Ministry for Primary Industries
Manatū Ahu Matua

Deepwater Fisheries: Review of Sustainability Measures and Other Management Controls

1 October 2013

New Zealand Government

Review of Sustainability Measures and Other Management Controls for Deepwater Fisheries

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HOKI (HOK1) – FINAL ADVICE PAPER

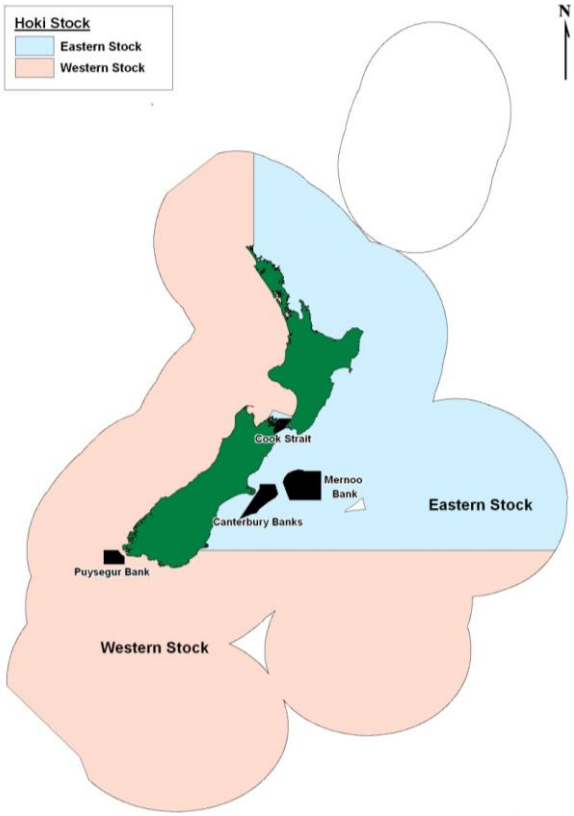

Figure 1: Boundaries between the eastern and western biological stocks and the hoki management areas

Executive Summary

1 The hoki fishery is managed under the Quota Management System (QMS) as one stock covering fishery management areas 1-9 (Figure 1). Biologically, two stocks make up HOK1, an eastern stock and a western stock. The 2013 hoki stock assessment results indicate that both the western and eastern biological stocks are above the biomass that will produce the maximum sustainable yield (B_{MSY}) which is estimated to be 25-27% of the un-fished biomass (B_0).

2 The 2013 stock assessment results also indicate that both hoki stocks are within or above the management target of 35-50% B_0. Five year projections, using the 2013 stock assessment, show that both stocks are likely to remain above both B_{MSY} and within or above the management target range at increased catch levels. This suggests that utilisation opportunities exist and a higher catch limit is likely to be sustainable.

3 Consequently, the Ministry for Primary Industries (the Ministry) consulted on increasing the total allowable catch (TAC) from 131,340 tonnes to either 141,440 tonnes or 151,540 tonnes (Table 1). The Ministry recommends increasing the TAC to 151,540 tonnes.

4 Both options to increase the TAC would retain the current nominal allowances for recreational and customary non-commercial fishing at 20 tonnes each. An allowance of 1% of the Total Allowable Commercial Catch (TACC) would also be retained for other sources of fishing-related mortality.

5 The deemed value rates for hoki have also been reviewed for the 2013/14 fishing year. The Ministry recommends that, regardless of which of the options you decide to implement, you retain the existing deemed value rates for hoki at this time.

Background Information

6 The hoki fishery is managed under the QMS as one stock, HOK1, which covers fishery management areas 1-9. The fishery consists of two distinct biological stocks, an eastern stock and a western stock. Within each stock there are the following defined fishing areas:

a) Eastern hoki stock: Cook Strait fishery, Chatham Rise fishery and East Coast South Island fishery (ECSI) and East Coast North Island fishery (ECNI).

b) Western hoki stock: west coast South Island fishery (WCSI), Sub-Antarctic fishery and Puysegur fishery.

Juvenile hoki from both stocks mix on the Chatham Rise. They are thought to migrate to either the eastern or western stock before spawning.

7 The main seasonal hoki fishery operates from mid-July to late August on the WCSI where hoki aggregate to spawn. A second major spawning fishery occurs in Cook Strait where the season runs from late June to mid-September peaking in July and August. Small catches of spawning hoki are taken from other spawning grounds off ECSI and, late in the season, at Puysegur Bank. Outside the spawning season there is a substantial fishery on the Chatham Rise and a smaller fishery in the Sub-Antarctic. There is also a small ECNI hoki fishery.

8 In 2001 industry implemented a catch split arrangement to manage fishing effort across the two biological stocks by setting individual catch limits for each stock. The catch limits set under this split arrangement vary depending on the status of each stock; since 1 October 2011 60,000 tonnes of the TACC has been allocated to the eastern stock and 70,000 tonnes to the western stock.

9 Until 2008, the western stock had been declining, largely due to an extended period of poor recruitment. Improved recruitment, supported by a cautious management regime in recent years, has meant that the western stock has rebuilt and the stock was able to sustain catch increases at the start of the 2009/10, 2010/11, and 2011/12 fishing years. In contrast, the eastern stock has remained above target levels throughout the history of the fishery.

10 To protect juvenile hoki, industry has also implemented a range of measures that apply to all vessels greater than 28 m in overall length known as the Hoki Operational Procedure (HOP). These measures include closing four areas to hoki targeting which are thought to contain large numbers of juvenile hoki. These areas, known as hoki management areas (HMAs), are still accessible to vessels targeting other species such as scampi, ling, silver warehou and squid. The four closed areas are (see Figure 1):

a) Cook Strait

b) Canterbury Banks

c) Mernoo Bank

d) Puysegur Bank

11 The Ministry actively monitors fishing activity within these HMAs and provides quarterly reports to industry.

Consultation

12 Decisions to vary TACs are made under section 13(4) of the Fisheries Act 1996 (the Act). Therefore, the consultation requirements of section 12(2) apply. Decisions to vary TACCs are made under section 20(2), to which the consultation requirements of section 21(2) apply. These provisions require consultation with such persons or organisations 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 Maori, environmental, commercial and recreational interests.

13 The Ministry consulted on your behalf between 12 July and 9 August on the three options set out in Table 1 below. The Ministry followed its standard consultation process of posting initial position papers (IPPs) on the Ministry website and alerting stakeholders to this through a letter sent to approximately 200 companies, organisations and individuals.

14 There is also an obligation to provide for input and participation of tangata whenua and have particular regard to kaitiakitanga. The Ministry recognises that information on customary harvest is uncertain and invited iwi, Tangata Tiaki/Kaitaiki, and customary permit holders to submit information. However, no additional information was submitted during the consultation process. The Ministry will continue to work with tangata whenua to improve reporting and information on customary non-commercial catches.

Table 1: Summary of management options proposed for the HOK1 fishery (tonnes)

	Option 1 (Status quo)	Option 2	Option 3 (Recommended)
TAC	131,340	141,440	151,540
Customary Maori allowance	20	20	20
Recreational allowance	20	20	20
Other sources of fishing-related mortality (1% of TACC)	1,300	1,400	1,500
TACC	130,000	140,000	150,000

Submissions Received

15 Submissions were received from the following:

a) Deepwater Group Limited (DWG)
b) Talley's Group Limited (Talley's)
c) Sealord Group Limited (Sealord)
d) Te Ohu Kai Moana Trustee Ltd (TOKM)
e) Sanford Limited (Sanford)
f) Iwi Collective Partnership (ICP)
g) New Zealand Recreational Fishing Council (NZRFC)
h) World Wildlife Fund (WWF)

All submissions are attached to this paper for your reference.

Submissions on Catch Limit

16 DWG is the industry organisation that represents holders of quota in New Zealand's major deepwater fisheries. DWG submitted on behalf of its shareholders who own HOK1 quota. These shareholders collectively own 92.4% of hoki quota.[1] The submission summarised feedback received from shareholders on preferred options for the TACC:

a) 22.67% of shareholders represented by DWG support Option 2, a 10,000 tonne increase to the HOK1 TACC

b) 77.33% support Option 3, a 20,000 tonne increase to the HOK1 TACC.

17 Talley's reiterated the opportunity available to the industry based on the 2013 hoki stock assessment and expressed support for the 20,000 tonne increase to the TACC (Option 3). Talley's was also explicit that the increase in the catch should only be taken from the western stock and stated the intention to adhere to the catch split arrangement to that effect.

18 Sealord expressed support for Option 3 based on the 2013 stock assessment that confirmed the high biomass of the stock. Sealord also discussed anecdotal reports from fishermen in the hoki fishery that suggested the fishing season has been long and healthy.

19 TOKM is the corporate trustee of Te Ohu Kai Moana Trust, which works to advance the interests of iwi individually and collectively. TOKM was in support of Option 3 based on the clear information showing stock biomass increasing and able to sustain increases larger than that proposed under Option 2.

20 Sanford submitted in support of Option 2, an increase of 10,000 tonnes in the HOK1 TACC. Sanford stated that "feedback we have been receiving from our vessels on the west coast spawn this year (outside the line) is not conducive to a 20,000 tonne increase." Sanford considered that small and steady adjustments are likely to lead to a more sustainable outcome in the longer term.

21 The ICP was formed in 2010 to represent the collective fisheries interests of 12 iwi, and manage the settlement annual catch entitlement (ACE) of three further iwi. ICP submitted in support of Option 2 on the basis that the fishery is healthy and the 10,000 tonne increase to the TACC would provide substantial economic benefits. They note that they are not averse to Option 3, but do not support Option 1.

22 NZRFC supported Option 2 as this is a more cautious approach for a stock that is estimated to be within or above the target range. The NZRFC expressed concerns over the lack of consultation with recreational fishing forums regarding fisheries up for review during this sustainability round. MPI considers that the NZRFC had the same opportunity as all other stakeholders to engage of the proposed changes. MPI would have welcomed any invitation to discuss these changes with the recreational sector.

23 WWF submitted in support of Option 1, the status quo, citing uncertainty around the 2011 year class, the implications of high catches of juvenile fish, potential increases in seabird interactions, interactions with other by-catch species, and impacts on the benthic habitat.

[1] Note that Talley's, Sealord, Sanford, ICP and TOKM are shareholders of the DWG and their views are represented in the DWG's submission in addition to individual submissions made.

Rationale for Management Intervention

24 The 2013 Fisheries Assessment Plenary (the Plenary) stated that the 2013 hoki stock assessment was of high quality and substantially met New Zealand's Science and Research Information Standard. The results from the assessment can therefore confidently be accorded a high weight in fisheries management decisions. The 2013 Plenary agreed to accept three final assessment models as equally plausible estimates of stock status.

25 The 2013 hoki stock assessment estimates the current status of the hoki stocks via three final model runs. The status of the western stock is estimated to be 45-65% B_0 and the eastern stock 50-57% B_0. Both stocks are currently above B_{MSY} (25-27% B_0) and are either within or above the hoki management target range of 35-50% B_0, depending on the model run.

26 Of the three model runs, even the most conservative shows that both stocks are above 35% B_0 and are likely able to support increased catch.

27 The stock assessment and projections are based on the best available scientific information. There is always some uncertainty around stock assessments, however, this is addressed in the outputs, with confidence intervals given and taken into account when assessing management options.

28 Despite that uncertainty, the current stock status indicates that there are utilisation opportunities available in the hoki fishery, as such, the Ministry recommends increasing the TAC to take advantage of these opportunities.

Management Measures Proposed

29 The hoki stocks are managed under section 13(2) of the Act, with TAC setting also guided by the hoki harvest strategy, which requires both stocks to fluctuate within the target range of 35-50% B_0. This target was set above B_{MSY} (25-27% B_0) to provide greater certainty that the hoki stocks will remain at or above B_{MSY} and can sustain the fishery in the long term.

30 Management actions are guided by a series of five year projections that provide estimates of future stock status in relation to B_0 and to the management target. The projections use the agreed assessment models to estimate the likely stock status trajectory under different catch and recruitment assumptions.

31 To inform the 2013 review of management settings, projections have been produced assuming three different commercial catch assumptions:

a) the status quo of 130,000 tonnes, with 60,000 tonnes allocated to the eastern stock, and 70,000 tonnes allocated to the western stock.

b) an increase of 10,000 tonnes to the western stock catch limit.

c) an increase of 20,000 tonnes, also to the western stock catch limit.

32 The increased catch has been allocated to the western stock to account for the fact that juvenile hoki from both stocks exist on the Chatham Rise, where the majority of hoki from the eastern stock are harvested. Even though the eastern stock is currently estimated to be above the management target range (B_{2013} is 50-57% B_0), taking a more conservative approach to increasing catches from the eastern fishing grounds aims to limit fishing pressure on juvenile fish.

33 Data collected during research surveys in 2012/13 estimated the 2011 year class to be very strong. However, some hoki year class strengths have in the past been overestimated when they are first observed as one year olds. It is impossible to determine the proportion of the year class that will recruit to each hoki stock, given that juveniles from both stocks are found on the Chatham Rise. For this reason, biomass projections were run under two recruitment scenarios: either including the strong 2011 year class (Table 2), or assuming that the 2011 year class was of average strength (Table 3). By reducing the strength of this cohort in some projections, and assuming it is of average strength, it is possible to illustrate the cohort's potential influence on future stock status.

34 All the projections, under both recruitment scenarios and all catch levels, result in both hoki stocks remaining above the lower bound of the management target (35% B_0) through to 2018 (see shaded areas in Tables 2 and 3). The projections that include the strong 2011 year class show that both stocks will increase considerably over the next five years under all the tested catch assumptions (Table 2).

Table 2: Expected median status of the hoki stocks in 2018, including the estimated 2011 year class strength (a, b and c represent variations of the stock assessment model)

TACC	Eastern limit (t)	Western limit (t)	Eastern stock (% B_0)			Western stock (% B_0)		
Model run:			a	b	c	a	b	c
130,000	60,000	70,000	76.2	65.1	77.0	83.5	82.6	60.4
140,000	60,000	80,000	76.2	65.1	77.0	81.4	80	57.9
150,000	60,000	90,000	76.2	65.1	77.0	79.3	77.6	55.5

35 The projections that include an average year class instead of the strong 2011 cohort show the stocks remaining stable under current catch levels and declining slowly over the next five years as the catches are increased (Table 3). However, despite this slight decline, none of the projections result in stock biomass falling below 35% B_0.

Table 3: Expected median status of the hoki stocks in 2018, if the 2011 year class is assumed to be average (a, b and c represent variations of the stock assessment model)

TACC	Eastern limit (t)	Western limit (t)	Eastern stock (% B_0)			Western stock (% B_0)		
Model run:			a	b	c	a	b	c
130,000	60,000	70,000	55.2	47.8	53.9	61.3	58.2	42.6
140,000	60,000	80,000	55.2	47.8	53.9	59.1	55.8	40.1
150,000	60,000	90,000	55.2	47.8	53.9	57.2	53.4	37.7

36 As discussed above, the Ministry considers caution is warranted due to the uncertainty over the influence that the strong 2011 year class will have on the fishery. That notwithstanding, the Ministry also tested the effect of an additional 10,000 tonne increase to the western stock catch limit (i.e. a 30,000 tonne increase to 160,000 tonnes). Although it is not included as an option in this paper, this projection also resulted in the western stock remaining slightly above 35% B_0 through to 2018. The Ministry therefore has confidence that the stock could support a greater increase than is being proposed under the options in this final advice paper (FAP) without any significant risks to the sustainability of the stocks. Furthermore, the Ministry will assess the influence of the 2011 year class and consider additional management action well in advance of 2018.

Option 1 – Status Quo

37 Under this option the TAC would remain at 131,340 tonnes and the TACC would remain at 130,000 tonnes. The current catch split arrangement would remain unchanged. Under this option both the eastern and western stock are highly likely to be above B_{MSY} and

above the management target range at the end of the 5 year projection period. While this option is undoubtedly more cautious it would likely result in lost utilisation opportunities as both hoki stocks combined are likely to be able to support a harvest level greater than 130,000 tonnes.

38 This option was supported by WWF primarily because:

a) There is still uncertainty around the strength of the 2011 year class which may have been overestimated; there is no data to suggest that it will fully recruit to the fishery.

b) Effects of any increase may result in increased impacts on by-catch species including other fish species (mainly deepwater sharks) and protected species like seabirds.

39 The Ministry's view is that a TAC increase is supported by projections from the 2013 stock assessment that assumed average strength for the 2011 year class. Projections under that assumption indicated that the stock would remain within the management target range, and above B_{MSY}, under the proposed TAC increase represented by Options 2 and 3.

40 Interactions with seabirds and fish by-catch species are actively monitored and managed. Seabird captures in the west coast South Island hoki fishery are also statistically modeled annually to ensure that captures are not causing adverse impacts on seabird populations.

Option 2 – 10,000 tonne TACC increase

41 If you select Option 2, the TAC would be increased to 141,440 tonnes and the TACC would be increased by 10,000 tonnes to 140,000 tonnes. In addition, it is proposed that the east/west catch split arrangement would be adjusted so that the increased catch would come entirely from the western stock. This would mean that a catch limit of 60,000 tonnes would be set for the eastern stock and a catch limit of 80,000 tonnes for the western stock.

42 The five year management projections indicate that setting the TAC and TACC based on the higher catches of Option 2 will ensure both stocks remain above B_{MSY} (see Tables 2 and 3 above).

43 Based on export figures from 2012 of $1.69/kg greenweight, a 10,000 tonne increase in the TACC may result in an additional $16.9 m in export revenue.[2]

44 For the reasons discussed above, this option is supported by Sanford and ICP.

45 Under Option 2, the Maori customary and recreational allowances would be retained at 20 tonnes each and an allowance for other sources of fishing-related mortality would remain at 1% of the TACC.

Option 3 – 20,000 tonne TACC increase

46 If you select Option 3, the TAC would be increased to 151,540 tonnes and the TACC would be increased by 20,000 tonnes to 150,000 tonnes. In addition it is proposed that the east/west catch split arrangement would be adjusted so that the increased catch would

[2] Based on export figures for 2012 calendar year of $1.69 / kg greenweight. This uses frozen fillets (TSK) to estimate the greenweight export price as this form accounted for 36.2% of export earnings and 24.5% of export volume for hoki in the 2012 calendar year. Precise revenue gain is difficult to estimate and will be influenced by factors such as commodity prices, exchange rate, catching costs and export state.

come entirely from the western stock. This would mean that a catch limit of 60,000 tonnes would be set for the eastern stock and a catch limit of 90,000 tonnes for the western stock.

47 Based on export figures from 2012 of $1.69/kg greenweight, a 20,000 tonne increase in the TACC may result in an additional $33.8 m in export revenue.

48 Option 3 is supported by the majority of DWG stakeholders, which includes Talley's, Sealord, and TOKM, all of whom submitted independently in support of Option 3. All parties acknowledge that the increase will be taken entirely from the western stock, and consider the stock to be in a healthy position and able to support the 20,000 tonne increase in the TACC.

49 Under Option 3, the Maori customary and recreational allowances would be retained at 20 tonnes each and an allowance for other sources of fishing-related mortality would remain at 1% of the TACC.

Assessment of Management Options

50 This section describes the management options available for your consideration in terms of how they will ensure that your relevant statutory obligations are met.

51 The Ministry considers that all options presented in this paper satisfy your obligations under section 8 of the Act in that they provide for utilisation in the hoki fishery while ensuring sustainability. Each management option proposed will ensure the long term sustainability of the stock. Option 1 is more cautious, but is likely to limit utilisation opportunities. In contrast, increasing the TAC under Option 2 or 3 would allow for increased utilisation without adversely affecting the sustainability of the stock.

Section 13 – Setting the TAC

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

a) Maintains the stock at or above a level that can produce a maximum sustainable yield, having regard to the interdependence of stocks;

b) Enables the level of a stock whose current level is below that which can produce the maximum sustainable yield to be altered

   i) in a way and at a rate that will result in the stock being restored to at or above a level that can produce the maximum sustainable yield, having regard to the interdependence of stocks; and

   ii) within a period appropriate to the stock having regard to the biological characteristics of the stock and any environmental conditions affecting the stock; or

c) Enables the level of any stock whose current level is above that which can produce the maximum sustainable yield to be altered in a way and at a rate that will result in the stock moving towards or above a level that can produce the maximum sustainable yield, having regard to the interdependence of stocks.

53 Under section 13 you are required to set a TAC for the entire hoki stock as a single unit of management (i.e. the combination of the eastern and western biological stocks). Given that hoki is assessed to be above a level that can produce the maximum sustainable yield, the Ministry considers that you should set a TAC under section 13(2)(c), having regard to the interdependence of stocks.

54 By-catch species of the hoki fishery are predominantly species which are managed in the QMS. This is discussed in more detail below, but the Ministry considers there is no information to suggest that the interdependence of stocks should affect where the TAC is set for hoki. The Ministry considers that given the information presented above, your obligations under section 13(2)(c) are met and increasing the TAC from 131,340 to either 141,440 or 151,540 tonnes will ensure the stock remains at or above a level that can produce the maximum sustainable yield.

Section 13(3) – Rate of change

55 Section 13(3) requires that, in considering the way and the rate that the stock may be moved towards a level that can produce MSY, you shall have regard to such social, cultural and economic factors as you consider relevant.

56 There is no statutory guidance on what an appropriate 'way and rate' might be in any given case for the purposes of applying section 13(2); it is a matter for you to determine having regard to social, cultural and economic factors.

57 The Ministry considers that an increase to the HOK1 TAC is justified given the stock is very likely to be above B_{MSY}. The majority of the submissions received indicate support from the commercial sector for increasing the HOK1 TAC and realising the accompanying economic benefits. As discussed, Sanford, the ICP and NZRFC supported a smaller increase to the TACC of 10,000 tonnes while WWF supported no increase.

58 Given the very small recreational and customary catch from HOK1, and the retention of the current allowances, the Ministry considers increasing the TAC under either of the proposed options will not have an adverse impact on non-commercial fishers.

Allocating the TAC

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

Recreational and customary allowances

60 Recreational and customary fishers do not target hoki as it is predominantly an offshore fishery and the data on customary and recreational catches of hoki in recent years is negligible. However, there are references to customary catches of hoki occurring in the past. The Ministry also considers it likely that a small amount of hoki is caught by recreational fishers while fishing for other middle-depth species. A small allowance of 20 tonnes each for recreational and customary fishers is currently provided for and the Ministry considers these allowances should continue regardless of whether the TAC is increased under Option 2 or 3.

Other sources of fishing-related mortality

61 The Ministry proposes an allowance for other sources of fishing-related mortality of 1% of the TACC. This would be 1,400 tonnes under Option 2 and 1,500 tonnes under Option 3. This allowance is required to take account of hoki mortality that is not reported such as hoki lost due to burst nets or dumping of damaged hoki.

Section 10 – Information Principles

62 Under section 10 of the Act, you must take into account the following information principles:

a) decisions should be based on the best available information

b) decision makers should take into account any uncertainty in the available information,

c) decision makers should be cautious when information is uncertain, unreliable, or inadequate, and

d) the absence of, or any uncertainty in, any information should not be used as a reason for postponing or failing to take any measure to achieve the purpose of the Act.

63 The Ministry considers that the best available information has been used as the basis for the recommendations herein. All science information upon which the management options are based has been peer reviewed by one of the Ministry's Fisheries Assessment Working Groups and meets the Research and Science Information Standard for New Zealand Fisheries.

Section 11 Considerations

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

a) Section 11(1)(a): take into account any effects of fishing on any stock and the aquatic environment. No information about any effects of fishing on any stock or on the aquatic environment, additional to that discussed elsewhere in this paper, is considered relevant to the review of sustainability measures for this stock at this time.

b) Section 11(1)(b): take into account any existing controls under the Act that apply to the stock or area concerned. For this stock the measures that apply currently are a TAC, TACC and allowances for customary take, recreational take, and incidental fishing-related mortality. No other controls under the Act specifically apply to this stock.

c) Section 11(1)(c): take into account the natural variability of the stock. This is incorporated into the discussion above on setting the TAC for this stock.

d) Sections 11(2)(a) and (b): have regard to any provisions of any regional policy statement, regional plan, or proposed regional plan under the Resource Management Act 1991 and any management strategy or management plan under the Conservation Act 1987 that apply to the coastal marine area and that the Minister considers relevant. The Ministry is not aware of any such policy statements, plans or strategies that should be taken into account for this stock.

e) Section 11(2)(c): have regard to sections 7 and 8 of the Hauraki Gulf Marine Park Act 2000 that apply to the coastal marine area and the Minister considers relevant. There have only ever been negligible catches of hoki in the Hauraki Gulf (<20 kgs in 10 years). There is also no target fishing for hoki, and it is not taken by recreational fishers in the Hauraki Gulf. Therefore, the Ministry considers there are no relevant considerations under the Hauraki Gulf Marine Park Act 2000.

f) Section 11(2)(d): have regard to any planning document lodged by a customary marine title group under section 91 of the Marine and Coastal Area (Takutai Moana) Act 2011—that apply to the coastal marine area and are considered by you to be relevant. The Ministry is not aware that any such planning documents have been lodged at this time.

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

h) Sections 11(2A)(a) and (c): you must take into account any conservation or fisheries services, or any decision not to require such services. Ministry does not consider that existing or proposed services materially affect the proposals for these stocks. No decision has been made to not require a service in this fishery at this time.

Section 11A – Fisheries Plans

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

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

a) The Use Outcome: Fisheries resources are used in a manner that provides greatest overall economic, social and cultural benefit

b) The Environment Outcome: The capacity and integrity of the aquatic environment, habitats and species are sustained at levels that provide for current and future use.

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

a) Management Objective 1.1: Enable economically viable deepwater and middle-depth fisheries in New Zealand over the long-term

b) Management Objective 1.3: Ensure the deepwater and middle-depths fisheries resources are managed so as to provide for the reasonably foreseeable needs of future generations

c) Management Objective 2.5: Manage deepwater and middle-depth fisheries to avoid or minimise adverse effects on the long-term viability of endangered, threatened and protected species.

68 The Ministry considers that the management options presented in this FAP will contribute towards the achievement of these three Management Objectives.

Section 9 – Environmental Considerations

69 Section 9 of the Act sets out the following environmental principles. These principles must be taken into account when implementing management measures under the Act.

a) Sections 9(a) and (b) require all persons exercising or performing functions, duties, or powers under the Act to take into account that associated or dependent species be maintained at or above a level that ensures their long-term viability, and that the biological diversity of the aquatic environment should be maintained.

b) Section 9(c) requires all persons exercising or performing functions, duties, or powers under the Act to take into account the principle that habitat of particular significance for fisheries management should be protected.

70 The Ministry is confident that the proposed options are consistent with the requirements of section 9. Key environmental issues associated with the HOK1 fishery and how they will be affected by the proposals to increase the TAC are discussed below.

Seabirds

71 The hoki trawl fishery is known to interact with a range of protected seabird species; in 2010/11 an estimated 305 seabird captures occurred in the hoki fishery.[3] Management of seabird interactions with New Zealand's commercial fisheries is now being driven through the Seabird National Plan of Action (NPOA-Seabirds). The NPOA-Seabirds establishes a risk-based approach to managing fishing interactions with seabirds, targeting management actions at the species most at risk.

72 Hoki fishing effort generally contributes a relatively low proportion of the total risk score for those seabird species that have been found to be at high or very high risk (e.g. Salvin's albatross). A species of concern for the middle-depth fisheries is the Southern Buller's albatross. This species is estimated to be at high risk, and hoki fishing effort contributes approximately one third of the total risk to this species.

73 The Ministry will continue to work with industry to reduce the risk to key seabird species; a range of measures is currently in place or under development. Mandatory seabird mitigation measures include the requirement that all trawlers over 28 m in length deploy bird mitigation devices during fishing. Research projects are currently underway that aim to improve the efficacy of these mitigation devices.[4]

74 Non-regulatory measures are also used to reduce the risk of seabird interactions with the hoki fleet. Every vessel over 28m in length has developed a specific vessel management plan (VMP) that sets out the onboard practices vessels must follow to reduce the risk to seabirds, including offal management procedures and good factory cleanliness. The Ministry monitors each vessel's performance against its VMP and works with DWG to rectify any non-adherence and also to assist the fleet improving their offal management capacity. These practices will continue during 2013/14.

[3] From Abraham, E.R., Thompson, F.N., and Berkenbusch, K. (2013) Estimated captures of seabirds in New Zealand trawl and longline fisheries, 2002-03 to 2010-11. Final Research Report for Ministry for Primary Industries project PRO2010-01.

[4] More information on these projects can be found at the Department of Conservation's Conservation Services Programme website: www.doc.govt.nz/csp

75 The Ministry is satisfied that existing regulatory and non-regulatory measures to reduce incidental interactions with seabirds will ensure that any increase in fishing effort under either Option 2 or 3 does not have an adverse effect on seabird populations.

Fish by-catch

76 The main commercial by-catch species in the hoki fisheries are hake, ling and silver warehou. Options 2 and 3 in this paper would result in increased fishing effort on the western stock, which could also result in increased catch of these non-target species.

77 The TAC for LIN7 is also being reviewed as part of this sustainability round as it is likely to be capable of sustaining increased catch levels. An increase to the TAC of 643 tonnes has been recommended for the LIN7 stock.

78 The silver warehou TACs from this area (SWA1 and SWA4) continue to be under-caught, so any increase in silver warehou by-catch as a result of increased hoki fishing effort should not cause catches to exceed the existing silver warehou TACs.

79 The hake stock on the WCSI (HAK7) has been assessed in 2013 and the stock is estimated to be at 57% B_0, which is very likely (>90% probability) to be at or above the management target. The TAC is also under-caught so any increased catch as a result of additional hoki fishing effort should not cause catches to exceed the existing TAC.

80 By-catch of non-QMS fish species constitutes a small proportion (<5%) of the total hoki catch, with the most commonly caught non-QMS species being rattails and javelinfish. Species of deepwater shark also comprise a very small proportion of the total hoki catch, but due to their biological characteristics should be afforded particular consideration.[5] WWF also raised concerns that the impacts on deepwater dogfish from increasing the hoki TAC had not been considered in enough detail.

81 Increasing the hoki TAC is likely to result in increased levels of non-QMS by-catch species (e.g. rat tails, javelin fish and deepwater sharks). However, the Ministry is confident that such an increase would not adversely impact these species. Estimates from trawl survey data on the Chatham Rise between 1992 and 2010 show the abundance of these species has either remained stable or increased over the 19 year time-series, despite an annual hoki catch significantly greater than the proposed TAC for 2013/14.

82 For these reasons, the Ministry is satisfied that any increase to the hoki TAC is unlikely to have an unacceptable impact on the sustainability of the fish species caught in conjunction with hoki. Fish by-catch levels in the fishery will continue to be monitored.

83 In addition, the New Zealand National Plan of Action for the Conservation and Management of Sharks (NPOA–Sharks) includes several actions to improve the monitoring of shark by-catch. As part of the revision of the NPOA-Sharks that is being conducted this calendar year, the Ministry will commence a risk assessment process for sharks that will better identify risks and direct management measures as appropriate.

Marine mammals

84 The hoki fisheries are also responsible for some fur seal mortality, particularly the fisheries in WCSI and Cook Strait. During the 2010/11 fishing year it is estimated that 159 fur

[5] Deepwater shark species have very low productivity and due to their biological characteristics are considered to be more vulnerable to the impacts of fishing than other species of finfish by-catch.

seal mortalities occurred in the hoki fisheries.[6] This estimate continues the declining trend in fur seal mortalities occurring in the hoki fisheries.

85 The rate of fur seal captures has continued to decline, despite previous increases in hoki fishing effort. It is unclear therefore whether further TAC increases will result in additional fur seal mortalities, although this is a possibility. However, the Ministry notes that the New Zealand fur seal population is believed to be increasing and it is unlikely that the current level of mortality is affecting the long term viability of the national population.

86 However, there is the potential risk of local depletion of certain fur seal populations. The Department of Conservation has commissioned research to help identify which fur seal populations are most affected by fishing related mortality. This work is ongoing and outcomes will be used to guide further management where required.

87 DWG has developed an operational procedure for mitigating marine mammal by-catch which applies to all hoki trawlers >28m; the marine mammal operational procedure (MMOP). The MMOP sets out the measures that all vessels should follow to limit fur seal interactions. As with the VMPs for seabirds, the Ministry also audits and monitors vessel performance against the MMOP.

88 The Ministry will continue to actively monitor marine mammal interactions in the hoki fisheries.

Benthic impacts

89 Hoki is a mid-water species caught by bottom trawl or mid-water trawl fished on or near the bottom which can have an impact on the benthic habitat.

90 In recent years, management measures to address the effects of deepwater trawl activity have focused on 'avoiding' these effects. This has been achieved through closing areas to bottom trawling; first with seamount closures in 2001 and then with Benthic Protection Areas (BPAs). The implementation of BPAs in 2007 closed approximately 30% of the New Zealand EEZ to bottom trawling. It also implemented a monitoring regime to ensure these closures are adhered to.

91 The proposals to increase the TACC for hoki will result in an increase in fishing effort, but this effort will be focused on the western fishing grounds. The risk of benthic interactions may be less in these fisheries as most of the fishing activity on the west coast of the South Island is carried out using mid-water gear which has little contact with the seabed.

92 The trawl footprint of the hoki fishery will continue to be mapped and monitored annually.

Deemed values

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

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

a) Annual deemed value rates set at $0.90 per kg

[6] From Thompson, F.M., Berkenbusch, K., and Abraham, E.R. (2013) Marine mammal by-catch in New Zealand trawl fisheries, 1995-96 to 2010-11. New Zealand Aquatic Environment and Biodiversity Report No. 105.

b) Interim deemed value rates set at $0.45 per kg

c) Differential deemed value rates apply at 102% of catch in excess of ACE at a rate of $1.30 per kg.

95 The Ministry considers these deemed value rates have been effective in constraining fishing effort to the TACC (although recognising that information on catch levels against the current TACC of 130,000 tonnes is not yet available). Despite recent increases in the hoki ACE trading price, the current annual deemed value rate is still set between the ACE trading price and the port price for the stock. The high differential deemed value rate also provides an appropriate incentive to limit catch to ACE holdings. The Ministry is satisfied that under both management options proposed the deemed value rates are set at an appropriate level to limit catch to the TACC.

96 Fishing activity will be monitored during the 2013/14 fishing year and if there is evidence that fishers are either fishing in excess of the TACC or fishing in excess of their individual ACE holdings then the deemed value rates will be reviewed for the 2014/15 fishing year.

Other Management Measures

Catch split monitoring

97 The catch split arrangement has been adhered to for the last two years. The Ministry acknowledges that it is too early to assess the performance of the arrangement in the 2012/13 fishing year but expects that adherence will continue.

98 Adherence to the catch split is managed and reported by FishServe on behalf of the DWG. All ACE generated at the start of the fishing year is split into either HOK1E (hoki that can be harvested from the eastern stock) or HOK1W (hoki that can be harvested from the western stock) ACE. Catch against each type of ACE is then reported, enabling in-season monitoring of performance against the catch split arrangement. The performance against the catch split is verified on a quarterly basis for the first three quarters and monthly for the remainder, and is reported to both DWG and the Ministry for review.

99 The Ministry is confident in the continued adherence of the industry to the voluntary catch split arrangement in the HOK1 fishery to take any increase solely from the western stock.

Compliance Issues

100 The Ministry considers there may be some compliance risks with the proposed increase under both Options 2 and 3 as this will result in additional fishing effort on the western stock and particularly in the WCSI spawning fishery. There is a risk that this increased fishing effort may create an incentive for operators fishing the WCSI fishery to dump by-catch species where there is a constraining TACC and insufficient available ACE to balance catch. This risk is most prevalent for ling on the west coast South Island as described previously, although should you agree to the recommendation to increase the LIN7 TAC, this risk may decrease.

101 Risks associated with the increase will be addressed through regular analysis of catch returns of hoki and by-catch species as well as increased observer coverage across the fisheries and monitoring of information collected by observers.

102 The Ministry's compliance group has also completed a risk profile of compliance

issues in hoki fisheries with a focus on the west coast South Island. This profile guides monitoring and enforcement activities to ensure continued compliance with all regulations.

Recommendations

103 The Ministry recommends that you:

EITHER (Option 1 – status quo, not recommended)

a) **Agree** to retain the existing TAC for HOK1 at 131,340 tonnes and within the TAC:
   i. Retain an allowance for recreational fishing interests of 20 tonnes;
   ii. Retain an allowance for Māori customary non-commercial fishing interests of 20 tonnes;
   iii. Retain an allowance of 1,300 tonnes for other sources of fishing-related mortality;
   iv. Retain the TACC at 130,000 tonnes. **Yes / No**

OR (Option 2)

b) **Agree** to increase the TAC for HOK1 from 131,340 tonnes to 141,440 tonnes and within the TAC:
   i. Retain an allowance for recreational fishing interests of 20 tonnes;
   ii. Retain an allowance for Māori customary non-commercial fishing interests of 20 tonnes;
   iii. Set an allowance of 1,400 tonnes for other sources of fishing-related mortality;
   iv. Set the TACC at 140,000 tonnes. **Yes / No**

OR (Option 3 – Ministry's recommendation)

c) **Agree** to increase the TAC for HOK1 from 131,340 tonnes to 151,540 tonnes and within the TAC:
   i. Retain an allowance for recreational fishing interests of 20 tonnes;
   ii. Retain an allowance for Māori customary non-commercial fishing interests of 20 tonnes;

iii. Set an allowance of 1,500 tonnes for other sources of fishing-related mortality;

iv. Set the TACC at 150,000 tonnes

Yes / No

James Stevenson-Wallace
Director Fisheries Management

AGREED / AGREED AS AMENDED / NOT AGREED

Hon Nathan Guy
Minister for Primary Industries

/ / 2013

LING (LIN5 and LIN6) – FINAL ADVICE PAPER

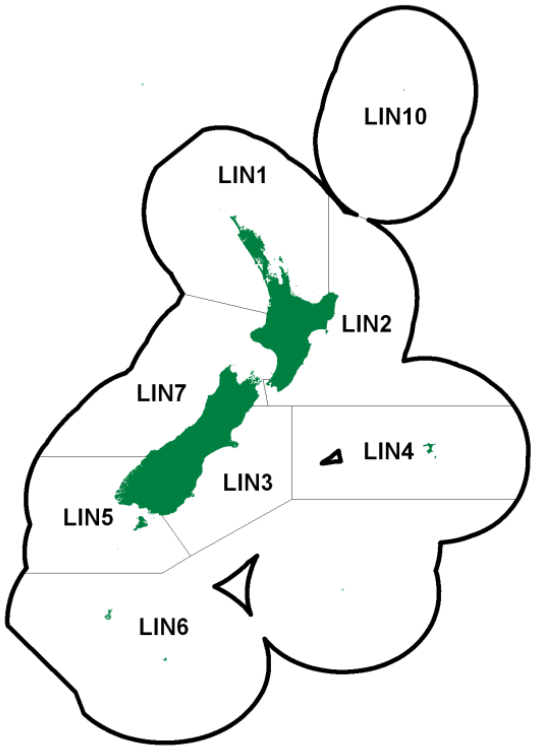

Figure 1: Quota Management Areas (QMAs) for ling

Executive Summary

1 The 2012 stock assessment for LIN5 and LIN6 (Stewart-Snares shelf and Campbell Plateau stocks) estimated the stocks to be above the biomass that will produce the maximum sustainable yield (B_{MSY}) and above the default management target of 40% of unfished biomass (40% B_0).

2 This stock assessment indicates that higher total allowable catches (TACs) and catches are likely to be sustainable for these stocks. Although estimates of current and unfished stock size are very imprecise, it is very likely that current biomass is greater than 70% of B_0 for LIN5 and LIN6.

3 After considering submissions from stakeholders, the Ministry for Primary Industries (the Ministry) is recommending that the TAC in LIN5 be increased by 403 tonnes (11%). The catch limit is regularly caught or exceeded in LIN5 and catch is likely to increase should the hoki TAC increase as recommended. No changes are proposed to the recreational or customary allowances, or to deemed value rates in LIN5 (Table 1).

4 In contrast to LIN5, LIN6 has been significantly under-caught since 2004/05 when the TAC was last changed (increased). As such the Ministry is recommending that the TAC in LIN6 be retained at 8,590 tonnes. No changes are proposed to the recreational or customary allowances, or to deemed value rates in LIN6 (Table 2).

Summary of Options

5 Based on submissions received, the Ministry is recommending the options specified in the following tables for each of LIN5 and LIN6.

Table 1: Recommended TACs, TACCs[7] and allowances for LIN5

Option			Allowances		
	TAC (t)	TACC (t)	Customary Māori (t)	Recreational (t)	Other sources of fishing-related mortality (t)
Option 1 (Status Quo)	3,633	3,595	1	1	36
Option 2 (recommended option)	4,036	3,955	1	1	79

Table 2: Recommended TACs, TACCs and allowances for LIN6

Option			Allowances		
	TAC (t)	TACC (t)	Customary Māori (t)	Recreational (t)	Other sources of fishing-related mortality (t)
Option 1 (recommended option)	8,590	8,505	0	0	85
Option 2	9,450	9,356	0	0	94

6 For both Options 1 and 2, the Ministry proposes to retain the current recreational and customary allowance of one tonne each in LIN5 to account for any catch that may be taken. The Ministry also proposes to retain the nil recreational and customary allowance in LIN6, as it is a remote, exposed and a challenging environment for non-commercial fishers.

7 The deemed value rates for ling have also been reviewed for the 2013/14 fishing year. The Ministry recommends that, regardless of which of the two TAC options you decide to implement, you retain the existing deemed value rates for LIN5 and LIN6 at this time.

Background Information

8 Ling was introduced into the quota management system in 1986. LIN5 and LIN6 are managed through the National Fisheries Plan for Deepwater and Middle-depth Fisheries (National Deepwater Plan). The species-specific chapter of the National Deepwater Plan for ling was completed in September 2011. The management approach for ling involves assessing the stock against the set of generic reference points specified in the Harvest Strategy Standard.[8]

9 The Standard establishes biological reference points (management target, soft limit and hard limit) and guides the appropriate management response depending on where a stock is assessed to be in relation to these reference points. The default management targets and limits for ling are listed in Table 3.

[7] Total allowable commercial catch.

[8] Ministry of Fisheries (2008) Harvest Strategy Standard for New Zealand Fisheries.

Table 3: Default reference points and associated management response used in ling fisheries

Reference point	Management response
Management target of 40% B_0	The stock is permitted to fluctuate around this management target. TAC/TACC changes will be employed to move stock toward or above target.
Soft limit of 20% B_0	A formal, time-constrained rebuilding plan will be implemented if this limit is reached.
Hard limit of 10% B_0	The limit below which a fishery will be considered for closure.

10 Ling in QMAs 5 and 6 are treated as two biological stocks for assessment purposes: Stewart-Snares shelf and Campbell Plateau as one stock (LIN5, and LIN6 west of 176° E), and Bounty Plateau as the other (LIN6 east of 176° E) (Figure 2). The Bounty Plateau (LIN6B) stock is relatively small, being perhaps 5% of the size of the combined Campbell Plateau and Stewart-Snares shelf stocks. So as in previous assessments, this stock has been excluded from the current analysis.

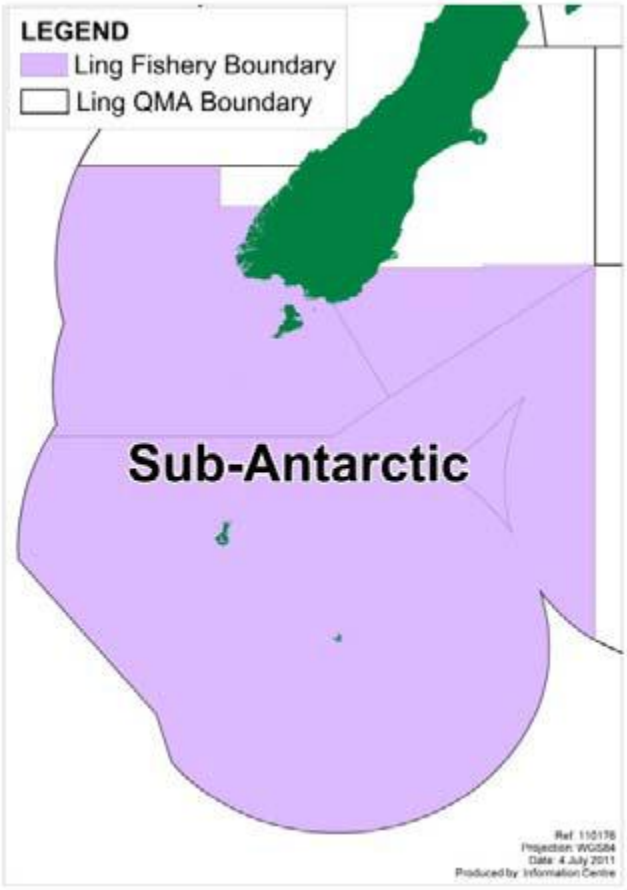

Figure 2: LIN5 and LIN6 (excluding LIN6B)

11 The current management approach for all biological ling stocks is based on frequent stock assessments and leads to regular reviews of the TAC/TACCs. Stock status is determined using the best available scientific information. These TAC/TACC reviews are conducted, and other management responses implemented, to ensure the stocks are managed within the default biological targets and limits as set out in the Harvest Strategy Standard.

Consultation

12 The Ministry consulted on two options for LIN5 and LIN6 in the initial position paper (IPP): the status quo for each of LIN5 and LIN6; and a 10% increase in the TACCs for LIN5 and for LIN6. Stakeholder submissions received indicated a preference for a combination of these two options, which are discussed below.

13 Decisions to vary TACs are made under section 13(4) of the Fisheries Act 1996 (Act). Therefore the consultation requirements of section 12 apply. Decisions to vary TACCs are made under section 20(2) of the Act. Therefore the consultation requirements of section 21(2) apply. These provisions require consultation with such persons or organisations 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.

14 The Ministry has consulted on your behalf on the two options that are set out in Tables 1 and 2 above. The Ministry followed its standard consultation process of posting IPPs on the Ministry website and alerting stakeholders to this through a letter sent to approximately 200 companies, organisations and individuals.

15 There is also an obligation to provide for input and participation of tangata whenua and have particular regard to kaitiakitanga. There have been no customary authorisations issued by tangata tiaki for harvest of ling from either LIN5 or LIN6 by customary Māori fishers.

Submissions Received

16 Submissions were received from the following:

a. The Deepwater Group Limited (DWG)
b. Sanford Limited (Sanford)
c. Te Ohu Kai Moana Trustee Limited (TOKM)
d. Talley's Group Limited (Talley's)
e. New Zealand Recreational Fishing Council (NZRFC)

17 All submissions are attached to this paper for your reference. A summary of submissions is provided in Table 4.

Table 4: Summary of submissions

Submitter	LIN5	LIN6
Deepwater Group	Increase	58.38% supported status quo 41.62% supported increase
Sanford	Increase	Status quo
TOKM	Increase	Status quo
Talley's	Increase	Status quo
NZRFC	Status quo	Status quo

Submissions on Catch Limit

18 DWG submitted on behalf of their shareholders who own LIN5 and LIN6 quota. These shareholders collectively own 94.2% of the LIN5 quota, and 92.5% of the quota for LIN6. DWG advises that in a poll of shareholders, based on tonnages of LIN5 quota owned, 99.99% supported an increasing the TACC to 3,955 tonnes for LIN5 (Option 2).

19 DWG submitted that based on tonnage of LIN6 quota owned, 58.38% of shareholders support no change to the TACC (Option 1) and that 41.62% support an increase to 9,356 tonnes (Option 2).

20 Sanford, a DWG shareholder, also separately submitted in support of an increase to the TACC to 3,955 tonnes in LIN5 (Option 2), noting there is strong evidence for increased economic utilisation opportunities. However, Sanford supported the status quo (Option 1) for LIN6. They submitted that the TACC should remain at 8,505 tonnes as 'catches are currently significantly under the TACC' and only 30% was caught in the 2012/13 fishing year.

21 TOKM is the corporate trustee of Te Ohu Kai Moana Trust, which works to advance the interests of iwi individually and collectively. TOKM is a shareholder of the DWG and submitted separately in support of the submission made by the DWG. TOKM supported an increase in the LIN5 TACC from 3,595 tonnes to 3,955 (Option 2). This support was based on the Ministry's scientific advice that a TACC increase of 10% would not adversely affect the stock sustainability. TOKM supported retaining the current TACC for LIN6 (Option 1) as LIN6 'has only ever been lightly fished and that this situation is not likely to change.' TOKM noted that as fishing companies and quota holders are unlikely to access an increased TACC, an increase does not appear warranted, particularly if it results in an oversupply of Annual catch entitlement (ACE) combined with an increase in levies for quota owners.

22 Talley's, a DWG shareholder, also made an individual submission supporting the proposed increase for LIN5 (Option 2). Talley's did not support the proposed increase for LIN6, and noted that the science in LIN6 is 'inconclusive'. Talley's provided the catch data for LIN6 for the last 10 years to illustrate that the LIN6 fishery has been under-caught over this period.

23 Talley's also noted compliance issues in relation to joint venture vessels 'trucking' catch from LIN5 to 6 (i.e. catching fish in LIN5 and reporting it as caught in LIN6). This may, in their view, have contributed to the diminished catch in LIN6 in recent years. In addition, their position is that the original catch history used to establish the TACC for LIN6 may have been based on inaccurate catch data recorded prior to the introduction of the QMS in 1986.

24 The NZRFC stated in its submission that it represents some 76,000 amateur and sustenance fishers. Their submission was prepared following consultation via email and through the NZRFC website. The NZRFC expressed concerns over the lack of consultation with recreational fishing forums regarding fisheries up for review during this sustainability round, most of which the NZRFC says, are of 'great interest to recreational fishers.'

25 The NZRFC is of the view that as no consultation took place in the South Island regarding LIN5 and 6 (or any other fisheries included in this sustainability round), and that as there 'appears to be uncertainty in the stock assessment', 'increases in the TACs for LIN5 and 6 cannot be supported.' The NZRFC therefore supports the status quo for both LIN5 and 6 (Option 1).

26 In response to the NZRFC's comments, the recreational allowance for LIN5 is to remain unchanged at one tonne for both Option 1 and Option 2. There is no recreational

allowance for ling in LIN6 under both Option 1 and Option 2 as there are no reports of recreational catch in LIN6.

Rationale for Management Intervention

27 The 2012 stock assessment for LIN5 and LIN6 estimated the stocks to be above the biomass that will produce the maximum sustainable yield (B_{MSY}) and above the default management target (40% B_0.). This assessment indicates that higher TACCs and catches are likely to be sustainable for these stocks.

28 Although estimates of current and un-fished stock size are very imprecise, it is very likely that current biomass is greater than 70% of B_0. This is considerably higher than the management target of 40% B_0.

29 The purpose of the Act 1996 is "to provide for the utilisation of fisheries resources while ensuring sustainability". The current stock status indicates that there are utilisation opportunities available in the ling fishery suggesting that a TACC increase is warranted.

30 The next stock assessment is scheduled for 2014.

Management Measures Recommended

31 The current management approach for all biological ling stocks is based on frequent stock assessments and leads to regular reviews of TACs and TACCs. Stock status is determined using the best available scientific information. These TAC and TACC reviews are conducted, and other management responses implemented, to ensure the stocks are managed within the default biological targets and limits as set out in the Harvest Strategy Standard (Table 3).

32 The evidence that the stock size is relatively high and that exploitation has been light, suggests that a modest TAC increase is unlikely to adversely affect the stock. The scientific advice, therefore, is that a TACC increase of the order of about 10% would not cause undue risks for stock sustainability, with on-going stock monitoring designed to identify any changes in stock status.

Option 1 – Status Quo

LIN5

33 Option 1 proposes no change to current TACs, TACCs and allowances for 2013/14. For the LIN5 stock, the status quo does not allow industry to benefit from the current ling abundance by increasing revenue from higher catches.

34 With the status of the stock estimated to be capable of supporting higher catches, there are lost opportunities for utilisation; this is particularly the case for LIN5 that has been fully caught in recent years.

35 However, retaining the TAC would provide increased certainty that the LIN5 stock remains at or above B_{MSY}. Although the assessment for LIN5 is uncertain, the Ministry considers the stock is likely to be well above B_{MSY} and a highly cautious approach, represented by retaining the status quo, is not necessary at this time.

LIN6

36 As for LIN5, Option 1 would not enable industry to obtain the full benefit of ling abundance. However, in the last five fishing years, the catch in LIN6 has averaged 2,655

tonnes of a total TACC of 8,505 tonnes. It is clear that a TAC increase is not necessary to allow industry to increase catches in LIN6. The majority of submitters did not support increasing the TAC and as such the Ministry recommends retaining the status quo for the LIN6 fishery.

Option 2 – Increased TACs

LIN5

37 Increasing the LIN5 TACC by 10% as proposed, will have direct benefits to industry. Ling is one of the most important export fisheries. In 2012, over 5,000 tonnes of ling was exported to the value of almost $45 million (4th most valuable deepwater finfish species by export value).[9] On the basis of the export value of the most common product state exported, 360 tonnes (the recommended TACC increase in LIN5) of ling is worth approximately $1.33 million.[10]

38 The Ministry considers that increasing the TAC for LIN5 is appropriate given the stock is estimated to be well above B_{MSY}.

LIN6

39 Given the historical under-catch in LIN6, the Ministry does not expect much, if any, increased catch from any increase of the LIN6 TAC. As such, additional revenue figures for this fishery have not been compiled. Although it is likely that a TAC increase is justified based on the status of the stock, the Ministry considers there will be little practical advantage in doing so. This view was supported by the majority of industry submitters.

Assessment of Management Options

40 This section describes the two management options available for your consideration in terms of how they will ensure that your relevant statutory obligations are met.

41 The Ministry considers that all options presented in this paper satisfy your obligations under section 8 of the Act in that they provide for utilisation in the ling fishery while ensuring sustainability. Each management option proposed will ensure the long term sustainability of the stock.

Section 13 – Setting the TAC

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

a) Maintains the stock at or above a level that can produce a maximum sustainable yield, having regard to the interdependence of stocks (13(2)(a))

b) Enables the level of a stock whose current level is below that which can produce the maximum sustainable yield to be altered (13(2)(b))

   i. In a way and at a rate that will result in the stock being restored to at or above a level that can produce the maximum sustainable yield, having regard to the interdependence of stocks; and

[9] Source: Seafood NZ.

[10] Based on export figures for 2012 calendar year of $3.69 / kg greenweight. This uses frozen fillets (TSK) to estimate the greenweight export price as this form accounted for 63.1% of export earnings and 50.3% of export volume for ling in the 2012 calendar year. Precise revenue gain is difficult to estimate and will be influenced by factors such as commodity prices, exchange rate, catching costs and export state.

ii. Within a period appropriate to the stock having regard to the biological characteristics of the stock and any environmental conditions affecting the stock; or

c) Enables the level of any stock whose current level is above that which can produce the maximum sustainable yield to be altered in a way and at a rate that will result in the stock moving towards or above a level that can produce the maximum sustainable yield, having regard to the interdependence of stocks.

43 The 2012 stock assessment for LIN5 and LIN6 has estimated stock status to be above the biomass that will produce the maximum sustainable yield (B_{MSY}) and above the default management target of 40% un-fished biomass (40% B_0). Although estimates of current and un-fished stock size are very imprecise, it is very likely that current biomass is greater than 70% of B_0 for LIN5 and LIN6.

44 The current status of the stock is very likely above B_{MSY}. The Ministry therefore recommends you set the TACs for LIN5 and LIN6 under section 13(2)(c), having regard to the interdependence of stocks.

45 By-catch species in the LIN5 and 6 fisheries are predominantly species which are managed in the QMS. Therefore, the Ministry considers there is no information to suggest that the interdependence of stocks should affect where the TAC is set for LIN5 and LIN6. The Ministry considers that given the information presented above, your obligations under section 13(2)(c) are met and increasing the TAC for LIN5 from 3,633 tonnes to 4,036 tonnes and; retaining the LIN6 TAC at 8,590 tonnes, will ensure that both stocks remain at or above a level that can produce the maximum sustainable yield.

Section 13(3) – Rate of change

46 Section 13(3) requires that, in considering the way and the rate that the stock may be moved towards a level that can produce MSY, you shall have regard to such social, cultural and economic factors as you consider relevant.

47 There is no statutory guidance on what an appropriate 'way and rate' might be in any given case for the purposes of applying section 13(2); it is a matter for you to determine having regard to social, cultural and economic factors.

48 The Ministry considers that the recommended increase to the LIN5 TAC is relatively cautious given the stock is likely to be well above B_{MSY}. The submissions received indicate support from the commercial sector for increasing the LIN5 TAC and the accompanying economic benefits. Given the very small recreational and customary catch from the LIN5 stock, and the retention of the current allowances, the Ministry considers increasing the TAC at the recommended rate is appropriate.

Allocating the TAC

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

Recreational and customary allowances

50 There have been no reliable estimates of recreational harvest of ling. In 1992/93 and 1996 some recreational catches of ling were reported in LIN5, but not in sufficient quantities to provide any reliable estimate. There is no known recreational catch in LIN6.

51 There have been no customary authorisations issued by tangata tiaki for harvest of ling from either LIN5 or 6 by customary Māori fishers.

52 In LIN5, a small allowance of one tonne each for recreational and customary fishers is currently provided. In LIN6, nil allowances are provided for both recreational and customary fishers. The Ministry recommends you retain these allowances regardless of whether the TACs are increased.

53 The Ministry considers that the recommended increase to the LIN5 TAC is unlikely to affect the size and availability of ling for non-commercial fishers. Ling is not a significant target species for non-commercial fishers in the area and the target commercial fishery lies well offshore in LIN5 and LIN6.

Other sources of fishing-related mortality

54 Historically, the allowance for other sources of fishing-related mortality in LIN5 has been set at 1% of the TACC. However, potential drivers for misreporting and non-reporting of catches have been identified and it is considered that the TAC should include a higher allowance to address this issue.[11]

55 Therefore for LIN5 only, the Ministry proposes increasing the allowance for other sources of fishing-related mortality from 1% of the TACC to 2% of the TACC. This allowance is required to take account of ling mortality that is not reported such as ling lost due to burst nets, broken hooks, ling that are damaged by fishing activity but not caught, or fish that have been discarded at sea and not reported.

56 The Ministry proposes retaining the current allowance of 1% of the TACC for the LIN6 fishery. The key reason for the proposed difference in the allowance between LIN5 and LIN6 are the relative lack of available LIN5 ACE, and the relatively high price of LIN5 ACE compared to LIN6. These factors combine to provide incentives to discard or misreport fish.

57 In summary, the Ministry recommends that the allowance for other sources of fishing-related mortality in LIN5 increase to 2% of the TACC (79 tonnes) and in LIN6 remain at 1% of TACC (85 tonnes).

Section 10 – Information Principles

58 Under section 10 of the Act, you must take into account the following information principles:

a) decisions should be based on the best available information

b) decision makers should take into account any uncertainty in the available information,

c) decision makers should be cautious when information is uncertain, unreliable, or inadequate, and

d) the absence of, or any uncertainty in, any information should not be used as a reason for postponing or failing to take any measure to achieve the purpose of the Act.

[11] Non-reporting is discarding catches that are not reported at all, whereas area misreporting, known colloquially as 'trucking', occurs when fish caught in one QMA is deliberately misreported as caught in another. In addition, non-reporting can be keeping (landing or consuming on board), but not reporting the catch.

59 The Ministry considers that the best available information has been used as the basis for the recommendations herein. All science information upon which the management options are based has been peer reviewed by one of the Ministry's Fisheries Assessment Working Groups and meets the *Research and Science Information Standard for New Zealand Fisheries*.

Section 11 Considerations

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

a) Section 11(1)(a): take into account any effects of fishing on any stock and the aquatic environment. No information about any effects of fishing on any stock or on the aquatic environment, additional to that discussed elsewhere in this paper, is considered relevant to the review of sustainability measures for these stocks at this time.

b) Section 11(1)(b): take into account any existing controls under the Act that apply to the stock or area concerned. For these stocks the measures that apply currently are a TAC, TACC and allowances for customary take, recreational take, and incidental fishing-related mortality. No other controls under the Act specifically apply to these stocks.

c) Section 11(1)(c): take into account the natural variability of the stock. This is incorporated into the discussion above on setting the TAC for these stocks.

d) Sections 11(2)(a) and (b): have regard to any provisions of any regional policy statement, regional plan, or proposed regional plan under the Resource Management Act 1991 and any management strategy or management plan under the Conservation Act 1987 that apply to the coastal marine area and that the Minister considers relevant. The Ministry is not aware of any such policy statements, plans or strategies that should be taken into account for these stocks.

e) Section 11(2)(c): have regard to sections 7 and 8 of the Hauraki Gulf Marine Park Act 2000 that apply to the coastal marine area and the Minister considers relevant. The LIN5 and LIN6 QMAs do not overlap with the Hauraki Gulf. Therefore, the Ministry considers there are no relevant considerations under the Hauraki Gulf Marine Park Act 2000.

f) Section 11(2)(d): have regard to any planning document lodged by a customary marine title group under section 91 of the Marine and Coastal Area (Takutai Moana) Act 2011—that apply to the coastal marine area and are considered by you to be relevant. The Ministry is not aware that any such planning documents have been lodged at this time.

g) Section 11(2A)(b): take into account any relevant and approved fisheries plans. The application of the National Deepwater Plan is discussed in the following section.

h) Sections 11(2A)(a) and (c): take into account any conservation or fisheries services, or any decision not to require such services. Ministry does not consider that existing or proposed services materially affect the proposals for these stocks. No decision has been made to not require a service in this fishery at this time.

Section 11A – Fisheries Plans

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

62 The fishery-specific chapter of the National Deepwater Plan for ling was completed in September 2011. You are required to take the National Deepwater Plan into account when making a decision on the management options presented for LIN5 and LIN6. The management options proposed in this FAP are consistent with the dual Outcomes of the National Deepwater Plan:

a) The Use Outcome: Fisheries resources are used in a manner that provides greatest overall economic, social and cultural benefit.

b) The Environment Outcome: The capacity and integrity of the aquatic environment, habitats and species are sustained at levels that provide for current and future use.

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

a) Management Objective 1.1: Enable economically viable deepwater and middle-depth fisheries in New Zealand over the long-term.

b) Management Objective 1.3: Ensure the deepwater and middle-depths fisheries resources are managed so as to provide for the reasonably foreseeable needs of future generations.

c) Management Objective 2.5: Manage deepwater and middle-depth fisheries to avoid or minimise adverse effects on the long-term viability of endangered, threatened and protected species.

64 The Ministry considers that the management options presented in this paper will contribute towards achieving these three Management Objectives.

Section 9 – Environmental Considerations

65 Section 9 of the Act sets out the following environmental principles. These principles must be taken into account when implementing management measures under the Act.

a) Sections 9(a) and (b) require all persons exercising or performing functions, duties, or powers under the Act to take into account that associated or dependent species (those that are not harvested) be maintained at or above a level that ensures their long-term viability, and that the biological diversity of the aquatic environment should be maintained.

b) Section 9(c) requires all persons exercising or performing functions, duties, or powers under the Act to take into account the principle that habitat of particular significance for fisheries management should be protected.

66 The fishing methods used in ling fishing have different environmental effects. Trawl fisheries interact with seabirds and some marine mammals, and those that fish on the bottom also interact with the seabed and the associated benthic environment. Longline

fisheries interact with seabirds and also with the seabed and associated benthic environment however less so than trawl gear.

67 Key environmental issues associated with the LIN5 and LIN6 fisheries and how they will be affected by the recommended management options are discussed below.

Seabirds

68 In the 2011/12 fishing year, there were five observed captures of birds in trawl fisheries in the south western LIN5 area during ling target fishing, and three observed captures of seabirds in bottom long-lining in LIN6 also during ling target fishing.[12] An increase to the LIN5 TAC may increase the risk of interactions with seabirds; however, The Ministry is satisfied that existing regulatory and non-regulatory measures to reduce incidental interactions with seabirds will ensure that any increase in fishing effort does not have an adverse effect on seabird populations.

69 The Ministry has finalised a new National Plan of Action (NPOA) for seabirds that puts in place a risk-based approach to managing fishing interactions with seabirds, targeting mitigation on those species most at risk. Results of the application of this approach have indicated that large trawlers do not pose a significant risk to any seabird species under current mitigation management regimes. The risk assessment does indicate that small inshore vessels may pose a risk to some seabird species, rather than vessels operating in LIN5 and 6 fisheries.

104 The Ministry will continue to work with industry to reduce the risk to key seabird species; a range of measures is currently in place or under development. Mandatory seabird mitigation measures include the requirement that all trawlers over 28 m in length deploy bird mitigation devices during fishing.

105 Non-regulatory measures are also used to reduce the risk of seabird interactions with the deepwater fleet. Every vessel over 28m in length has developed a specific vessel management plan (VMP) that sets out the onboard practices vessels must follow to reduce the risk to seabirds, including offal management procedures and good factory cleanliness. The Ministry's observers monitor each vessel's adherence to their VMP and if a vessel is not complying with the guidelines in its VMP, the Director-General has the option of applying vessel-specific regulations to better control management practices. These practices will continue during 2013/14.

Fish by-catch

70 Ling are often taken as a by-catch in hoki target trawl fisheries. Both species are widely distributed in Fisheries Management Areas (FMAs) 5 and 6 at depths of 300-800 m. Target line fisheries for ling have the main by-catch species of spiny dogfish, sea perch, sharks and skates and ribaldo. Fish by-catch include sharks and skates, in both trawl and longline fisheries. The Ministry has no information that suggests by-catch is of concern in LIN5 and LIN6; the majority of by-catch consists of QMS species.

71 In 2008, the then Minister responsible for fisheries approved a National Plan of Action (NPOA) for the Conservation and Management of Sharks. The purpose of the NPOA was to ensure conservation of sharks and management of all fisheries that catch sharks, either as the target or as by-catch. The Ministry has reviewed the 2008 NPOA, and is

[12] Source: Dragonfly.co.nz

drafting an updated version to cover the coming four (or more) years from 2013. The Ministry will ensure all deepwater fisheries are managed to meet the objectives of the revised NPOA.

Marine mammals

72 New Zealand fur seals are occasionally captured in ling fisheries. The majority of New Zealand fur seal captures take place in trawl fisheries, with only one observed incident of New Zealand fur seal capture while targeting ling reported in historical longline data.[13] Given the very low capture rates, the Ministry considers that increasing TACs in LIN5 and/or LIN6 will have no significant effect on marine mammal populations.

Benthic impacts

73 Although ling is a mid-water species, it is often caught by bottom trawl or mid-water trawls fished on or near the bottom which can have an impact of the benthic habitat. Most ling in LIN5 and 6 are taken by bottom trawls which contact with the seabed, and by long-lines which have lesser physical impact.

74 In recent years, management measures to address the effects of deepwater trawl activity have focused on 'avoiding' these effects. This has been achieved through closing areas to bottom trawling; first with seamount closures in 2001 and then with Benthic Protection Areas (BPAs). The implementation of BPAs in 2007 effectively closed over 30% of New Zealand's EEZ to bottom trawling.[14] It also implemented a monitoring regime to ensure these closures are adhered to.

75 The trawl footprint of all fisheries operating in the LIN5 and 6 QMAs will continue to be mapped and monitored annually. Should you agree to increase the LIN5 and/or LIN6 TACs, fishing will be conducted in the same fishing grounds as are currently utilised by the fleet. The Ministry considers that an increase in fishing effort will not materially increase the effect of fishing on the benthic environment and will not constitute an adverse effect.

Deemed values

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

77 The current deemed value rates for LIN5 and LIN6 were revised in 2007 and are set as follows:

Interim	Annual 100-102%	Annual 102-120%	Annual 120%+	2011/12 total deemed values invoiced[15]
$1.20 per kg	$2.38 per kg	$3.40 per kg	$6.00 per kg	$160,925

78 The Ministry considers these deemed value rates are appropriate, as the current annual (100-102%) deemed value rate is set between the ACE trading price and the landed (export) price for the stock. The high differential deemed value rate also provides an

[13] This was in 2002 and occurred on the Bounty Plateau area of LIN6.

[14] Most of the EEZ is deeper than 1,250 m and only about 10% has ever been trawled. Areas that have never been trawled include much of the BPAs, though some seamounts have previously been bottom trawled.

[15] Total for LIN5 only. Deemed values for LIN6 in 2011/12 were nil.

incentive to limit catch to ACE holdings. The Ministry is satisfied that should you increase the LIN5 and/or LIN6 TACCs the current deemed value rates will limit catch to within the TACC.

79 Fishing activity will be monitored during the 2013/14 fishing year and if there is evidence that fishers are either fishing in excess of the TACC or fishing in excess of their individual ACE holdings then the deemed value rates will be reviewed for the 2014/15 fishing year.

Compliance Issues

80 The Ministry considers there may be some compliance risks with the proposed increase under Option 2. Area misreporting has been known in ling fisheries, particularly in LIN5 and LIN6 where there have been a number of investigations and successful prosecutions.

81 Risks associated with the increase will be addressed through regular analysis of catch returns of ling and by-catch species as well as increased observer coverage across the fisheries and monitoring of information collected by observers.

Recommendations

82 The Ministry recommends that you:

FOR LIN5 EITHER (Option 1 – status quo)

a) Agree to retain the existing TAC at 3,633 tonnes and within the TAC:
   v. Retain the allowance for Māori customary non-commercial fishing interests of one tonne;
   vi. Retain the allowance for recreational fishing interests of one tonne;
   vii. Retain an allowance of 36 tonnes for other sources of fishing-related mortality; and
   viii. Retain the TACC at 3,595 tonnes **Yes / No**

OR (Option 2 – Ministry's recommendation)

b) Agree to increase the TAC from 3,633 tonnes to 4,036 tonnes and within the TAC:
   i. Retain the allowance for Māori customary non-commercial fishing interests of one tonne
   ii. Retain the allowance for recreational fishing interests of one tonne;
   iii. Increase the allowance for other sources of fishing-related mortality from 1% of the TACC to 2% of the TACC and set this allowance at 79 tonnes; and
   iv. Set the TACC at 3,955 tonnes

Yes / No

AND

FOR LIN6 EITHER (Option 1 – status quo and Ministry's recommendation)

a) Agree to retain the existing TAC for LIN6 at 8,590 tonnes and within the TAC:
   i. Retain the allowance for Māori customary non-commercial fishing interests of zero tonnes
   ii. Retain the allowance for recreational fishing interests of zero tonnes;
   iii. Retain the allowance of 85 tonnes for other sources of fishing-related mortality;
   iv. Retain the TACC at 8,505 tonnes **Yes / No**

OR (Option 2)

b) Agree to increase the TAC for LIN6 from 8,590 tonnes to 9,450 tonnes and within the TAC:

i. Retain the allowance for Māori customary non-commercial fishing interests of zero tonnes
ii. Retain the allowance for recreational fishing interests of zero tonnes;
iii. Set an allowance of 94 tonnes for other sources of fishing-related mortality;
iv. Set the TACC at 9,356 tonnes

Yes / No

James Stevenson-Wallace
Director Fisheries Management

AGREED / AGREED AS AMENDED / NOT AGREED

Hon Nathan Guy
Minister for Primary Industries

/ / 2013

LING (LIN7) – FINAL ADVICE PAPER

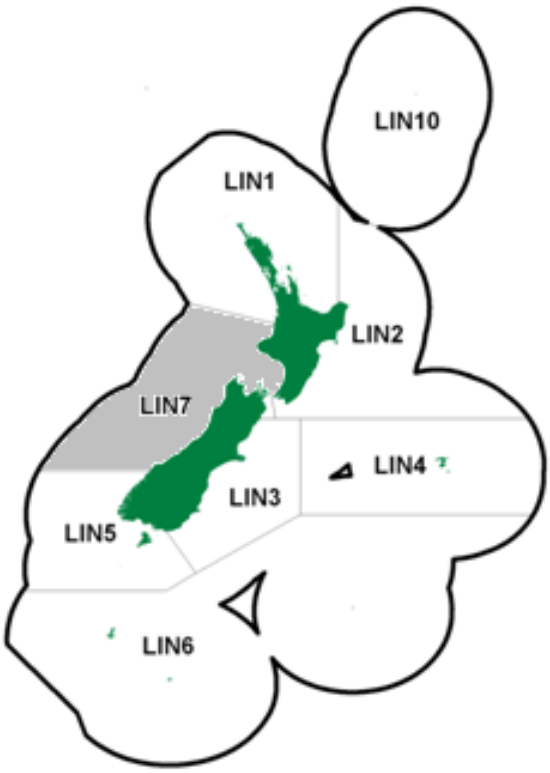

Figure 1: Map of the ling Quota Management Areas with the area of LIN7 highlighted

Executive Summary

1 The 2013 stock assessment for LIN7 estimated the stock to be 71% of un-fished biomass (B_0). This is above the biomass that will produce the maximum sustainable yield (B_{MSY}) and above the default management target of 40% of un-fished biomass (40% B_0). This estimate of stock biomass indicates that a higher TAC is likely to be sustainable.

2 The Ministry for Primary Industries (the Ministry) is proposing two options for your consideration. The first option would retain the LIN7 total allowable catch (TAC) and total allowable commercial catch (TACC) at 2,501 and 2,474 tonnes respectively. In addition, allowances for customary Maori and recreational interests would be retained at one tonne each. The allowance for other sources of fishing-related mortality would remain at 25 tonnes (1% of the TACC).

3 The second option (the Ministry's recommendation) would increase the LIN7 TAC from 2,501 tonnes to 3,144 tonnes and the TACC from 2,474 tonnes to 3,080 tonnes. Allowances for customary Maori and recreational interests would be retained at one tonne each. Under Option 2, the allowance for other sources of fishing-related mortality would increase from 1% of the TACC to 2% of the TACC (increase from 25 to 62 tonnes).

4 The deemed value rates for ling have also been reviewed for the 2013/14 fishing year and are considered to be appropriate.

Background Information

5 New Zealand's ling fisheries have been managed within the quota management system (QMS) since 1986. There are eight quota management areas (QMAs) for ling (Figure 1).

6 The main fishing area for LIN7 is off the west coast of the South Island (WCSI), where 98% of the LIN7 catch is taken. This catch is mostly taken in two main fisheries, the first as a by-catch in the WCSI hoki target fishery, and the second by vessels smaller than 28 metres targeting ling using both trawl and longline fishing methods.

7 The catch from smaller vessels has gradually increased since the early 2000s making up nearly 50% of total catch in 2011/12. The catch from hoki target fishing has varied over time in relation to the hoki TACC and hoki catch from the WCSI fishery.

8 Hoki TACCs were highest from 1994–2001, the period where LIN7 captures regularly exceeded the TACC and were as high as 3,300 tonnes. The hoki TAC was lowered in 2001 and LIN7 catches decreased as a result. Hoki TACCs have been increasing since 2009 and as a result, LIN7 catches from hoki target fishing have also increased. There is another increase to the hoki TAC proposed for this year which could again result in increased LIN7 catches.

Consultation

9 A decision to vary the TAC is made under section 13(4) of the Act. Therefore consultation requirements of section 12(2) apply. Decisions to vary TACCs are made under section 20(2) of the Act. Therefore, consultation requirements under 21(2) apply. These provisions require consultation with such persons or organisations 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 Maori, environmental, commercial and recreational interests.

10 The Ministry has consulted on your behalf on the two options that are set out in Table 1. The Ministry followed its standard consultation process of posting initial position papers (IPPs) on the Ministry website and alerting stakeholders to this through a letter sent to approximately 200 companies, organisations and individuals.

11 There is also an obligation to provide for input and participation of tangata whenua and have particular regard to kaitiakitanga. The Ministry recognises that information on customary harvest is uncertain and invited iwi, Tangata Tiaki/Kaitaiki, and customary permit holders to submit information. However, no additional information was submitted during the consultation process. The Ministry will continue to work with tangata whenua to improve reporting and information on customary non-commercial catches.

Table 1: Summary of management options proposed for the LIN7 fishery (all values in tonnes)

	Option 1 (Status quo)	**Option 2 (Recommended option)**
TAC	2,501	3,144
Customary Maori allowance	1	1
Recreational allowance	1	1
Other sources of fishing-related mortality	25 (1% of the TACC)	62 (2% of the TACC)
TACC	2,474	3,080

Submissions Received

12 Submissions were received from the following:

a) Deepwater Group Limited (DWG)

b) Westfleet Seafoods Limited (Westfleet)

c) Sealord Group Limited (Sealord)

d) Sanford Limited (Sanford)

e) Iwi Collective Partnership (ICP)

f) Te Ohu Kaimoana Trustee Ltd (TOKM)

g) New Zealand Recreational Fishing Council (NZRFC)

h) Talley's Group Limited (Talley's)

All submissions are attached to this paper for your reference.

Submissions on the Catch Limit

13 DWG submitted on behalf of its shareholders who own LIN7 quota. These shareholders collectively own 69.6% of the LIN7 quota. The submission indicated a split in the opinion of DWG shareholders, with 41% of LIN7 shareholders represented by DWG supporting Option 1, and the remaining 59% supporting Option 2.

14 Westfleet is a fishing company based in Greymouth that operates several inshore bottom longline and trawl vessels that target ling in LIN7 and has been fishing in the area since 1989. Westfleet expressed a strong preference for Option 2, but also indicated disappointment that the proposed increase was not larger. The submission was supported by the reported status of the stock, anecdotal reports of increasing catch rates, and the availability of LIN7 annual catch entitlement ACE limiting fishing for other QMS species including hoki and hake.

15 Sealord expressed support for Option 2 based on the strength of the new stock assessment for LIN7 and the stock having supported catches of 2,500-3,200 tonnes for the past 25 years with no signs of significant depletion.

16 Sanford supported Option 2 as it considered it is unlikely to give rise to a sustainability concern and better reflects current catch rates.

17 The ICP was formed in 2010 to represent the collective fisheries interests of 12 iwi, and manage the settlement ACE of three further iwi. ICP supported Option 2 based on the demonstrated health of the LIN7 fishery, and the need to adjust the LIN7 TACC in conjunction with the TACC increase proposed for HOK1 which would increase fishing pressure in LIN7.

18 TOKM is the corporate trustee of Te Ohu Kaimoana Trust, which works to advance the interests of iwi individually and collectively. The submission clarified that for LIN7, TOKM supported Option 2 based on the outcomes of the 2013 stock assessment indicating that the stock is significantly above the level of the maximum sustainable yield and the management target. TOKM also noted the historical overcatch of the LIN7 TACC, the proposed increase in the HOK1 TACC, and the next review planned for 2016 which should take into account any changes in the LIN7 fishery.

19 The NZRFC supported Option 1 and expressed disappointment that recreational fishers were not specifically consulted regarding the proposed TACC increase in LIN7. NZRFC stated that until consultation takes place they will not support any increase.

20 Talley's owns quota equivalent to 29% of the TACC in LIN7 and submitted in support of Option 1, justifying the position with a number of factors including uncertainty in the stock assessment, assertions of a steady decline in catch-per-unit effort, anecdotal reports from vessel skippers of the fishery 'tiring', and the long term catches over the TACC depleting the stock. A reference was also made to section 10 of the Fisheries Act implying that the scientific information available for the management of LIN7 is of poor quality and inadequate for a decision to increase the TACC.

Rationale for Management Intervention

21 The stock assessment for LIN7 was updated in 2013. The assessment model uses data inputs including standardised catch-per-unit-effort from commercial trawl fisheries, abundance estimates from two research trawl surveys in 2000 and 2012, and catch-at-age information from the research surveys and commercial trawl and longline fisheries.

22 The model estimated LIN7 to be at 71% B_0. However, the model is very uncertain with regards to estimates of B_0 or absolute biomass. There is insufficient information to allow the model to accurately scale the B_0 or $B_{current}$ estimates. This means that while the Working Group believes that it is very likely that the stock is above the management target and lightly fished, the model does not provide information as to the actual tonnage of ling in LIN7.

23 The TACC for LIN7 has been exceeded by more than 10% in the previous two years, with catches in 2012/13 expected to be at a similar level and to increase again in 2013/14, especially if the TAC for HOK1 is increased as recommended. Although catches have historically been above the TACC, the stock assessment indicates that the stock has never been heavily fished suggesting that the TAC is conservative.

24 The purpose of the Fisheries Act 1996 is "to provide for the utilisation of fisheries resources while ensuring sustainability". The current stock status indicates that there are utilisation opportunities available in the LIN7 fishery suggesting that a TAC increase is warranted.

25 Despite the assertion by Talley's that the stock cannot support the recommended TAC increase, the Ministry considers the current stock assessment constitutes the best available information. That information suggests a higher biomass can be taken from the LIN7 stock without resulting in any sustainability concern.

Management Measures Proposed

26 Ling stocks 3-7 are managed as Tier 1 stocks in the National Fisheries Plan for Deepwater and Middle-depth Fisheries (National Deepwater Plan). The species-specific chapter of the National Deepwater Plan for ling was completed in 2011. Stock-specific reference points have not been agreed on for any ling stock. Therefore the management approach involves assessing the stock against the set of generic reference points specified in the Harvest Strategy Standard (Table 2).[16]

[16] Ministry of Fisheries (2008) Harvest Strategy Standard for New Zealand Fisheries.

Table 2: Default harvest strategy from the Harvest Strategy Standard

Reference point	Management Response
Management target of 40% B_0	The stock is permitted to fluctuate around this management target. TAC/TACC changes will be employed to move stock toward or above target.
Soft limit of 20% B_0	A formal, time-constrained rebuilding plan will be implemented if this limit is reached.
Hard limit of 10% B_0	The limit below which a fishery will be considered for closure.

Option 1 – Status Quo

27 Under this option the TAC would remain at 2,501 tonnes and the TACC would remain at 2,474 tonnes. Other allowances would remain at the current levels set out in Table 1.

28 This option is supported by NZRFC and Talley's. The NZRFC supported Option 1 based primarily on a perceived lack on consultation with recreational fishers. As discussed above, the rationale provided by Talley's includes uncertainty in the stock assessment and anecdotal information from their skippers regarding the health of the fishery.

29 There is no confirmed recreational or Maori customary take of ling in LIN7, although a nominal allowance of one tonne each is provided for within the TAC. Any changes in the LIN7 TAC are unlikely to have any significant effects on recreational or customary fishers.

30 The 2013 stock assessment for LIN7 indicates that the stock is very likely to be above the management target, with the assessment having been rated as 'High Quality' by the Deepwater Fishery Assessment Working Group.

31 This Option is undoubtedly cautious and would result in lost utilisation opportunities as the LIN7 stock has been estimated to be well above the management target.

Option 2 – Recommended Option

32 If you select Option 2, the TAC would be increased to 3,144 tonnes and the TACC would be increased by 606 tonnes to 3,080 tonnes. In addition, it is proposed that the allowance for other sources of fishing-related mortality be increased to 2% of the TACC (62 tonnes).

33 Option 2 is supported by a small majority of DWG shareholders, including Sealord, Sanford, ICP, and TOKM, all of whom submitted separately but are also represented in the DWG submission. This option is also supported by Westfleet. All submissions in support of Option 2 referenced the stock being estimated at 71% B_0, well above the default management target. Some submitters also included anecdotal information of a healthy fishery and abundant ling in the LIN7 area. An important point emphasised in these submissions was the need to allow for additional by-catch of ling in the west coast South Island hoki fishery as a result of the recommended increase to the hoki TAC.

34 In 2012, LIN7 contributed an estimated $44.8m to the New Zealand economy in export revenues. Based on export figures from 2012 of $3.69/kg greenweight, a TACC increase of 606 tonnes would result in an additional $2.24m in export revenue.[17]

[17] Based on export figures for 2012 calendar year of $3.69 / kg greenweight. This uses frozen fillets (TSK) to estimate the greenweight export price as this form accounted for 63.1% of export earnings and 50.3% of export volume for ling in the 2012 calendar year. Precise revenue gain is difficult to estimate and will be influenced by factors such as commodity prices, exchange rate, catching costs and export state

35 Given the results of the stock assessment, the Ministry recommends you increase the TAC under Option 2 for the 2013/14 fishing year to take advantage of this utilisation opportunity.

Assessment of Management Options

36 This section discusses the two management options available for your consideration in terms of how they will ensure that your relevant statutory obligations are met.

37 The Ministry considers that all options presented in this paper satisfy your obligations under section 8 of the Act in that they provide for utilisation in the LIN7 fishery while ensuring sustainability. Each management option proposed will ensure the long term sustainability of the stock. Option 1 is more cautious, but is likely to limit utilisation opportunities. In contrast, increasing the TAC to 3,144 tonnes under Option 2 (the Ministry's recommended option), will allow for increased utilisation without adversely affecting the sustainability of the stock.

Section 13 – Setting the TAC

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

a) Maintains the stock at or above a level that can produce a maximum sustainable yield, having regard to the interdependence of stocks;

b) Enables the level of any stock whose current level is below that which can produce the maximum sustainable yield to be altered

   i) in a way and at a rate that will result in the stock moving towards or above a level that can produce the maximum sustainable yield, having regard to the interdependence of stocks; and

   ii) within a period appropriate to the stock having regard to the biological characteristics and any environmental conditions affecting the stock; or

c) Enables the level of any stock whose current level is above that which can produce the maximum sustainable yield to be altered in a way and at a rate that will result in the stock moving towards or above a level that can produce the maximum sustainable yield, having regard to the interdependence of stocks.

39 The 2013 stock assessment for LIN7 has estimated the stock to be at 71% B_0, well above the biomass that will produce the maximum sustainable yield (B_{MSY}) and above the default management target of 40% un-fished biomass (40% B_0).

40 Therefore the current status of the stock is very likely above B_{MSY}. The Ministry therefore recommends you set the TAC for LIN7 under section 13(2)(c), having regard to the interdependence of stocks.

41 By-catch species in LIN7 are predominantly species which are managed in the QMS. Therefore, the Ministry considers there is no information to suggest that the interdependence of stocks should affect where the TAC is set for LIN7. The Ministry considers that given the information presented above, your obligations under section 13(2)(c) are met and increasing the TAC for LIN7 will ensure the stock remains at or above a level that can produce the maximum sustainable yield.

Section 13(3) – Rate of change

42 Section 13(3) requires that, in considering the way and the rate that the stock may be moved towards a level that can produce MSY, you shall have regard to such social, cultural and economic factors as you consider relevant.

43 There is no statutory guidance on what an appropriate 'way and rate' might be in any given case for the purposes of applying section 13(2); it is a matter for you to determine having regard to social, cultural and economic factors.

44 The Ministry considers that the recommended increase to the LIN7 TAC is relatively cautious given the stock is likely to be well above B_{MSY}. With the exception of Talley's, the submissions received from the commercial sector largely support increasing the LIN7 TAC, noting the accompanying economic benefits. Given the very small recreational and customary catch from the LIN7 stock, and the retention of the current allowances, the Ministry considers increasing the TAC at the recommended rate is appropriate.

Allocating the TAC

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

Recreational and customary allowances

46 Recreational and customary fishers do not target ling as it is predominantly an offshore fishery; the data on actual customary and recreational catches of ling in recent years is negligible. However, there are references to customary catches of ling occurring in the past. The recently-completed recreational fishing survey showed no recreational ling catch in LIN7. The Ministry also considers it possible that a small amount of ling is caught by recreational fishers while fishing for other middle-depth species. A small allowance of one tonne each for recreational and customary fishers is currently provided for and the Ministry considers these allowances should continue regardless of whether the TAC is increased under Option 2.

Other sources of fishing-related mortality

47 Historically, the allowance for other sources of fishing-related mortality in LIN7 has been set at 1% of the TACC. However, potential drivers for non-reporting of catches have been identified and it is considered that the TAC should include an increased allowance that addresses this issue.

48 Such drivers include a lack of available ACE, difficulties and time required for the processing of large ling, and the ramped deemed values that can make it uneconomic to land the fish. Some of these drivers may be removed by an increase to the TACC, however the processing difficulties remain and as a result, the Ministry recommends increasing the allowance from 1% to 2% of the TACC to allow for any potential misreporting of catch.

49 The Ministry proposes the allowance for other sources of fishing-related mortality under Option 1 remain at 1% of the TACC (25 tonnes), and under Option 2 be increased to 2% of the TACC (62 tonnes).

Section 10 – Information Principles

50 Under section 10 of the Act, you must take into account the following information principles:

a) decisions should be based on the best available information:

b) decision makers should take into account any uncertainty in the available information:

c) decision makers should be cautious when information is uncertain, unreliable, or inadequate:

d) the absence of, or any uncertainty in, any information should not be used as a reason for postponing or failing to take any measure to achieve the purpose of the Act.

51 The Ministry considers that the best available information has been used as the basis for the recommendations herein. All science information upon which the management options are based has been peer reviewed by one of the Ministry's Fisheries Assessment Working Groups and meets the *Research and Science Information Standard for New Zealand Fisheries*.

Section 11 Considerations

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

a) Section 11(1)(a): take into account any effects of fishing on any stock and the aquatic environment. No information about any effects of fishing on any stock or on the aquatic environment, additional to that discussed elsewhere in this paper, is considered relevant to the review of sustainability measures for this stock at this time.

b) Section 11(1)(b): take into account any existing controls under the Act that apply to the stock or area concerned. For this stock the measures that apply currently are a TAC, TACC and allowances for customary take, recreational take, and incidental fishing-related mortality. No other controls under the Act specifically apply to this stock.

c) Section 11(1)(c): take into account the natural variability of the stock. This is incorporated into the discussion above on setting the TAC for this stock.

d) Sections 11(2)(a) and (b): have regard to any provisions of any regional policy statement, regional plan, or proposed regional plan under the Resource Management Act 1991 and any management strategy or management plan under the Conservation Act 1987 that apply to the coastal marine area and that the Minister considers relevant. The Ministry is not aware of any such policy statements, plans or strategies that should be taken into account for this stock.

e) Section 11(2)(c): have regard to sections 7 and 8 of the Hauraki Gulf Marine Park Act 2000 that apply to the coastal marine area and the Minister considers relevant. The LIN7 QMA does not overlap with the Hauraki Gulf. Therefore, the Ministry considers there are no relevant considerations under the Hauraki Gulf Marine Park Act 2000.

f) Section 11(2)(d): have regard to any planning document lodged by a customary marine title group under section 91 of the Marine and Coastal Area (Takutai Moana) Act 2011—that apply to the coastal marine area and are considered by

you to be relevant. The Ministry is not aware that any such planning documents have been lodged at this time.

g) Section 11(2A)(b): take into account any relevant and approved fisheries plans. The application of the National Deepwater Plan is discussed in the following section.

h) Sections 11(2A)(a) and (c): you must take into account any conservation or fisheries services, or any decision not to require such services. The Ministry does not consider that existing or proposed services materially affect the proposals for these stocks. No decision has been made to not require a service in this fishery at this time.

Section 11A – Fisheries Plan

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

54 The fishery-specific chapter of the National Deepwater Plan for ling was completed in 2011. You are required to take the National Deepwater Plan into account when making a decision on the management options presented for LIN7. The management options proposed in this IPP are consistent with the dual Outcomes of the National Deepwater Plan:

a) The Use Outcome: Fisheries resources are used in a manner that provides greatest overall economic, social and cultural benefit

b) The Environment Outcome: The capacity and integrity of the aquatic environment, habitats and species are sustained at levels that provide for current and future use.

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

a) Management Objective 1.1: Enable economically viable deepwater and middle-depth fisheries in New Zealand over the long-term

b) Management Objective 1.3: Ensure the deepwater and middle-depths fisheries resources are managed so as to provide for the reasonably foreseeable needs of future generations

c) Management Objective 2.5: Manage deepwater and middle-depth fisheries to avoid or minimise adverse effects on the long-term viability of endangered, threatened and protected species.

56 The Ministry considers that the management options presented in this paper will contribute towards achieving these three Management Objectives.

Section 9 – Environmental Considerations

57 Section 9 of the Act sets out the following environmental principles. These principles must be taken into account when implementing management measures under the Act.

a) Sections 9(a) and (b) require all persons exercising or performing functions, duties, or powers under the Act to take into account that associated or

dependent species (those that are not harvested) be maintained at or above a level that ensures their long-term viability, and that the biological diversity of the aquatic environment should be maintained.

b) Section 9(c) requires all persons exercising or performing functions, duties, or powers under the Act to take into account the principle that habitat of particular significance for fisheries management should be protected.

58 The fishing methods used in ling fishing have different environmental effects. Trawl fisheries interact with seabirds and some marine mammals, and those that fish on the bottom also interact with the seabed and the associated benthic environment. Longline fisheries interact with seabirds and also with the seabed and associated benthic environment however less so than trawl gear.

Seabirds

59 The ling trawl and long-line fisheries are known to interact with a range of protected seabird species. In 2010/11, ling target trawling and bottom long-lining on the west coast of the South Island was estimated to have captured five and 52 seabirds respectively. Both estimates are informed mainly by species distributional data, as observer coverage in ling fisheries has historically been very low.

60 Management of seabird interactions with New Zealand's commercial fisheries is now being driven through the Seabird National Plan of Action (NPOA-Seabirds). The NPOA-Seabirds establishes a risk-based approach to managing fishing interactions with seabirds, targeting management actions at the species most at risk.

61 Results of the application of this approach have indicated that large trawlers do not pose a significant risk to any seabird species under current mitigation management regimes. The risk assessment does indicate that small inshore vessels may pose a risk to some seabird species and the Ministry is working with the DWG to reduce these risks.

62 Interactions with seabirds are generally managed by both mandatory requirements and non-regulatory measures. Regulations stipulate that all trawlers larger than 28 m overall length, and bottom longline vessels larger than 7 m overall length, deploy bird mitigation devices when fishing gear is in use. Non-regulatory measures include vessel management plans (VMPs), which set out additional measures trawl vessels must follow to avoid seabird interactions including offal management. The Ministry has processes in place to monitor and audit performance against these measures.

63 An increase to the LIN7 TAC may increase the risk of interactions with seabirds. The Ministry will continue to actively monitor seabird interactions in both trawl and longline fisheries and work to improve the information available for robust risk assessment and management.

Fish by-catch

64 The main species that have been observed caught in association with ling on the west coast of the South Island are hoki, javelinfish and silver warehou. Observations have mainly been on larger trawl vessels. Bottom longline fisheries for ling have very low levels of by-catch, which include mainly QMS species such as stargazer, gemfish and spiny dogfish. There are not currently any sustainability concerns for any of these stocks and the hoki TAC is being considered for an increase.

65 The LIN7 QMA also covers a small portion of the Cook Strait biological ling stock. The Cook Strait ling biological stock was assessed in 2013 but the assessment was not accepted by the working group as a reliable assessment. The previous assessment for the Cook Strait biological ling stock indicated it was likely to be at or above the default management target of 40% B_0 at around 54% B_0. Less than 2% of the total LIN7 catch comes from the Cook Strait biological stock, and that stock is scheduled for assessment again in 2016.

66 The Ministry is satisfied that any increase to the LIN7 TACC is unlikely to have an unacceptable impact on the sustainability of the key species that are caught in conjunction with ling. However, by-catch levels in the fishery will continue to be monitored.

Marine mammals

67 No marine mammals have been reported as incidental by-catch in any ling longline fishery in the last five years. Estimated captures of fur seals from all ling trawl fisheries were 26 in 2009/10 and 19 in 2010/11. None of the reported captures on which these estimates are based came from the LIN7 fishery, and no estimates of captures have been made specifically for the west coast of the South Island ling fishery. Given the negligible number of captures in LIN7, the Ministry considers that increasing the TAC in LIN7 will have no significant effect on marine mammal populations.

Benthic impacts

68 Although ling is a mid-water species, it is often caught by bottom trawl or midwater trawl fished on or near the bottom which can have an impact on the benthic habitat. Nearly 50% of the catch in LIN7 is taken by bottom longlines which contact the seabed, but are likely to have minimal impacts on the seafloor habitat.

69 The majority of trawl-caught ling is taken in the hoki target fishery, which may have benthic impacts. While the proposal to increase the TAC for LIN7 will result in an increase in fishing effort, the majority of the additional catch is likely to be taken by vessels targeting hoki using mid-water trawl gear. Any increase in effort directly due to the LIN7 TAC increase is likely to be in the smaller vessels which predominantly use bottom longline gear.

70 In recent years, management measures to address the effects of deepwater trawl activity have focused on ‘avoiding’ these effects. This has been achieved through closing areas to bottom trawling; first with seamount closures in 2001 and then with Benthic Protection Areas (BPAs). The implementation of BPAs in 2007 effectively closed approximately 30% of the New Zealand EEZ to bottom trawling. It also implemented a monitoring regime to ensure these closures are adhered to.

71 The trawl footprint of both the ling and hoki west coast South Island fisheries will continue to be mapped and monitored annually.

Deemed values

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

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

Interim	Annual 100-102%	Annual 102-120%	Annual 120%+	2011/12 Actual
$1.20 per kg	$2.38 per kg	$3.40 per kg	$6.00 per kg	$1,032,649

74 The Ministry considers these deemed value rates are appropriate, as the current annual (100-102%) deemed value rate is set between the ACE trading price and the port price for the stock. The high differential deemed value rates also provides an incentive to limit catch to ACE holdings. The Ministry is satisfied that should you increase the TACC, the current deemed value rates will limit catch to within the TACC.

75 Fishing activity will be monitored during the 2013/14 fishing year and if there is evidence that fishers are either fishing in excess of the TACC or fishing in excess of their individual ACE holdings then the deemed value rates will be reviewed for the 2014/15 fishing year.

Compliance Issues

76 The Ministry considers there may be some compliance risks with maintaining the status quo as this will maintain the TAC at a level below current catches. With a potential increase in the hoki TAC and consequent increased effort in the LIN7 fishery area, catches are likely to increase. The lack of available ACE in the fishery can be a driver for non-compliant behaviour including non-reporting of catches or dumping of catches at sea.

Recommendations

77 The Ministry recommends that you:

EITHER (Option 1 – status quo)

a) **Agree** to retain the existing TAC for LIN7 at 2,501 tonnes and within the TAC:

i. Retain an allowance for Māori customary non-commercial fishing interests of one tonne;

ii. Retain an allowance for recreational fishing interests of one tonne;

iii. Retain an allowance of 25 tonnes for other sources of fishing-related mortality;

iv. Retain the TACC at 2,474 tonnes **Yes / No**

OR (Option 2 – Ministry's recommendation)

b) **Agree** to increase the TAC for LIN7 from 2,501 tonnes to 3,144 tonnes and within the TAC:

i. Retain an allowance for Māori customary non-commercial fishing interests of one tonne;

ii. Retain an allowance for recreational fishing interests of one tonne;

iii. Set an allowance of 62 tonnes for other sources of fishing-related mortality;

iv. Set the TACC at 3,080 tonnes **Yes / No**

James Stevenson-Wallace
Director Fisheries Management

AGREED / AGREED AS AMENDED / NOT AGREED

Hon Nathan Guy
Minister for Primary Industries

/ / 2013

ORANGE ROUGHY (ORH3B) – FINAL ADVICE PAPER

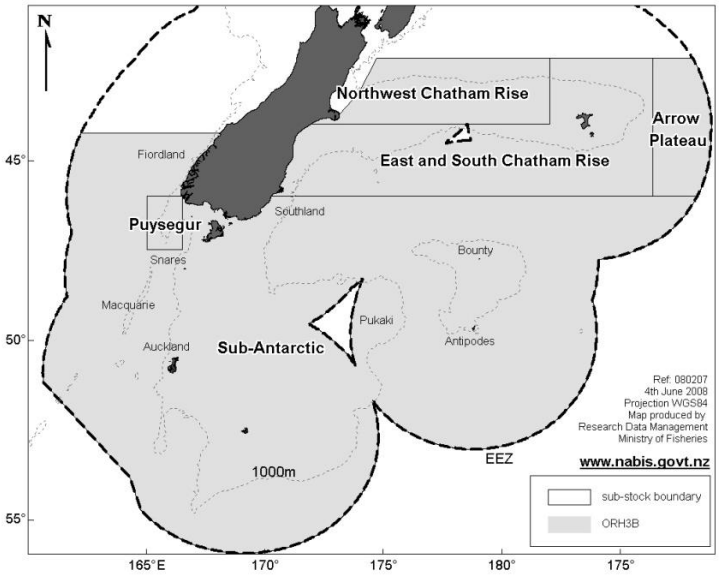

Figure 1: Quota Management Area (QMA) and sub-stock boundaries for ORH3B

Executive Summary

1 ORH3B is a large and spatially-complex fishery that comprises at least five individual sub-stocks (Figure 1). Despite the various sub-stocks, the total allowable catch (TAC) for the ORH3B stock is set as a whole. Individual catch limits are set for each of the five sub-stocks via agreement between the Ministry for Primary Industries (the Ministry) and the Deepwater Group Ltd (DWG), which represents approximately 98.0% of the ORH3B quota owners. These sub-Quota Management Area level catch limits for the individual sub-stocks are not statutory but are monitored and audited by the Ministry.

2 Based on the best available information, the ORH3B stock is unlikely to be at or above the management target. The East and South Chatham Rise fishery, which has provided approximately 70% of the orange roughy catch taken in ORH3B, has been the focus of ORH3B management in recent years and is the main focus of this paper.

3 The TAC for ORH3B has been reduced several times since 2008 as a harvest strategy was introduced for the East and South Chatham Rise sub-stock. As these reductions were made, the biomass of the East and South Chatham Rise continued to decline. Orange roughy biomass in this sub-stock then increased significantly in 2011 when a new spawning plume was discovered and surveyed.

4 The Ministry and DWG agreed not to increase the sub-stock catch limit in 2012 in response to this increased biomass, instead agreeing to conduct further acoustic surveys of the new plume and continue work developing the harvest strategy for this stock. Based on the newly-agreed harvest strategy, the Ministry recommends that you increase the TAC for ORH3B by 25% from 3,780 tonnes to 4,725 tonnes for the 2013/14 fishing year, to allow for an increase to the East and South Chatham Rise sub-stock catch limit.

5 The recommended TAC increase would result in the catch limit for the East and South Chatham Rise sub-stock increasing from 1,950 tonnes to 3,100 tonnes. Catch limits for all other sub-stocks in ORH3B would remain unchanged, although the allowance for other sources of fishing-related mortality would also be increased proportionally.

Summary of Options

6 The ORH3B TAC is set under section 13(2)(b) of the Fisheries Act 1996 (the Act). You may set the TAC and other allowances at any level you consider best meets your legislative obligations. This may include retaining the current management settings.

7 The Ministry's recommendation is that you increase the ORH3B TAC by 945 tonnes (25%) for the 2013/14 fishing year (i.e. from 3,780 tonnes to 4,725 tonnes). Within this TAC, the Ministry recommends you set allowances and the TACC as follows:

a) Retain nil allowances for customary Mäori and recreational fishing interests;

b) Set the allowance for other sources of fishing-related mortality at 5% of the TACC, or 225 tonnes (an increase of 45 tonnes); and

c) Set the TACC for ORH3B at 4,500 tonnes.

8 Should you agree to the recommended option, the Ministry will request that industry implement the following sub-stock catch limits within the TACC (Table 1):

a) The catch limit for the East and South Chatham Rise sub-stock would be set at 3,100 tonnes (an increase of 1,150 tonnes or 59%);

b) The industry research survey allowance of 250 tonnes for the East and South Chatham Rise sub-stock would be abolished. The Ministry's view is that this is no longer necessary and that further research will be conducted under special permit as is the case in all other fisheries;

c) The catch limit for Sub-Antarctic would remain at 500 tonnes;

d) The catch limit for Northwest Chatham Rise would remain at 750 tonnes;

e) The catch limit for Puysegur would remain at 150 tonnes.

Table 1: Summary of existing and recommended sub-stock catch limits for the ORH3B fishery (tonnes)

ORH3B Sub-stocks	Existing catch limits for 2012/13 (t)	Recommended Option for 2013/14 (t)
Northwest Chatham Rise	750	750
East and South Chatham Rise	1,950	3,100
Puysegur	150	150
Arrow Plateau (protected by BPA)	0	0
Sub-Antarctic	500	500
East and South Chatham Rise research allowance	250	0
TACC	3,600	4,500
Recreational and customary allowances	0	0
Other sources of fishing-related mortality (5% of TACC)	180	225
TAC	**3,780**	**4,725**

9 The Ministry also recommends that you request that Industry reconfirm the catch spreading arrangements via the above catch limits for each sub-stock within ORH3B and:

a) Continue to submit monthly monitoring reports regarding catch levels by sub-stock to the Ministry; and

b) Continue to notify the Ministry when catch reaches 80% of any sub-stock limit and also notify the Ministry when any limit has been reached.

Background Information

10 The ORH3B fishery is spatially complex and comprises several biological stocks. The majority of the ORH3B biomass is within the Northwest Chatham Rise and the East and South Chatham Rise sub-stocks. The remainder is spread across the Sub-Antarctic, which includes the Arrow Plateau, Puysegur, Pukaki South and the remaining southern areas.

11 The status of each sub-stock is evaluated independently, with the results compiled to determine the status of ORH3B as a whole. Based on the best available information, the ORH3B stock as a whole is unlikely to be at or above the biomass that can produce the maximum sustainable yield (B_{MSY}). However, the stock is unlikely to be below the soft limit, the point at which the Harvest Strategy Standard requires implementation of a formal, time-constrained rebuilding plan.[18]

12 The only sub-stock for which there is sufficient new information to support a review of management settings is the East and South Chatham Rise sub-stock. As such, the proposed management action for the 2013/14 fishing year would increase the ORH3B TAC and apply this increase to the catch limit for the East and South Chatham Rise sub-stock.

Consultation

13 Your decision on adjusting the TAC for ORH3B is a decision under section 13 (4) of the Fisheries Act 1996 (the Act) and therefore the consultation requirements of section 12 apply. Further, in respect of your decision on adjusting the TACC for ORH3B under section 20 of the Act, the consultation requirements set out in section 21(2) apply.

14 Consultation on the Initial Position Paper (IPP) was undertaken with such persons or organisations 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 Maori, environmental, commercial and recreational interests.

15 The Ministry followed its standard consultation process for IPPs in the October 2013 sustainability round. This involved posting all IPPs on the Ministry's website and alerting stakeholders to this through a letter sent to approximately 200 companies, organisations and individuals.

16 There is also an obligation to provide for input and participation of tangata whenua and have particular regard to kaitiakitanga. The Ministry recognises that information on customary harvest is uncertain and invited iwi, Tangata Tiaki/Kaitaiki, and customary permit holders to submit information. However, no additional information was submitted during the consultation process. The Ministry will continue to work with tangata whenua to improve reporting and information on customary non-commercial catches.

[18] The Harvest Strategy Standard for New Zealand Fisheries provides policy guidance on best practice in relation to the setting of fishery and stock targets and limit reference points for fishstocks in New Zealand's QMS. The Standard requires that harvest strategies for NZ fishstocks consist of three core elements, a specified target about which a stock should fluctuate, a soft limit that triggers a requirement for a formal, time-constrained rebuilding plan, and a hard limit below which the fishery should be considered for closure.

Submissions Received

17 Submissions were received from the following:

a) WWF–New Zealand (WWF)

b) The Deepwater Group Ltd (DWG)

c) Sanford Ltd

d) Sealord Group Ltd

e) New Zealand Recreational Fishing Council (NZRFC)

f) Iwi Collective Partnership (ICP)

g) Our Seas Our Future Petition (Petitioners)

All submissions are attached to this paper for your reference.

Summary of Submissions

18 The general theme of the submissions received is briefly summarised below. Comment from the Ministry is provided in the relevant sections of this advice paper where appropriate.

19 As in previous years, WWF submitted that the fishery should be closed to allow the stock to recover to 50% of un-fished biomass (B_0). WWF considered that the information used as the basis for the proposed management action is insufficient and that more research is required. WWF also submitted that the proposed harvest strategy is not sufficiently conservative for a vulnerable species such as orange roughy.

20 WWF also noted some concerns about the impact of any proposed increase on the aquatic environment; particularly impacts on the seabed and deepwater sharks. These are discussed in more detail later in this paper.

21 DWG represents holders of 95.1% of the ORH3B quota shares. DWG submitted that holders of 99.99% of those quota shares supported the proposed increase to the ORH3B TAC.

22 Sanford and Sealord also made individual submissions in addition to their inclusion in the DWG submission.

23 Sanford submitted that it supported the proposed increase to the ORH3B TAC. No further comment was provided.

24 Sealord submitted that it was also in support of the proposed increase. Sealord considered that the information used as the basis for the proposed increase was very strong and that the proposed measures are precautionary.

25 The NZRFC noted that the fishery is unlikely to be at or above B_{MSY} and stated that they support the Ministry's position. No further comment or explanation of this apparently contradictory opinion was provided.

26 The ICP represents the collective fisheries interests of 12 iwi and manages settlement annual catch entitlement (ACE) on behalf of three further iwi. The ICP supported the proposal to increase the TAC for this stock and submitted that the discovery of the new spawning plume was a positive sign and an indication of stock health. The ICP also noted

the economic benefits that would accrue to iwi as a result of any TAC increase. The ICP also voiced its support for the submission of the DWG.

27 When consultation closed, the Ministry had received 261 copies of an email petition. Petitioners did not support the proposed TAC increase. The petition noted the recent decline in the ORH stock and stated that more comprehensive data should be obtained. Petitioners also recommended that bottom trawling should not be used to catch orange roughy due to damage caused by that method on fragile seabed ecosystems.

Rationale for Management Intervention

28 The management settings for ORH3B are being reviewed to allow the implementation of an updated harvest strategy for the East and South Chatham Rise sub-stock. This review also acts on updated information on the status of this sub-stock, derived from the results of acoustic surveys in 2011 and 2012.

29 The 2013 Plenary report concludes that the biomass of the East and South Chatham Rise sub-stock was estimated to be 25% of the un-fished biomass (B_0) (range 19-32% B_0). This is unlikely to be at or above the biomass that can produce the maximum sustainable yield, which is estimated to be 30% B_0 (B_{MSY}). However, the Plenary considered that the stock was also unlikely to be below the soft limit of 20% B_0.

30 This assessment was made based on the most recent acoustic surveys of the main spawning areas in the East and South Chatham Rise sub-stock, conducted in 2011 and 2012. An important component of the management approach adopted for the East and South Chatham Rise fishery is an estimate of spawning biomass.

Estimating Spawning Biomass (B_{spawn})

31 Historically, spawning was known to occur primarily in an area to the north of the Chatham Islands (referred to as the Plume) with additional smaller spawning aggregations forming in other localities across the East and South Chatham Rise. The Plume has historically been the most significant input into calculating total spawning biomass in this sub-stock and an acoustic survey of the Plume has been undertaken annually since 2002. The most recent estimates of spawning biomass from the Plume are 16,422 tonnes in 2011 and 19,392 tonnes for 2012 (Table 2).

32 In 2011, a new spawning aggregation, named the Rekohu Plume, was discovered to the west of the Plume. This was acoustically surveyed in 2011 and again in 2012. The Rekohu Plume was confirmed to be different fish to those in the Plume and biomass was estimated to be 28,114 tonnes and 27,121 tonnes in 2011 and 2012 respectively (Table 2).

33 In addition to the biomass in these two plumes, spawning is known to occur on other areas of the East and South Chatham Rise (the Northeast Flats, the Northeast Hills, Mt Muck, the Andes complex and the South Chatham Rise). Estimates of spawning biomass from these areas, also shown in Table 2, have been derived from earlier surveys. These data have been collected sporadically and, with the exception of Mt Muck, the estimates are less well defined at this time. Mt Muck was surveyed in 2011, and the orange roughy biomass was preliminarily estimated to be 10,263 tonnes. No other new estimates of spawning biomass are available that are considered to meet New Zealand's Research and Science Information Standard.

34 WWF submitted that the Ministry has not done enough research into the estimates of spawning biomass in these plumes to warrant an increase to the TAC. The Ministry does not

concur with this view. The surveys of the orange roughy spawning plume(s) have been carried out by independent research providers and reviewed by the Deepwater Fisheries Assessment Working Group (the Working Group) every year since 2002, providing high confidence that the methodology and results are robust. In addition, the particular uncertainties and concerns with the research that were raised by WWF in its submission relate to research that is still being considered by the Working Group.[19]

Table 2: Estimated spawning biomass for East and South Chatham Rise (Plenary: 2012 and 2013)

Area	2011 estimates of spawning biomass	2012 estimates of spawning biomass
Spawning Plume	16,422	19,392
Rekohu Plume	28,114	27,121
Mt Muck	10,263	10,263
Other areas	5,376	6,309
Total	**60,156**	**63,085**

Management Measures Proposed

35 This section describes the harvest strategy and explains how the most recent science information described above has been used to derive the recommended management measures.

36 The Ministry considers that implementation of the agreed harvest strategy as recommended will allow the biomass of the East and South Chatham Rise sub-stock, and hence ORH3B, to continue to rebuild to B_{MSY}, although at a lower rate than under the status quo. This approach will also allow an increase in the orange roughy harvest to utilise the newly-discovered aggregation.

Harvest strategy for the East and South Chatham Rise

37 In 2013, the Ministry and DWG developed a new harvest strategy for the East and South Chatham Rise sub-stock. This harvest strategy establishes a management target range of 30-40% B_0 based on modelling that estimated B_{MSY} to be 30% B_0.[20] The Ministry and DWG have agreed to set a higher management target range of 30-40% B_0 for this stock, a more conservative target than the simple target of 30% B_0 used previously. The default soft and hard limits of 20% B_0 and 10% B_0 respectively have been retained from the earlier iteration of the harvest strategy.[21]

38 The new harvest strategy dictates that when mature biomass, taken as the mean of the two most recent estimates of spawning biomass, is within (or above) the target range of 30-40% B_0, the fishing mortality rate will be set at F_{MSY}.[22] F_{MSY} is assumed to be equal to the rate of natural mortality (F=M), which is estimated to be 4.5% of mature biomass (i.e.

[19] The research that WWF have taken issue with is the work that uses a multi-frequency acoustic optical system (AOS) to estimate orange roughy biomass within mixed species aggregations found on underwater topographical features (UTFs). This work is still being worked through by the Working Group and has not yet been accepted.

[20] Francis RICC. 1992. Recommendations concerning the calculation of maximum constant yield (MCY) and current annual yield (CAY). New Zealand Fisheries Assessment Research Document 1992/8. 26p.

[21] The Hard Limit is the point at which a stock should be considered for closure.

[22] F_{MSY} is a biological reference point. It is the fishing mortality rate that, if applied constantly, would result in an average catch corresponding to the Maximum Sustainable Yield (MSY) and an average biomass corresponding to the biomass that can support MSY (B_{MSY}).

harvesting 1 in 22 mature fish). When mature biomass is between 30% B_0 and 10% B_0, the fishing mortality rate will be reduced linearly to rebuild the stock toward the management target range at a faster rate than would be achieved under the previous F_{MSY} strategy (Figure 2).

39 The Harvest Strategy Standard specifies that when a stock is below the soft limit of 20% B_0, the stock should be rebuilt to its management target between T_{MIN} and 2*T_{MIN} years, where T_{MIN} is the minimum time that the stock would rebuild in the absence of fishing. However, the harvest strategy being used for the East and South Chatham Rise stock is not based on a stock assessment model. As such, there is no model that can be used to estimate T_{MIN}. Rather, the harvest strategy is based on the reasonable assumption that fishing the stock at a fishing mortality below F_{MSY} will result in the stock rebuilding more quickly to B_{MSY}. Although the stock is currently unlikely to be below the soft limit and does not require a rebuild strategy, the harvest strategy still reduces F below F_{MSY} to ensure that the stock rebuilds to B_{MSY} faster.

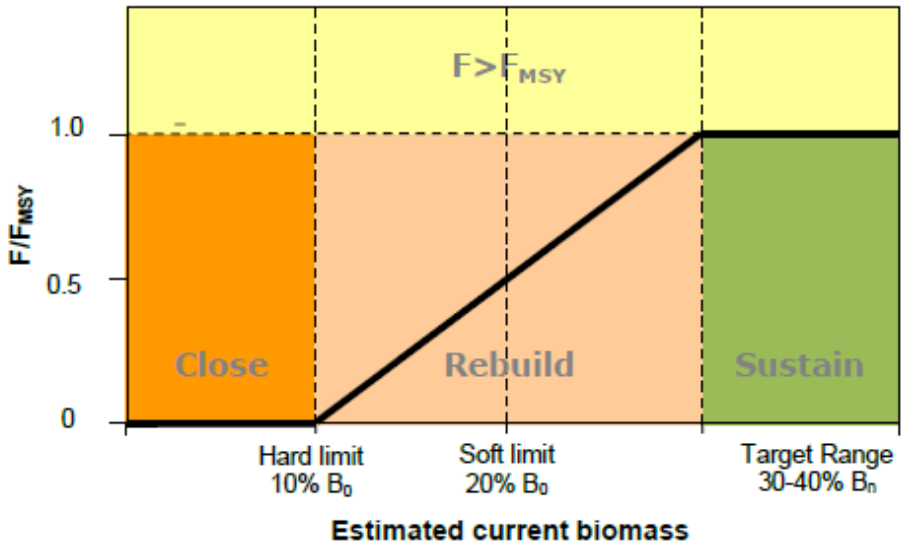

Figure 2: Orange roughy harvest strategy for East and South Chatham Rise

Proposed response

40 Under the new harvest strategy, the catch limit for this sub-stock is set as a proportion of mature biomass. As $B_{CURRENT}$ is less than 30% B_0, the yield from the fishery is lower than that available under the former F_{MSY} strategy.

41 For the purpose of estimating an appropriate yield from this fishery, the Ministry proposes using the mean biomass estimate from the last two years. These estimates are reported in the Plenary as 89,600 tonnes and 94,000 tonnes in 2012 and 2013 respectively, giving a mean biomass estimate of 91,800 tonnes, which is lower than the current biomass estimate in the 2013 Plenary (Figure 3).

42 The stock is currently estimated to be at 25% B_0 which, from Figure 2, equates to an F of 0.75*F_{MSY} (Table 3). This results in a catch limit for the East and South Chatham Rise sub-stock of 3,098 tonnes (i.e. 0.75 * 0.045 * 91,800 tonnes) (Table 3). This equates to harvesting 1 in 30 mature fish.

43 More detail regarding this calculation can be found in Annex I to this paper.

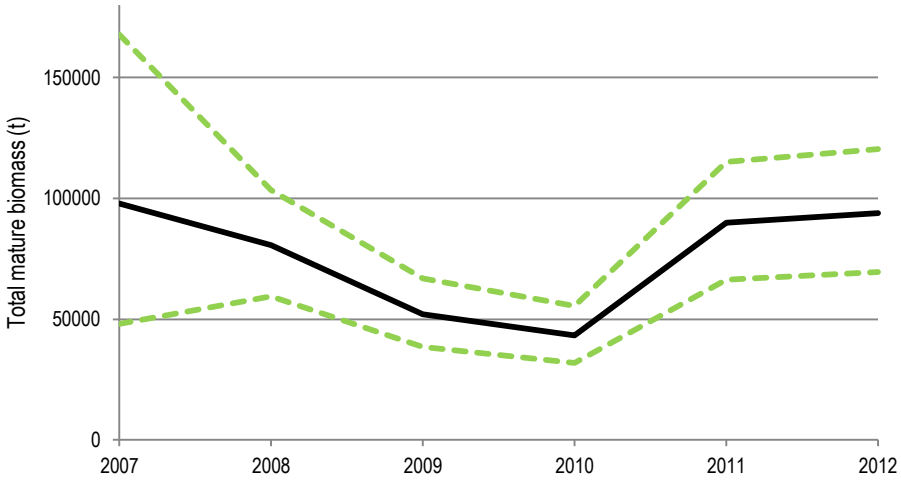

Figure 3: Estimates of mature biomass between 2007 and 2012

Table 3: Calculation of the yield under the new harvest strategy for the East and South Chatham Rise stock

Mean estimate of mature biomass (Source: 2012 and 2013 Plenary)	91,800 tonnes
Multiply by 0.045 (F) to obtain yield under former F_{MSY} strategy	4,131 tonnes
Multiply yield under the former F_{MSY} strategy by 0.75 to obtain the yield under the new harvest strategy	3,098 tonnes

Assessment of Management Options

44 This section largely addresses the requirements of the Act. As described in section 8, the purpose of the Act is to provide for the utilisation of fisheries resources while ensuring sustainability. Section 8 also defines the meanings of utilisation and sustainability. The management options presented seek to achieve the purpose of the Act by setting sustainable catch limits as described below.

Section 13 – Setting the TAC

45 ORH3B is managed under section 13 of the Act, which requires that you set a TAC that will result in the stock being restored to or above, or maintain the stock at or above, a level that can produce the maximum sustainable yield (B_{MSY}). B_{MSY} for this stock has previously been estimated to be 30% B_0. The recent stock assessment completed for a separate orange roughy stock (the mid-east coast orange roughy stock – ORH MEC) estimated B_{MSY} at 23% B_0. This has not yet been formally adopted for the East and South Chatham Rise sub-stock, but is indicative of an estimate of B_{MSY} for this stock.[23]

46 Stock assessment information reported in the 2013 Plenary considers ORH3B by sub-stock – specifically the Northwest Chatham Rise, the East and South Chatham Rise, and the Sub-Antarctic (Arrow Plateau, Puysegur, Pukaki South and the remaining southern areas). The status of ORH3B in relation to B_{MSY} is determined by considering the status of

[23] The estimate calculated for ORH MEC is a deterministic (or theoretical) estimate of B_{MSY}. There are several ways to calculate B_{MSY} and the Ministry and DWG consider that the 23% B_0 estimate is lower than desirable. Consequently, the Ministry and DWG have agreed to use a higher (more conservative) range of 30-40% B_0 as the management target.

each sub-stock separately and then combining these assessments together to determine the status of the ORH3B stock as whole.

Status of the ORH3B stock as a whole

47 Based on the best available information, the East and South Chatham Rise sub-stock is unlikely to be above B_{MSY} but is likely to be above the soft limit.

48 The Northwest Chatham Rise sub-stock has recently been acoustically surveyed and the biomass of the sub-stock was preliminarily estimated to be 19,000 tonnes. However, due to the use of some novel acoustic methodologies the Deepwater Working Group has not yet accepted these preliminary biomass estimates and this result was not included in the 2013 Fisheries Assessment Plenary. In the absence of a final biomass estimate from 2012, the Ministry has used the mean of the recent estimate of 19,000 tonnes and the biomass estimate of 6,000 tonnes from 2006, giving a mean estimate of 12,500 tonnes.

49 Although less information is available for the Sub-Antarctic sub-stock, the best available information suggests it is likely to be below B_{MSY}.

50 Combining the best available estimates of biomass for the Northwest Chatham Rise, the East and South Chatham Rise sub-stocks suggests that the current biomass of the ORH3B stock is of the order of 106,500 tonnes.[24] While there is no information on the biomass of the remainder of ORH3B, this part of the QMA probably contributes only a small percentage of the biomass of ORH3B as a whole. This is supported by a simple analysis of the total orange roughy catch that has been taken from the various sub-stocks that have made up ORH3B since the fishery began. Catch data indicate that 92% of the total catch has come from the East and South Chatham Rise and the Northwest Chatham Rise.[25]

51 Unfished biomass (B_0) for the East and South Chatham Rise sub-stock is thought to have been between 300,000 tonnes and 450,000 tonnes; however, the Ministry considers that these figures may be unrealistically low and high respectively and has adopted a mean estimate of B_0 of 375,000 tonnes. The 2006 stock assessment estimated B_0 for the Northwest Chatham Rise to be 55,000 tonnes. As stated above, it is assumed that the majority of current and historic biomass in ORH3B is made up of these two sub-stocks, as indicated by past fishing practice.

52 Based on estimates of current biomass and B_0 for the two main sub-stocks, the stock as a whole is likely to be at approximately 25% B_0. This is above the soft limit of 20% B_0 but likely to be below B_{MSY} (30% B_0).[26] Estimates of current biomass and B_0 from the remainder of ORH3B are unlikely to materially affect the status of the stock as a whole.

53 The Ministry proposes that the TAC for ORH3B should be varied under section 13(2)(b) of the Act. Section 13(2)(b) is appropriate in cases where the stock biomass is likely to be below B_{MSY} and requires a TAC 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, biological characteristics and environmental conditions.

[24] East and South Chatham Rise (94,000 t); Northwest Chatham Rise (c. 12,500 t) (see Plenary 2013 and previous years).

[25] Dunn, M. (2008) Draft descriptive analysis of catch and effort data from New Zealand orange roughy fisheries in ORH3B to the end of the 2006-07 fishing year.

[26] $B_{current}$ (ESCR: 94,000 t + NWCR: 12,500 t = 106,500 t). B_0 (ESR: 375,000 + NWCR 55,000 t = 430,000 t). Therefore current stock status = 106,500 / 430,000 = 25% B_0.

54 There is no information to suggest that the interdependence of stocks should affect the level of the TAC for ORH3B at this time, given that the fishery primarily targets aggregations of orange roughy and by-catch proportions are low. In terms of their biological characteristics, orange roughy are understood to be very long-lived and late maturing. While these biological characteristics render orange roughy slow to recover from overfishing, this is taken into account in the assessment and management of the ORH3B stock. No specific environmental conditions that would affect the level of the TAC for ORH3B have been identified.

Section 13(3) – Rate of rebuild

55 Section 13(3) of the Act requires that, in considering the way and the rate that the stock may be moved towards a level that can produce MSY, you shall have regard to such social, cultural and economic factors as you consider relevant.

56 The proposed management approach will continue to move the stock towards B_{MSY}, despite an increase in the TAC. This is because the fishing mortality F (catch limit) would remain lower than F_{MSY} ($F = 0.75*F_{MSY}$). By increasing the TAC, you would be making a decision about the rate at which that rebuild would be occurring.

57 The Ministry considers that the appropriate way and rate to rebuild the stock towards a level that can produce the MSY is consistent with the agreed harvest strategy for this stock. This strategy is consistent with the approach taken in the previous five years but is more conservative in that it reduces fishing mortality when the stock is below the lower level of the management target range. As such, the new harvest strategy provides a harvest level that is approximately 1,000 tonnes lower than would have been available under the previous harvest strategy.

58 The Ministry accepts that the proposed increase of the TAC will slow the rate of rebuild toward the management target range, when compared with the status quo catch limit. The proposed approach therefore provides a different balance between providing for utilisation of the orange roughy stock whilst ensuring it remains a sustainable fishery. However, the proposed TAC increase should be considered in the context of the recent and significant increase in current biomass, as a result of the discovery of the Rekohu plume. The existing catch limit for this sub-stock was set prior to the discovery of the Rekohu plume and was therefore based on a considerably lower biomass level.

59 Orange roughy is a relatively valuable fishery and an increase in the TAC will result in a significant increase in export earnings. The management measures proposed would equate to a 900 tonne increase to the ORH3B TACC. As the majority of orange roughy is exported, the best estimation of value is derived from export earnings. On the basis of the export value of the most common product state exported, 900 tonnes of orange roughy is worth approximately $3.7 million.[27]

Allocating the TAC

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

[27] Based on export figures for the 2012 calendar year of $4.12 / kg greenweight. This uses frozen fillets to estimate the greenweight export price as this form accounted for 86.6% of export earnings and 65.8% of export volume for orange roughy in the 2012 calendar year. Precise revenue gain is difficult to estimate and will be influenced by factors such as commodity prices, exchange rate, catching costs and export state.

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

62 There are no known Mäori customary or recreational fisheries for orange roughy. The Ministry recommends you retain nil allowances for recreational and Mäori customary fishing, consistent with the approach that has been adopted since orange roughy became a QMS species in 1986.

63 The allowance for other sources of fishing-related mortality has been previously set at 5% of the TACC to account for fish lost due to burst nets, fish that may have been damaged by fishing but not retained in the gear, and fish that may have been discarded at sea and not reported. There is no further information available to support a variation to this figure at this time. Under the option recommended this equates to 225 tonnes.

Section 10 – Information Principles

64 Under section 10 of the Act, you must take into account the following information principles:

a) decisions should be based on the best available information

b) decision makers should take into account any uncertainty in the available information,

c) decision makers should be cautious when information is uncertain, unreliable, or inadequate, and

d) the absence of, or any uncertainty in, any information should not be used as a reason for postponing or failing to take any measure to achieve the purpose of the Act.

65 The Ministry considers that the best available information has been used as the basis for the recommendations herein. All science information upon which the management options are based has been peer reviewed by one of the Ministry's Fisheries Assessment Working Groups.

Section 11 Considerations

66 In making decisions on sustainability measures, you must also have regard to the requirements of section 11 of the Act.

a) Section 11(1)(a): Before setting or varying any sustainability measure for any stock, you must take into account any effects of fishing on any stock and the aquatic environment. The effects of fishing on the stock or on the aquatic environment are discussed elsewhere in this paper, where they are considered relevant to the review of sustainability measures for this stock at this time.

b) Section 11(1)(b): Before setting or varying any sustainability measure for any stock, you must take into account any existing controls under the Act that apply to the stock or area concerned. For this stock the measures that apply currently are a TAC, TACC and an allowance for incidental fishing-related mortality. No other controls under the Act specifically apply to this stock.

c) Section 11(1)(c): Before setting or varying any sustainability measure for this stock, you must take into account the natural variability of the stock. This is incorporated into the discussion above on setting the TAC for this stock.

d) Sections 11(2)(a) and (b): Before setting or varying any sustainability measure for any stock, you must have regard to any provisions of any regional policy statement, regional plan, or proposed regional plan under the Resource Management Act 1991 and any management strategy or management plan under the Conservation Act 1987 that apply to the coastal marine area and that you consider relevant. There are no policy statements, plans or strategies that should be taken into account for this stock.

e) Section 11(2)(c): Before setting or varying any sustainability measure for any stock, you must have regard to sections 7 and 8 of the Hauraki Gulf Marine Park Act 2000 that apply to the coastal marine area and you consider relevant. The boundaries of the quota management area for this stock do not intersect with the Hauraki Gulf. Therefore, there are no relevant considerations under the Hauraki Gulf Marine Park Act 2000.

f) Section 11(2)(d): Before setting or varying any sustainability measure for any stock, you must have regard to any planning document lodged by a customary marine title group under section 91 of the Marine and Coastal Area (Takutai Moana) Act 2011 that apply to the coastal marine area and are considered by you to be relevant. The Ministry is not aware that any such planning documents have been lodged at this time.

g) Sections 11(2A)(a) and (c): Before setting or varying any sustainability measure for any stock, you must take into account any conservation or fisheries services, or any decision not to require such services. The Ministry does not consider that existing or proposed services materially affect the proposals for this stock. No decision has been made to not require a service in this fishery at this time.

Section 11A – Fisheries Plans

67 In addition, under section 11(2A)(b), before setting or varying any sustainability measure for any deepwater stock, you must take into account any relevant and approved fisheries plans. The Ministry, in collaboration with industry and environmental organisations, has developed the National Fisheries Plan for Deepwater and Middle Depth Fisheries (the National Deepwater Plan) which received Ministerial approval in 2010 under section 11A of the Act.

68 The National Deepwater Plan contains the following dual outcomes and the management options recommended in this paper are consistent with those outcomes:

a) The Use Outcome: Fisheries resources are used in a manner that provides greatest overall economic, social and cultural benefit

b) The Environment Outcome: The capacity and integrity of the aquatic environment, habitats and species are sustained at levels that provide for current and future use.

69 The National Deepwater Plan also contains a specific chapter on orange roughy which drives the management of these fisheries and contributes to meeting the dual outcomes of the National Deepwater Plan. Those most relevant to your current decisions are:

a) Management Objective 1.1: Enable economically viable orange roughy fisheries in New Zealand over the long-term.

b) Management Objective 1.2: Ensure there is consistency and certainty of management measures and processes in the orange roughy fisheries.

c) Management Objective 1.3: Ensure the orange roughy fisheries resource is managed so as to provide for the reasonably foreseeable needs of future generations.

d) Management Objective 2.1: Ensure orange roughy stocks are managed to an agreed harvest strategy.

70 The recommended increase to the ORH3B TAC will provide for both Management Objectives 1.1 and 1.3 by retaining an economically viable orange roughy fishery at a level that should also provide for the needs of future generations. Implementing the more conservative F_{MSY} harvest strategy also contributes to Management Objectives 1.2 and 2.1.

71 The Ministry considers that the management options presented in this paper are consistent with the Management Objectives specified in the orange roughy chapter of the National Deepwater Plan.

Section 9 – Environmental Considerations

72 Section 9 of the Act sets out the following environmental principles which must be taken into account when implementing management measures under the Act:

a) Associated or dependent species should be maintained at or 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.

73 Key environmental issues associated with ORH3B and how they will be affected by the proposals are discussed below.

Finfish by-catch

74 While a number of deepwater species that share similar habitat to orange roughy are taken in the ORH3B fishery (including black, smooth and spiky oreo, black cardinal fish and alfonsino), targeted orange roughy fishing historically captures over 90% orange roughy by greenweight.[28] The proposed TAC for ORH3B is close to the TAC that was in place in 2010 and is lower than historical years. The majority of the finfish by-catch species taken in target orange roughy trawls are managed under the QMS. The Ministry considers there is a low risk that the proposed increase to the ORH3B TAC would materially affect the long term viability of these fish by-catch species.

Biodiversity

75 The nature and extent of effects of fishing in ORH3B are generally understood to be localised and specific to aggregations of orange roughy at 850-1,200 metre depths. While

[28] Anderson OF, Gilbert DJ, Clark MR (2001). Fish discards and non-target catch in the trawl fisheries for orange roughy and hoki in New Zealand waters for the fishing years 1990-91 to 1998-99. *New Zealand Fisheries Assessment Report 2001/16, 57* p.

some by-catch of non-harvested species is known, the impact that fishing for ORH3B has on the long term viability of non-harvested species and biological diversity of the aquatic environment is of greater concern in regions of steep sloping and highly diverse topographic features. Some features within ORH3B have been set aside from all trawling, including ten underwater topographic features and the Arrow Plateau, to mitigate the effect that fishing has on the benthic environment.

76 The main prey species for orange roughy include mesopelagic and benthopelagic prawns, fish and squid, with other organisms such as mysids, amphipods and euphausiids occasionally being important. The Ministry has considered the effects on associated and dependent species and biodiversity that would affect the setting of the TAC and considers the impact is addressed under the catch spreading arrangements which are discussed later in this paper.

Shark by-catch

77 Deepwater sharks historically account for approximately 3% (by greenweight) of the by-catch in target orange roughy fisheries.[10] The increase in the ORH3B TAC being considered is likely to result in additional shark by-catch. The Ministry recognises that this is an area where further information is required to ensure that the effects of orange roughy fishing are within the required limits. However, it should be noted that none of the information currently available suggests that deepwater sharks are being adversely affected by orange roughy fishing.

78 A range of deepwater shark species are reported in the observed by-catch data from the East and South Chatham Rise stock. The majority of these species are caught in very low volumes (<1 tonne reported over a five year period) and are not considered to represent a concern. The 14 remaining species would benefit from improved understanding of the impacts of the level of observed catch. While WWF submitted that any fishing pressure could be “disastrous”, the available information suggests this is unlikely to be the case. Analysis of the 19 year time series of trawl survey data from the Chatham Rise shows that the abundance indices of several of the species that are most represented in the observed by-catch data have remained stable throughout the time-series, despite historical catches being significantly higher than those proposed.

79 The New Zealand National Plan of Action for the Conservation and Management of Sharks (NPOA–Sharks) includes several actions to improve information and monitoring of shark by-catch. As part of the revision of the NPOA-Sharks that is being conducted this calendar year, the Ministry will conduct a risk assessment process for sharks that will better identify risks and direct management measures as appropriate.

Marine mammals

80 There have been no observed marine mammal interactions reported within ORH3B (Table 4). The Ministry considers that the management proposal will have little, if any, additional effect on fur seals, sea lions and other marine mammals as a result of the increase in fishing effort.

Seabirds

81 Management of seabird interactions with New Zealand’s commercial fisheries is now being driven through the Seabird National Plan of Action (NPOA-Seabirds). The NPOA-Seabirds establishes a risk-based approach to managing fishing interactions with seabirds, targeting management actions at the species most at risk. Results of the application of this

approach have indicated that large trawlers do not pose a significant risk to any seabird species under current mitigation management regimes.

82 Mandatory measures are in place across the deepwater fleet to address seabird captures, including the requirement that all trawlers deploy bird mitigation devices when fishing gear is in use. In addition, non-regulatory measures include vessel specific measures known as vessel management plans (VMPs) which set out the onboard practices that vessels must follow to avoid seabird interactions, including offal management and good factory cleanliness. The Ministry currently monitors vessel performance against VMPs and works in collaboration with the Deepwater Group (DWG) to rectify any issues that arise during the fishing season. This practice will continue during the 2013/14 fishing year.

83 While trawl fisheries for orange roughy are known to interact with seabirds, orange roughy fisheries pose very low risk (Table 4). The low risk to seabirds from deepwater fisheries is confirmed by the risk assessment conducted as part of the National Plan of Action – Seabirds 2013 (Seabird NPOA).[29] The Ministry is satisfied that existing regulatory and non-regulatory measures are appropriate and that the management proposal should have little, if any, additional effect on seabirds.

Table 4: Observed interactions with seabirds and mammals from all orange roughy target trawls [30]

Period	Observed bird captures	Observed mammal captures	Total number of tows	Observed tows	Percentage of tows observed
2011/12	0	0	1,590	429	26.9%
2010/11	2	0	1,889	496	26.3%
2009/10	13	0	2,922	1,139	39.0%
2008/09	6	0	3,544	1,435	40.5%
2007/08	2	0	3,689	1,618	43.9%
2006/07	1	0	4,058	1,191	29.3%
2005/06	2	0	4,948	896	18.1%

Benthic impacts and coral by-catch

84 Bottom trawling can affect fragile benthic invertebrate communities but effects may be reduced if vessels repeatedly trawl along the same towlines in a fishery. There are cost implications for industry in terms of lost or damaged gear when fishing in new areas. As a consequence industry generally follows known trawl tracks on the Chatham Rise.

85 Two initiatives are in place to address benthic impacts. In 2001, the Minister regulated trawl closures covering 18 areas containing seamounts of varying size and depth within New Zealand. Ten of these are within the ORH3B QMA. In addition 17 further areas have been closed to bottom trawling by regulation under the Fisheries (Benthic Protection Areas) Regulations 2007. Twelve of these, including the Arrow Plateau, are within the ORH3B QMA. Across the ORH3B QMA, 15% of the area within the recognised depth range

[29] Yvan Richards, Edward R. Abraham & Dominique Filippi (2012). Assessment of the risk of commercial fisheries to New Zealand seabirds 2006-07 to 2010-11. PRO2010/02.

[30] Finlay N. Thompson, Katrin Berkenbusch (2013). Protected species by-catch in New Zealand orange roughy trawl fisheries, 2002-03 to 2011-12. Draft Final Research Report for Ministry for Primary Industries (Unpublished report held by the Ministry for Primary Industries, Wellington). 56 pages.

of orange roughy is closed to bottom trawling through either the BPA initiative or the seamount closures.

Deemed values

86 Section 75 of the Act requires that you set deemed value rates for every stock in the QMS. This is to ensure there are appropriate incentives for fishers to acquire or maintain sufficient ACE so that catch limits are not exceeded.

87 The Ministry increased the deemed value rates in 2010 based on significant reductions in the TACC in previous years and the resultant risk of the TACC being exceeded. Furthermore, prior to 2010 the deemed value rates for ORH3B were lower than those for neighbouring ORH2B and ORH3A stocks. Increasing the deemed value rates in ORH3B in 2010 aligned the deemed value rates across all three stocks. The current deemed value rates are set as follows:

a) The annual deemed value rate is $5.00 per kg.

b) The interim deemed value rate is $2.50 per kg.

c) A differential deemed value rate of $6.25 applies to catch in excess of 110% of ACE holdings.

88 The Ministry considers the deemed values rates in this fishery are appropriate and did not consult on any changes. With few vessels operating in this fishery, and monthly catch monitoring arrangements working well, catch has historically been closely aligned with catch limits. The Ministry is confident this will continue.

89 Fishing activity will continue to be monitored during the 2013/14 fishing year and if there is evidence that fishers are either fishing in excess of the TACC, or fishing in excess of their individual ACE holdings, then the deemed value rates will be reviewed for the 2014/15 fishing year.

Other Management Issues

Sub-QMA catch spreading arrangements

90 Where several biological stocks exist in a single QMA, catch spreading arrangements ensure fishing effort is not concentrated in one or two areas which would increase fishing pressure on those biological stocks. To achieve this, catch limits for each sub-stock are put in place to reduce fishing pressure on individual biological stocks and these limits are monitored by the Ministry and DWG. The Ministry continues to support catch spreading in the ORH3B fishery.

91 The Ministry recommends that sub-stock catch limits and the associated reporting requirements continue to be managed by DWG. The Ministry undertakes to continue to monitor DWG reports and operators' fishing patterns to evaluate the effectiveness of these catch limits. The Ministry will ensure that, through joint Ministry-DWG communications, operators are fully informed as to the progress of catch taken against sub-stock limits. Performance against catch spreading arrangements will be reported in the Annual Review Report that forms part of the National Deepwater Plan.

92 The Ministry notes that WWF is opposed to the catch spreading arrangement in ORH3B, due to the purported increase in impacts to the benthic environment. The Ministry disagrees that these arrangements result in trawling occurring over a wider area of the

benthic environment and considers that WWF have misinterpreted the rationale for these arrangements. Catch spreading ensures that harvests from each sub-stock remain sustainable. Removing the entire ORH3B TACC from one sub-stock would be highly likely to present sustainability concerns for that stock. Removing these arrangements is therefore not an approach that the Ministry recommends.

Compliance Issues

93 Key offences that may occur in ORH3B include misreporting of QMA, species and weights; and fishing in closed areas. The significant increase in the TAC under this proposal is likely to reduce the incentive to offend.

94 The ORH3B fishery is closely managed from an industry perspective with few boats operating in the fishery and approximately 98.0% of the ORH3B quota owners represented by the DWG. DWG currently monitors adherence to catch spreading arrangements and provides monthly reports to the Ministry. DWG notifies the Ministry when catch reaches 80% of the sub-stock limits, and also notifies the Ministry when any limit has been reached. Observer coverage in the orange roughy trawl fisheries is relatively high with between 25 and 40% of tows observed in recent years (Table 4).

95 The Ministry considers that the monitoring arrangements are robust and appropriate. DWG and the Ministry will continue to monitor this fishery closely to ensure compliance with management arrangements.

Recommendations

96 The Ministry recommends that you:

a) **Agree** to increase the TAC for ORH3B from 3,780 tonnes to 4,725 tonnes and within the TAC:

i) Retain a nil allowance for Mäori customary non-commercial fishing interests;

ii) Retain a nil allowance for recreational fishing interests;

iii) Set an allowance of 225 tonnes for other sources of fishing-related mortality;

iv) Set the TACC at 4,500 tonnes.

AND

Note that the Ministry and DWG have agreed a new, more conservative harvest strategy for the East and South Chatham Rise sub-stock within ORH3B.

AND

Note that as part of managing the ORH3B fishery, by way of other non-statutory management measures, the Ministry will request that Industry implement the following sub-stock catch limits within the TACC of 4,500 tonnes:

v) The catch limit for the East and South Chatham Rise sub-stock would be set at 3,100 tonnes;

vi) The Industry research survey allowance of 250 tonnes for the East and South Chatham Rise sub-stock would be removed and future research conducted under a Special Permit issued by the Ministry;

vii) The catch limit for the Sub-Antarctic sub-stock would remain at 500 tonnes;

viii) The catch limit for the Northwest Chatham Rise sub-stock would remain at 750 tonnes;

ix) The catch limit for the Puysegur sub-stock would remain at 150 tonnes.

AND

b) **Agree** to request that the Deepwater Group Ltd continue to adhere to the catch spreading and sub-stock catch limits in ORH3B and the existing reporting arrangements of catch against the sub-stock catch limits.

Yes / No

James Stevenson-Wallace
Director Fisheries Management

AGREED / AGREED AS AMENDED / NOT AGREED

Hon Nathan Guy
Minister for Primary Industries

/ / 2013

ANNEX 1: FURTHER DETAILS REGARDING CALCULATION OF A CATCH LIMIT FOR THE EAST AND SOUTH CHATHAM RISE STOCK

Table 5: Calculation of the catch limit for the East and South Chatham Rise using the Harvest Strategy depicted in Figure 2 and equations 1 to 3 below

Percentage initial biomass (% B_0)	**F/F_{MSY} multiplier**	**TACC for $B_{current}$ = 91,815 tonnes and F_{MSY}=0.045 where % B_0 30%**
30	1.00	4,132
29	0.95	3,925
28	0.90	3,719
27	0.85	3,512
26	0.80	3,305
25	**0.75**	**3,099**
24	0.70	2,892
23	0.65	2,686
22	0.60	2,479
21	0.55	2,272
20	0.50	2,066
19	0.45	1,859
18	0.40	1,653
17	0.35	1,446
16	0.30	1,240
15	0.25	1,033
14	0.20	826
13	0.15	620
12	0.10	413
11	0.05	207
10 or less	0.00	0

Equations

$\%B_0 = (B_{current}/B_{0)} * 100$ equation 1

F/F_{MSY} multiplier = a+ b * $\%B_0$ equation 2

where, a is the intercept (-0.50) and b is the slope (0.05) of the Harvest Strategy line during the rebuild phase (Figure 2).

TACC = $B_{current}$ * F_{MSY} * F/F_{MSY} multiplier equation 3

SCAMPI (SCI2) – FINAL ADVICE PAPER

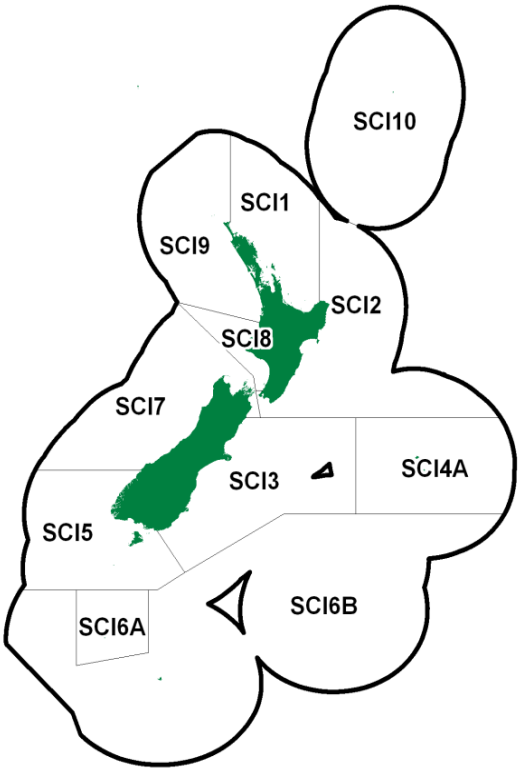

Figure 1: Scampi Quota Management Areas (QMAs)

Executive Summary

1 SCI2 is a moderately sized but valuable fishery located on the east coast of the North Island (Figure 1). Results from the 2013 stock assessment indicated that the SCI2 biomass is approximately 74% of un-fished biomass (B_0) which is above the biomass that will produce the maximum sustainable yield (B_{MSY}) and above the default management target of 40% B_0. Consequently, the Ministry consulted on several options to increase the total allowable catch (TAC).

2 Eight submissions, six from the commercial fishing sector and two from the recreational fishing sector, were received on the SCI2 Initial Position Paper (IPP). Commercial fishing companies were in support of an increase in the total allowable commercial catch (TACC) to 133 tonnes (Option 3). The recreational bodies did not support an increase and preferred keeping catch levels at the status quo (Option 1).

3 After considering the submissions received, the Ministry recommends increasing the SCI2 TAC from 105 tonnes to 140 tonnes to utilise the increase in scampi abundance.

4 In terms of other catch allowances, there is no known customary Māori or recreational take of scampi and it is recommended that you retain zero allowances for these sectors. In addition, the Ministry recommends maintaining the allowance for other sources of fishing-related mortality at 5% of the TACC. The Ministry is not proposing any changes to SCI2 deemed value rates as current rates are still appropriate for the fishery.

Summary of Options

5 The Ministry consulted on five options which are summarised below. Option 3, which increases the TAC by 33%, is the Ministry's recommended option (Table 1).

Table 1: Proposed TACs, TACCs and allowances for SCI2

Option			Allowances		
	TAC (t)	TACC (t)	Customary Māori (t)	Recreational (t)	Other sources of fishing-related mortality (t)
Option 1 (Status Quo)	105	100	0	0	5
Option 2	120	114	0	0	6
Option 3 (Recommended Option)	140	133	0	0	7
Option 4	180	171	0	0	9
Option 5	200	190	0	0	10

Background Information

6 Scampi are burrowing crustaceans that are widely distributed around the coast of New Zealand, usually between 200-500 m depth. Studies estimate that scampi are ~3-4 years at 30 mm orbital carapace length and may live for 15-20 years. However the size and growth of scampi within New Zealand have been shown to differ significantly among the regional fish stocks. Scampi off the Wairarapa coast (SCI2) achieve sexual maturity around 36 mm.

SCI2 Fishery

7 The SCI2 fishery off the Wairarapa coast developed through the late 1980s and early 1990s and is now considered fully developed. At present the New Zealand scampi fishery is made up of eight vessels, all 20-40 m in length. In each of the past five years three to six of these vessels have fished in SCI2.

8 Scampi vessels differ from other trawlers as they catch scampi using a double or triple trawl net configuration. These nets as have a smaller mouth or opening than other trawl nets and an escape panel at the top of the net to reduce the capture on non-target species.

9 A competitive catch limit was set for SCI2 in 1991-92 of 246 tonnes. This was decreased to 200 tonnes when scampi was introduced into the quota management system (QMS) in 2004. The TACC was further decreased in 2011/12 to 100 tonnes due to sustainability concerns.

10 Landings and catch per unit effort (CPUE) show an increase in SCI2 biomass during the early 1990s, but decline steadily after this until the early 2000s (Figures 2 and 3). Landings over the past five years have averaged 93 tonnes, however for the first time in seven years landings exceeded 100 tonnes in 2009/10 prior to the decrease in TACC.

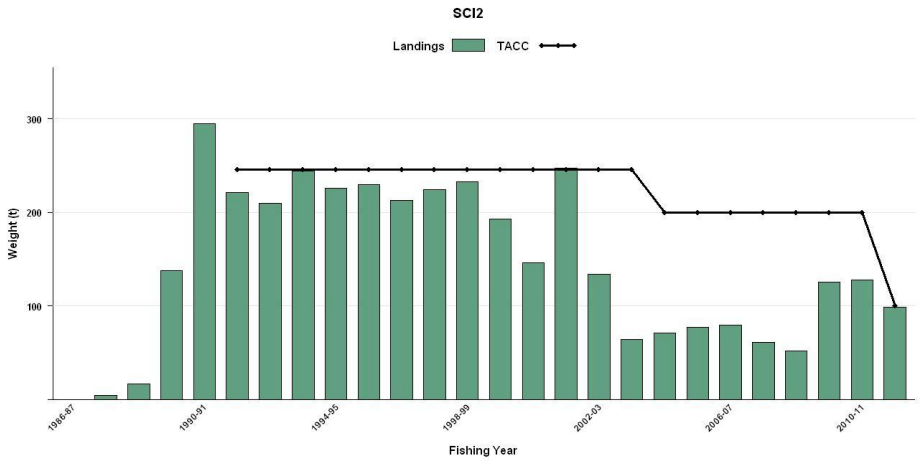

Figure 2: Reported landings and TACC (t) for SCI2 from fishing year 1986/87 to the 2011/12 fishing year

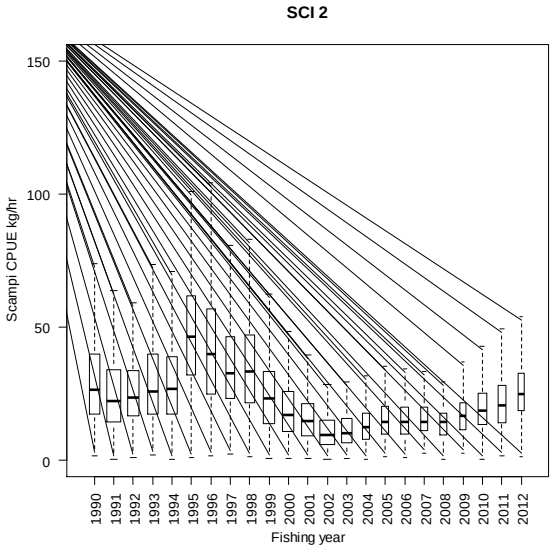

Figure 3: Unstandardised catch per unit effort (CPUE) (kg/hr) for SCI2 from fishing year 1990 to the 2011/12 fishing year. Bars represent 95% confidence intervals and the dark line indicates the median CPUE

Consultation

11 Your decision to adjust the TAC for SCI2 is made under section 13(4) of the Fisheries Act 1996 (the Act) and therefore the consultation requirements of section 12 apply. Also, in respect of your decision whether or not to adjust the TACC for SCI2 under section 20(1) of the Act the consultation requirements set out in section 21(2) of the Act apply.

12 Consultation on the IPP was undertaken with such persons or organisations representative of those having an interest in the stock or the effects of fishing on the aquatic environment in the area concerned. This includes Māori, environmental, commercial and recreational interests.

13 The Ministry followed its standard consultation process by posting the IPP publicly on the Ministry website in conjunction with letters sent to approximately 200 companies, organisations and individuals, informing them of the IPP and submission deadlines.

14 There is also an obligation to provide for input and participation of tangata whenua and have particular regard to kaitiakitanga. The Ministry recognises that information on customary harvest is uncertain and invited iwi, Tangata Tiaki/Kaitaiki, and customary permit

holders to submit information. However, no additional information was submitted during the consultation process. The Ministry will continue to work with tangata whenua to improve reporting and information on customary non-commercial catches.

Submissions Received

15 Submissions, attached to this paper for your reference, were received from the following:

a) The Deepwater Group Ltd (DWG)

b) Barine Developments Limited (Barine)

c) Te Ohu Kai Moana Trustee Ltd (TOKM)

d) Sanford Limited (Sanford)

e) Ngāi Tahu

f) Iwi Collective Partnership (ICP)

g) New Zealand Recreational Fishing Council (NZRFC)

h) Combined submission from: Zone 5 (Area 2 of the New Zealand Sports Fish Council), Guardians of Hawke Bay Fisheries Inc, Hawkes Bay Sports Fishing Club, and Gisborne Tatapouri Sports Fishing Club

Summary of Submissions

16 All submissions from the commercial fishing sector were in favour of an increase to the TAC from 105 tonnes to 140 tonnes (Option 3). The DWG, which represents 85.2% of SCI2 quota holders, conducted a poll amongst its shareholders. Results from this poll, based on tonnages of SCI2 quota owned, indicate 2.4% support Option 2, and 97.6% support Option 3. No other options were supported.

17 Sanford, TOKM, Barine, Ngāi Tahu, and ICP, although represented by DWG, sent individual submissions. Given the result of the stock assessment, these submitters see Option 3 as a precautionary step. Sanford submitted that by taking this precautionary step, it hopes stock biomass will continue to improve leading to further catch increases. Barine however supported an increase subject to a condition that further non-regulatory measures are developed to restrict catch levels within the 133 tonne TACC. Ngāi Tahu also supported this approach. These non-regulatory measures will not be discussed further within this document as they are outside the decision making framework. However the Ministry has committed to work with stakeholders to agree a harvest strategy for this fishery.

18 Both submissions from the recreational sector support maintaining the current TAC (Option 1). The NZRFC noted the uncertainties around recruitment and biology as the main reasons to maintain catch levels, if not decrease the TAC. The joint submission from the Guardians of Hawke Bay Fisheries Inc, Hawkes Bay Sports Fishing Club, Gisborne Tatapouri Sports Fishing Club, and Zone 5 favour Option One. They submitted that any increase in the TAC comes with an unacceptable risk to the environment due to the high levels of by-catch and benthic impact associated with the scampi fishery. These groups ask for further data collection and analysis of the SCI2 by-catch.

19 The Ministry acknowledges that the scampi fishery does have a high level of by-catch and does use gear that contacts the seabed. However these impacts are currently being monitored to better inform management and the consideration of the effects of fishing on the aquatic environment. Environmental considerations are discussed in more detail later in this paper.

Rationale for Management Intervention

20 An update of the SCI2 stock assessment was finalised and accepted by the Shellfish Working Group and Plenary in May 2013. This assessment indicates that scampi abundance has increased since the 2011 assessment, which the model interprets as the result of recent above average recruitment.The increase in biomass is seen in both photographic surveys and industry catch effort records giving more confidence that the biomass has increased.

21 The stock assessment estimates current (2012) SCI2 biomass to be 74% B_0 which is above the level that will support the maximum sustainable yield (B_{MSY}) and is very likely (>90% probability) to be at or above the default target of 40% B_0. Projections using various catch levels indicate that the stock will remain at or above the management target with high likelihood. Given these results, the Ministry is confident that there is an opportunity to utilise this recent above average recruitment.

22 The major sources of uncertainty with this year's assessment, similar to that of previous assessments, are that there is little information on the growth rate of scampi, the catchability of scampi, and recruitment. These uncertainties, specifically those around recruitment, add risk to any increase in utilisation as it is uncertain how and when another above average recruitment year may occur. To minimise this risk, projections were made using average recruitment over the past decade, not just recent recruitment, taking into account high and low years of recruitment.

23 Projections were calculated for annual catch levels of 100–200 tonnes until 2018. All catch levels are projected to maintain biomass at or above the management target (40% B_0) until 2018 with 99-90% probability. All catch levels however, even the status quo, project that biomass will decrease from that of current levels. The rate at which this decrease occurs depends on the overall catch level (i.e. a TAC of 200 tonnes will decrease biomass quicker than one of 100 tonnes).

Management Measures Proposed

24 Scampi stocks are managed as Tier 1 stocks in the National Fisheries Plan for Deepwater and Middle-depth Fisheries (National Deepwater Plan). However, stock-specific reference points have not yet been agreed on for any scampi stock. Therefore the management approach involves assessing the stock against the set of generic reference points specified in the Harvest Strategy Standard (Table 2).[31]

Table 2: Default harvest strategy from the Harvest Strategy Standard

Reference point	Management response
Management target of 40% B_0	The stock is permitted to fluctuate around this management target. TAC/TACC changes will be employed to move stock toward or above target.
Soft limit of 20% B_0	A formal, time-constrained rebuilding plan will be implemented if this limit is reached.
Hard limit of 10% B_0	The limit below which a fishery will be considered for closure.

25 Given the results of the stock assessment, the Ministry considers all options proposed are consistent with the objective of maintaining the SCI2 stock at or above the level that can produce the maximum sustainable yield. However as catch levels increase there is a greater chance that the stock biomass will drop below the management target of

[31] Ministry of Fisheries (2008) Harvest Strategy Standard for New Zealand Fisheries.

40% B_0 and all catch levels presented will result (with 55-83% probability) in scampi biomass decreasing over the next five years. Details of the projections are set out in the discussion of options below (Figure 4).

Option 1 (Status Quo)

26 Option 1 proposes the TAC remains at the current level of 105 tonnes, with a 100 tonne TACC, and a five tonne allowance for other sources of fishing-related mortality.

27 Last year landings were just under the TACC with 99 tonnes of scampi landed. Given an export price of $25.98/kg this resulted in approximately $3.0 million in export revenue.[32] Projections indicate that under catch levels at the current TACC, the biomass of the stock will stay above the target until 2018 with 99% probability (Figure 4).[33] Submissions received from recreational fishers support this option.

Option 2

28 Option 2 proposes:

a) Increasing the TAC from 105 tonnes to 120 tonnes.

b) Increasing the TACC from 100 tonnes to 114 tonnes (an increase of 14%).

c) Increasing the allowance for other sources of fishing-related mortality from five tonnes to six tonnes.

29 An increase of 14 tonnes may result in an additional $364,000 in export revenue, given the recent export price. Projections indicate that with a TAC of 120 tonnes, the biomass of the stock will remain above the target until 2018 with 98% probability (Fig 4). This option is supported by 2.4% of SCI2 quota holders represented by DWG.

Option 3 (Recommended Option)

30 Option 3 proposes:

a) Increasing the TAC from 105 tonnes to 140 tonnes.

b) Increasing the TACC from 100 tonnes to 133 tonnes (an increase of 33%).

c) Increasing the allowance for other sources of fishing-related mortality from five tonnes to seven tonnes.

31 An increase of 33 tonnes may result in an $858,000 increase in export revenue. Projections indicate that, over the next five years, a TAC of 140 tonnes will keep stock biomass above the target with 97% probability (Fig 4). This option is most consistent with commercial catch levels prior to the decrease in the TAC in 2011. This option is supported by 97.6% of SCI2 quota holders represented by DWG.

[32] Based on export figures for the 2012 calendar year of $25.98 / kg. Scampi does not have its own Harmonised System (HS) code and therefore is captured under shrimps & prawns. No precise product form is assigned therefore a greenweight export price cannot be calculated. The $25.98 / kg figure was calculated for Other Crustacea Frozen as this export form accounted for 99.9% of export earnings and 99.9% of export volume for scampi (shrimps & prawns) in the 2012 calendar year. Precise revenue gain is difficult to estimate and will be influenced by factors such as commodity prices, exchange rate, catching costs and export state.

[33] When discussing projections stock biomass refers to spawning stock biomass or SSB.

Option 4

32 Option 4 proposes:

a) Increasing the TAC from 105 tonnes to 180 tonnes.

b) Increasing the TACC from 100 tonnes to 171 tonnes (an increase of approximately 71%).

c) Increasing the allowance for other sources of fishing-related mortality from five tonnes to nine tonnes.

33 An additional 71 tonnes may result in around $1.85 M in additional export revenue. A TAC of 180 tonnes is projected to keep the stock at or above the target with 93% probability. However this is the first option where the bounds of the projections dip below the management target (Figure 4).

Option 5

34 Option 5 proposes:

a) Increasing the TAC from 105 tonnes to 200 tonnes.

b) Increasing the TACC from 100 tonnes to 190 tonnes (an increase of 90%).

c) Increasing the allowance for other sources of fishing related mortality from five tonnes to 10 tonnes.

35 An increase of 90 tonnes may result in additional export revenue of $2.34 M. Projections indicate that even with a TAC of 200 tonnes, there is a 90% probability that stock biomass will remain at the management target (Figure 4).

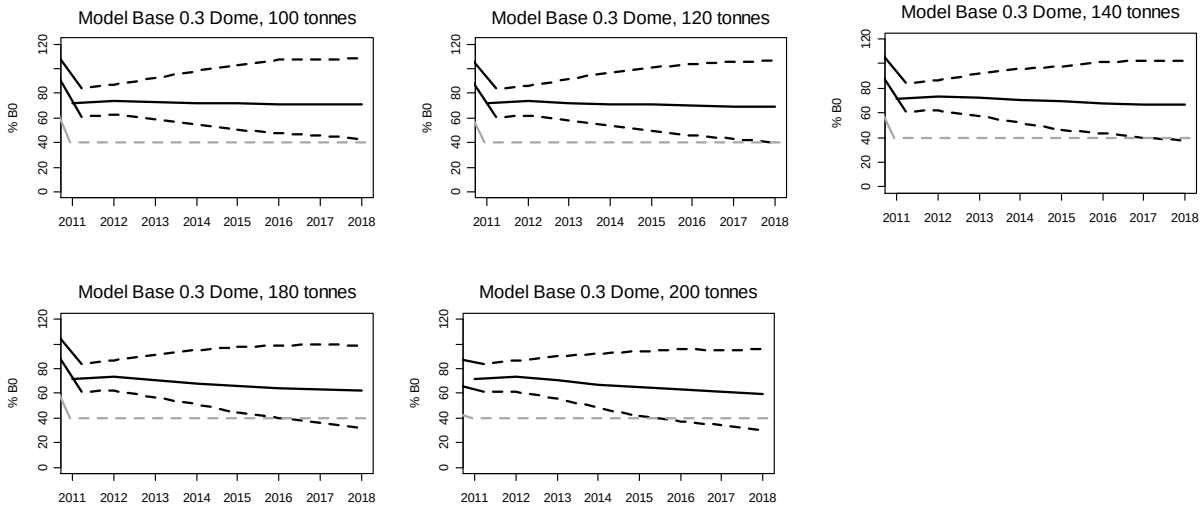

Figure 4: Projected spawning stock biomass for a range of possible catch limits out until 2018, with dotted line indicating the 95% confidence bounds around the median estimate (solid line)

36 The Ministry considers that Option 1 would not allow the industry to take advantage of the increase in scampi biomass that has resulted from strong recruitment into the fishery. This would forego the economic benefit associated with higher scampi catches.

37 Conversely, Option 5 represents the highest risk to the fishery as this option is most likely to result in scampi biomass falling below the management target in the short term. Consequently, the Ministry does not recommend Option 5.

38 The remaining options represent a trade-off between increased revenue from the scampi fishery and risk that the biomass will fall below the management target. The Ministry considers that given the lack of information available on scampi growth within the SCI2 fishery, as well as the uncertainties associated with model estimates, that Option 3 (a TAC increase of 35 tonnes) provides an appropriate balance. The majority of the commercial industry also supported this Option.

Assessment of Management Options

39 This section describes the management options proposed by the Ministry, in terms of how they meet the legislative obligations within the Act. The Ministry considers that all management options proposed here satisfy the purpose of the Act, in that they provide for utilisation of the SCI2 fishery, while ensuring sustainability.

Section 13 – Setting the TAC

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

a) Maintains the stock at or above a level that can produce a maximum sustainable yield, having regard to the interdependence of stocks;

b) Enables the level of a stock whose current level is below that which can produce the maximum sustainable yield to be altered

   i. in a way and at a rate that will result in the stock being restored to at or above a level that can produce the maximum sustainable yield, having regard to the interdependence of stocks; and

   ii. within a period appropriate to the stock having regard to the biological characteristics of the stock and any environmental conditions affecting the stock; or

c) Enables the level of any stock whose current level is above that which can produce the maximum sustainable yield to be altered in a way and at a rate that will result in the stock moving towards or above a level that can produce the maximum sustainable yield, having regard to the interdependence of stocks.

41 The 2013 stock assessment for SCI2 has estimated stock status at approximately 74% B_0, with B_{MSY} estimated to be 27% B_0. The current status of the stock is above B_{MSY} and the Ministry therefore recommends you set the SCI2 TAC under section 13(2)(c) of the Act.

42 Section 13(2)(c) enables you to set a TAC that will allow the stock to move towards or above a level that can produce the maximum sustainable yield when the stock level is estimated to be already above B_{MSY}. You are permitted to choose the 'way and rate' that the stock is moved towards the desired level but you must have regard to the interdependence of stocks. All options presented maintain the stock above B_{MSY}.

43 The scampi fishery catches a high proportion of by-catch. A recent monitoring report indicates that the majority of by-catch are non-QMS species which are discarded.[34] However the monitoring study, given the data available, was unable to test for any trends in by-catch

[34] Anderson, O.F. (2012) Fish and invertebrate by-catch and discards in New Zealand scampi fisheries from 1990-91 until 2009-10.

rates over time for the SCI2 fishery. There is no information therefore to suggest that the setting of the TAC for SCI2 will impact the interdependence of stocks. The Ministry is looking at developing a risk assessment framework for non-QMS species caught within deepwater fisheries to increase our understanding of non-QMS species and the interdependence stocks.

Section 13(3) – Rate of change

44 Section 13(3) requires that, in considering the way and the rate that the stock may be moved towards a level that can produce MSY, you shall have regard to such social, cultural and economic factors as you consider relevant.

45 There is no statutory guidance on what an appropriate 'way and rate' might be in any given case for the purposes of applying section 13(2); it is a matter for you to determine having regard to social, cultural and economic factors. The rate of change in scampi biomass is discussed above with reference to the projections in Figure 4.

46 The Ministry considers that the proposals to increase the SCI2 TAC are justified given the stock is very likely to be above B_{MSY}. The majority of the submissions received from the commercial sector stated support for increasing the TAC under Option 3 which is indicative of the economic factors favoured by commercial stakeholders.

47 Given the lack of recreational and customary catch from SCI2 and the retention of the current nil allowances, the Ministry considers increasing the TAC under any of the proposed options will not have an adverse impact on non-commercial fishers.

Section 20 and 21 – Allocating the TAC

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

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

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

Section 10 – Information Principles

51 Under section 10 of the Act, you must take into account the following information principles:

a) decisions should be based on the best available information

b) decision makers should take into account any uncertainty in the available information,

c) decision makers should be cautious when information is uncertain, unreliable, or inadequate, and

d) the absence of, or any uncertainty in, any information should not be used as a reason for postponing or failing to take any measure to achieve the purpose of the Act.

52 The Ministry considers that the best available information has been used as the basis for the recommendations herein. All science information upon which the management options are based has been peer reviewed by one of the Ministry's Fisheries Assessment Working Groups and meets the Research and Science Information Standard for New Zealand Fisheries.

Section 11 Considerations

53 Under section 11 of the Act, before varying any sustainability measure for the SCI2 stock, you must:

a) Section 11(1)(a): take into account any effects of fishing on any stock and the aquatic environment. No information about any effects of fishing on any stock or on the aquatic environment, additional to that discussed elsewhere in this paper, is considered relevant to the review of sustainability measures for SCI2 at this time.

b) Section 11(1)(b): take into account any existing controls under the Act that apply to the stock or area concerned. For SCI2, the measures that apply currently are a TAC, TACC and an allowance for other sources of fishing related mortality. No other controls under the Act specifically apply to SCI2.

c) Section 11(1)(c): take into account the natural variability of the stock. The SCI2 stock assessment model incorporates all available information on the biological characteristics of scampi and therefore takes into account the factors that drive the natural variability of the stock.

d) Sections 11(2)(a) and (b): have regard to any provisions of any regional policy statement, regional plan, or proposed regional plan under the Resource Management Act 1991 and any management strategy or management plan under the Conservation Act 1987 that apply to the coastal marine area and you consider relevant. A regional coastal plan exists for the Bay of Plenty but the Ministry is satisfied that no provisions within this plan are relevant to your decision.

e) Section 11(2)(c): have regard to sections 7 and 8 of the Hauraki Gulf Marine Park Act 2000 that apply to the coastal marine area and are considered relevant by you. The boundaries of the SCI2 QMA do not overlap with the Hauraki Gulf. Therefore, the Ministry considers there are no relevant considerations under the Hauraki Gulf Marine Park Act 2000.

f) Section 11(2)(d): have regard to any planning document lodged by a customary marine title group under section 91 of the Marine and Coastal Area (Takutai Moana) Act 2011 that apply to the coastal marine area and are considered by you to be relevant. The Ministry is not aware of any planning documents under the Marine and Coastal Area (Takutai Moana) Act 2011 that are relevant to the setting of the SCI2 TAC.

g) Section 11(2A)(b): take into account any relevant and approved fisheries plans. The application of the National Deepwater Plan is discussed in the following section.

h) Section 11(2A)(a) and (c): take into account any conservation or fisheries services, or any decision not to require such services. The Ministry does not consider that existing or proposed services materially affect the proposals for SCI2. No decision has been made to not require a service in this fishery at this time.

Section 11A – Fisheries Plan

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

55 Scampi will be one of the Tier 1 fishery-specific chapters of the National Deepwater Plan, and currently is in development. You are required to take the National Deepwater Plan into account when making a decision on the management options presented for SCI2. The management options proposed in this paper are consistent with the dual Outcomes of the National Deepwater Plan:

a) The Use Outcome: Fisheries resources are used in a manner that provides greatest overall economic, social and cultural benefit

b) The Environment Outcome: The capacity and integrity of the aquatic environment, habitats and species are sustained at levels that provide for current and future use.

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

a) Management Objective 1.1: Enable economically viable deepwater and middle-depth fisheries in New Zealand over the long-term

b) Management Objective 1.3: Ensure the deepwater and middle-depths fisheries resources are managed so as to provide for the reasonably foreseeable needs of future generations

c) Management Objective 2.5: Manage deepwater and middle-depth fisheries to avoid or minimise adverse effects on the long-term viability of endangered, threatened and protected species.

57 The Ministry considers that the management options presented in this paper will contribute towards achieving these three Management Objectives.

Section 9 – Environmental Considerations

58 Section 9 of the Act sets out the following environmental principles. These principles must be taken into account when implementing management measures under the Act.

a) Sections 9(a) and (b) require all persons exercising or performing functions, duties, or powers under the Act to take into account that associated or dependent species be maintained at or above a level that ensures their long-term viability, and that the biological diversity of the aquatic environment should be maintained.

b) Section 9(c) requires all persons exercising or performing functions, duties, or powers under the Act to take into account the principle that habitat of particular significance for fisheries management should be protected.

59 The Ministry is confident that the proposed options are consistent with the requirements of section 9. The key environmental interactions associated with the SCI2 fishery are discussed below with reference to the likely impacts of the proposed management options.

Seabirds

60 The Ministry has recently undertaken an assessment of the risk to seabird populations from commercial fisheries.[35] This research has identified that the scampi fisheries do contribute to the risk score for the Salvin's albatross and flesh-footed shearwater, two of the four most at-risk seabirds. However, the proportion of the total risk to both species attributed to scampi fishing is small as it is not the most significant risk to these birds.[36] In addition, the majority of this risk is thought to be generated from the other scampi fisheries, rather than SCI2. The Ministry acknowledges however that observer coverage has been low in the SCI2 fishery.

61 The Ministry acknowledges that with increased fishing effort more seabirds may be incidentally captured by the scampi fleet within SCI2. Management measures are being developed however to mitigate and minimise seabird interactions within the scampi fleet. Furthermore a new seabird mitigation device is being used across the scampi fishery to minimise the capture of diving birds such as the flesh-footed shearwater. These objectives are in line with the Ministry's National Plan of Action for Seabirds which was released in April 2013.

Fish by-catch

62 The scampi fishery has a high level of by-catch with scampi making up around 17% of catch in scampi target tows since 1 October 1990. The main by-catch species or species groups were javelinfish (16%), other rattails (13%), and sea perch (8.4%).[37] The Ministry acknowledges that levels of by-catch are likely to increase under the measures proposed, however the Ministry has processes in place to monitor and manage any risks associated with this increase in by-catch. This includes introduction to the QMS if sustainability concerns arise.

Marine mammals

63 The incidental capture of marine mammals occurs within the scampi fisheries. Fur seal and sea lion captures have been reported by observers. However, these captures are not in SCI2 and are isolated to the SCI3 and SCI6A fisheries. Given the distribution and known capture rate of fur seals and sea lions, the Ministry considers marine mammal captures to be a low risk in the SCI2 fishery that will not substantially change with any of the options proposed within this paper.

Benthic impacts

64 Fragile invertebrates that are most susceptible to trawling impacts are found primarily on hard substrates that do not occur within the core fishing area of SCI2. Soft sediment and mud substrates predominate in all scampi fisheries and the fishery has evolved to use light bottom gear with multiple rigs that mitigates some of the impact. Nevertheless, bottom trawling for scampi is known to have an impact on the benthic habitat.[38]

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[35] Yvan Richards, Edward R. Abraham & Dominique Filippi (2012). Assessment of the risk of commercial fisheries to New Zealand seabirds 2006-07 to 2010-11. PRO2010/02.

[36] Risk to seabirds from the scampi fisheries comprises 4% of the total risk score for the Salvin's albatross and 7% of the total risk score for the flesh-footed shearwater.

[37] Information is based on observer records not industry catch returns.

[38] Cryer, M., Hartill, B., O'Shea, S., (2002) Modification of marine benthos by trawling: toward a generalization for the deep ocean. Ecol. Apps. 23(6):1824-1839.

65 Recent research has characterised New Zealand's benthic environment and the level of benthic impact from fisheries activity. The benthic-optimised marine environment classification (BOMEC) of New Zealand's exclusive economic zone (EEZ) is not specific to SCI2 but shows the majority of trawl effort for scampi in SCI2 occurs within BOMEC class H. Class H covers approximately 138,550km^2 mainly in depths of between 200m and 500m. Around 45% of the area of class H has been impacted by bottom trawl effort targeting the nine major deepwater species which includes scampi. The SCI2 fishery is only a small part of this footprint. Although the preferred option presented in this paper will result in increase effort by the scampi trawl fishery, this will not increase the scampi benthic footprint as any increase of effort will occur in the areas that have already been fished.

66 In recent years, management measures to address the effects of deepwater trawl activity have focused on 'avoiding' these effects. This has been achieved through closing areas to bottom trawling; first with seamount closures in 2001 and then with Benthic Protection Areas (BPAs). The implementation of BPAs in 2007 closed approximately 30% of the New Zealand EEZ to bottom trawling. It also implemented a monitoring regime to ensure these closures are adhered to.

Deemed values

67 Section 75 of the Act requires you to set deemed value rates for every stock in the QMS. This is to ensure there are appropriate incentives for fishers to acquire or maintain sufficient annual catch entitlement (ACE) so that fishing effort does not result in catch limits being exceeded. The Ministry is not proposing any changes to the SCI2 deemed value rates. Current economic factors indicate that the current deemed value rates are likely to provide the appropriate financial incentives to encourage fishers to remain within their ACE.

68 The current deemed value rates for SCI2 are as follows:

a) The annual deemed value rate is $51.30 per kg

b) The interim deemed value rate is $26.65 per kg

c) The differential deemed value rates are increased according to the proportion by which ACE holdings have been exceeded (Table 3).

Table 3: SCI2 differential deemed value rates

Catch in excess of ACE holdings (%)	Current deemed value rates for SCI2
20	$61.56
40	$71.82
60	$82.08
80	$92.34
100	$102.60

Recommendations

69 The Ministry recommends that you:

EITHER (Option 1 – Status quo)

a) **Agree** to retain the SCI2 TAC at 105 tonnes and within the TAC:

i. retain a nil allowance for Māori customary non-commercial fishing interests;
ii. retain a nil allowance for recreational interests;
iii. retain the allowance for other sources of fishing- related mortality at five tonnes;
iv. retain the TACC of 100 tonnes. **Yes / No**

OR (Option 2)

b) **Agree** to increase the SCI2 TAC from 105 tonnes to 120 tonnes and within the TAC:

i. retain a nil allowance for Māori customary non-commercial fishing interests;
ii. retain a nil allowance for recreational interests;
iii. increase the allowance for other sources of fishing-related mortality from five tonnes to six tonnes;
iv. increase the TACC from 100 tonnes to 114 tonnes. **Yes / No**

OR (Option 3 – Ministry's recommendation)

c) **Agree** to increase the SCI2 TAC from 105 tonnes to 140 tonnes and within the TAC:

i. retain a nil allowance for Māori customary non-commercial fishing interests;
ii. retain a nil allowance for recreational interests;
iii. increase the allowance for other sources of fishing-related mortality from five tonnes to seven tonnes;
iv. increase the TACC from 100 tonnes to 133 tonnes. **Yes / No**

OR (Option 4)

d) **Agree** to increase the SCI2 TAC from 105 tonnes to 180 tonnes and within the TAC:

i. retain a nil allowance for Māori customary non-commercial fishing interests;
ii. retain a nil allowance for recreational interests;
iii. increase the allowance for other sources of fishing-related mortality from five tonnes to nine tonnes;
iv. increase the TACC from 100 tonnes to 171 tonnes. **Yes / No**

OR (Option 5)

e) **Agree** to increase the SCI2 TAC from 105 tonnes to 200 tonnes and within the TAC:

i. retain a nil allowance for Māori customary non-commercial fishing interests;
ii. retain a nil allowance for recreational interests;
iii. increase the allowance for other sources of fishing-related mortality from five tonnes to 10 tonnes;
iv. increase the TACC from 100 tonnes to 190 tonnes. **Yes / No**

James Stevenson-Wallace
Director Fisheries Management

AGREED / AGREED AS AMENDED / NOT AGREED

Hon Nathan Guy
Minister for Primary Industries

/ / 2013

SUBMISSIONS