

Challenger orange roughy (ORH 7A) – FINAL ADVICE PAPER

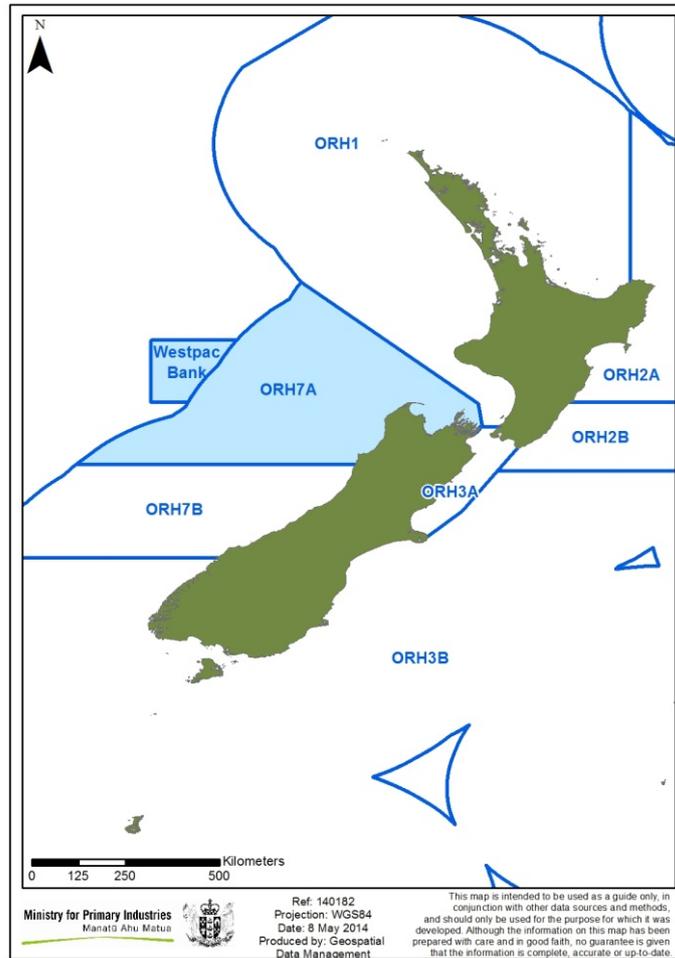


Figure 1: Map showing location and boundaries of ORH 7A

Executive Summary

- 1 The ORH 7A fishery has historically occurred in the southwestern region of the Challenger Plateau, both inside and outside of the New Zealand EEZ. Catches peaked in the late 1980s but dropped sharply in the early 1990s. The fishery was closed in 2000 on the basis of a biomass estimate indicating the stock was below 10% the unfished biomass (B_0). The fishery was re-opened in 2010 with a conservative TAC of 525 tonnes. This decision was informed by a biomass estimate from a 2009 survey that indicated stock size had increased to above the biomass that will produce the maximum sustainable yield (B_{MSY}).
- 2 The 2014 stock assessment of ORH 7A estimated the stock status as being above B_{MSY} and, at 42% B_0 , above the upper bound of the current management target range for this stock (30-40% B_0). Stock status is estimated to have been increasing since the late 1990s (Figure 2).
- 3 The stock assessment indicates that a TAC increase is likely to be sustainable. To test the stock's response to increased catch levels, a series of five year projections were run based on the assessment model. Projections indicate the expected biomass trajectory in relation to the management reference points for orange roughy under different catch levels and form the basis for the options proposed in this paper.
- 4 MPI consulted on three options (Table 1) for catch limits in ORH 7A. The first option is the status quo, retaining the current TAC and allowances. Options 2 and 3 present TACs and allowances for two levels of increased catches.
- 5 MPI recommends that you implement Option 3, which would provide an appropriate increase in utilisation to take advantage of the utilisation opportunity available while also taking account of the uncertainty in the assessment results and environmental considerations.

Table 1: Options for the ORH 7A TAC, TACC and allowances in 2014/15 (tonnes)

	TAC	TACC	Customary Maori Allowance	Recreational Allowance	Other sources of fishing-related mortality
Option 1 (status quo)	525	500	0	0	25
Option 2	945	900	0	0	45
Option 3 (recommended)	1680	1600	0	0	80

- 6 MPI has reviewed annual, interim and differential deemed value rates and is proposing to increase the interim deemed value rate from \$1.60 to \$2.50 and the annual deemed value rate from \$3.20 to \$5.00 to align deemed value rates in this stock with other orange roughy stocks throughout the EEZ.

Background Information

- 7 Orange roughy is a slow-growing, long-lived fish that inhabits depths between 700 and 1500 m. On the basis of otolith ring counts, it is estimated that orange roughy may live up to 120-130 years, and are thought to spawn at around 32-41 years of age.
- 8 ORH 7A is a straddling stock ⁷ with the portion of the stock outside the EEZ ⁸ now managed by the South Pacific Regional Fisheries Management Organisation (SPRFMO). Historically, the Challenger fishery mainly occurred in the southwestern region of the Challenger Plateau, both inside and outside the EEZ.
- 9 Catches peaked in the late 1980s at about 10,000-12,000 t but then dropped sharply in the early 1990s and the fishery remained at 1,000-2,000 t for much of that decade before the fishery was closed in 2000. The fishery was re-opened in 2010 with a TAC of 525 tonnes on the basis of a biomass estimate which indicated that the stock was above B_{MSY} .

Consultation

- 10 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.
- 11 MPI consulted on your behalf on the three options set out in Table 1 above. The standard consultation process has been followed, whereby initial position papers (IPPs) were posted on the MPI website and stakeholders were notified of this through a letter sent to approximately 200 companies, organisations and individuals.
- 12 There is also an obligation to provide for input and participation of tangata whenua and have particular regard to kaitiakitanga. MPI recognises that information on customary harvest is uncertain and invited iwi, Tangata Tiaki/Kaitiaki, and customary permit holders to submit information. However, no additional information was submitted during the consultation process. MPI will continue to work with tangata whenua to improve reporting and information on customary non-commercial catches.

SUBMISSIONS RECEIVED

- 13 Submissions were received from the following:
 - a) Deepwater Group Ltd., (DWG)
 - b) Environment and Conservation Organisations of New Zealand Inc., (ECO)
 - c) Iwi Collective Partnership (ICP)
 - d) Ngati Porou Seafoods Ltd., (NPSL)

⁷ A straddling stock is defined as one which occurs both within the EEZ of a country and in an area beyond and adjacent to it.

⁸ The main area fished outside the EEZ is about 25 nautical miles outside the EEZ boundary. Fish here are considered to be from the same biological stock as those inside the EEZ.

- e) Our Seas Our Future (OSOF)
- f) Sanford Ltd., (Sanford)
- g) Sealord Group Ltd., (Sealord)
- h) Te Ohu Kaimaona (TOKM)

14 All submissions are attached to this paper for your reference.

SUMMARY OF SUBMISSIONS

- 15 ECO does not support an increase in the TACC for this stock for 2014-15 and therefore considers that the status quo (Option 1) should be the preferred option. The reasons given for this are concerns, in their view, with uncertainty in the stock assessment which should prompt further research. Further, ECO considers the status quo should continue so as to avoid increases in bycatch of seabirds and to ensure no increase in the impacts of bottom trawling and associated benthic impacts within this fishery.
- 16 OSOF supports the status quo (Option 1) as this ‘will best limit related bycatch’ and also ‘best limit interaction with protected marine species such as sharks, fur seals and seabirds’ and ‘limit effects on benthic habitats.’ OSOF agrees with the efforts of MPI to work with stakeholders to reduce risks to seabirds, and supports use of multi-frequency acoustic surveys for stock assessments.
- 17 There was no support from submitters for Option 2.
- 18 DWG is the industry organisation that represents holders of quota in New Zealand’s major deepwater fisheries. DWG advises that in a poll of its shareholders, based on tonnages of ORH 7A owned, there was unanimous support for Option 3, an increase in the TACC to 1,600 tonnes.
- 19 Sealord supports an increase in the TACC to 1,600 tonnes (Option 3). Sealord view this new catch limit as an interim step up from the current limit of 500 tonnes, and expect results from the 2014 survey to lend support to a future long-term higher yield for this stock. Sealord is mindful of the perceived previous reputational damage to New Zealand from overfishing of this stock and supports a conservative approach where possible. They also view it as important to send a strong message to SPRFMO and other states that have previously exploited orange roughy outside the EEZ that New Zealand is capable of fully exploiting this stock under UNCLOS.
- 20 NPSL supports Option 3, an increase in the TAC from 525 tonnes to 1,680 tonnes, increasing the TACC from 500 tonnes to 1,600 tonnes. The overarching reason for supporting this position is the belief that this is the best option at present to utilise this orange roughy fish stock in a sustainable manner.
- 21 ICP⁹ supports an increase in the TACC from 500 tonnes to 1,600 tonnes (Option 3) staged over a three-year timeframe. ICP believes that while all the options provided by MPI are consistent with the harvest strategy for orange roughy, Option 3 allows better utilisation opportunities that the stock assessment indicates are available and sustainable.
- 22 Sanford indicates that it supports the DWG submission across all orange roughy stocks.

⁹ Note that NPSL is also a member of the Iwi Collective Partnership and support the final submission of DWG.

- 23 Similarly, TOKM endorses the submission made by DWG on the orange roughy stocks under review (Option 3 for ORH 7A), and that while this increase is greater than for Option 2, the stock will still remain within the accepted management regime.

Rationale for Management Intervention

- 24 The 2014 Fisheries Assessment Plenary (the Plenary) agreed that the 2014 ORH 7A stock assessment was of high quality and met New Zealand's Science and Research Information Standard for New Zealand Fisheries.¹⁰ MPI is therefore confident that the results from the assessment can be accorded a high weight in fisheries management decisions.
- 25 The Plenary agreed on an assessment model which assumes natural mortality (M) at 0.045, is single-sex and age-structured. The model includes the following data sources: biomass estimates from acoustic and trawl surveys (2006, 2009-2013); the trawl surveys from 1987-89; and age frequencies from the three trawl surveys. This information has been collected from within the EEZ and the Westpac Bank area (Figure 1) outside of the New Zealand EEZ.
- 26 The assessment estimates current biomass to be 42% B_0 . The Plenary considered this to be Very Likely (> 90% probability) to be at or above the lower bound of the management target range (30% B_0) and About as Likely as Not (40-60% probability) to be at or above the upper bound of the management target range (40% B_0).

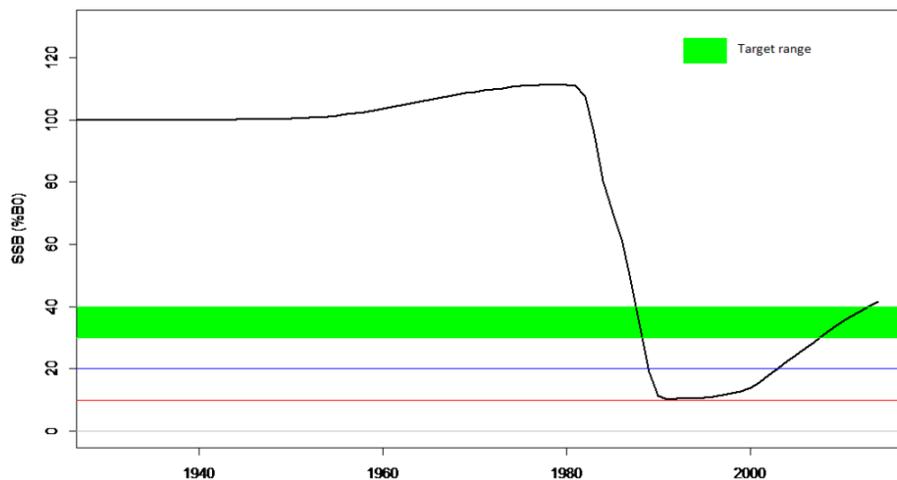


Figure 2: Estimated biomass trajectory for ORH 7A, an output of the 2014 assessment model.

- 27 Major sources of uncertainty associated with the stock assessment model include: the assumptions made about the proportion of the stock indexed by the combined acoustic and trawl survey; and age composition data used to determine the pattern of year class strengths, is available for only 3 years.
- 28 MPI considers this assessment to be robust to these uncertainties. Additional model runs investigated the sensitivity of the model to different values for natural mortality and to changes in the assumption regarding the proportion of the stock indexed by the survey biomass estimates. None of these sensitivity runs was significantly different from the base model run.

¹⁰ Available at: <http://www.fish.govt.nz/en-nz/Publications/Research+and+Science+Information+Standard.htm>

Management Measures Proposed

- 29 Orange roughy is managed under section 13(2) of the Act, with TAC setting also guided by the orange roughy harvest strategy, which requires the stock to fluctuate within the target range of 30-40% B_0 . This target was set above deterministic B_{MSY} (22-23% B_0)¹¹ to provide greater certainty that the stock 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 in relation to the management target range. The projections use the assessment model to estimate the likely stock status trajectory under different catch assumptions.
- 31 To inform the 2014 review of management settings, projections were produced assuming four different levels of catch taken from the ORH7A stock:
- the status quo of 500 tonnes;
 - an increase of 400 tonnes to a catch limit of 900 tonnes;
 - an increase of 1,100 tonnes, to a catch limit of 1,600 tonnes; and
 - an increase of 1,600 tonnes to a catch limit of 2,100 tonnes.
- 32 Based on the results of the 2014 ORH 7A stock assessment, and the projections, MPI considers all the options proposed are consistent with the orange roughy harvest strategy and maintaining ORH 7A at or above B_{MSY} . All projections result in the stock remaining above the lower bound of the management target range (30% B_0) with high probability through to 2019 (Table 2). Even if a catch of 2,100 tonnes is assumed, the stock biomass would remain within the management target range of 30-40% B_0 over the next five years.

Table 2: Five year projection results, showing the expected median status of ORH 7A in 2019, and the probability that status is within or above management target range (30-40% B_0)

Projection	TACC (tonnes)	Projected stock status	Probability of being above 30% B_0	Probability of being above 40% B_0
a) Option 1 (status quo)	500	48% B_0	100%	92%
b) Option 2	900	46% B_0	100%	86%
c) Option 3 (recommended)	1,600	42% B_0	99%	66%
d) For information only	2,100	40% B_0	96%	48%

- 33 These projections were used to select the management options proposed during consultation. In recognition that these projections assume average recruitment in each of the next five years, which is uncertain, MPI included only the three lower catch levels as management options. MPI therefore has confidence that these options are robust to the uncertainty in future recruitment. Furthermore, additional surveys and stock assessment updates are planned and MPI intends to re-assess the catch limit well in advance of 2019.
- 34 Work is also ongoing to further investigate the appropriateness of the agreed management target range. Final results are not yet available although preliminary results

¹¹ It is important to note that deterministic estimates of B_{MSY} are not considered to be appropriate as management targets as they rely on perfect information, which is unrealistic

indicate that the management target range may need to extend upwards to provide an increased level of certainty that the stock will remain above the soft limit reference point. This could potentially result in aiming to have stocks fluctuating around 40% B_0 as the midpoint of that target range. Options 2 and 3 would be consistent with this approach if it was adopted in future.

OPTION 1 - STATUS QUO

- 35 Under this option the TAC would remain at 525 tonnes and the TACC would remain at 500 tonnes.
- 36 This option will result in lost utilisation opportunities. The stock assessment results provide confidence that the stock is likely to be able to support a harvest level greater than the status quo.
- 37 The 500 tonne TACC represented a conservative yield when the fishery was reopened in 2010. The estimated sustainable yield from the stock was determined to be 1,050 tonnes, and the TAC was set at half this figure. Under this conservative catch limit the stock has continued to rebuild and is now considered to be above the upper limit of the current management target range.
- 38 Environmental stakeholders (ECO and OSOF) preferred this option. Both provided similar reasons for this namely; uncertainty with the stock assessment and to avoid increases in interactions with protected species, fish bycatch, and to limit effects on benthic impacts. MPI disagrees that the uncertainties in the assessment require retaining such a conservative TACC. The assessment has investigated the impacts of the main uncertainties through sensitivity analyses and the results are considered robust. The environmental interactions of the fishery are addressed later in this paper.

OPTION 2

- 39 Option 2 proposes:
- To increase the TAC from 525 tonnes to 945 tonnes
 - To increase the TACC from 500 tonnes to 900 tonnes
 - To increase the allowance for other sources of fishing related mortality from 25 tonnes to 45 tonnes (maintaining it at 5% of the TACC)
 - No changes to customary or recreational allowances.
- 40 The projections indicate that the status of ORH 7A would remain above the upper bound of the management target range for the next five years with a TACC of 900 tonnes. The projections also indicate that the stock could support a larger catch increase before it would be likely to decline below the upper bound of the management target range (Table 2). This option therefore presents a conservative approach to the current harvesting opportunity available in this stock.
- 41 You could take this conservative approach if you wished to have particular regard for the uncertainties associated with the stock assessment model. Under this option, the stock would be maintained at a higher biomass level than under Option 3, which would increase the likelihood that the stock would remain above the upper end of the management target range. However as mentioned, MPI is confident the assessment results are robust to these uncertainties.

- 42 This option would not take full advantage of the available utilisation opportunity indicated by the stock assessment and the current harvest strategy. This option would implement a catch level below the sustainable yield estimated in 2010. ORH 7A biomass has continued increasing since 2010 and a higher yield is now sustainable for this stock. MPI considers that there is now enough confidence that the stock has successfully rebuilt, there is less need for taking such a conservative approach to utilisation of this resource.
- 43 This option could also be implemented as the first step up in a longer-term approach of incrementally increasing the TACC over time. Future increases would be considered based on this assessment and as new information was made available to further strengthen confidence in the results of the 2014 stock assessment.
- 44 Based on export figures from 2013 of \$4.31/kg greenweight, a 400 tonne increase in the TACC may result in an additional \$1.7 m in revenue.¹²

OPTION 3 – RECOMMENDED

- 45 Option 3 proposes:
- To increase the TAC from 525 tonnes to 1,680 tonnes
 - To increase the TACC from 500 tonnes to 1,600 tonnes
 - To increase the allowance for other sources of fishing related mortality from 25 tonnes to 80 tonnes (maintaining it at 5% of the TACC)
 - No changes to customary or recreational allowances.
- 46 Option 3 would implement the estimate of yield that would cause the stock to fluctuate around the upper bound of the management target range (40% B_0). While this option is the least conservative of the three proposed Options, the increase is lower than the maximum yield the stock assessment estimated ORH7A could sustain.
- 47 ORH 7A stock status is estimated to be 42% B_0 , above the upper bound of the current management target range. The five-year management projections also indicate that stock status would remain above the top end of the target range for the next five years with a TACC of 1,600 tonnes, and a catch of 2,100 tonnes would bring stock biomass back within the management target range (Table 2). MPI has not included 2,100 tonnes as a management option, as some caution is warranted given the assessment is new.
- 48 MPI also considers this to be the most appropriate option to take advantage of the utilisation opportunity that is available. Implementing this option will also ensuring that the stock will remain within or above the management target range. An acoustic survey has recently been carried out in ORH 7A, and the stock assessment is scheduled to be updated in 2015. This will provide additional certainty with regards to the status of the stock, and may result in a further review of the ORH 7A TAC.
- 49 All industry submitters (five) were in favour of this Option. Sanford and TOKM endorsed the DWG submission and the assertion that the TACC should aim to maintain the stock at 40% B_0 .

¹² Based on export figures for 2013 calendar year of \$4.31 / kg greenweight. This uses frozen fillets to estimate the greenweight export price as this product form accounted for 85% of export earnings and 72% of export volume for orange roughy in the 2013 calendar year. Precise value is difficult to estimate and is influenced by factors such as commodity prices, exchange rate, catching costs and export state.

- 50 Based on export figures from 2013 of \$4.31/kg greenweight, a 1,100 tonne increase in the TACC may result in an additional \$4.7 m in revenue.

Assessment of Management Options

- 51 This section describes the management options available for your consideration in terms of how they will ensure that your relevant statutory obligations are met.
- 52 The purpose of the Act (Section 8) is to provide for utilisation of fisheries resources while ensuring sustainability. MPI considers that all options presented in this paper satisfy the purpose of the Act in that they provide for utilisation in the ORH 7A fishery while ensuring sustainability.
- 53 Each management option proposed will ensure the long term sustainability of the stock. Option 1 maintains the current catch levels set in 2010 at a conservative value of 525 tonnes. Option 2 would provide for an additional volume of catch that would support ORH 7A remaining above the upper bound of the management target range for the next five years. Option 3 would cause the stock to fluctuate around the upper bound of the management target range.

SECTION 13 – SETTING THE TAC

- 54 The best available information estimates the stock status for ORH 7A as being above B_{MSY} and, at 42% B_0 , above the upper bound of the current management target range for this stock (30-40% B_0). Stock status is estimated to have been increasing since the late 1990s. Accordingly, MPI proposes that the TAC be set under section 13(2)(b) to enable the ORH 7A stock to be increased; and with the stock's response to increased catch levels tested by a series of five-year projections based on the accepted assessment model.
- 55 Section 13(2)(b) of the Act requires you to set a TAC that:
- a) 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
- 56 Section 13(2)(b) also contains specific considerations that you must have regard to when setting the TAC:
- a) The interdependence of stocks (section 13(2)(b)(i)). There is no information to suggest the interdependence of stocks should affect the level of the TAC for ORH 7A at this time, given that bycatch proportions are low. The interdependence of stocks is discussed further below.
 - b) The biological characteristics of ORH 7A (section 13(2)(b)(ii)). It is known that orange roughy are very long-lived and late maturing, which are biological characteristics that render them slow to recover from overfishing. These

biological characteristics have been taken into account in the stock assessment model and in the formation of management options.

- c) Environmental conditions affecting ORH 7A (section 13(2)(b)(ii)). No specific environmental conditions affecting the ORH 7A stock have been identified.

SECTION 13(3) – RATE OF CHANGE

- 57 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.
- 58 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.
- 59 MPI considers that an increase to the ORH 7A TAC catch limit is justified given the stock is very likely to be above B_{MSY} . Submissions received indicate support from the commercial sector for increasing the ORH 7A TAC and maximising the accompanying economic benefits.
- 60 Given the lack of recreational and customary catch from ORH 7A, and the retention of the current allowances, MPI considers increasing the TAC catch limit under either of the proposed options will not have an adverse impact on non-commercial fishers.

ALLOCATING THE TAC

- 61 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

- 62 Recreational and customary fishers do not target orange roughy as it is a deepwater, offshore fishery and the data on customary and recreational catches of orange roughy is negligible. MPI considers there to be no rationale to change the current recreational or customary allowances of zero tonnes.

Other sources of fishing-related mortality

- 63 MPI proposes an allowance for other sources of fishing-related mortality of 5% of the TACC. This would remain at 25 tonnes under Option 1, be increased to 45 tonnes under Option 2, and increased to 80 tonnes under Option 3. This allowance is required to take account of orange roughy mortality that is not reported such as orange roughy lost due to burst nets or discarding of damaged orange roughy.

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

SECTION 11 CONSIDERATIONS

- 66 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 other sources of 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. MPI 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 boundaries of the ORH7A do not intersect with the Hauraki Gulf. Therefore, there are no relevant considerations under the Hauraki Gulf Marine Park Act 2000 for this stock.
 - 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. MPI 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 and Forum Fisheries Plans 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. MPI 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

- 67 MPI, in collaboration with industry and environmental organisations, has developed a National Fisheries Plan for Deepwater and Middle-depth Fisheries (the National Deepwater Plan) which 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.
- 68 The fishery-specific chapter of the National Deepwater Plan for orange roughy 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 ORH 7A. 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.
- 69 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.
- 70 MPI considers that the management options presented in this FAP will contribute towards the achievement of these three Management Objectives.
- 71 There is one Forum Fisheries Plan relevant to the ORH 7A fishery area. The Te Waka a Maui me ona Toka Iwi Forum has produced the Te Waipounamu Iwi Forum Fisheries Plan. This Plan covers ORH 7A and identifies orange roughy as a taonga species. The Te Waipounamu Iwi Forum Fisheries Plan contains six Management Objectives, two of which are relevant to the management of ORH 7A:
- a) Management Objective 3: To develop environmentally responsible, productive, sustainable and culturally appropriate commercial fisheries that create long-term commercial benefits and economic development opportunities for South Island Iwi
 - b) Management Objective 5: To restore, maintain and enhance the mauri and wairua of fisheries throughout the South Island.
- 72 MPI considers that the management options presented in this advice paper will contribute towards the achievement of these two management objectives. All options

would ensure that the fishery remains sustainable and that environmental impacts are minimised.

SECTION 9 – ENVIRONMENTAL CONSIDERATIONS

- 73 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.
- 74 MPI is confident that the proposed options are consistent with the requirements of section 9. Key environmental issues associated with the ORH 7A fishery and how they will be affected by the proposals to increase the TAC are discussed below.

Protected species interactions

- 75 Either Option 2 or Option 3 would result in increased orange roughy fishing effort on the Southwest Challenger Plateau. This could result in increases to the known interactions with protected species, which are outlined below. However, MPI is comfortable that current management processes will ensure that there is low risk of negatively impacting on the long-term viability of the affected protected species populations.
- 76 Orange roughy trawl fisheries rarely interact with marine mammals (Table 4). MPI considers that the management proposal is unlikely to have any additional effects on New Zealand fur seals, New Zealand sea lions, or any other marine mammals. However, MPI will continue ongoing monitoring of marine mammal interactions in all deepwater fisheries.
- 77 Management of seabird interactions with New Zealand's commercial fisheries is now being driven through the 2013 National Plan of Action to reduce the incidental capture of seabirds in New Zealand fisheries (NPOA-Seabirds). The NPOA-Seabirds has established a risk-based approach to managing fishing interactions with seabirds, targeting management actions at the species most at risk.
- 78 The risk based approach that underpins the NPOA-Seabirds has identified the level of risk to individual seabird species, generated by different vessel classes within the commercial fishing fleet, via a comprehensive and hierarchical risk assessment and risk screening approach.

Table 3: Observed and estimated captures of seabirds and NZ fur seals in all orange roughy trawl fisheries. There have been no reported interactions with New Zealand sea lions or any other marine mammals

	Seabird captures		NZ fur seal captures		Total # of tows	Observed tows	% of tows observed
	Observed	Estimated	Observed	Estimated			
2011-12	0	6	0	0	1,588	437	27.5
2010-11	2	10	0	0	1,889	795	26.2
2009-10	13	27	0	0	2,922	1,139	39.0
2008-09	6	16	0	1	3,544	1,435	40.5
2007-08	2	12	0	0	3,689	1,618	43.9

- 79 Orange roughy fishing effort generally contributes a very 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) and this will not be materially affected by the increase in fishing effort inherent in Options 2 and 3.
- 80 MPI will continue to work with industry stakeholders to reduce the risk to key seabird species. A range of measures are currently in place or are 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.¹³
- 81 Non-regulatory measures are also used to reduce the risk of seabird interactions with the orange roughy fleet including use of mitigation devices and offal management procedures. MPI monitors seabird captures and works with the DWG where necessary to minimise and mitigate captures. These practices will continue during 2014/15.

Benthic impacts

- 82 Bottom trawling can affect fragile benthic invertebrate communities but adverse effects may be reduced if vessels repeatedly trawl along the same towlines in a fishery. There are cost implications for the industry in terms of lost or damaged gear when fishing in new areas and as a result, fishing effort is more likely to continue in areas previously fished.
- 83 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 large areas of the EEZ to bottom trawling; first with seamount closures in 2001 (none of these are within the ORH 7A QMA) and then with Benthic Protection Areas (two of these areas are within the ORH 7A area). The implementation of BPAs in 2007 effectively closed approximately 30% of the New Zealand EEZ to bottom trawling and established a monitoring regime to ensure these closures are adhered to.
- 84 The proposals to increase the TACC for orange roughy will result in an increase in fishing effort, and potentially new areas being trawled, though at this stage MPI is of the view that areas targeted will be comprised by areas that have been previously trawled.
- 85 The trawl footprint of the orange roughy fishery will continue to be mapped and monitored annually.

¹³ More information on these projects can be found at the Department of Conservation's Conservation Services Programme website: www.doc.govt.nz/csp

Section 75 - 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 fishing effort does not result in catch limits being exceeded.
- 87 The current interim and annual deemed value rates for ORH 7A were reviewed against current port prices, estimated export value, and deemed values for other orange roughy stocks. MPI proposes that the deemed value rates for ORH 7A be increased as follows:
- a) The annual deemed value rate would be \$5.00 per kg.
 - b) The interim deemed value rate would be \$2.50 per kg.
 - c) A differential deemed value rate of \$6.25 would apply to catch in excess of 110% of ACE holdings.
- 88 These deemed value rates were consulted on in the IPP as required by Section 75A of the Act; no comments were received. These rates are consistent with those in place in other New Zealand orange roughy fisheries, and MPI considers the increased rates are appropriate to provide incentives for fishers to acquire or maintain sufficient ACE so the catch limits are not exceeded.
- 89 Fishing activity will continue to be monitored during the 2014-15 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

SUB-QMA CATCH SPREADING ARRANGEMENTS

- 90 As indicated above, ORH 7A is a straddling stock, with a proportion of the fishing taking place outside New Zealand's EEZ on the Westpac Bank, an area now managed by SPRFMO. The Westpac Bank area was closed to fishing in 2000 alongside the closure of ORH 7A. When ORH 7A was re-opened in 2010, industry requested that the Westpac Bank be re-opened as well under the same conditions that existed prior to the fisheries' closure.
- 91 The Westpac bank has been closed to bottom fishing by SPRFMO because it was not included in the 2002-06 SPRFMO bottom fishing footprint. The Westpac Bank has been re-examined as a result of the opening of ORH 7A. There were several trawl surveys during 2002-06 which have been included in New Zealand's bottom trawling footprint.
- 92 New Zealand is in the process of opening two areas of the Westpac Bank to fishing where they meet the definition of areas that should be open based on historic fishing activity as described in the NZ Bottom Fishing Impact¹⁴ assessment. There is a catch limit for orange roughy in the wider SPRFMO area of 1,852 tonnes.
- 93 For New Zealand vessels, orange roughy catches in the Westpac Bank area will be required to be reported against the ORH 7A TACC to ensure that total catches of the

¹⁴ <http://www.southpacificrfmo.org/assets/Science/Benthic-Impact-Assessments/New-Zealand/New-Zealand-Bottom-Fishery-Impact-Assessment-v1.3-2009-05-13.pdf>

stock remain within the sustainable limit. The schedule of SPRFMO conditions for the 1 May 2014 fishing season (including the Westpac Bank) is being finalised.

- 94 To minimise risk of localised depletion caused by taking too large a proportion of the TACC from Westpac Bank, the fishery will be actively monitored in 2014-15. If it is considered that a disproportionate amount of the TACC is being caught on Westpac Bank, MPI will work with DWG to implement voluntary sub-area catch limits for this area.

COMPLIANCE ISSUES

- 95 Key offences that may occur in ORH 7A include misreporting of QMA, species and weights, and fishing in closed areas. Any reduction in TACs may increase the incentive to offend.
- 96 However, the ORH 7A fishery is closely managed from an industry perspective with few vessels operating in the fishery and regular reporting requirements in place. Observer coverage in the orange roughy fisheries is relatively high with 29-42% of tows observed in the most recent five years.
- 97 MPI considers that the monitoring arrangements in place are robust and appropriate. DWG and MPI will continue to actively monitor this fishery closely to ensure compliance with catch limits and all management arrangements.

Conclusions

- 98 The 2014 stock assessment of ORH 7A estimates stock status to be above the level that can support the maximum sustainable yield, and above the upper bound of the current management target range for this stock. This indicates that a TAC increase is likely to be sustainable.
- 99 Of the three options proposed for this stock, MPI recommends Option 3. Under this Option you would increase the ORH 7A TAC by 1,155 tonnes, to take advantage of the utilisation opportunities that are available. Forward projections of stock status indicate that stock size will remain stable at the recommended catch level, and that a larger catch increase would be sustainable in ORH 7A.

Recommendations

100 MPI recommends that you:

Note that the prerequisites for the setting or varying of the TAC, TACC and allowances (which include consultation and the provision of input and participation in the decision making process of tangata whenua with a non-commercial interest in the stock or an interest in the effects of fishing on the aquatic environment in the area concerned) have been complied with

NOTED

AND, Choose either:

Option 1 – status quo

- a) **Agree** to retain the existing TAC for ORH 7A at 525 tonnes and within the TAC:
- i. Retain an allowance for recreational fishing interests of 0 tonnes;
 - ii. Retain an allowance for Māori customary non-commercial fishing of 0 tonnes;
 - iii. Retain an allowance of 25 tonnes for other sources of fishing-related mortality;
 - iv. Retain the TACC at 500 tonnes.

Agreed / Not Agreed

OR

Option 2

- c) **Agree** to increase the TAC for ORH 7A from 525 tonnes to 945 tonnes and within the TAC:
- i. Retain an allowance for recreational fishing interests of 0 tonnes;
 - ii. Retain an allowance for Māori customary non-commercial fishing interests of 0 tonnes;
 - iii. Set an allowance of 45 tonnes for other sources of fishing-related mortality;
 - iv. Set the TACC at 900 tonnes.

Agreed / Not Agreed

OR

Option 3 (MPI Recommended option)

- d) **Agree** to increase the TAC for ORH 7A from 525 tonnes to 1,680 tonnes and within the TAC:
- i. Retain an allowance for recreational fishing interests of 0 tonnes;
 - ii. Retain an allowance for Māori customary non-commercial fishing interests of 0 tonnes;
 - iii. Set an allowance of 80 tonnes for other sources of fishing-related mortality;
 - iv. Set the TACC at 1,600 tonnes

Agreed / Not Agreed

AND, Choose either

Option 1 – status quo

- a) **Agree** to leave the deemed value rates for ORH 7A unchanged for the 2014/15 year;

Agreed / Not Agreed

OR

Option 2 (MPI Recommended option)

a) **Agree** to amend the deemed value rates for ORH 7A as follows:

- a. Set an annual deemed rate of \$5.00 per kg
- b. Set an interim deemed value rate of \$2.50 per kg

Set a differential deemed value rate for this stock starting at 10% of catch in excess of a fisher's ACE holding of \$6.25

Agreed / Not Agreed

Scott Gallacher
Deputy Director-General
Regulation and Assurance
for Director-General

Hon Nathan Guy
Minister for Primary Industries

/ / 2014