Toka Iwi Fisheries Forum or Te Tau Ihu iwi that provided individual submissions. Given this, it aligns least closely with enabling South Island Iwi to exercise kaitiakitanga under *Te Wai Pounamu Iwi Fisheries Plan*. However, in FNZ's view it provides a high degree of certainty to achieve objective three, around developing a sustainable, productive fishery with long term-term commercial benefits for South Island iwi.
- 1429. As noted under other options, any reduction to TAC would not foreseeably exacerbate or cause any new impacts in relation to environmental considerations Existing impacts would likely decrease proportionate to the extent of a TAC reduction. However, this option would likely require a decrease in targeting for associated species in which STA 7 is a bycatch, meaning there may be both positive impacts for viability of these species as well as some potential for redirected effort and unforeseen changes in fishing activity.
- 1430. Option 2 is consistent with returning the stock to target at a responsive way and rate, with the greatest certainty of restoring the stock to or above the target within the appropriate period. It therefore prioritises maximising certainty of recovery above mitigating negative social, cultural, and economic impacts in the short term. Given that this option would likely impact on targeting of other stocks in the *South Island West Coast mixed trawl fishery* stock complex, there would be more widespread immediate economic impacts under this option beyond those associated with reduction in STA 7 catch alone.
- 1431. This option represents a significantly more precautionary approach than other options, giving the highest certainty of reducing relative fishing pressure and that the stock will recover to the target within the appropriate period of 9 to 12 years. It takes into account that stock biomass could be lower than estimated, and it relies less on the potential to re-evaluate catch settings during this period and make further incremental reductions if shown to be necessary. Immediate economic, social and cultural impacts are given less weight than potential medium to long term benefits in developing a way and rate to recover the stock to target.

8.5 Other matters raised

- 1432. In their submission, Southern Inshore Fisheries raised the view that preliminary results of trawl surveys are being used inconsistently to review stocks with potential abundance decreases, without doing the same for those seeing potential increases such as SNA 7 (snapper across the West Coast and Top of the South Island). We note, however, that SNA 7 is a Group 1 stock under the Finfish Plan, requiring a fully quantitative stock assessment with a range of biological and catch-based inputs in addition to WCSI trawl survey estimates. STA 7, on the other hand, is assessed using partial quantitative stock assessments based only on the trawl survey data. In response to preliminary 2023 WCSI trawl survey results indicating increased SNA 7 abundance, FNZ has proposed to bring forward the stock assessment by a year to 2023/24.
- 1433. RNZSPCA raised broader concerns around animal welfare, environmental impacts and potential protected species interactions associated with bulk harvest methods such as bottom trawling (refer to Heading 6 of the *Introduction and Legal Overview* chapter for FNZ's general response to these concerns).

9 Economic considerations

- 1434. The inshore mixed species trawl fishery in Fisheries Management Area 7 (FMA 7), in which STA 7 is predominantly caught, supports many people and businesses, including quota holders, commercial fishers, licensed fish receivers, and seafood processing facilities.
- 1435. To give a sense of scale and distribution for STA 7, based on the 2021/22 fishing year, 79% of STA 7 quota was owned by four entities, and the remaining 21% of quota was owned by 26 entities. As at the end of the 2021/22 fishing year, there were 43 commercial entities holding ACE: 39% held by four entities, and the remaining 61% held by 39 entities.

- 1436. The current landed value of the fishery with a fully realised TACC under current settings is estimated to be approximately \$1.53 million per year, based on the STA 7 2023/24 port price²⁰⁶ of \$1.27/kg. This value represents what commercial fishers would receive at port, not what the fish is worth at market (which is higher). Nor does it reflect the income for Licensed Fish Receivers (including, wholesalers and/or processors) and retailers.
- 1437. Under Option 1, the reduction in TACC of 183 tonnes would likely result in an approximate decrease in annual revenue of \$232,000, based on the 2023/24 port price. Under the modified Option 1 this amount would be \$307,000, and \$462,000 under Option 2. These amounts do not include potential decreases in revenue beyond STA 7, given the potential to affect targeting of other stocks through significant STA 7 TAC reductions. Targeting of other stocks will likely be affected under Option 2, but is not anticipated under other options.
- 1438. Given the TACC was fully caught in the most recent fishing year (2022/23), it is possible that the amounts above would be fully realised as decreases in short-term annual revenue for the commercial fishing industry, under the respective options. The reductions to TACC may also have negative socio-economic impacts on the commercial fishing industry in the short-term, who are currently facing a range of cumulative pressures with recent changes in practices, monitoring, and management of fisheries.
- 1439. There is potential that if fishers are unable to effectively constrain or avoid catch of STA 7, deemed values will be incurred on top of these amounts. The basic deemed value rate for STA 7 is currently set below the 2023/24 port price and above the average ACE transfer price, at \$0.50 per kg.
- 1440. Importantly, these potential impacts must be considered against the positive medium to long term effects of returning STA 7 to a level which can produce maximum sustainable yield. While the potential short-term financial impacts from reduced catch are lowest under Option 1, the risk of possible medium to long term impacts associated with lower abundance of stargazer and additional management actions is also the greatest. Failing to recover the stock to target within the appropriate period of 9 to 12 years would likely entail a need for more significant management actions and sustained loss of income across the fishing industry.
- 1441. The medium to long term impacts of a rebuilt stock and not been quantified, but most importantly include ongoing stable commercial access to the fishery into the future. Option 2 presents the greatest short-term financial impact, to have high certainty of medium to long term sustainability and associated utilisation benefits in the future.

10 Deemed values

1442. FNZ is satisfied that the current deemed value rates for STA 7 are consistent with section 75(2)(a) of the Act in that they provide sufficient incentive for fishers to balance their catch with ACE. FNZ therefore did not propose any deemed value rate changes as part of this review. None of the submissions received commented on the STA 7 deemed value rates.

11 Conclusions and recommendations

- 1443. The best available information suggests that STA 7 has been subject to significant decrease in abundance and is now as likely as not (40-60%) below the soft limit. FNZ therefore considers that a cautious approach should be taken to ensure that the stock moves back towards the target with a reasonable degree of confidence. In interpreting uncertainty associated with the best available information, it must be noted that trawl surveys could be underestimating or overestimating true abundance.
- 1444. It is important to acknowledge that future effects of any reduction cannot be projected, that 2023 WCSI trawl survey results have not been reviewed in Working Groups, and that significant reductions will likely have impacts on targeting of other species. All options presented in this chapter are intended to recover the stock to target within an appropriate period of 9 to 12 years.
- 1445. On balance, FNZ considers that the purpose of the Act is best satisfied through a TAC reduction of 20% under the modified Option 1, alongside a commitment to ongoing monitoring of the stock and further action if shown to be necessary. There is considerable room for discretion in

²⁰⁶ Each year, MPI sends a voluntary survey to all licensed fish receivers (LFRs) to calculate the port price index for the year ahead. Port price represents the greenweight price per kg paid on a particular day and not an average for the whole year. The fishing method is not included in the survey even though a particular method may receive a higher landed price.

choosing between the options in this chapter, given the trade-off between maximising certainty of recovery and mitigating immediate social, cultural and economic impacts, in order to ensure long-term benefits.

12 Decision for STA 7

Option 1

Agree to set the STA 7 TAC at 1,080 tonnes and, within the TAC, to:

- i. Retain the allowance for Māori customary non-commercial fishing interests at 1 tonne;
- ii. Retain the allowance for recreational fishing interests at 4 tonnes;
- iii. Decrease the allowance for all other sources of mortality to the stock caused by fishing from 58 to 50 tonnes;
- iv. Decrease the STA 7 TACC from 1,208 to 1,025 tonnes.

Agreed / Agreed as Amended / Not Agreed

Modified Option 1 (introduced following consultation) (Fisheries New Zealand preferred option)

Agree to set the STA 7 TAC at 1,017 tonnes and, within the TAC, to:

- i. Retain the allowance for Māori customary non-commercial fishing interests at 1 tonne;
- ii. Retain the allowance for recreational fishing interests at 4 tonnes;
- iii. Decrease the allowance for all other sources of mortality to the stock caused by fishing from 58 to 46 tonnes;
- iv. Decrease the STA 7 TACC from 1,208 to 966 tonnes.

Agreed Agreed as Amended / Not Agreed

Option 2

Agree to set the STA 7 TAC at 890 tonnes and, within the TAC, to:

- i. Retain the allowance for Māori customary non-commercial fishing interests at 1 tonne;
- ii. Retain the allowance for recreational fishing interests at 4 tonnes;
- iii. Decrease the allowance for all other sources of mortality to the stock caused by fishing from 58 to 41 tonnes;
- iv. Decrease the STA 7 TACC from 1,208 to 844 tonnes.

Agreed / Agreed as Amended / Not Agreed

Hon Rachel Brooking Minister for Oceans and Fisheries

1 9 / 2023 2



Silver warehou – Seriolella punctata, warehou



1 Why are we proposing a review?

- 1446. The best available information for this stock is from research undertaken during 2022 and 2023 (Dunn and McGregor, *in prep*). This is summarised in the May 2023 Fisheries Assessment Plenary (**the Plenary**) and indicates that there was an increase in the biomass of silver warehou across the SWA 3 and SWA 4 QMAs that peaked during the early 2000s.
- 1447. You are being asked to make the decision on the TAC pursuant to section 13(2A) of the Fisheries Act 1996 (**the Act**) as the status of the stock in relation to the default management target of 40% B_0 is not able to be reliably estimated. While the status of the stock in relation to the default management target is unknown, the Plenary concluded that it is unlikely to be below the soft limit (20% B_0) and very unlikely to be below the hard limit (10% B_0).
- 1448. The peak in biomass during the early 2000s was followed by a decline. However, based on various catch per unit effort (**CPUE**) indices, biomass appears to have remained relatively high (compared to the 1990s) between the mid-2000s and the end of the study period (the 2020/21 fishing year). The Chatham Rise trawl survey index, which is independent from CPUE indices derived from fisher-reported data, shows a broadly similar trend over the same time period.
- 1449. The Plenary concluded that there were no sustainability concerns with silver warehou in SWA 3 and SWA 4.
- 1450. FNZ considers there is a utilisation opportunity and is recommending you increase the Total Allowable Catch (**TAC**), allowance for other sources of mortality caused by fishing, and the Total Allowable Commercial Catch (**TACC**) for SWA 3.

SWA10

T

1

SWA3

ŚWA1

SWA4

1.2 Summary of proposed options

	TAC		Allowances					
Option		TACC	Customary Māori	Recreational	All other mortality caused by fishing			
Option 1 (Status quo)	3,646	3,610	0	0	36			
Option 2	4,040 (↑ 394 t)	4,000 (↑ 390 t)	0	0	40 (个 4 t)			
la total 10 submissions were received on the near and entires								

Table 1: Summary of options proposed for SWA 3 from 1 October 2023. All figures are in tonnes. The preferred option of Fisheries New Zealand is highlighted in blue.

In total, 16 submissions were received on the proposed options.

2 About the stock

2.1 Biology

- 1451. Silver warehou are common around the South Island and on the Chatham Rise. They are caught most often at depths of 100-500 m (Dunn et al., 2020), although juvenile fish inhabit shallower water (150-200 m) and remain apart from mature fish. Initial growth is rapid, and fish reach sexual maturity at around 45 cm fork length in four years. Maximum age is considered to be 23 years for females and 19 years for males (FNZ Fisheries Assessment Plenary, 2023).
- 1452. The species aggregates to feed and spawn. Silver warehou specialise in feeding on salps.²⁰⁷ In 2023 the Deepwater Working Group²⁰⁸ noted that the biomass of other species (e.g. white warehou, sea perch, and spiny dogfish) that feed on salps also increased in Chatham Rise surveys during the late 1990s and early 2000s, suggestive of an increase in food availability.
- 1453. Growth and reproductive data suggest the existence of four stocks based on spawning occurring in four relatively distinct areas (west coast South Island, southern South Island, eastern North Island, and on the Chatham Rise). These proposed boundaries are tentative and there is a high likelihood of mixing between them (Horn et al., 2001).
- 1454. The timing of spawning appears to vary considerably. The 2023 Fisheries Assessment Plenary notes that the peak time for spawning appears to be winter on the west coast of the South Island, winter-spring on the western Chatham Rise, and spring-summer around the Chatham Islands.
- 1455. The stock structure for silver warehou remains poorly known. This means the current QMAs bear little relation to known spawning areas and silver warehou distribution. In 2023, the Deepwater Working Group identified stock structure as a future research consideration.

2.2 Fishery characteristics

- 1456. Silver warehou is an important commercial species that is mostly (90-95%) taken by the deepwater trawl fleet around the South Island. During the last five completed fishing years (2017/18 to 2021/22) the inshore trawl fleet has taken between 5 and 10% of SWA 3 landings annually.
- 1457. In SWA 3, silver warehou is taken both as target species and non-target catch. During the last five completed fishing years, most of the estimated catch of silver warehou in SWA 3 was taken in the silver warehou (27%), hoki (37%), and squid (28%) target fisheries. During this period less than 1% of catch was taken by methods other than trawl.
- 1458. There is no reported customary Māori or recreational catch of silver warehou.

²⁰⁷ Salps are barrel-shaped, jelly-like marine animals, that both feed and move by pumping water through their bodies.

²⁰⁸ The Deepwater Working Group is a Stock Assessment Working Group for deepwater species. Based on scientific information the Stock Assessment Working Groups assess the current status of fish stocks or species relative to the maximum sustainable yield (**MSY**)-compatible reference points and other relevant indicators of stock status, conduct projections of stock size and status under alternative management scenarios, and review results from relevant research projects.

2.3 Management background

- 1459. Silver warehou stocks entered the Quota Management System (**QMS**) in 1986. The TACC for SWA 3 was initially set at 2,600 tonnes. Between 1988 and 1994, this was gradually increased to 3,280.3 tonnes as a result of administrative processes related to QMS introduction.
- 1460. The TACC for SWA 3 was reviewed for the first time since QMS introduction prior to the start of the 2020/21 fishing year. The then Minister decided to set a TAC for the first time and to increase the TACC by 10% to 3,610 tonnes. The Minister also set an allowance of zero tonnes for both customary Māori and recreational fishing, and an allowance for all other mortality caused by fishing of 36 tonnes (equivalent to 1% of the TACC).

3 Status of the stock

- 1461. The best available information on the biomass of SWA 3 (and SWA 4) comes from research undertaken during 2022 and 2023 that is summarised in the May 2023 Fisheries Assessment Plenary. The overall objective of the research was "to develop an assessment of biomass in relation to management targets for silver warehou (*Seriolella punctata*) in SWA 3 and SWA 4".
- 1462. The project was unsuccessful in achieving that objective; the 2023 assessment model was not accepted by the Deepwater Working Group. It did, however, update the descriptive analysis of the commercial catch and effort data for silver warehou on the Chatham Rise and Southland, and standardised catch and effort analyses. Based on this, the Plenary concluded that there was no sustainability issue for the Chatham Rise (and Southland). This was because (1) all CPUE and trawl survey indices had increased and/or remained stable, and concurrently (2) length and age frequency data indicated recruitment of several large year classes, which persisted into the spawning stock. Age frequency data also show no reduction in the occurrence of older fish.
- 1463. Earlier research considered several different areas within SWA 3/4 for the purposes of stock assessment e.g., east coast South Island, eastern Chatham Rise, and Southland. Dunn and McGregor (in prep), however, looked at the Chatham Rise and Southland areas combined i.e., the SWA 3 and SWA 4 QMAs. The available data (catch and effort, observer-collected length and female maturity data, and age sample data) could not reject the hypothesis that the area represented a single biological stock.
- 1464. Dunn and McGregor (in prep) used data to the end of the 2020/21 fishing year. CPUE indices have been developed since 2018 as part of the previous research projects referred to above. For example, Dutilloy and Dunn (2020) looked at the silver warehou fishery on the east coast South Island and Chatham Rise (SWA 3 and part of SWA 4) and commented that the abundance of silver warehou appeared to have been increasing over much of the last 30 years.
- 1465. The various indices developed since 2018 cover different time periods and different parts of SWA 3/4. There is a broadly consistent trend between the different indices however, with a low period during the late 1990s followed by an increase to a peak in the period 2003/04 to 2006/07. The peak was followed by a decline although indices have remained relatively high.
- 1466. Two examples of the indices referred to are shown below.



- Figure 2. Examples of indices developed in 2023 by Dunn and McGregor (in prep). The figure on the left is a catch per unit of effort analysis using fisher-reported data from factory trawlers targeting hoki throughout the SWA 3 and SWA 4 QMAs. The figure on the right shows the core strata biomass index from the Tangaroa Chatham Rise trawl survey (encompassing the SWA 3 QMA and the Chatham Rise portion of the SWA 4 QMA). In both figures fishing year is on the x axis and the index is on the y axis.
- 1467. The Chatham Rise trawl survey index also suggested an overall upward biomass trend in the early 2000s. The age composition data that is available suggests that the increase in catch and catch rates since the early 2000s was consistent with the recruitment of some relatively large year classes.
- 1468. The biomass index from the trawl survey and the CPUE indices are independent from each other. However, the trends from both sets of data are broadly similar. As noted in paragraph 1460 above, this information, together with length and age data, informed the Plenary's conclusion that while the status of the stock in relation to the management target was unknown, there were no sustainability concerns for silver warehou on the Chatham Rise (SWA 3 and part of SWA 4) and Southland (part of SWA 4).
- 1469. As the status of the stock with respect to the management target is unknown, section 13(2A) of the Act is relevant. It requires that decisions to set or vary the TAC must not be inconsistent with the objective of maintaining the stock at or above or moving the stock towards or above a level that can produce the MSY. As the status of the stock in relation to MSY for SWA 3 is unknown, a precautionary approach to the management of this stock is proposed, with the modest TAC increase of Option 2.

4 Catch information and current settings within the TAC

4.1 Commercial

1470. Catch of SWA 3 for the last 10 completed fishing years is shown in Figure 3 below. Catch has been at the level of the TACC / available ACE for most of that period including the two years after the TACC increase in 2020/21.





4.2 Customary Māori

- 1471. Silver warehou does not appear in customary take information. This is likely because the depth range and offshore distribution of the species makes it general inaccessible for customary take. There are also no records of silver warehou being taken for customary purposes through the pataka system. The current customary Māori allowance is zero tonnes.
- 1472. None of the submissions received addressed the customary Māori allowance. There were also no comments from any of the iwi fisheries forums suggesting there is any need to change this allowance.

4.3 Recreational

- 1473. Due to its depth range and offshore distribution, silver warehou is not thought to be taken by recreational fishers. The only warehou species mentioned in the National Panel Survey of Marine Recreational Fishers 2017-18 is likely to have been blue (or common) warehou (Wynne-Jones et al., 2019).
- 1474. Accordingly, the recreational fishing allowance is currently zero tonnes.
- 1475. None of the submissions received addressed the recreational fishing allowance.

4.4 Other sources of mortality caused by fishing

- 1476. The allowance for other sources of mortality caused by fishing is 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 cod-ends, predation, and misreporting.
- 1477. In the absence of specific information, the approach that is often taken for deepwater stocks is to set the allowance that equates to a specified percentage of the TACC. For other species taken by the deepwater trawl fleet, such as hoki, hake and ling, the allowance, where set, is set at one or two percent of the TACC.
- 1478. For species that are primarily taken by the deepwater trawl fleet, this allowance typically equates to a smaller proportion of the TACC than for inshore species. One of the reasons for this is that there is greater certainty that catch reporting is accurate due to the relatively high levels of observer coverage. During the last five completed fishing years, 30-40% of reported SWA 3 catch was taken while an observer has been on board the vessel.
- 1479. Given the morphology of silver warehou compared to these species, FNZ considers this species is unlikely to have significantly different mortality resulting from fishing activity. In 2020, the Minister agreed to an allowance that equated to one percent of the TACC for SWA 3.
- 1480. None of the submissions received addressed the allowance for other sources of mortality caused by fishing.

5 Treaty of Waitangi obligations

5.1 Input and participation of tangata whenua

- 1481. Section 12 (1)(b) of the Act requires that before undertaking any sustainability process you shall provide for the input and participation of tangata whenua who have a non-commercial interest in the stock or an interest in the effects of fishing on the aquatic environment in the area concerned. In considering the views of tangata whenua, you are required to have particular regard to kaitiakitanga.²⁰⁹
- 1482. Input and participation of tangata whenua into the sustainability decision-making process is provided mainly through Iwi Fisheries Forums, which have been established for that purpose. Each Iwi Fisheries Forum can develop an Iwi Fisheries Forum Plan that describes how the iwi in the Forum exercise kaitiakitanga over the fisheries of importance to them, and their objectives for the management of their interest in fisheries. Iwi Fisheries Forums may also be used as entities to consult iwi with an interest in fisheries.²¹⁰
- 1483. SWA 3 falls within the rohe of the Te Waka a Māui me Ōna Toka (South Island) Iwi Fisheries Forum, which includes all nine tangata whenua Iwi of Te Wai Pounamu (South Island). Prior to a hui held in March 2023, the Forum was provided with the longlist of stocks being considered for the October 2023 sustainability round. No specific comments on SWA 3 were received.
- 1484. A further Forum meeting was held on 18 July and FNZ's proposal to review the TAC for SWA 3 was on the agenda for that meeting. The Forum indicated its support for increasing the TAC under Option 2.

5.2 Kaitiakitanga

- 1485. Information provided by forums, and iwi views on the management of fisheries resources and fish stocks, as set out in Iwi Fisheries Plans, are ways that tangata whenua can exercise kaitiakitanga in respect of fish stocks.
- 1486. Silver warehou is listed as a taonga species in Te Waipounamu (all of South Island) lwi Fisheries Plan. Te Waka a Māui me Ōna Toka lwi Forum considers all fish species taonga. Te Waipounamu plan contains objectives to support and provide for the interests of South Island iwi, and contains two objectives that are relevant to the management options proposed for SWA 3:
 - **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.
 - **Management objective 5:** to restore, maintain and enhance the mauri and wairua of fisheries throughout the South Island.
- 1487. FNZ considers the proposals in this decision document are consistent with those objectives. For settlement quota holders, Option 2 would result in additional ACE being available for sale. As noted in the previous section, Te Waka a Māui me Ōna Toka (South Island) lwi Fisheries Forum supports increasing the TAC under Option 2.

²⁰⁹ 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.

²¹⁰ However, FNZ also engages directly with lwi (outside of Forums) on matters that affect their fisheries interests in their takiwa and consults with any affected Mandated lwi Organisations and lwi Governance Entities where needed.

5.3 Mātaitai reserves and other customary management tools

1488. There are no customary fisheries management tools such as mātaitai, taiāpure, or section 186B temporary closures relevant to this review.

6 Environmental and sustainability considerations under the Act

6.1 Overview

- 1489. You are being asked to make a decision under section 13 of the Act, to set the TAC for silver warehou in SWA 3. This is a sustainability measure. Before setting or varying a sustainability measure, you must adhere to section 11 of the Act. When making your decision you must also act consistently with the requirements in section 5, and sections 8-10 (Purpose and Principles of the Act).
- 1490. The requirements and details of each of these sections are set out below, in the following order:
 - a) Section 5 (Application of international obligations and Treaty of Waitangi (Fisheries Claims) Settlement Act 1992);
 - b) Section 8 (Purpose);
 - c) Section 9 (Environmental principles);
 - d) Section 11 (Sustainability measures);
 - e) Section 13 (Setting a Total Allowable Catch); and
 - f) Section 10 (Information principles).

6.2 Application of international obligations and the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992 – section 5 of the Act

1491. You must act in a manner consistent with the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992. This is discussed in more detail under Heading 2.2.1 of the *Introduction and Legal Overview* chapter of this document. You must also act in a manner consistent with New Zealand's international obligations relating to fishing. Discussion of these relevant obligations is provided under Heading 2.2.2 of the *Introduction and Legal Overview*.

6.3 Purpose of the Act – section 8 of the Act

1492. The Act's purpose is to "provide for the utilisation of fisheries resources while ensuring sustainability." Guidance for you on the meaning of section 8 and how it should be applied for decision making (for all the stocks being reviewed as part of this round) is provided under Heading 2.2.3 in the *Introduction and Legal Overview*.

6.4 Environmental principles – section 9 of the Act

- 1493. The environmental principles that you must take into account when considering sustainability measures for SWA 3 are as follows:
 - Associated or dependent species should be maintained above a level that ensures their long-term viability.
 - Biological diversity of the aquatic environment should be maintained; and
 - Habitats of particular significance for fisheries management should be protected.
- 1494. Most silver warehou is taken by the deepwater trawl fleet, which is well observed. Over the last five years, the average rate of observer coverage in the SWA 3 fishery has been 30-40% of effort, based on both event-level data and overall catch.²¹¹ The rollout of onboard cameras scheduled to begin later in 2023 does not extend to the deepwater trawl fleet.

²¹¹ This coverage is calculated based on fishing events (individual tows, sets or shots) in which the fish stock was recorded as caught and an observer was on board. This metric does not reflect the overall level of monitoring in the fishery.

^{213 •} Review of sustainability measures for the 2023 October round: SWA 3

1495. The consistently high level of observer coverage of the fleet that catches most silver warehou in the SWA 3 fishery means higher confidence in data / estimates relating to environmental interactions.

6.4.1 Associated or dependent species – section 9(a) of the Act

- 1496. Associated or dependent species include marine mammals, seabirds, fish, and invertebrate species caught as non-target catch in the silver warehou target fishery, as well as any non-harvested species taken or otherwise affected by the taking of any harvested species.
- 1497. FNZ considers that the modest increase to the TACC for SWA 3 proposed under Option 2 would result in little or no change to current fishing effort. The area encompassed by SWA 3 is one of the main hoki fishing areas and it is likely that any increase to the SWA 3 TACC could be taken as non-target catch in the hoki target fishery. Consequently, little change in environmental interactions, including catch of associated or dependent species, is expected.

Marine mammals

1498. The deepwater trawl fleet operating off the east coast of the South Island occasionally interacts with marine mammals, primarily fur seals. The annual number of captures of fur seals observed on this fleet (all target species combined) during the last five fishing years has ranged between 4 and 22. Of these, only one was reported while SWA was the target species. The fur seal population is considered to be increasing in both abundance and distribution (FNZ – Aquatic Environment and Biodiversity Annual Review 2021).

Seabirds

- 1499. The deepwater trawl fleet operating off the east coast of the South Island also interacts with seabirds. Estimated capture information is available on the protected species capture website up to the 2019/20 fishing year. The website (<u>https://protectedspeciescaptures.nz/</u>) presents information on fishing effort and protected species bycatch in New Zealand fisheries.
- 1500. For the five fishing years between 2015/16 and 2019/20, the annual number of estimated seabird captures by the fleet (all target species combined) in the east coast South Island area ranged between 90 and 125. The website cannot be interrogated further to generate the corresponding information for where SWA was the target species. However, fishers reported 3-12 birds per annum for the same time period when targeting silver warehou in SWA 3 and observers have reported 1-11 birds.
- 1501. Regulations requiring the use of seabird scaring devices by the deepwater trawl fleet (vessels greater than 28 metres in length) have been in place for over 15 years. Mandatory requirements are set out in the <u>Seabird Scaring Devices Circular 2010 No. F517</u>, which is issued pursuant to regulation 58A of the Fisheries (Commercial Fishing) Regulations 2001.
- 1502. Additionally, a range of non-regulatory measures have been in place for a similar period of time. They are set out in vessel-specific protected species risk management plans (**PSRMPs**) and include measures such as fish waste management practices and the deployment of additional seabird scaring devices at times of heightened risk.
- 1503. All deepwater trawl vessels have had a PSRMP for over 15 years. Most inshore trawl vessels also now have a PSRMP. Information on adherence to PSRMPs by all vessels is reported in Seabird Annual Reports and, for the deepwater fleet, in Annual Review Reports.
- 1504. Seabird Annual Reports summarise progress towards implementing the National Plan of Action – Seabirds 2020 (**NPOA-Seabirds** -Department of Conservation and FNZ 2020). The NPOA Seabirds was approved in 2020 and sets out the New Zealand government's commitment to reducing fishing-related captures and associated mortality of seabirds. Annual reports are available at <u>https://www.mpi.govt.nz/fishing-aquaculture/sustainable-fisheries/managing-theimpact-of-fishing-on-protected-species/reducing-deaths-of-seabirds/.</u>
- 1505. Deepwater Annual Review Reports report on the annual performance of deepwater fisheries in relation to environmental interactions and impact. They are available at https://www.mpi.govt.nz/fishing-aquaculture/fisheries-management/deepwater-fisheries/.

Non-target fish catch

1506. Silver warehou is taken both as target species and as non-target catch in other fisheries such as hoki and squid. Fisher-reported data for the five years between 2017/18 and 2021/22 indicates that when silver warehou is targeted in SWA 3, over 70% of catch was either silver

warehou or hoki. Most of the remaining catch comprised species managed under the QMS with around 5% of catch being non-QMS species.

1507. There are currently no known sustainability concerns for the species taken in silver warehou target tows.

6.4.2 Biological diversity of the aquatic environment – section 9(b) of the Act

- 1508. The trawl fisheries that take silver warehou in SWA 3 can interact with the seabed and the associated benthic environment. The nature and extent of those impacts depends on a range of factors such as seafloor type (e.g. mud/sand/rock), gear type, types of organisms and habitats encountered, and oceanographic characteristics. Contact of the trawl gear can lead to incidental catch of benthic organisms such as sponges.
- 1509. The impact of tows on the benthic environment (the trawl footprint) is mitigated by the spatial concentration of the fishery where vessels typically trawl along previously trawled tow lines. In SWA 3, trawl vessels greater than 46 metres in length are prohibited from operating in the Territorial Sea as well as much of the continental shelf area that extends beyond the Territorial Sea boundary (refer Figure 3).²¹² Smaller vessels use lighter trawl gear with a narrower wingspread than larger vessels meaning less interaction with the benthic environment.
- 1510. As already noted, the recommended increase to the TAC under Option 2 is not expected to result in any significant change in terms of fishing effort within SWA 3. The trawl footprint is mapped and monitored annually. Further information on bottom trawling is available on the FNZ website.²¹³

6.4.3 Habitats of particular significance for fisheries management – section 9(c) of the Act

- 1511. Juvenile and adult silver warehou tend to have separate distributions with juveniles more common at shallower depths (100-300 m) and adults favouring deeper water (300-500 m). Within the entire depth range, silver warehou are widely distributed across SWA 3 with the areas of highest catches varying from year to year.
- 1512. There is little information available to guide identification of habitats of particular significance to the stock. Some general habitats that may potentially be significant for silver warehou in SWA 3 are discussed in Table 2 below.

Table 2: Summary of information on potential habitats of particular significance for fisheries management for silver warehou in SWA 3.

Fish stock	SWA 3				
Potential habitat of particular significance	Spawning: Ripe female silver warehou have been recorded by observers across a relatively large area of the western Chatham Rise mainly during the September – November period. Juvenile: Juvenile silver warehou are widely distributed in shallower depths on the western Chatham Rise including off Banks Peninsula, and around the Mernoo and Veryan Banks.				
Attributes of habitat	Continental shelf and slope				
Reasons for particular significance	 Spawning is key to supporting the productivity and recruitment of silver warehou. Spawning is likely to occur in several other areas outside of SWA 3 although stock structure is not well understood. From observer data there is evidence that some years result in larger cohorts of silver warehou subsequently entering the fishery than other years, indicating successful spawning events. There is no information on why year class strength varies between years. Adult and juvenile silver warehou have largely separate depth ranges. Survival of juveniles to an age where they can reproduce is essential for the productivity of the species. Juvenile silver warehou area are also widely distributed in other areas including the Stewart/Snares Shelf. 				

²¹² Since the late 1970s trawl vessels greater than 43 metres in length (until 2007) or 46 metres (after 2007) have been prohibited from operating in the Territorial Sea and several additional areas that extend beyond the Territorial Sea (out to 20-25 nautical miles). The rule was introduced in the late 1970s primarily as an allocative measure to protect the then small domestic fleet and the inshore fishing grounds from the greater power and capability of larger foreign-owned deep-water vessels.

²¹³ https://www.mpi.govt.nz/fishing-aquaculture/sustainable-fisheries/strengthening-fisheries-management/bottom-trawling/

Fish stock	SWA 3
Risks/threats	 The importance of environmental conditions to the success of silver warehou spawning is unknown Within SWA 3, it is currently unknown what conditions make the spawning and juvenile habitats favourable for silver warehou. It is also unknown to what extent fishing activity may impact these habitats.
Existing protection measures	Much of the continental shelf area within SWA 3 that is favoured by juvenile silver warehou is unable to be fished by trawl vessels greater than 46 metres in length.
Evidence	Dutilloy, A; Dunn, M R (2020) Fishery and stock structure for silver warehou (Seriolella punctata) in SWA 3 and SWA 4. New Zealand Fisheries Assessment Report 2020/19.



- Figure 3: Area of SWA 3 where trawlers greater than 46 metres in length are prohibited from operating (outlined in blue) in addition to the Territorial Sea.
- 1513. FNZ considers adverse effects from fishing on SWA 3 habitats are low for this species, because:
 - Silver warehou spawning habitat appears to be widespread
 - Habitat favoured by juveniles also appears to be widespread.

6.5 Considerations for setting sustainability measures under section 11 of the Act

- 1514. Section 11 of the Act sets out various matters that you must take into account or have regard to when setting or varying sustainability measures (such as the TAC change recommended as part of this chapter). These include:
 - a) any effects of fishing on any stock and the aquatic environment; and
 - b) any existing controls under the Act that apply to the stock or area concerned; and
 - c) the natural variability of the stock concerned; and
 - d) any relevant planning instruments, strategies, or services.²¹⁴

6.5.1 Effects of fishing on any stock and the aquatic environment – section 11(1)(a)

1515. You must take into account any effects of fishing on any stock and the aquatic environment when making your decision about the SWA 3 TAC.

²¹⁴ Sections 11 (2) and (2A).

1516. "Effect" is defined widely in the Act.²¹⁵ All information with regard to the effects of target trawling for silver warehou is discussed above in the 'Environmental principles' section, and below under the 'Options and analysis' section.

6.5.2 Existing controls that apply to the stock or area – section 11(1)(b)

- 1517. You must take into account any existing controls under the Act (including rules and regulations made under the Act (section 2(1A)) that apply to the stock when setting or varying the TAC.
- 1518. The primary controls that apply under the Act are the catch limits and allowances. Although silver warehou is not a recreational species, it would come under the daily bag limit requirements. In the South-East fishery management area (**FMA**), which corresponds to FMAs 3 and 4, the combined daily limit for finfish is 30.

6.5.3 The natural variability of the stock – section 11(1)(c)

- 1519. You must take into account the natural variability of the stock when setting or varying its TAC.
- 1520. As noted above, the abundance of silver warehou appears to have been driven by several strong year classes entering the fishery over the years. FNZ will continue to monitor the fishery, including via the Chatham Rise trawl survey and the east coast South Island inshore trawl survey (both of which are undertaken biennially), which primarily monitor adult and juvenile silver warehou respectively.

6.5.4 Relevant statements, plans, strategies, provisions, and documents - section 11(2)

1521. In setting or varying the TAC of this stock, you must have regard to the following statements, plans, strategies, provisions and planning documents under section 11(2) of the Act, that apply to the coastal marine area and that you consider to be relevant.

Regional plans – section 11(2)(a)

- 1522. Two Regional Councils have coastlines within the boundaries of SWA 3: Canterbury and Otago. Each region has policy statements and plans to manage the coastal and freshwater environments, including terrestrial and coastal linkages, ecosystems, and habitats.
- 1523. FNZ has reviewed these documents and the provisions that might be considered relevant are provided in Table A1 of Addendum 1. FNZ considers that the management options in this chapter are consistent with the objectives of these relevant regional plans, which generally relate to the maintenance of healthy and sustainable ecosystems to provide for the needs of current and future generations.

6.5.5 Relevant services or fisheries plans – section 11(2A)

- 1524. Under section 11(2A), before setting or varying any sustainability measure or making any decision or recommendation under the Act to regulate or control fishing, you must take into account
 - a) any conservation services or fisheries services; and
 - b) any relevant fisheries plan approved under this Part; and
 - c) any decisions not to require conservation services or fisheries services.
- 1525. Fisheries services of relevance to the options in this chapter include the research used to monitor the fishery, such as electronic reporting of landings, and the tools used to enforce compliance of management controls in the fishery. These are discussed under '*Management background*', '*Catch information and current settings within the TAC*', and above under '*Existing controls that apply to the stock or area section 11(1)(b)*.'
- 1526. Observer and onboard camera coverage relevant to the SWA 3 fishery is also described above under the 'Other sources of mortality caused by fishing' and Environmental principles section 9 of the Act' sections.
- 1527. There are no applicable conservation services that specifically relate to SWA 3, or any decisions not to require conservation services or fisheries services.

²¹⁵ Section 2(1) of the Act defines "effect" to mean the direct or indirect effect of fishing, and includes any positive, adverse, temporary, permanent, past, present, or future effect. It also includes any cumulative effect, regardless of the scale, intensity, duration, or frequency of the effect, and includes potential effects.

^{217 •} Review of sustainability measures for the 2023 October round: SWA 3

The National Fisheries Plan for Deepwater and Middle-depth Fisheries

- 1528. All silver warehou stocks are managed as Tier 2 stocks within the National Fisheries Plan for Deepwater and Middle-depth fisheries 2019 part 1A (FNZ National Deepwater Plan 2019).²¹⁶
- 1529. The National Deepwater Plan sets out a series of Management Objectives for deepwater fisheries, the most relevant to the SWA 3 stock being:
 - **Management Objective 1:** Ensure the deepwater and middle-depth fisheries resources are managed so as to provide for the needs of future generations.
 - **Management Objective 4:** Ensure deepwater and middle-depth fish stocks and key bycatch fish stocks are managed to an agreed harvest strategy or reference points.
- 1530. The National Deepwater Plan is a formally-approved section 11A plan, which you must take into account when making sustainability decisions. The recommended option for SWA 3 is consistent with the Management Objectives in the plan, including those outlined above.

6.5.6 Other plans and strategies

1531. The following plans and strategies are not mandatory considerations under section 11 of the Act, but they may be considered relevant to this review.

Te Mana o te Taiao (Aotearoa New Zealand Biodiversity Strategy)

- 1532. FNZ considers that the sustainability measures proposed for SWA 3 are generally consistent with relevant objectives of the Te Mana o te Taiao the Aotearoa New Zealand Biodiversity Strategy including Objective 10, which is to ensure that ecosystems are protected, restored, resilient and connected from mountain tops to ocean depths; and Objective 12, which is to manage natural resources sustainability.
- 1533. For more information on Te Mana o te Taiao see section 3.3 of the Introduction and Legal Overview.

6.6 Total Allowable Catch - section 13 of the Act

- 1534. A precautionary approach in setting the TAC under section 13(2A) is recommended because:
 - the level of the stock required in order to produce MSY is not able to be estimated reliably using the best available information; and
 - the current level of the stock is not able to be estimated reliably using the best available information.
- 1535. As outlined earlier, the status of the SWA 3 stock in relation to the default management target of $40\% B_0$ (unfished biomass) is unknown and the MSY is unknown. As outlined in section 3 above (status of the stock), the best available information on the status of SWA 3 indicates that biomass has remained at a relatively high level for the past 15-20 years (based on CPUE indices). The Chatham Rise trawl survey shows a broadly similar trend. The Plenary was confident that there are no sustainability concerns for silver warehou on the Chatham Rise (SWA 3 and part of SWA 4) and Southland (part of SWA 4).
- 1536. Section 13(3) requires you to have regard to such social, cultural, and economic factors you consider relevant when considering the way in which and rate at which a stock is moved towards or above a level that can produce MSY. FNZ considers that both options are consistent with maintaining the stock above MSY, despite the status of the stock in relation to the management target of 40% B_0 being unknown. This means that 'way and rate' considerations in sections 13(2A) and (3), as well as the social, cultural, and economic factors under section 13(3) are not applicable for this decision.
- 1537. Based on the best available information, FNZ considers there is a utilisation opportunity for SWA 3, and that the modest TAC increase recommended under Option 2 is unlikely to create sustainability concerns.
- 1538. The status of SWA 3 in relation to MSY is unable to be reliably estimated using the best available information (outlined above), and as such, section 13 (2A) of the Act is the provision

²¹⁶ https://www.mpi.govt.nz/dmsdocument/3967-National-Fisheries-Plan-for-Deepwater-and-Middle-depth-Fisheries-2019

relevant to setting the TAC of the stock. In deciding to set or vary the TAC under this provision, you must—

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

6.6.1 Biological characteristics

1539. The biology of silver warehou is summarised in section 2 above. Silver warehou grow relatively quickly and reach sexual maturity when they are around 45 cm in length and around four years old. These characteristics make silver warehou more resilient to fishing pressure than longer-lived species that reach sexual maturity later. Combined with the information indicating that the biomass of silver warehou has remained at a high level for an extended period of time, this means the modest TAC increase recommended under Option 2 is unlikely to lead to sustainability concerns.

6.6.2 Interdependence of stocks

- 1540. There is little information available regarding predator/prey interdependency for silver warehou. The Plenary report does not contain any information on the importance of silver warehou as a food source to other animals.
- 1541. The modest increase to the TAC recommended under Option 2 is unlikely to result in a significant change to either the quantity of silver warehou taken in SWA 3 or to the quantity of other species taken in SWA 3 target tows. As noted in section 2, most fish taken in SWA 3 target tows, or tows that take SWA 3 as non-target catch, comprises species managed under the QMS.

6.6.3 Environmental conditions affecting the stock

1542. There is little information regarding the environmental conditions that are likely to affect silver warehou. However, as abundance of silver warehou in SWA 3 appears to have remained high for an extended period of time, it is unlikely that environmental factors are adversely impacting the stock at present.

6.6.4 Harvest Strategy Standard

- 1543. Section 13 of the Act provides for the setting of a TAC for SWA 3, and guidance is provided by the Harvest Strategy Standard for New Zealand Fisheries (**HSS**).
- 1544. The High Court has held that the HSS is a mandatory relevant consideration that the Minister must have regard to when setting a TAC under section 13 of the Act. ²¹⁷
- 1545. The 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.
- 1546. The HSS outlines the Ministry's approach to relevant sections of the Act and forms a core input to the Ministry's advice to the Minister on the management of fisheries. The HSS defines a hard limit as a biomass limit below which fisheries should be considered for closure and a soft limit as a biomass limit below which the requirement for a formal time-constrained rebuilding plan is triggered.
- 1547. Under the HSS, the default management target is 40% B_0 (unfished biomass), the soft limit is 20% B_0 , and the hard limit is 10% B_0 . The default management target applies to SWA 3.

²¹⁷ Fisheries Inshore New Zealand Ltd v Royal Forest and Bird Protection Society of New Zealand Incorporated [2023] NZCA 359.

1548. In the case of silver warehou in SWA 3, there are no established reference points or available estimates of B_{MSY} (the biomass that enables a fish stock to deliver MSY), and as such there is uncertainty as to where the current biomass sits in relation to the default targets (including the soft or hard limit) set out by the HSS. The information presented in section 3, Status of the stock, contains the best available information on silver warehou biomass.

6.7 Information principles: Uncertainties and unknowns - section 10 of Act

- 1549. Under section 10 of the Act, decision-makers are required to take into account four information principles:
 - a) decisions should be based on the best available information.²¹⁸
 - b) decision makers should consider any uncertainty in the information available in any case;
 - c) decision makers should be cautious when information is uncertain, unreliable, or inadequate;
 - 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 this Act.
- 1550. FNZ considers that the information presented in this chapter represents the best available information.
- 1551. In various sections of this chapter, FNZ has pointed out where information is uncertain and warrants caution for your decision making, in line with the principles above. In particular, it is noted in section 3 that the status of the stock with respect to the management target is unknown and that there is high uncertainty in relation to the species' trophic interactions with the wider ecosystem (section 6.6.2 above).
- 1552. Issues that have been identified future research considerations have been identified, including stock structure. Monitoring will continue, including future Chatham Rise trawl surveys (which are carried out biennially) and sampling by observers.

7 Submissions

1553. A total of 15 submissions addressed the proposal to review the TAC for SWA 3. Additionally, the New Zealand Federation of Commercial Fishermen Inc. supports the submission made by the Deepwater Council.

1554. Table 3 summarises the submissions received and shows submitters' support for each option.

Table 3: Written submissions and responses received for SWA 3.

Submitter	Option supported			
Submitter		2	Other	Notes
Ngātiwai Holdings Ltd.	\checkmark			Believes a cautious approach should be adopted.
Royal New Zealand Society for the Prevention of Cruelty to Animals Inc. (RNZSPCA)	~			Supports the <i>status quo</i> but does not provide specific rationale.
Te Ohu Kaimoana		\checkmark		Supports Option 2 but does not provide rationale.
Iwi Collective Partnership (ICP)		\checkmark		Suitable approach given the high biomass trend.
Maruehi Fisheries Ltd.		\checkmark		Comfortable that research supports a modest increase.
Ngati Mutunga o Wharekauri Asset Holding Company Ltd.		~		Comfortable that research supports a modest increase.
Raukawa Asset Holding Company Ltd.		~		Comfortable that research supports a modest increase.

²¹⁸ Section 2(1) of the Act defines "best available information" to mean "the best information that, in the particular circumstances, is available without unreasonable costs, effort, or time"

Submitter		Option supported			
		2	Other	Notes	
Taranaki lwi Fisheries Ltd.		\checkmark		Comfortable that research supports a modest increase.	
Te Paataka o Tangaroa Ltd.		\checkmark		Comfortable that research supports a modest increase.	
Ngāti Tama ki Te Waipounamu Trust (Ngāti Tama)		~		Did not elaborate.	
Sealord Group Ltd.		~		Supports Option 2, but would prefer the alternative option suggested by DWC (below).	
Seafood New Zealand - Deepwater Council (DWC)			\checkmark	Suggests a 15% increase for SWA 3 and that the increase should also be applied to SWA 4 as the stocks are interdependent. Supports Option 2 but this is not the preferred option.	
Talley's Ltd.			\checkmark	Supports DWC's submission.	
New Zealand Federation of Commercial Fishermen Inc.			\checkmark	Supports DWC's submission.	
Rangitāne o Wairau			\checkmark	Supports a reduction to the TACC but does not provide rationale.	
Ben			\checkmark	Generally opposed proposed changes to catch limits.	

8 Options and analysis

8.1 Option 1 – status quo

TAC: 3,646 t TACC: 3,610 t Customary: 0 t Recreational: 0 t Other mortality: 36 t

- 1555. Option 1 is to retain the *status quo*. It is available to you as an option as it provides for the sustainable utilisation of silver warehou in SWA 3 and recognises the uncertainty in the stock status information for this species.
- 1556. This option would forgo the utilisation opportunity that the best available information indicates is likely to exist for this stock.
- 1557. This option is supported by two submitters. Ngātiwai Holdings Ltd believes that a cautious approach should be adopted for the fishery. The RNZSPCA's rationale for supporting the *status quo* is based on a number of factors including concerns that the sustainability reviews do not address issues such as the use of destructive bulk fishing methods such as trawling and set netting.
- 1558. FNZ notes that these concerns raised by the RNZSPCA apply broadly to all stocks in the October 2023 sustainability round and are outside the scope of what can be considered in setting an appropriate TAC for SWA 3.

8.2 Option 2

8.2.1 TAC

1559. Under Option 2, the TAC would be set at 4,040 tonnes pursuant to section 13(2A) of the Act as there is no accepted stock assessment. This represents a 10.8% increase to the SWA 3 TAC. As noted in section 1, FNZ considers there is a utilisation opportunity for the stock.

8.2.2 Allowances

1560. The allowances for customary Māori and recreational fishing would remain at 0 tonnes each, while the allowance for all other mortality caused by fishing would increase to 40 tonnes (equivalent to 1% of the TACC).

8.2.3 TACC

1561. The TACC would increase by 390 tonnes to 4,000 tonnes, a 10.8% increase. The increase is broadly equivalent to the average catch of SWA 3 during the 2020/21 and 2021/22 fishing years, which was 4,032 tonnes.

8.2.4 Discussion

- 1562. Option 2 is supported by over two thirds of submitters with most noting that recent research supports the modest increase proposed. Sealord Group Ltd states that skippers and quota managers have noted for many years that the abundance of silver warehou SWA 3 and SWA 4 has been increasing.
- 1563. The relevance of this option to your considerations under section 13 of the Act is outlined in section 6.6 above.

8.4 Other options proposed by submitters

- 1564. Rangitāne o Wairau supports a reduction to the TACC but did not provide rationale for that position or suggest a quantum for the reduction. FNZ notes that there is no indication of sustainability concerns for SWA 3 that would require a reduction to the TACC.
- 1565. DWC's submission is provided on behalf of SWA 3 and SWA 4 quota owners. Their position is one of disappointment that a) the proposed increase to the TACC is only in the order of 10%, and b) the proposal does not extend to SWA 4.
- 1566. DWC proposes an alternative option to increase the TACC for SWA 3 (and SWA 4) by 15%. This option is also supported by Sealord Group Ltd and Talley's Ltd. Talley's notes that a lack of commitment to reviewing the TACC of the two stocks over the years has had a detrimental impact on the company in the form of ongoing deemed values.
- 1567. As DWC's proposal only referred to the TACC, the TAC and allowances set out in the table below have been inferred by FNZ.

8.4.1 Alternative option proposed by DWC

Table 4: Alternative option proposed for SWA 3 and SWA 4 from 1 October 2023. All figures are in tonnes.

			Allowances			
Stock	TAC	TACC	Customary Māori	Recreational	All other mortality caused by fishing	
SWA 3	4,194 (↑ 548 t)	4,152 (↑ 542 t)	0	0	42 (↑ 6 t)	
SWA 4	5,227 (↑ 682 t)	5,175 (个 675 t)	0	0	52 (个 7 t)	

1568. Rationale for DWC's alternative option includes:

- The fact that silver warehou in SWA 3 and SWA 4 are highly interrelated and may represent a single biological stock. This means FNZ's initial proposal should also have included SWA 4.
- The additional 5% increase to the TACC for SWA 3, as well as the TACC increase for SWA 4, is necessary to mitigate the risks of fishers being unable to balance catch with ACE and, consequentially, being required to pay deemed values.
- A 15% increase to the TACC for both stocks is consistent with the best available information regarding the abundance of silver warehou in SWA 3 and SWA 4.

8.4.2 Discussion

1569. Figure 4 below shows catch, available ACE and the TACC for SWA 3 since 2012/13. For reference, the proposed TACC under Option 2, together with DWC's alternative TACC are also indicated.



Figure 4. Graph showing catch, available ACE, and TACC for SWA 3 since 2012/13 together with the proposed TACC under Option 2 and DWC's alternative TACC

- 1570. DWC's proposed TACC of 4,152 tonnes is 152 tonnes higher than the proposed TACC under Option 2. Recorded catch of SWA 3 has exceeded this twice since silver warehou stocks entered the QMS (2005/06 and 2006/07 when catches were 4,524 and 5,947 tonnes respectively).
- 1571. The absence of a stock assessment for silver warehou in SWA 3 / 4 means that projections of future stock status based on different catch scenarios are not able to be undertaken. This means that it is not possible to ascertain whether DWC's proposed 15% increase to the TACC for SWA 3 would be consistent with the objective of maintaining the stock at or above the level that the level that can produce the maximum sustainable yield.
- 1572. For this reason FNZ has not presented DWC's suggestion to you as an additional option for your consideration. FNZ also noted a preference for a precautionary approach to management of this stock given the absence of an estimate of the status of this stock in relation to MSY. However, FNZ acknowledges that if, in the future, catch of SWA 3 were to be at the level of the alternative TACC proposed by DWC, this would be unlikely to result in sustainability concerns for the stock, at least in the short term.
- 1573. FNZ acknowledges that while a utilisation opportunity also exists for SWA 4, we did not prioritise a review of that stock in the October 2023 sustainability round. As it has not been consulted on, you cannot make a decision for that stock as part of this round. FNZ will consider a review of SWA 4 in 2024.
- 1574. FNZ notes that mitigating the risks of fishers paying deemed values is not something you are able to consider when making decisions on the TAC for this stock.

9 Economic context

1575. The SWA 3 fishery supports many people, including quota holders, commercial fishers, licensed fish receivers, and seafood processing facilities. To give a sense of scale and distribution, based on the 2021/22 fishing year, 83% of SWA 3 quota was owned by four entities, and the

remaining 17% of quota was owned by 66 entities. As at the end of the 2021/22 fishing year, there were 30 commercial entities holding ACE: 93% held by four entities, and the remaining 7% held by 26 entities.

- 1576. As the recommended increase to the TACC under Option 2 represents the average catch of SWA 3 during the last two completed fishing years, there is unlikely to be a subsequent change in export volume.
- 1577. Economic benefits are likely to take the form of a reduction in deemed values. During the 2020/21 and 2021/22 fishing years, total deemed values invoiced for SWA 3 were approximately \$327,000 and \$386,000 respectively. Under Option 2, deemed values incurred for SWA 3 would be expected to decrease.
- 1578. For the 2020/21 fishing year, five permit holders incurred 98% of deemed values while for 2021/22, four fishers incurred 99%. Two permit holders incurred deemed values during both years.
- 1579. During the last five completed fishing years, just under 50 permit holders have reported landing SWA 3. The majority of catch is taken by a small number of permit holders, however, with three permit holders landing 82% of the combined catch during that time period.

10 Deemed values

- 1580. FNZ is satisfied that the current deemed value rates for SWA 3 are consistent with section 75(2)(a) of the Act in that they provide sufficient incentive for fishers to balance their catch with ACE. FNZ therefore did not propose any deemed value rate changes as part of this review.
- 1581. In their submission, Talley's Ltd commented that deemed value rates need to be set at a level that incentivises landing. At the December 2022 meeting of the Commercial Catch Balancing Forum, Forum members felt that the current deemed value rates for this stock were appropriate and that it was the TACC setting that was the primary issue.²¹⁹
- 1582. Both the DWC and Talley's Ltd submissions refer to the quantity of deemed value payments incurred by fishers for SWA 3 and SWA 4 since 2003/04. However, apart from Talley's Ltd, none of the submissions received commented on the SWA 3 deemed value rates. No changes to deemed value rates for SWA 3 are recommended as part of this review.

11 Conclusions and recommendations

- 1583. The biomass of silver warehou appears to have remained at a high level across the Chatham Rise and sub-Antarctic for an extended period. Additionally, there are no sustainability concerns for silver warehou in SWA 3. Given this information, FNZ recommends Option 2; that you increase the TAC for SWA 3 by just over 10% to 4,040 tonnes. This option is supported by the majority of submitters together with Te Waka a Māui me Ōna Toka Iwi Forum.
- 1584. FNZ considers the modest increase to the TAC under Option 2 will provide a utilisation opportunity for SWA 3 while retaining the ongoing sustainability of the stock. It is also likely that increasing the TAC for SWA 3 would result in little or no change to current fishing effort. FNZ will continue to monitor the fishery, including via the biennial Chatham Rise trawl survey.
- 1585. FNZ acknowledges the point raised by DWC regarding the utilisation opportunity that also exists for the SWA 4 stock, as to silver warehou in SWA 3 and SWA 4 are likely to be a single biological stock. FNZ will consider reviewing the management settings for SWA 4 during 2024.

²¹⁹ An outline of the Commercial Catch Balancing Forum, including its purpose and members, is available in section 4 of the Deemed Values decision document

12 Decision for SWA 3

Option 1

Agree to retain the SWA 3 TAC at 3,646 tonnes and, within the TAC, to:

- i. Retain the allowance for Māori customary non-commercial fishing interests at 0 tonnes;
- ii. Retain the allowance for recreational fishing interests at 0 tonnes;
- Retain the allowance for all other sources of mortality to the stock caused by fishing at 36 tonnes;
- iv. Retain the SWA 3 TACC at 3,610 tonnes.

Agreed / Agreed as Amended / Not Agreed

<u>OR</u>

Option 2 (Fisheries New Zealand preferred option)

Agree to set the SWA 3 TAC at 4,040 tonnes and, within the TAC, to:

- i. Retain the allowance for Māori customary non-commercial fishing interests at 0 tonnes;
- ii. Retain the allowance for recreational fishing interests at 0 tonnes;
- iii. Increase the allowance for all other sources of mortality to the stock caused by fishing from 36 to 40 tonnes;
- iv. Increase the SWA 3 TACC from 3,610 to 4,000 tonnes.

Agreed / Agreed as Amended / Not Agreed

Hon Rachel Brooking Minister for Oceans and Fisheries

9 / 2023 21

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Addendum 1

Table A1: Summary of relevant regional plan provisions and policy statements.

FNZ has reviewed these provisions and policy statements and plans relevant for each of the fish stocks and proposals under review. The provisions are not stock specific, and for the most part, are of a general nature and focus mostly on land-based stressors on the marine environment.

Regional Council	Document	Relevant sections
Northland	Regional Policy Statement for Northland	 2.2 Indigenous ecosystems and biodiversity The key pressures on Northland's indigenous terrestrial, freshwater, and coastal marine ecosystems and species are: (d) Fragmentation, loss and isolation of populations and communities of indigenous species due to habitat loss, land use changes and vegetation clearance. 4.5.1 Policy – Identification of the coastal environment, outstanding natural features and outstanding natural landscapes and high and outstanding natural character This policy assists in the implementation of s6. Resource Management Act and the New Zealand Coastal Policy Statement 2010 (NZCPS) by: Identifying the coastal environment; Identifying high and outstanding natural character areas (in the coastal environment); and Identifying outstanding natural features and landscapes
	Proposed Regional Plan for Northland	 Section D.2 General D.2.18 Managing adverse effects on indigenous biodiversity avoiding adverse effects on:
Auckland	Auckland Council Regional Policy Statement	 2.4.7 Auckland's coastal environment is a fundamental part of its heritage and is sensitive to the adverse effects of inappropriate subdivision, use and development. It is also essential for the Region's social and economic wellbeing. The Hauraki Gulf and its islands are resources of regional and national significance for navigation and port purposes, fishing, recreation, tourism and settlement. The Hauraki Gulf Marine Park Act 2000 requires the Council maintains the interrelationship between the Hauraki Gulf, its islands and catchments to sustain the life supporting capacity of the environment. Harbours, such as the Mahurangi, sustain a variety of recreational uses as well as commercial shell fisheries. The catchment also contains large tracts of forest and some urbanisation. These potentially conflicting uses must be carefully managed to ensure this diversity of use is sustainable and the resource qualities are maintained.

Regional Council	Document	Relevant sections
		 7 Coastal Environmental 7.3 Objectives 2. To protect outstanding natural features and landscapes, areas of significant indigenous vegetation and significant habitats of indigenous fauna, and significant historic and cultural places and areas in the coastal environment. 7.4.4 Policies: Natural character of the coastal environment
		 The natural character of the coastal environment shall be preserved, and protected from inappropriate subdivision, use and development by: areas of indigenous vegetation and habitats of indigenous fauna and associated processes; habitat important for preserving the range, abundance and diversity of indigenous and migratory coastal species; (ii) In all other areas, avoiding any adverse effects which result in the significant reduction in habitat important for preserving the range and diversity of indigenous and migratory coastal species; (ii) In all other areas, avoiding any adverse effects which result in the significant reduction in habitat important for preserving the range and diversity of indigenous and migratory coastal species within the Auckland Region.
		 Section B6 – Mana Whenua Section B6.3.2 of the Auckland Unitary Plan states its policy to: "(4) Provide opportunities for Mana Whenua to be involved in the integrated management of natural and physical resources in ways that do all of the following: (a) Recognise the holistic nature of the Mana Whenua world view; (b) Recognise any protected customary right in accordance with the Marine and Coastal Area (Takutai Moana) Act 2011; and (c) Restore or enhance the mauri of freshwater and coastal ecosystems."
Auckland	Auckland Unitary Plan	 Section B7 – Natural Resources Section B7.1 of the Auckland Unitary Plan notes that the combination of urban growth and past land, coastal and freshwater management practices have placed increasing pressure on land and water resources including habitats and biodiversity. Section B7.7 of the Auckland Unitary Plan states that: Coastal and marine ecosystems are also subject to change, damage or destruction from inappropriate subdivision, use and development, as well as natural processes. Areas containing threatened ecosystems and species require effective management to protect them, and enhance their resilience which is important for the long-term viability of indigenous biodiversity and to help respond to the potential effects of climate change. Effectively addressing these issues requires a combination of regulatory and voluntary efforts. Areas of high ecological value have been identified as significant ecological areas using significant Ecological Areas – Marine Schedule.) The coastal marine area has not yet been comprehensively surveyed for the purpose of identifying marine significant ecological areas. Those that have been identified may underrepresent the extent of significant marine communities and habitats present in the sub-tidal areas of the region. It is important that both areas be considered together because of the dynamic and interconnected nature of coastal environments and because the classes may change over time as more knowledge is gained and as pressures on receiving environments change. There is evidence that even moderate levels of degradation can result in ecosystem level changes, and it is not yet known how reversible these changes might be. Section B8 - Coastal Environment Section B8 - Coastal Environment
		Provide for use and development in the coastal marine area that: (a) Have a functional need which requires the use of the natural and physical resources of the coastal marine area;

Regional Council	Document	Relevant sections
		(b) Are for the public benefit or public recreation that cannot practicably be located outside the coastal marine area;
		(c) Have an operational need making a location in the coastal marine area appropriate and that cannot practicably be located outside the coastal marine area; or
		(d) Enable the use of the coastal marine area by Mana Whenua for Māori cultural activities and customary uses.
		Section B8.5. Managing the Hauraki Gulf/Te Moana Nui o Toi/Tīkapa Moana Section B8.5 lists objectives and policies provide guidance on giving effect to the Hauraki Gulf Marine Park Act. Objectives include:
		 (1) The management of the Hauraki Gulf gives effect to sections 7 and 8 of the Hauraki Gulf Marine Park Act 2000. (2) Use and development supports the social and economic well-being of the resident communities of Waiheke and Great Barrier islands, while maintaining or where appropriate ophanoing the natural and physical resources of the islands.
		 (3) Economic well-being is enabled from the use of the Hauraki Gulf's natural and physical resources without resulting in further degradation of environmental guality or adversely affecting the life-supporting capacity of marine ecosystems.
		Policies include:
		Integrated management
		(1) Encourage and support the restoration and enhancement of the Hauraki Gulf's ecosystems, its islands and catchments.
		(2) Require the integrated management of use and development in the catchments, islands, and waters of the Hauraki Gulf to ensure that the ecological values and life-supporting capacity of the Hauraki Gulf are protected, and where appropriate enhanced.
		(3) Require applications for use and development to be assessed in terms of the cumulative effect on the ecological and amenity values of the Hauraki Gulf, rather than on an areaspecific or case-by-case basis.
		(4) Maintain and enhance the values of the islands in the Hauraki Gulf.
		(5) Avoid use and development that will compromise the natural character, landscape, conservation and biodiversity values of the islands, particularly in areas with natural and physical resources that have been scheduled in the Unitary Plan in relation to natural heritage, Mana Whenua, natural resources, coastal, historic heritage and special character.
		(6) Promote the restoration and rehabilitation of natural character values of the islands of the Hauraki Gulf.
		(7) Ensure that use and development of the area adjoining conservation islands, regional parks or Department of Conservation land, does not adversely affect their scientific, natural or recreational values.
		(8) Enhance opportunities for educational and recreational activities on the islands of the Hauraki Gulf if they are consistent with protecting natural and physical resources, particularly in areas where natural and physical resources have been scheduled in the Unitary Plan in relation to natural heritage, Mana Whenua, natural resources, coastal, historic heritage and special character.
		(9) Identify and protect areas or habitats, particularly those unique to the Hauraki Gulf, that are:
		 (a) significant to the ecological and biodiversity values of the Hauraki Gulf; and (b) vulnerable to modification;
		(10) Work with agencies and stakeholders to establish an ecological bottom line, or agreed target, for managing the Hauraki Gulf's natural and physical
		resources which will do all of the following:
		(a) provide greater certainty in sustaining the Hauraki Gulf's ongoing life-supporting capacity and ecosystem services;
		(b) assist in avoiding incremental and ongoing degradation;
		 (c) co-ordinate cross-jurisdictional integrated management and effort to achieve agreed outcomes; (d) between encoded and an encoded an encoded and an encoded and an encoded and an encoded and an encoded an encoded and an encoded an enc
		(a) better measure the success of protection and enhancement initiatives;

Regional Council	Document	Relevant sections
		(e) assist in establishing a baseline for monitoring changes;
		(f) enable better evaluation of the social and economic cost-benefits of management; and
		(g) provide an expanded green-blue network linking restored island and mainland sanctuaries with protected, regenerating marine areas where
		the ecological health and productivity of the marine area will be enhanced.
		Providing for the relationship of Mana Whenua with the Hauraki Gulf
		(11) Work in partnership with Mana Whenua to protect and enhance culturally important environmental resources and values of the Hauraki Gulf that are important to their traditional, cultural and spiritual relationship with the Hauraki Gulf.
		(12) Incorporate matauranga Maori with western knowledge in establishing management objectives for the Hauraki Gulf.
		(13) Require management and decision-making to take into account the historical, cultural and spiritual relationship of Mana Whenua with the Hauraki
		Gulf, and the ongoing capacity to sustain these relationships.
		Maintaining and enhancing social, cultural and recreation values
		(14) Identify and protect the natural and physical resources that have important cultural and historic associations for people and communities in and around the Hauraki Gulf.
		(15) Identify, maintain, and where appropriate enhance, areas of high recreational use within the Hauraki Gulf by managing water quality, development
		and potentially conflicting uses so as not to compromise the particular values or qualities of these areas that add to their recreational value.
		(16) Encourage the strategic provision of infrastructure and facilities to enhance public access and recreational use and enjoyment of the Hauraki Gulf.
		Providing for the use of natural and physical resources, and for economic activities
		(1/) Provide for commercial activities in the Hauraki Gulf and its catchments while ensuring that the impacts of use, and any future expansion of use and
		development, do not result in further degradation or net loss of sensitive marine ecosystems.
		(18) Encourage the strategic provision of infrastructure and facilities that support economic opportunities for the resident communities of walneke and Great Barrier islands.
		(19) Promote economic development opportunities that complement the unique values of the islands and the Hauraki Gulf.
		Section B8.6 summarises the reasons of adopting the proposed policies, including:
		 The coastal environment and the resources of the coastal marine area comprise some of the most important taonga to Mana Whenua, who have a traditional and on-going cultural relationship with the coast.
		 Auckland's richly varied coastal environment is a finite resource with high environmental, social, economic and cultural values. Its coasts and harbours are among its most highly valued natural features. It is the location of New Zealand's largest commercial port and international airport. The
		marine industry, transport and aquaculture activities all contribute to social and economic well-being.
		The coastal marine area also provides a range of ecosystem services, including providing food, assimilating discharges from land into coastal waters and enabling a range of coastal uses that support the economic well-being of people and communities.
		 Promoting use and development that provides for social and economic opportunities while avoiding further degradation of the marine environment of
		Section D9 – Significant Ecological Areas
		Significant Ecological Areas – Marine are identified areas of significant indigenous vegetation or significant habitats of indigenous fauna located in the coastal
		marine area.
		Policies for managing these areas include:

Regional Council	Document	Relevant sections
		 (12) Manage the adverse effects of use and development on the values of Significant Ecological Areas – Marine, taking into account all of the following: (a) The extent to which existing use and development already, and in combination with any proposal, impacts on the habitat, or impedes the operation of ecological and physical processes;
		(b) The extent to which there are similar habitat types within other Significant Ecological Areas – Marine in the same harbour or estuary or, where the significant ecological area - marine is located on open coast, within the same vicinity; and
		(C) Whether the viability of habitats of regionally or nationally threatened plants or animals is adversely affected, including the impact on the species population and location.
	The Waikato Regional Policy Statement	 3.7 Coastal environment The coastal environment is managed in an integrated way that: a) preserves natural character and protects natural features and landscape values of the coastal environment; b) avoids conflicts between uses and values; c) recognises the interconnections between marine-based and land-based activities; and d) recognises the dynamic, complex and interdependent nature of natural biological and physical processes in the coastal environment.
		15.4.4 Coastal marine area (c) Marine habitats and ecosystems are protected from significant adverse effects. Section 3.4 – Protection of Coastal Processes
		3.4.3 Policy – Biodiversity Ensure the protection of biodiversity, the inter-relatedness of coastal ecology, and the natural movement of biota within the coastal marine area.
Waikato		Section 13.1 – Integrated Management Across Boundaries 13.1.2 Policy – Coastal Environmental Inter-Relationships When managing the use, development and protection of the coastal environment, provide for:
	Pagional	 (a) The interconnected nature of the coastal environment; and (b) The inter-relationships between natural and physical resources: and
	Coastal Plan for	(c) The potential for adverse effects to occur; and
	Waikato	(d) The range of social, cultural and economic values within the Region.
		 Section 17.2 – Natural Character, Habitat and Coastal Processes 17.2.3 – Consultation with the Ministry of Fisheries Environment Waikato, in conjunction with the Ministry of Fisheries, will advocate management practices to resource users harvesting marine life that: i Do not adversely affect significant or extensive areas of indigenous vegetation and habitat of indigenous fauna; ii Avoid sensitive inshore areas; and iii Ensure marine ecosystems and fish stock are managed sustainably.

Regional Council	Document	Relevant sections
	Regional Policy Statement	 Part Two (Issues and objectives) Objective 20 The protection of significant indigenous habitats and ecosystems, having particular regard to their maintenance, restoration and intrinsic values. Part Three (Policies and methods) Policy IR 6B: Promoting consistent and integrated management across jurisdictional boundaries Collaboration and information sharing between agencies with different responsibilities in the coastal environment such as fisheries and conservation should be encouraged to promote integrated and efficient resource management.
Bay of Plenty	Bay of Plenty Regional Coastal Environmental Plan	 Part 2, Section 2 - Objectives Objective 1 of this section seeks to "achieve integrated management of the coastal environment" by: (a) Providing a consistent, efficient and integrated management framework; (b) Adopting a whole of catchment approach to management of the coastal environment; (c) Recognising and managing the effects of land uses and freshwater-based activities (including discharges) on the coastal marine area; (d) Enabling the exercise of kaitiakitanga; (e) Planning for and managing: i. cumulative effects; and ii. the effects of climate change; and (f) Promoting the sustainable management of the Bay of Plenty coastal fisheries. Part 5 Methods, 1.2 Natural Heritage Method 3A: Support research to identify areas in the Bay of Plenty region where ecosystems and biodiversity values are being, or are likely to be, adversely effected by fishing activities, and investigate the options available to manage such activities for the protection of indigenous biodiversity. Method 19A: Council will partner with tangata whenua for additional spatial mechanisms for the coastal marine area that identify and protect: (a) Areas or sites of cultural, biodiversity and/or natural character value that are, or are likely to be, adversely activities (including fishing), and options to manage such activities for the protection and/or restoration; (b) Areas or sites of cultural, biodiversity and/or natural character value that are, or are likely to be, adversely affected by activities (including fishing), and options to manage such activities for the protection and/or restoration;
Gisborne	Gisborne District Council – The Tairāwhiti Resource Management Plan	 Section C3.6 – Tangata Whenua Under Policy 7, the Plan notes that: The RMA does not address Fisheries issues which are dealt with under the Fisheries Act or the Marine Reserves Act. Council may, however, advocate for the protection of special areas in the Coastal Marine Area that support traditional fishing or food gathering areas to the responsible agencies on behalf of or in conjunction with iwi or hapu authorities, This policy is designed to recognise this advocacy role and supports Objective C3.6.2(3), which is to "maintain the integrity of the relationship of Māori with their culture, traditions, ancestral lands, and other resources."
Taranaki	Taranaki Regional Policy Statement	 Section 1.2 Purpose The Regional Policy Statement for Taranaki ('the Regional Policy Statement' or 'Statement') is a statement of policy for the Taranaki region (as constituted under the Local Government (Taranaki Region) Reorganisation Order 1989). Its purpose is to promote the sustainable management of natural and physical resources in the Taranaki region by: providing an overview of the resource management issues of the Taranaki region identifying policies and methods to achieve integrated management of the natural and physical resources of the whole region.

Regional Council	Document	Relevant sections
		 Section 8. Coastal Environment Objective 1: To protect the natural character of the coastal environment in the Taranaki region from inappropriate subdivision, use, development and occupation by avoiding, remedying or mitigating the adverse effects of subdivision, use and development in the coastal environment. Objective 2: To provide for appropriate, subdivision, use, development and occupation of the coastal environment in the Taranaki Region. Section 9: Indigenous Biodiversity Objective 1: To maintain and enhance the indigenous biodiversity the indigenous biodiversity of the Taranaki region, with a priority on ecosystems, habitats and areas that have significant indigenous biodiversity values.
		Section 1.2 Purpose The purpose of the Plan is to assist the Taranaki Regional Council to carry out its functions under the Resource Management Act 1991 (RMA) to promote the sustainable management of the coastal environment, including the coastal marine area, in the Taranaki region.
	Interim version of the Proposed Coastal Plan for Taranaki	 Section 4. Objectives Objective 2: Use and development Natural and physical resources of the coastal environment are used efficiently, and activities that have a functional need or an operational need, that depend on the use and development of these resources, are provided for in appropriate locations. Objective 4: Life-supporting capacity and mouri The life-supporting capacity and mouri of coastal water, land and air are safeguarded from the adverse effects, including cumulative effects, of use and development of the coastal environment. Objective 6: Natural character The natural character of the coastal environment is preserved and protected from inappropriate subdivision, use and development and is restored where appropriate. Objective 7: Natural features and landscapes The natural features and landscapes of the coastal environment are protected from inappropriate subdivision, use and development. Objective 8: Indigenous biodiversity Indigenous biodiversity in the coastal environment is maintained and enhanced and significant indigenous biodiversity in the coastal environment is protected.
Hawke's Bay	Hawke's Bay Regional Council Coastal Environmental Plan	 Section 4 – Indigenous species and habitats The Hawke's Bay Regional Council Coastal Environmental Plan includes a policy to "ensure adverse effects on ecological systems (including natural movement of biota, natural biodiversity, productivity and biotic patterns) are avoided, including adverse effects on: (a) fishing grounds; (b) shell fish areas; (c) fish spawning and nursery areas; (d) bird breeding and nursery areas; (e) fish and bird migration; (f) feeding patterns;

Regional Council	Document	Relevant sections
		 (g) habitats' importance to the continued survival of any indigenous species; (h) wildlife and indigenous marine biota; (i) dune systems; and (j) the intrinsic values of ecosystems."
Manawatu- Wanganui	Regional Policy Statement	 Policy 8-4: Appropriate use and development Any use or development in the CMA must: (a) avoid, as far as reasonably practicable, any adverse effects on the following important values:
	Horizons Regional Council One Plan (The Horizons One Plan includes the Regional Coastal Plan for the Manawatu- Wanganui region)	 Section 18 of the plan details activities in the coastal marine area. Specifically, it covers; Occupation; Structures; Reclamations and Drainage; Disturbances, Removal and Deposition; Water Takes, Uses, Damming and Diversions; Discharges; Noise and Discharges into Air; Exotic and Introduced Plants; and Other Rules
Greater Wellington Region	Regional Policy Statement for the Wellington region	 3.2 Coastal environment Objective 3 Habitats and features in the coastal environment that have significant indigenous biodiversity values are protected; and Habitats and features in the coastal environment that have recreational, cultural, historical or landscape values that are significant are protected from inappropriate subdivision, use and development
	Regional Coastal Plan for the Wellington Region	 Section 4 – General Objectives and Policies The Regional Coastal Plan for the Wellington Region contains the following Environmental Objectives: 1) The intrinsic values of the coastal marine area and its components are preserved and protected from inappropriate use and development; 2) People and communities are able to undertake appropriate uses and developments in the coastal marine area which satisfy the environmental protection policies in the plan, including activities which:

Regional Council	Document	Relevant sections
		 The adverse effects that new activities may have on existing legitimate activities in the coastal marine area are avoided, remedied or mitigated as far as is practicable; Land, water and air in the coastal marine area retains its life supporting capacity; The natural character of the coastal marine area is preserved and protected from inappropriate use and development; Important ecosystems and other natural and physical resources in and adjacent to the coastal marine area are protected from inappropriate use and development; Public health is not endangered through the effects of previous, present or future activities in the coastal marine area; Public access along and within the coastal marine area is maintained and enhanced; Amenity values in the coastal marine area are maintained and enhanced.
		Section 16 – Principal reasons for Objectives, Policies and Methods Section 16 of the Plan states that: The objectives and policies acknowledge the need to protect important characteristics and values of the coastal marine area. They also recognise that the coastal marine area is an important location for many activities, some of which are dependent on this particular location. These activities are important for the economic well-being of the Wellington Region, and to enable people to fulfil their social desires to use the coastal marine area.
		 Appendix 2 – Areas of Significant Conservation Value Castlepoint is identified in the Plan as an Area of Significant Conservation Value in the Plan, due to: Scientific, wildlife, geological, scenic, natural and conservation values; Naturally vegetated and fragile coastal vegetation containing rare plant species (including Brachyglottis compacta); A habitat for sea mammals and breeding ground for bird species. An internationally significant crayfish (Jasus edwardsi) larvae (puerulus) population; and Outstanding scenic values and an important physical and geological landscape.
	Regional Policy Statement	5.3.10 Objective – Coastal Marine Habitat The natural species diversity and integrity of marine habitats be maintained or enhanced.
Marlborough	Appeals Version of The Proposed Marlborough Environment Plan	 Volume 1 2. Background - Other strategies and plans Strategies and plans may also be prepared under the Fisheries Act and Council will have regard to these where relevant, such as protecting significant habitats of indigenous fauna in the marine environment. Volume 1 8. Indigenous Biodiversity - Policy 8.3.8 Within vulnerable ecologically significant marine sites, activities that disturb the seabed must be avoided. Some activities use techniques or practices that result in disturbance of the seabed. Depending where this occurs, there is the potential for adverse effects on marine biodiversity. The policy seeks to specifically avoid activities that disturb the seabed to ensure acces identified as having significant biodiversity.
	Plan	on marine biodiversity. The policy seeks to specifically avoid activities that disturb the seabed to ensure areas identified as having significant biodiversity value in the coastal marine area and which are identified as being vulnerable to such disturbance are protected. This will help to give effect to Policy 11 of the NZCPS. Ecologically Significant Marine Sites evaluated to be vulnerable to seabed disturbance are identified in Appendix 27 of the plan.

Regional Council	Document	Relevant sections
		16.6. Discretionary Activities - Application must be made for a Discretionary Activity for the following 16.6.6 Any dredging, bottom trawling, or deposition within the buffer for any Ecologically Significant Marine Site specified in Appendix 27 of the plan.
Nelson	Nelson Draft Regional Policy Statement	 1.0 Rationale for the Regional Policy Statement This draft Regional Policy Statement (RPS) has been prepared by the Nelson City Council, in accordance with the requirements of sections 59 to 62 and Schedule 1 of the Resource Management Act 1991 (RMA). The RPS seeks to achieve the purpose of that Act by providing an overview of the significant resource management issues of the region and the intended responses to those issues, to achieve integrated management of the region's natural and physical resources. Chapter 8: Biodiversity Objective 8.3 Protect Whakatū Nelson's significant freshwater and marine biodiversity values from the effects of sedimentation, discharges of
		Chapter 10: Coastal and Marine Environment Objective 10.1 Recognise and provide for tangata whenua's kaitiaki role in managing coastal resources in accordance with tikanga Māori. Objective 10.2 Protect the values that contribute to outstanding natural character, outstanding natural landscapes and other significant natural features, and ensure use and development maintains or restores natural values in other areas. Objective 10.3 Recognise and reconcile the competing social, economic and cultural values that are ascribed to the coastal environment, while providing for uses and development that by their nature must be located in the coastal environment. Objective 10.4 Maintain or enhance the quality of marine waters to a level that ensures healthy marine ecosystems and safety for people's recreational activities. Objective 10.5 Protect the integrity, functioning and resilience of coastal physical and ecological processes, from the adverse effects of inappropriate subdivision, use and development.
Tasman	Tasman Regional Policy Statement	Part 1: Introduction, interpretation and glossary 1.2 Purpose of the Tasman Regional Policy Statement The purpose of the Tasman Regional Policy Statement as set out in the Act is to promote the sustainable management of natural and physical resources by providing: (i) an overview of the resource management issues of the region; and (ii) policies and methods to achieve integrated resource management. Section 9: Coastal Environment Objective 9.3 A coastal marine area in which adverse effects from activities, including structures, physical modification, or occupation, are avoided, remedied, or mitigated. Objective 9.4 A fair and efficient process for the allocation of rights to use parts of the coastal marine area, especially where parties are in competition for a limited area. Objective 9.5 Preservation of the natural character of the coastal environment, including the functioning of natural processes.

Regional Council	Document	Relevant sections
West Greet	West Coast Regional Policy Statement	 1.1 Role of the Regional Policy Statement – Its Scope and Effect The role of the Regional Policy Statement (RPS) is to promote the sustainable management of the natural and physical resources of the West Coast. It does this by:
West obust		(2) Provide for appropriate subdivision, use and development in the coastal environment to enable people and communities to maintain or enhance their economic, social, and cultural wellbeing.
	Regional coastal plan for the West Coast	 Chairman's foreword The Regional Coastal Plan will enable Council to sustainably manage activities in the coastal marine area of the region. The coastal area covered by this Plan has important ecological, economic, social and cultural values for local communities and visitors, while also being a dynamic environment subject to natural hazards. This Plan is intended to both enable low impact activities to be carried out as well as managing other uses with greater impacts, by way of regulatory and non-regulatory methods, in order to sustain the values associated with the coastal marine area. Section 5.1 – Coastal Management Objectives 5.3.1 To recognise and provide for the West Coast's significant coastal values, when considering the use, development and protection of the coastal marine area. 5.3.2 To avoid, remedy or mitigate adverse effects on the amenity, cultural, heritage, scenic and ecosystem values of the entire coastal marine area.
Canterbury	Canterbury Regional Policy Statement	 8.2.4 Preservation, protection and enhancement of the coastal environment In relation to the coastal environment: Its natural character is preserved and protected from inappropriate subdivision, use and development; and Its natural, ecological, cultural, amenity, recreational and historic heritage values are restored or enhanced.
	Regional Coastal Environment Plan for the Canterbury Region	 1.2 Plan Purpose The purpose of this Plan is to promote the sustainable management of the natural and physical resources of the Coastal Marine Area and the coastal environment and to promote the integrated management of that environment. In particular, the Plan sets out the issues relating to: protection and enhancement of the coast; water quality; controls on activities and structures; and coastal hazards
Otago	Otago Regional Policy Statement	Policy 3.1.9 Ecosystems and indigenous biological diversity Manage ecosystems and indigenous biological diversity in terrestrial, freshwater and marine environments to: Maintain or enhance:

Regional Council	Document	Relevant sections
		 a) Ecosystem health and indigenous biological diversity including habitats of indigenous fauna; Biological diversity where the presence of exotic flora and fauna supports indigenous biological diversity; b) Maintain or enhance as far as practicable: Areas of predominantly indigenous vegetation; Habitats of trout and salmon unless detrimental to indigenous biological diversity;
		 Policy 5.4.9 Activities in the Coastal Marine Area In the coastal marine area minimise adverse effects from activities by all of the following: a) Avoiding activities that do not have a functional need to locate in the coastal marine area; b) When an activity has a functional need to locate in the coastal marine area; b) When an activity has a functional need to locate in the coastal marine area; c) to avoiding its location in: i. Areas of significant indigenous vegetation and significant habitats of indigenous fauna; ii. Outstanding natural features, landscapes and seascapes; iii. Areas of outstanding natural character; iv. Places or areas containing historic heritage of regional or national significance; v. Areas subject to significant natural hazard risk; d) Where it is not practicable to avoid locating in the areas listed in b) above, because of the functional needs of that activity: i. Avoid adverse effects on the values that contribute to the significant or outstanding nature of b)iiii; ii. Avoid significant adverse effects on natural character in all other areas of the coastal environment; iii. Avoid, remedy or mitigate adverse effects on values as necessary to preserve historic heritage of regional or national significance; iv. Minimise any increase in natural hazard risk through mitigation measures; v. avoiding remediation or mitination adverse effects on other values:
	Regional Plan: Coast for Otago	 Section 1.1: Purpose of the Plan The purpose of this Plan is to provide a framework for the integrated and sustainable management of Otago's coastal marine area. Section 2.10.2: Fisheries Act 1983 This Regional Plan: Coast for Otago does not contain any provisions relating to the management or allocation of the fishery resource within Otago's coastal marine area. Objective 5.3.1 To provide for the use and development of Otago's coastal marine area while maintaining or enhancing its natural character, outstanding natural features and landscapes, and its ecosystem, amenity, cultural and historical values.
Southland	Southland Regional Policy Statement	Section 1.1 Introduction The Southland Regional Policy Statement (RPS) guides resource management policy and practice in Southland. It provides a framework on which to base decisions regarding the management of the region's natural and physical resources, gives an overview of the significant resource management issues facing Southland, including issues of significance to tangata whenua, and includes objectives, policies and methods to resolve any identified issues.

Regional Council	Document	Relevant sections
		Chapter 6: Biodiversity Objective BIO.1 – Understand and identify Understand the extent of loss of indigenous ecosystems and habitats across the Southland Region and identify those at risk to further loss and degradation. Objective BIO.2 – Maintain and protect Maintain indigenous biodiversity in Southland and protect areas of significant indigenous vegetation and significant habitats of indigenous fauna for present and future generations. Objective BIO.3 – Enhance Enhance the range, extent and condition of indigenous biodiversity in Southland, with a particular emphasis on those areas most at risk to further loss or degradation.
		 Chapter 7: Coast Objective COAST.1 – Direction on activities within the coastal environment Provide clear direction on appropriate and inappropriate subdivision, use and development activities, the cumulative effect of an activity, and precedent effects of a decision, within the region's coastal environment. Objective COAST.2 – Activities in the coastal environment Infrastructure, ports, energy projects, aquaculture, mineral extraction activities, subdivision, use and development in the coastal environment are provided for and able to expand, where appropriate, while managing the adverse effects of those activities. Objective COAST.3 – Coastal water quality and ecosystems Coastal water quality and ecosystems are maintained or enhanced.
	The Regional	Section 1.2 – Principal Reasons The principal reasons for adopting the objectives, policies and methods of implementation in this Plan, are: (i) to promote the sustainable management of the coastal marine area; (ii) to minimise conflicts between the users of the coastal marine area; (iii) to provide for the communities social, economic and cultural wellbeing; and, (iv) to maintain, or enhance the opportunity for future generations to enjoy and utilise the coastal. Section 5.4.1 Ecosystems
	Coastal Plan for Environment Southland	 Objective 5.4.1.1 Protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna To protect areas of significant indigenous vegetation and significant habitats of indigenous fauna within the coastal marine area. Objective 5.4.1.2 - Protect intrinsic values of ecosystems To protect the intrinsic values of ecosystems in the coastal marine area. Section 5.8 Efficient use of natural and physical resources Objective 5.8.1 - Efficient use and development of natural and physical resources To provide for efficient use and development of natural and physical resources in the coastal marine area where adverse effects are avoided, remedied or mitigated

Chatham Section 5.10 Social, economic and cultural issues Objective > 51.01 - Social, cultural and economic utilisation of the coastal marine area To recognise the need for social and economic utilisation of the coastal marine area in a manner that enables people and communities to provide for their social, cultural and deconomic well-being and for their health and safety. 1.1 Overview The Chatham Islands Resource Management Document (referred to as 'the document' or 'the CIRMD') provides a framework for the integrated management of natural and physical resources of the islands including the sea area out to the 12 nautical mile terntorial limit. The CIRMD is a unique one in the New Zealand context, containing aspects of a regional policy statement, a district plan, a coastal plan and regional plan in one document administered by the Chatham Islands Council, rather than separate plans administered by different authonties. Part 4: Territory wide objectives and policies 4.11 The Imiliwi 4.11 Deimiliwi 1.11 Deimiliwi 4.11 Deimiliwi 1.11 Deimiliwi 4.11 Objective - Management of Resources (i) The management of natural and physical resources that takes into account the principles of the Treaty of Waitang/Te Tinti o Waitangi and that recognise the relationship, culture and traditions of imiliwi with their ancestral lands, water, sites, wahi tapu and other taonga. 1.2.2 Water Resource (i) The maintenance and enhancement of Te Whanga as a significant natural ecosystem and community resource in respect of: (ii) bocu gathering and recreation. <t< th=""><th>Regional Council</th><th>Document</th><th>Relevant sections</th></t<>	Regional Council	Document	Relevant sections
Chatham Islands Chatham Islands Resource Management of natural and physical resources of the islands including the sea area out to the 12 natuical mile territorial limit. The CIRMD is a unique one in the New Zealand context, containing aspects of a regional policy statement, a district plan, a coastal plan and regional plan in one document administered by the Chatham Islands Council, rather than separate plans administered by different authorities. Part 4: Territory wide objectives and policies 4.1 The Imiliwi 4.1 The Imiliwi 4.1 The Imiliwi 4.2 Water Resources 4.2 Water Resources (i) The management of antural and physical resources that takes into account the principles of the Treaty of Waitangi/Te Triti o Waitangi and that recognises the relationship. (ii) The management of a dynamic and recreation. (a) food gathering and recreation. </th <th></th> <th></th> <th>Section 5.10 Social, economic and cultural issues Objective 5.10.1 - Social, cultural and economic reliance on the coastal marine area To recognise the need for social and economic utilisation of the coastal marine area in a manner that enables people and communities to provide for their social, cultural and economic well-being and for their health and safety.</th>			Section 5.10 Social, economic and cultural issues Objective 5.10.1 - Social, cultural and economic reliance on the coastal marine area To recognise the need for social and economic utilisation of the coastal marine area in a manner that enables people and communities to provide for their social, cultural and economic well-being and for their health and safety.
 (i) To safeguard the life-supporting capacity of coastal ecosystems. 5.6.4 Objective – Vegetation, Habitat and Natural Features (i) The protection of areas of significant indigenous vegetation, significant habitats of indigenous fauna and outstanding natural features within the Coastal Marine Area. 5.6.6 Objective – Coastal Processes 	Chatham Islands	Chatham Islands Resource Management Document	 11 To be and economic well-being and for their health and safety. 11 The Chatham Islands Resource Management Document (referred to as "the document" or "the CIRMD") provides a framework for the integrated management of natural and physical resources of the islands including the sea area out to the 12 nautical mile territorial limit. The CIRMD is a unique one in the New Zealand context, containing aspects of a regional policy statement, a district plan, a coastal plan and regional plans in one document administered by the Chatham Islands Council, rather than separate plans administered by different authorities. Part 4: Territory wide objectives and policies 4.11 The Imilivi 4.11 To bijective - Management of Resources (i) The management of natural and physical resources that takes into account the principles of the Treaty of Waitangi/Te Tiriti o Waitangi and that recognises the relationship, culture and traditions of imi/iwi with their ancestral lands, water, sites, wahi tapu and other taonga. 4.2 Water Resources (i) The maintenance and enhancement of Te Whanga as a significant natural ecosystem and community resource in respect of: (a) food gathering and recreation, (b) the functioning of ecosystems, (c) imi/iwi values and relationships. 4.3 Coastal Environment 4.3.1 Objective - Natural Character (i) Preserve the natural character of the Chatham Island's through the control of inappropriate use, development and subdivision where it may adversely affect the natural character of the coastal environment. Part 5: Zones 5.6 Coastal Environment Area
5.0.0 Objective – Coastal Processes			 (i) To safeguard the life-supporting capacity of coastal ecosystems. 5.6.4 Objective – Vegetation, Habitat and Natural Features (i) The protection of areas of significant indigenous vegetation, significant habitats of indigenous fauna and outstanding natural features within the Coastal Marine Area. 5.6.6 Objective – Coastal Processes
(i) Natural coastal processes are not adversely affected by activities on the foreshore or seabed.			(i) Natural coastal processes are not adversely affected by activities on the foreshore or seabed.
Regional Council	Document	Relevant sections	
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		5.7 Off Shore Islands Zone	
		5.7.2 Objective – Retention of Natural Values	
		(i) To retain the values associated with the offshore islands including:	
		landscape features	
		 indigenous vegetation and habitats of fauna 	
		 cultural and spiritual values 	