Ministry of Fisheries
Te Tautiaki i nga tini a Tangaroa

Review of Sustainability Measures and Other Management Controls for 1 October fish stocks

Initial Position Paper

June 2010

New Zealand Government

CONTENTS

INTRODUCTION

1. This Initial Position Paper (IPP) provides the Ministry of Fisheries (MFish's) initial views on proposals relating to sustainability measures for selected inshore fish stocks for the 2010/11 fishing year, commencing on 1 October.

2. MFish developed the attached Initial Position Papers (IPP) for the purpose of consultation as required under the Fisheries Act 1996 (the Act). MFish emphasises the views and recommendations outlined in each paper are preliminary and are provided as a basis for consultation with stakeholders.

3. In August 2010, MFish will compile the Final Advice Paper (FAP) for the attached proposals. This document will summarise MFish and stakeholder views on the issues being reviewed, and provide final advice and recommendations to the Minister of Fisheries. A copy of the FAP and subsequently the Minister's letter setting out his final decisions will be posted on the MFish website as soon as it becomes available with hard copies available on request.

Deadline for Submissions

4. MFish welcomes written submissions on the proposals contained in the IPPs. **All written submissions on this consultation document must be received by MFish no later than Monday, 26 July 2010.**

5. Written submissions should be sent directly to:

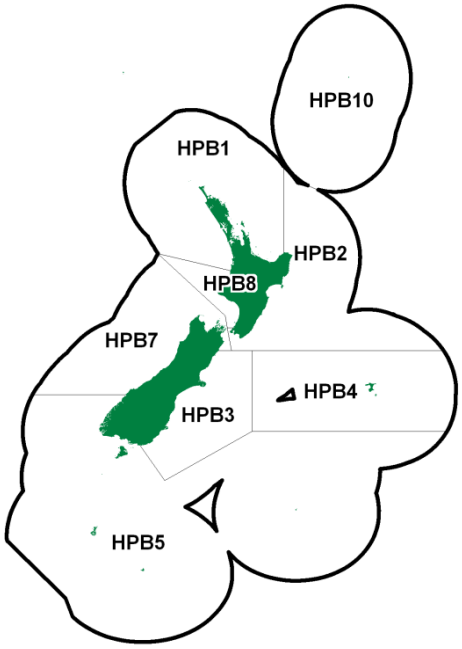
   Trudie Macfarlane,
   Ministry of Fisheries,
   P O Box 1020,
   Wellington;

   or faxed to 04 819 4208
   or emailed to Trudie.Macfarlane@fish.govt.nz

6. All submissions are subject to the Official Information Act and can be released, if requested, under the Act. If you have specific reasons for wanting to have your submission withheld, please set out your reasons in the submission. MFish will consider those reasons when making any assessment for the release of submissions if requested under the Official Information Act.

INITIAL POSITION PAPER
HAPUKU BASS (HPB 3)

Figure 1: Quota Management Areas (QMA) for Hapuku Bass (HPB 3)



Summary

1 MFish is seeking tangata whenua and stakeholder information and views to inform a review of catch limits for hāpuku/bass ("groper") in Quota Management Area 3 (HPB 3; refer figure 1).

2 The following catch limit options are being considered for HPB 3:

a) Option 1 – TAC set at a level that reflects the current TACC (335.1 t) with allowances for customary interests (1 t), recreational interests (195 t) and other sources of mortality (6.5 t)

b) Option 2 – TAC set at a level that allows for an increased TACC to reflect average reported commercial landings over the past 15 years (350 t) and allowances for customary interests (1 t), recreational interests (195 t) and other sources of mortality (7 t)

c) Option 3 – TAC set at a level that allows for an increased TACC to reflect average reported commercial landings over the last ten years (370 t) and allowances for customary interests (1 t), recreational interests (195 t) and other sources of mortality (7.5 t).

3 MFish's initial view is that Option 1 is the appropriate option. Information on the status of groper stocks is highly uncertain. Groper species are long lived, slow growing and, when mature, can show a strong degree of site fidelity. All these features make groper vulnerable to over-fishing. The history of overcatch in the

fishery is not sufficiently long or consistent to confirm recent catch levels are sustainable. The biology of groper species means, should the stock be over-fished, recovery would be slow, which would adversely impact the utilisation benefit able to be derived from the fishery.

4 MFish is also seeking tangata whenua and stakeholder views on appropriate deemed value (DV) rates for HPB 3. The following options are being considered:

a) Option A - Retain the existing interim and annual deemed values.

b) Option B - Increase the interim and annual deemed value rates to $2.00 per kg and $2.50 per kg respectively.

c) Option C - Increase the interim and annual deemed value rates to $2.30 per kg and $2.80 per kg respectively.

5 MFish's initial view is that the deemed value rates for HPB 3 should be increased in line with Option C. Increasing the deemed values would reduce profit margins on deemed fish and provide greater incentives to manage harvest to within ACE holdings and consequently the TACC.

Background

6 HPB 3 entered the QMS in 1986 and, apart from Quota Appeal Authority decisions, the TACC has remained unchanged at 335.1 tonnes since. No TAC, allowances for non-commercial interests, or allowance for other sources of fishing-related mortality have been set for this fishery.

7 HPB 3 consists of two species, häpuku (*Polyprion oxegeneios*) and bass (*P. americanus*) along the east coast of the South Island. Reported catches do not distinguish between species. The common term for both these species is groper which will be used as the collective term for these species in this paper.

Biological Characteristics of HPB

8 Groper are widely distributed around New Zealand from the Kermadec Islands in the north to the Auckland Islands in the south, generally over rough ground, from the central shelf (about 100 m) to the shelf edge and down the upper slope.

9 Both groper species are assumed to be long-lived. Häpuku mature sexually between 10 and 13 years old and may live in excess of 60 years (Francis *et al.* 1999)[1]. Natural mortality (*M*) may be 0.1 or less (Francis *et al.* 1999).

10 Tagging studies have shown movement of HPB 3 into Cook Strait with return movements also indicated. While migration patterns are little known or understood, they are probably related to spawning.

[1] Francis MP., Mulligan KP., Davies NM., Beentjes MP. 1999. Age and growth estimates for New Zealand häpuku, *Polyprion oxygeneios.* Fishery Bulletin. 97(2): 227–242.

11 Current groper stock boundaries are based on FMAs and are unlikely to reflect natural stock boundaries. Electrophoretic studies suggest that separate stocks of groper could occur, however, the genetic heterogeneity of Cook Strait groper, seasonal movements of groper through this area, moderately long-distance movements of some tagged groper, the presence of both species on open ground and the eventual recovery of heavily exploited reefs, suggest that, either each stock is moderately mobile or that, there is essentially only one stock (of each species) with some small geographic or temporal genetic differences.

HPB 3 Fishery

12 The commercial groper fishery takes both species, but in different proportions by region, depth, fishing method and season, and these have changed over time.

13 The fishery has both a target fishery (setnet, longline and dahn line) and a trawl bycatch component. Principal areas are the setnet fishery around Kaikoura, anecdotally intercepting migrating fish, and the bycatch trawl fishery, principally in the Canterbury Bight. The fleet is composed largely of small to medium inshore craft.

Table 1: Reported landings (t) of groper HPB 3 from 1988–89 to 2008–09

Year	Landings	TACC
1986-87	260	270
1987-88	268	286
1988–89	259	294
1989–90	283	318
1990–91	311	326
1991–92	298	326
1992–93	299	327
1993–94	306	330
1994–95	274	335
1995–96	321	335
1996–97	301	335
1997–98	329	335
1998–99	348	335
1999–00	385	335
2000–01	381	335
2001–02	343	335
2002–03	350	335
2003–04	335	335
2004–05	371	335
2005–06	406	335
2006–07	394	335
2007–08	341	335
2008–09	391	335

14 Groper is a popular target species for recreational fishers. HPB 3 has a recreational daily bag limit of five groper. The fishery has two discrete parts defined by location, and season. South of Pegasus Bay is a summer/autumn fishery largely catching "school" groper at an average weight of around 7 kg. The fishery north of Pegasus Bay, and especially Kaikoura, is more of a winter fishery; the narrowing shelf concentrates the seasonally moving groper allowing for better access and improved targeting of groper with an average size around 15 kg.

15 Available recreational survey estimates of groper catch in HPB 3 are not robust. The maximum and minimum estimates across the surveys range from 10 tonne up to 293 tonne with co-efficients of variation of 40 to 50%. While the plenary advises that the 1999/2000 harvest estimates are implausibly high for many important fisheries, it also advises that estimates should be evaluated with reference to the co-efficient of variation. In the case of HPB 3, this survey supplies a point estimate of 195 tonnes with a coefficient of variation of 50%.

16 Groper is known to be of importance to Maori. Maori customary landings are managed by Tangata tiaki under Customary Regulations. Tangata tiaki have been appointed for most of FMA 3 and they provide the permits for all customary take in the area. Since October 1998, five customary permits have been issued and reported for HPB 3 covering 345 fish plus another 55 kg. MFish considers it likely that traditional harvesting of groper by tangata whenua is occurring under the amateur fishing regulations. Further information from submitters is keenly sought to ensure an allowance that appropriately reflects Maori customary fishing under customary regulations is set.

HPB 3 Stock Status

17 The 2009 Plenary states that recent HPB catches (across all stocks) are less than the maximum constant yield (MCY) estimates, are considered sustainable, and are probably at levels that will allow stocks to move towards a size that will support the maximum sustainable yield. MFish notes the Plenary is shortly due to be updated so this assessment may be revised.

18 The MCY for all HPB stocks, excluding HPB 4 and HPB 5, is estimated to be 1330 t. MCY is the maximum sustainable yield that can be produced over the long-term by taking the same catch year after year, with little risk of stock collapse. However, there is not a great deal of confidence in the accuracy of catch information (particularly for the foreign fleet) over the period for which the MCY estimate was calculated, therefore, the MCY estimate is highly uncertain.

19 The 2009 MFish Plenary does not comment specifically on the stock status of HPB 3. Estimates of current and reference biomass are not available for HPB 3.

20 The East Coast South Island trawl surveys do not cover the entire habitat range and have moderate to high co-efficients of variation (CVs) (average over all years = 28.17; range 19-35) , but may be monitoring relative abundance of settled juveniles in HPB 3. The series varies about the whole-of-series mean and error bars overlap (refer to Figure 2). The mean of the recent data series (2007-2009) is slightly higher than for the earlier series (1991-1996), however, the number of data points in the recent series is small.

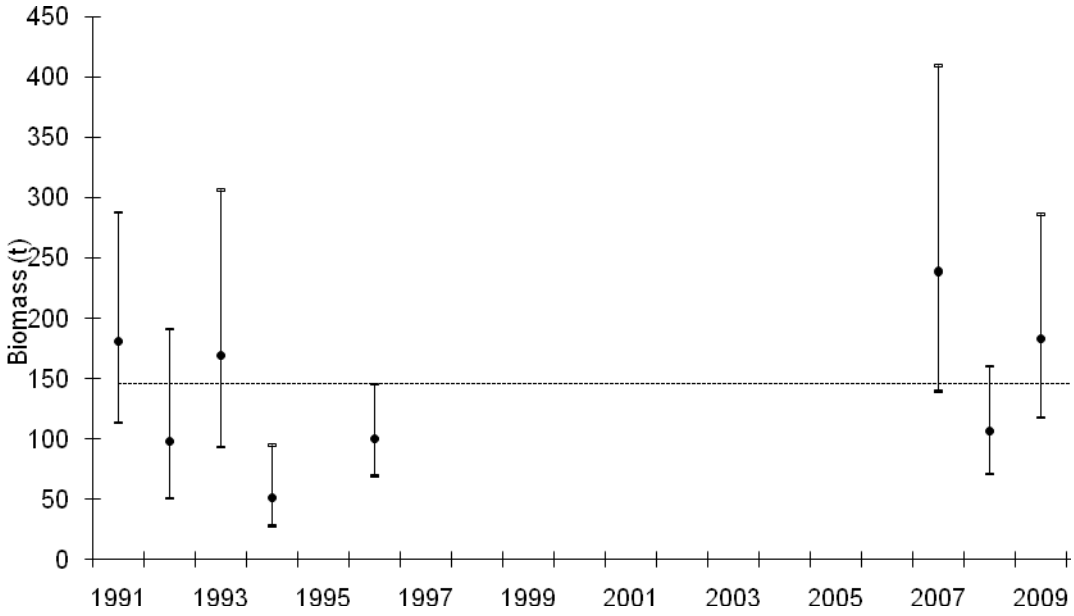


Figure 2: Biomass estimates ±95% CI (estimated from survey CV's assuming a lognormal distribution) and the time series mean (dotted line) from the East Coast South Island trawl survey.

Management Options

21 MFish proposes the following options to set the TAC, TACCs and allowances for HPB 3.

Table 2 : Management Options

Stock	Option	TAC	Maori customary allowance	Recreational allowance	Other sources of mortality	TACC
HPB 3	**1**	**537.6**	**1**	**195**	**6.5**	**335.1**
HPB 3	**2**	**553**	**1**	**195**	**7.0**	**350**
HPB 3	**3**	**573.5**	**1**	**195**	**7.5**	**370**

Total Allowable Catch

22 The current status of HPB 3 in relation to the level of the stock that can produce the maximum sustainable yield (B_{MSY}) is unknown and is unable to be reliably estimated using the best available information. In such circumstances, the Minister may set a TAC under s 13(2A) of the Fisheries Act.

23 Section 13(2A) requires the Minister to have regard to the interdependence of stocks, the biological characteristics of the stock, and any environmental conditions affecting the stocks. It requires the Minister to set a TAC –

a) Using the best available information; and

b) That is not inconsistent with the objective of maintaining the stock at or above, or moving the stock towards or above, B_{MSY}.

24 The Minister must not use the absence of, or uncertainty in, the information available as a reason for postponing or failing to set a TAC.

25 In considering the way in which, and rate at which, a stock is moved towards or above a level that can produce maximum sustainable yield under s 13(2)(b) or (c) or (2A), the Minister must have regard to such social, cultural, and economic factors that he considers are relevant.

26 For HPB 3, best available information to inform TAC setting at this time is commercial catch history, trawl survey indices, groper MCY estimates, recreational catch estimates, Maori customary permit reports and information on groper biology and behaviour.

27 There is no HPB 3 stock status information available to confirm whether the options proposed are consistent or inconsistent with the objective of maintaining the stock at or above, or moving the stock towards or above, a level that can produce the MSY. The risk to the B_{MSY} objective arising from absence of, and uncertainty in, available information differs depending on the TAC option chosen.

28 There is a very high level of uncertainty in the information currently available to inform TAC setting. This uncertainty includes uncertainty in the MCY estimate created by uncertain catch information, uncertainty about the link between trawl indices, catch information and abundance of the stock, and uncertainty about the behaviour of groper and the structure of groper stocks.

29 Groper species are long lived, slow growing and, when mature, can show a strong degree of site fidelity. These features make groper vulnerable to overfishing; cautious management is therefore advisable in the absence of robust monitoring information.

Analysis

30 Relevant matters for the Minister to take into account in setting or varying a TAC include:

- any effects of fishing on any stock and the aquatic environment
- any existing management controls under the Fisheries Act that apply to the stock or area concerned; and
- the natural variability of the stock.

31 The Minister must also take into account the following environmental principles:

- associated or dependent species should be maintained above a level that ensures their long-term viability
- biological diversity of the aquatic environment should be maintained; and
- habitat of particular significance for fisheries management should be protected.

32 As the TAC proposals do not exceed the actual recorded landings of HPB 3, it is not anticipated that the proposed TAC (and TACC) options will result in an increase in

fishing activity. Therefore, it is not anticipated there will be an increase in impacts on the marine environment or on current measures to mitigate adverse impacts on sea birds and marine mammals**.**

33 In addition to the existing TACC, a range of management controls apply to the HPB 3 fishery, including commercial reporting requirements, a recreational daily bag limit of five fish per person and a limit of two longlines per recreational boat. The proposed changes to TACs, allowances, and TACCs are unlikely to affect these measures.

34 As both the groper species are long lived and high on the trophic scale there is limited natural variability in this fishery. The most likely source of population variability is fishing mortality.

35 The Minister must have regard to, or take into account, certain other matters:

- MFish is not aware of any provisions in any statement or plans under the Resource Management Act 1991 that are specifically relevant to setting a TAC for this stock.
- MFish is not aware of anything in the provisions of management strategies or plans for relevant Conservancies that is relevant to these proposals.
- HPB 3 does not intersect with the Hauraki Gulf Marine Park. Therefore, there are no relevant considerations under the Hauraki Marine Park Act 2000
- MFish is not aware of any fisheries or conservation services, or any decisions not to require fisheries or conservation services, which are relevant to setting a TAC for this fishstock.

36 The Minister must take into account any relevant Fisheries Plan for HPB 3. At this time there is no relevant Fisheries Plan that has objectives that would impact on setting a TAC for HPB 3.

37 In setting or varying sustainability measures, the Minister must also act in a manner consistent with New Zealand's international obligations to fishing and the provisions of the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992:

- A wide range of international obligations relate to fishing, including use and sustainability of fishstocks; and maintaining biodiversity (s 5(a)). MFish considers that the management options for HPB 3 are consistent with these international obligations.
- MFish also considers that the proposed management options are consistent with the provisions of the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992 (s 5 (b)). Ongoing work is being done within the area covered by HPB 3 to promote policies that help to recognise customary use and management practices. This paper has identified a lack of information on the level of harvest and the importance of groper fisheries to customary fishers in HPB 3. Further information on this topic would be welcomed.

Analysis of Options

Option 1 – TAC of 537.6 tonnes based on status quo TACC of 335.1 tonnes

38 Under Option 1, a TAC of 537.6 tonnes would be established and allowances set for Maori customary and recreational interests, and for *other sources of fishing related mortality*. This is the consequence of the HPB 3 TACC not being reviewed since first entering the QMS in 1986.

39 Option 1 is the most cautious option; it does not provide for any increased utilisation.

40 This option favours caution given the uncertainties regarding the status of the stock and considering the biology and life history of the groper species. Both species are long lived, slow growing and, when mature, can show a strong degree of site fidelity. All these features make groper vulnerable to over-fishing.

Option 2 – TAC of 553 tonnes; TACC of 350 tonnes

41 Option 2 proposes setting a TAC of 553 t. This is based on allowances for recreational, Maori customary, and other sources of fishing-related mortality and an increase to the TACC level based on the average commercial landings over the last fifteen years.

42 This option slightly increases the risk to the sustainability of the HPB 3 stock while providing an extra 15 tonnes of allowable catch and, therefore, utilisation benefits to the fishery. The increased risk may already be being realised as average catch in the commercial fishery has exceeded the TACC by more than 15 tonnes in three of the last four years.

43 The trawl indices information suggests juvenile resident groper abundance may be stable at existing catch levels, however, this information is highly uncertain. It is possible that each HPB 3 species is part of a single New Zealand-wide stock. Information on the status of other HPB stocks is also absent. Information from the HPB 5 fishery indicates the percentage of mature fish (older than 10 years) in HPB 5 has declined from 19% in the 1990s down to 8% currently. Whether this is a result of changes in fishing behaviour or abundance of adult fish is unknown.

44 MFish notes that the biology of groper species means that should the stock be over-fished, recovery will be slow.

Option 3 – TAC of 573.5 tonnes; TACC of 370 tonnes

45 Option 3 proposes a TAC of 573.5 t. This is based on recreational and Maori non-commercial fishing interests and an increase to the TACC (to 370 t) based on the average catch over the past ten years.

46 Of the three options, Option 3 carries the greatest risk to sustainability of the HPB 3 stock and the highest utilisation benefits in the short term.

47 MFish notes the 10-year averaging period is equal to/less than the number of years required for hāpuku to reach maturity (10-13 years). Adverse impacts of recent catch

levels in excess of the TACC, if occurring, would potentially not be observable in catch information over this period.

Allocation of the TAC

48 When setting any TAC, that TAC must be apportioned between the relevant sectors and interests set out under the provisions of s 21 of the Act. Section 21 requires the Minister to allow for Maori customary non-commercial interests, recreational fishing interests, and for any other sources of fishing-related mortality, when setting or varying the TACC.

49 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, the Minister has the discretion to make allowances for various sectors based on the best available information.

Maori Customary Non-Commercial Interests

50 Based on the available information, it is proposed that 1 t be used as the estimate for Maori non-commercial customary catch. Further information from tangata whenua and stakeholders is invited to ensure an allowance that appropriately reflects Maori customary fishing under customary regulations is set.

51 Section 21(4) requires that any mataitai reserve or closures/restrictions under s 186A to facilitate customary Maori fishing be taken into account. There are four mataitai reserves, two taiapure, and one s 186B rāhui within HPB 3. MFish does not consider that these closures have a material effect on setting a TAC for HPB 3.

Recreational Interests

52 Based on the available information, MFish proposes an allowance for recreational take of 195 tonnes, acknowledging that uncertainty in information means recreational catch could be half or double that value.

53 MFish has used this estimate of recreational catch for all TAC options. Further information from tangata whenua and stakeholders is invited to inform the accuracy of estimates of recreational harvest.

Allowance for other sources of fishing-related mortality

54 MFish proposes to include an estimate of 2% of the proposed TACCs for other sources of fishing-related mortality for HPB 3. No allowance is currently set, but there are various potential sources of fishing-related mortality in HPB 3, including:

- Discarded fish caught in line and setnet gear as a result of damage to fish by sea lice;
- Loss of fish while landing to the boat, and loss of small and damaged fish
- The extent of any illegal catch of groper for commercial sale is unknown but considered possible to occur.

Total Allowable Commercial Catch (TACC)

55 The TACC options proposed for consultation represent a range seeking to set out the balance between the risk to sustainability and improved utilization and benefits from the fishery. Unfortunately, there is little information available to inform obtaining maximum benefit from the fishery. The risks to sustainability are set out earlier in the paper; the increase in value from the fishery is set out in Table 3. Values shown are based on a port price of $3.07 per kg.

56 MFish notes that deemed value charges for HPB 3 have exceeded $100,000 for three of the last five years and that this represents a significant cost on the fishery.

Table 3: Proposed TACCs (t) and corresponding change in annual economic return ($) for HPB 3

Option 1		Option 2		Option 3	
Proposed TACC	**Potential Additional revenue**	**Proposed TACC**	**Potential Additional revenue**	**Proposed TACC**	**Potential Additional revenue**
335.1 t	$0.00	350 t	$45,743	370 t	$107,143

Other management measures

Deemed values

57 Under s 75(1) of the Act, the Minister is required to set interim and annual deemed value rates for each quota management stock. Section 75(2A) requires the Minister, when setting deemed value rates, to take into account the need to provide an incentive for every commercial fisher to acquire and hold sufficient annual catch entitlement (ACE) in respect of each fishing year that is not less than the total catch of that stock taken by the commercial fisher.

58 MFish developed a Deemed Value Standard in 2007 to set out a process for managing the setting, reviewing and amendment of deemed value rates. This standard is available to view on the MFish website[2].

59 MFish's general policy is to set deemed values for a fish stock between the ACE price and port price. This approach creates an economic incentive for fishers to balance any over-catch against ACE, when ACE is available. Alternatively, if ACE is not available, this approach creates an economic incentive to land and record any over-caught fish rather than discard them at sea.

60 To some extent, the current recorded landings in excess of the TACC are a reflection of the deemed value regime in place for HPB 3. There is currently a margin of $0.80 to $1.00 or more per kg depending on quality and marketing. Therefore, to better protect the TACC, the deemed values regime may need to be modified. There are three courses of action available. Increase the deemed value; lower the point for the onset of ramping (a standard ramping rate applies to HPB3); or, increase the interim deemed value to 90% of the annual deemed value. It should be noted that any of these actions may encourage less accurate reporting if groper is an unavoidable bycatch

[2] http://fs.fish.govt.nz/Page.aspx?pk=119

species and there are barriers to the flow of ACE from fishers targeting groper species and fishers taking groper as bycatch.

Table 4 : Current ACE Price, Port Price and Deemed Value ($) for HPB 3.

Stock	ACE Price	Port Price	Annual Deemed Value
HPB 3	$1.24	$3.07	$2.30

61 Table 4 lists the MFish held ACE price and port price, however, these values fluctuate significantly depending on a range of factors including how the fish is caught and/or how it is marketed. MFish proposes the deemed value options shown in Table 5 and encourages fishers to submit on the issue. For all options, MFish recommends retaining standard ramping provisions.

Table 5 Proposed interim and annual deemed value ($) for HPB 3.

Option	Interim Deemed Value	Annual Deemed Value
A (status quo)	$1.15	$2.30
B	$2.00	$2.50
C	$2.30	$2.80

62 No additional management measures are proposed for this fishery.

Preliminary Recommendations

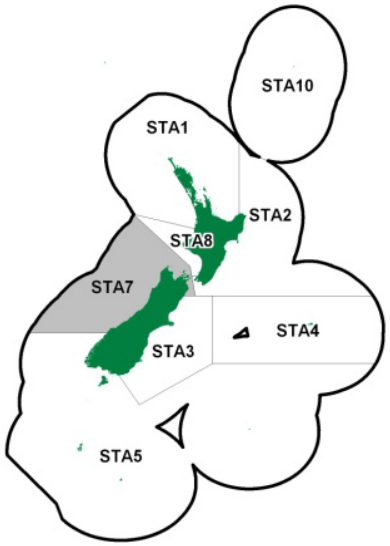
63 MFish's initial view is that Option 1 (establish a TAC based on the existing TACC and estimates of existing non commercial harvest and other sources of fishing-related mortality) is the appropriate option.

64 Information on the status of groper stocks is highly uncertain. Groper species are long lived, slow growing and, when mature, can show a strong degree of site fidelity. All these features make groper vulnerable to over-fishing and indicate cautious management is desirable in the absence of robust monitoring information. The history of overcatch in the fishery is not sufficiently long or consistent to strongly indicate recent catch levels are sustainable. The biology of groper species means, should the stock be over-fished, recovery would be slow, which would adversely impact the utilisation benefit able to be derived from the fishery.

65 MFish's initial view is also that the deemed value rates for HPB 3 should be increased in line with Option C. Available information suggests the existing deemed value rates provide a margin of $0.80 to $1.00 or more per kg depending on quality and marketing. Increasing the deemed values would reduce profit margins from deemed fish and provide greater incentives to manage harvest to within ACE holdings and consequently the TACC.

INITIAL POSITION PAPER
STARGAZER 7 (STA 7)

Figure 1: Quota Management Areas (QMA) for STA



Summary

1 The Ministry of Fisheries (MFish) is seeking tangata whenua and stakeholder information and views to inform a review of catch limits for giant stargazer in the Challenger fisheries management area (STA 7; refer Figure 1).

2 The following catch limit options are being considered for STA 7:

- Option 1: increase the Total Allowable Catch (TAC) by 25 tonnes to 1025 tonnes to incorporate an allowance for other sources of fishing-related mortality of 25 tonnes. Retain the existing Total Allowable Commercial Catch (TACC), Maori customary and recreational allowances.
- Option 2: increase the TAC by 72 tonnes to 1072 tonnes based on average commercial catch landings from the last ten years. The TAC would be achieved by retaining the current Maori customary and recreational allowances, setting an allowance for other sources of fishing-related mortality of 27 tonnes and increasing the TACC to 1042 tonnes.
- Option 3: increase the TAC by 128 tonnes to 1128 tonnes providing for a 10% increase to current catch landings. The TAC would be achieved by retaining the current Maori customary and recreational allowances, setting an allowance for other sources of fishing-related mortality of 28 tonnes and increasing the TACC to 1097 tonnes.

3 MFish's initial view is that Option 2 provides the most appropriate catch limits at this time. Available information is uncertain but suggests stock size is stable or increasing under current catch levels. A small increase in catches is therefore likely to be sustainable and would provide for increased utilisation benefit in the short-medium term.

4 MFish's initial view on deemed values for STA 7 is that the interim and annual deemed value rates should be increased by $0.20 and $0.83 per kg respectively to increase incentives for fishers to balance their catch with ACE. The standardised differential DV rates would be adjusted to reflect the new annual deemed value rate, if adopted.

Background

5 STA 7 entered the Quota Management System in 1986. The TACC for STA 7 was increased from 528 t to 700 t in the 1991–92 fishing year under the adaptive management programme (AMP). The AMP provided for increases to the TACC of low-knowledge fishstocks in conjunction with a monitoring programme to track the response of the fishstock to the catch limit change.

6 The STA 7 TACC was increased to 997 tonnes in the 2002/03 fishing year and the stock was retained in the AMP. At this time a Maori customary allowance of 1 t, a recreational allowance of 2 t, and a TAC of 1000 t were also set for the fishery. No allowance was set for other sources of fishing-related mortality.

7 New research information on the STA 7 stock became available this year. SeaFIC consider the new information indicates the stock could support a higher TAC.

Biological Characteristics of Giant Stargazer

8 Two species of giant stargazer are present in New Zealand waters, the giant stargazer (Kathetostoma giganteum) and the banded giant stargazer (Kathetostoma sp.). STA 7 includes both species. Banded giant stargazer is thought to be relatively uncommon and almost all catch in STA 7 is likely to be giant stargazer.

9 Giant stargazer is widely distributed around New Zealand. It is generally found on muddy and sandy substrates to depths of 500m, but is most common between 50 and 300m on the continental shelf around the South Island.

10 Age and growth studies indicate giant stargazers reach sexual maturity at a total length of about 40-55cm depending on sex, at an age of 5-7 years. Giant stargazers are known to reach a total length of approximately 90cm and can reach a maximum age of at least 25 years.

11 Spawning occurs annually during winter, most likely in mid and outer shelf waters.

STA 7 Fishery

12 Catch effort data reported by commercial fishers indicates that approximately 97% of STA 7 is caught by bottom-trawl, and 80% of these trawl landings come from statistical areas 33 and 34 (refer Figure 2).

13 Over half of trawl-caught STA 7 is taken as bycatch in the inshore bottom-trawl fisheries targeting tarakihi, barracouta or flatfish. Some is taken as bycatch in the deeper water hoki and ling fisheries, and a small amount is targeted STA 7 catch.

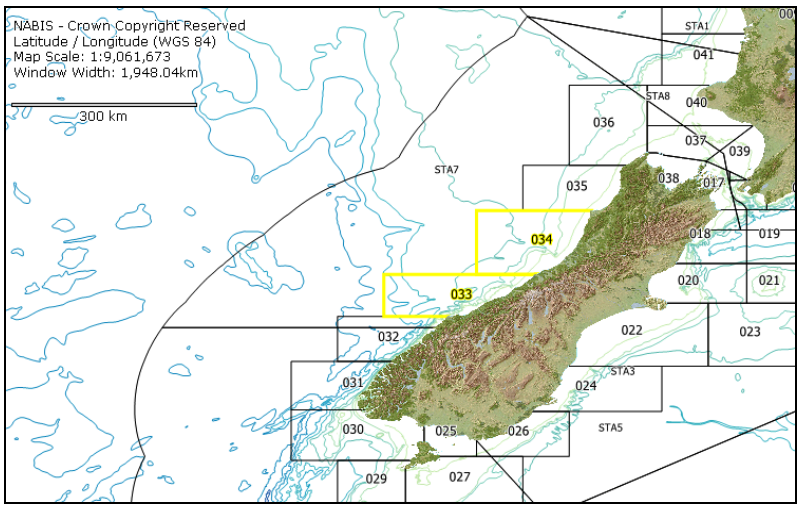


Figure 2: Map showing inshore statistical areas within the STA 7 QMA

14 STA 7 commercial landings and TACC are shown in Figure 3.

15 Landings of STA 7 reached a high of 1440 tonnes in 2000/01. In 2001/02 landings dropped down to 802 tonnes. When reviewing the performance of the AMP in 2007 the MFish AMP Fisheries Assessment Working Group (AMP FAWG) attributed this drop to changes in the management regime, including the discontinuation of the bycatch trading scheme and increased deemed value rates. The AMP FAWG noted that this demonstrated an ability to actively target or avoid stargazer. Since the 2002/03 TACC increase, landings have been close to the TACC; average landed catch from 2002/03 to 2008/09 has been approximately 996 tonnes per fishing year.

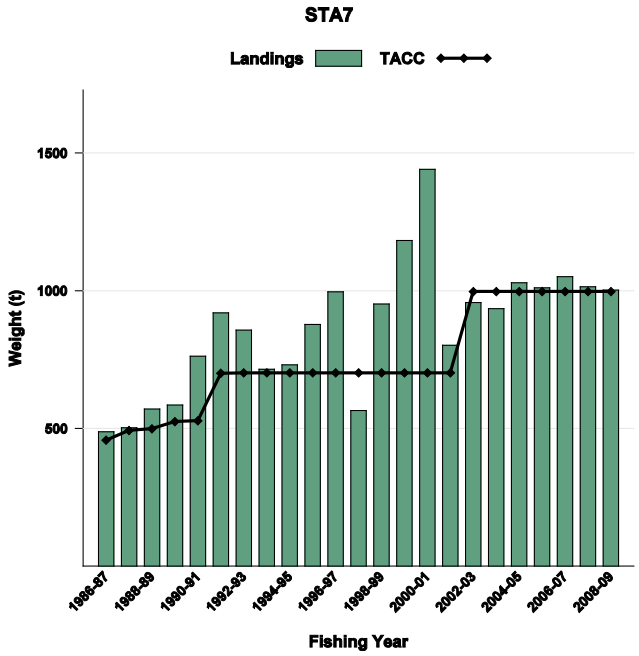


Figure 3: STA 7 reported commercial landings and TACC between 1986/87 and 2008/09

STA 7 Stock Status

16 Target reference biomass, B_{MSY}, for STA 7 is assumed to be 40% of the virgin biomass (B_0). Under the *MFish Harvest Strategy Standard Guidelines*, 40%B_0 is the

recommended target reference point for stocks with average levels of productivity in the absence of any other information.

17 A stock assessment of STA 7 was completed in 2008 and accepted by the MFish Southern Inshore Fisheries Assessment Working Group (Southern Inshore FAWG). Stock biomass was estimated at 24.1-51% B_0 with a median of 38.8% B_0 for the base case model, and ranged between 24.2 and 87.4% B_0 for the two model sensitivities. The stock assessment showed that, provided the assumptions about recruitment hold, STA 7 is likely to be near B_{MSY}.

18 Relative biomass indices are also available for STA 7 from a series of bottom-trawl research surveys of the West Coast South Island that began in 1992. These surveys are undertaken every two to three years with the most recent survey completed in 2009.

19 The 2009 point estimate is 1952 tonnes, the highest in the series. The point estimate is within acceptable error bounds, however it is the most uncertain for the survey series. The survey series indicates that abundance is at least relatively stable, and may be increasing under current catch levels.

20 When considered together, the stock assessment estimate and trawl biomass indices indicate that the STA 7 stock size is at or above BMSY.

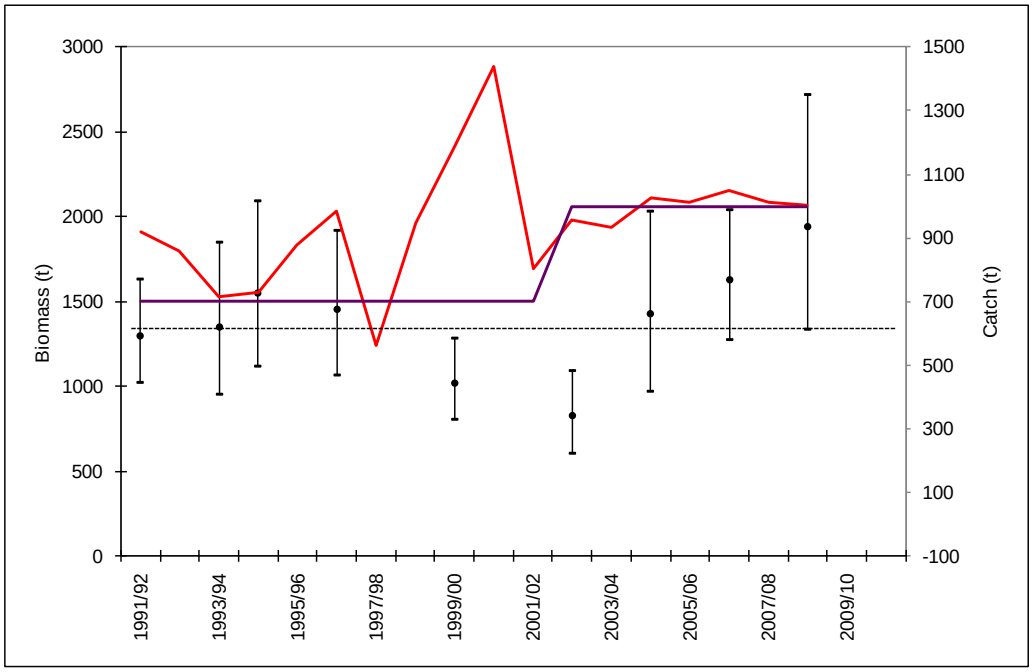


Figure 4: Stargazer biomass estimates and c.v.s from the West Coast South Island trawl survey series, mean biomass for the survey (dotted line), catch (red line) and TACC from 1991 to 2010.

Summary of Options

21 MFish proposes options for changes to sustainability measures for STA 7 as outlined in Table 1 below.

Table 1: Current and proposed TAC and associated sector allowances for STA 7

Stock	Option	TAC	Maori customary allowance	Recreational allowance	Other sources of mortality	TACC
STA7	Current	1000 t	1t	2t		997t
	1	1025 t	1t	2t	25t	997t
	2	1072 t	1t	2t	27t	1042t
	3	1128 t	1t	2t	28t	1097t

Total Allowable Catch Setting

22 The current status of STA 7 in relation to the level of the stock that can produce the maximum sustainable yield (B_{MSY}) is unable to be reliably estimated using the best available information. In such circumstances, the Minister may set a TAC under s 13(2A) of the Fisheries Act.

23 Section 13(2A) requires the Minister have regard to the interdependence of stocks, the biological characteristics of the stock, and any environmental conditions affecting the stocks. It requires the Minister to set a TAC –

a) Using the best available information; and
b) That is not inconsistent with the objective of maintaining the stock at or above, or moving the stock towards or above, B_{MSY}.

24 The Minister must not use the absence of, or uncertainty in, the information available as a reason for postponing or failing to set a TAC.

25 In considering the way in which and rate and which a stock is moved towards or above a level that can produce maximum sustainable yield under s 13(2A), the Minister must have regard to such social, cultural, and economic factors that he considers are relevant.

26 Relevant matters for the Minister to take into account in setting or varying a TAC include

- any effects of fishing on any stock and the aquatic environment
- any existing management controls under the Fisheries Act that apply to the stock or area concerned; and
- the natural variability of the stock.

27 The Minister must also take into account the following environmental principles:

- associated or dependent species should be maintained above a level that ensures their long-term viability

- biological diversity of the aquatic environment should be maintained; and
- habitat of particular significance for fisheries management should be protected.

Analysis

Setting a TAC using best available information and that is consistent with the B_{MSY} objective

28 For STA 7, best available information to inform TAC setting at this time is the STA 7 stock assessment, relative biomass indices from the West Coast bottom trawl survey, commercial catch history information, recreational catch estimates, Maori customary permit reports and information on giant stargazer biology and behaviour.

29 There is no evidence that any of the options proposed is inconsistent with the objective of maintaining the stock at or above, or moving the stock towards B_{MSY}. Available information suggests STA 7 stock size is near or above B_{MSY} and that stock size is stable or increasing at current catch levels.

30 Information on STA 7 is uncertain, however. This uncertainty includes uncertainty in the stock assessment assumptions, particularly in respect of recruitment, uncertainty in trawl survey indices, uncertainty in sector catch information, and uncertainty about the behaviour and stock boundaries of giant stargazers. The risk to the B_{MSY} objective arising from this uncertainty differs depending on the TAC option chosen. In general, the higher the TAC proposed, the greater the risk to the B_{MSY} objective.

Social, cultural and economic factors

31 The social, cultural and economic implications of TAC setting vary depending on the option chosen. The implications for each option are set out in the next section.

Effects of fishing on stocks and the aquatic environment

32 The majority of STA 7 commercial take is bycatch in bottom-trawl fisheries. As the TAC proposals do not affect catch limits for the key species targeted when STA 7 is taken or exceed historical recorded landings of STA 7, it is not anticipated that the proposed TAC (and TACC) options would result in a significant change to fishing operations. Therefore, it is not anticipated there will be an increase in impacts on the marine environment or on the harvest of other stocks.

33 If increased trawl effort did result, increased harvest of smooth skates, which are a bycatch of inshore trawl fisheries on the West Coast may be a concern. The biomass index for smooth skates in the West Coast South Island trawl survey has declined substantially since 1997. There may also be concerns with the take of rough skates, but the available information is less conclusive. MFish has no information on the ease of avoiding or targeting smooth skate when trawling but potential effects may be mitigated in part because both smooth skate and rough skate are on Schedule 6 of the Fisheries Act 1996, and if likely to survive, can be returned to the waters from which they are taken.

Existing management controls

34 Apart from the existing TAC, TACC, and Maori customary and recreational allowances, standard management controls apply to the STA 7 fishery, for example a

minimum net mesh size of 100mm for both commercial and amateur fishers. The proposed changes to TACs and TACCs do not affect these measures.

Natural variability

35 Giant stargazer stock size is not naturally highly variable from year to year. Giant stargazer is relatively long-lived and moderately productive. The stock is therefore vulnerable to overfishing and caution should be taken when increasing catch limits.

Associated or dependent species

36 Hector's dolphins aggregate at Westport and Hokitika, however there have been no known interactions between trawl fisheries and dolphins off the South Island West Coast.

Biological diversity and habitats of particular significance to fisheries management

37 The West Coast Marine Protection Forum is currently in the process of identifying important areas of biological diversity to inform recommendations on the establishment of a marine protected area network for the South Island West Coast.

38 MFish does not consider the proposed options will significantly change the impacts associated with areas likely to be proposed as part of this network.

39 Some habitats of particular significance to fisheries management have been identified in the Challenger fisheries management area. As noted above, the TAC proposals do not affect catch limits for the key species targeted when STA 7 is taken or exceed historical recorded landings of STA 7, therefore it is not anticipated that the proposed TAC (and TACC) options would result in a significant change to fishing operations.

40 MFish invites further information from tangata whenua and stakeholders on this matter.

Analysis of Options

Option 1 – Increase TAC to include a 25 tonne allowance for other sources of fishing-related mortality only

41 Option 1 increases the TAC to include an allowance for other sources of fishing-related mortality. No change is proposed to the TACC and allowances under Option 1.

42 The proposed TAC recognises the fishing-related mortality likely to be occurring currently. Stock size will therefore likely remain unaffected by the introduction of the allowance and associated change to the TAC.

43 This option favours caution given the uncertainties regarding the status of the stocks. The option also avoids any potential increased impacts on the environment or other species such as smooth skate.

44 Available information suggests STA 7 abundance may be increasing under current levels of catch. If this is the case, retaining existing sector catch allowances could result in a missed opportunity to maximise benefits from the fishery.

45 Option 1 is unlikely to result in unavoidable bycatches in excess of the TACC as fishery information and information provided by SeaFIC indicates giant stargazer can be both avoided and targeted when trawling.

Option 2 – Increase TAC to provide for a 45 tonne TACC increase and a 27 tonne allowance for other sources of fishing-related mortality

46 Option 2 increases the TAC based on an average of the last ten years of reported commercial catch, and provides for an allowance for other sources of fishing-related mortality. The proposed TAC increase is an increase of approximately 7.2%.

47 Available information suggests that stock biomass may be increasing under current levels of catch and is likely to remain at or above B_{MSY}.

48 Option 2 provides for a modest increase of the TAC consistent with the average catch of STA 7 in the last ten years. MFish notes the average of the last ten years of reported commercial catch is influenced by two years of comparatively high catch at the start of the ten-year period. Information on stock status is uncertain and stock size may be stable at current catch levels rather than increasing. The stock size is near or above B_{MSY}, so an increase in catch levels could cause the stock to decline below target levels. This risk is mitigated under Option 2 by constraining the TAC increase to an amount that reflects the average catch from the last ten years of reported commercial landings and by ongoing monitoring of the fishery.

49 MFish notes that a West Coast trawl survey is being consulted on for 2011; subsequent trawl surveys will depend on available funding and priorities for research.

50 Option 2 would provide for additional utilisation benefits to be achieved from the fishery. The commercial value of the additional catch made available under Option 2 based on the current port price of $1.05 is $51,450. MFish invites further information from stakeholders regarding these benefits.

Option 3 – Increase TAC to provide for a 100 tonne TACC increase and a 28 tonne allowance for other sources of fishing-related mortality

51 Option 3 increases the TAC to provide for a larger (10%) increase in landed catch and an allowance for other sources of fishing-related mortality. The proposed TAC increase is an increase of approximately 12.8%.

52 Option 3 favours additional opportunities for utilisation given the 2009 point estimate is the highest in the trawl series and the series trend suggests stock size is increasing at current catch levels. Although still conservative in the quantity of increase proposed, of the three options, Option 3 carries the greatest sustainability risk and the greatest potential to impact on the environment or other species such as smooth skate. These risks would be mitigated by ongoing monitoring of the fishery.

53 The commercial value of the additional catch based on the current port price of $1.05 is estimated at $105,000. MFish invites further information from stakeholders regarding these benefits.

Allocation of the TAC

54 When setting any TAC, that TAC must be apportioned between the relevant sectors and interests set out under the provisions of s 21 of the Act. Section 21 requires the Minister to allow for Maori customary non-commercial interests, recreational fishing interests, and for any other sources of fishing-related mortality, when setting or varying the TACC.

55 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, the Minister has the discretion to make allowances for various sectors based on the best available information.

Maori Customary Non-Commercial Interests

56 All options propose to retain the Maori customary allowance of 1 tonne in this fishery. There is no new information to suggest that a review of this allowance is required.

57 Section 21(4) requires that any mataitai reserve or closures/restrictions under s 186A to facilitate customary Maori fishing be taken into account. There are no mātaitai reserves or closures/ restrictions currently in place in the area covered by STA 7.

Recreational Interests

58 All options propose to retain the recreational allowance of 2 tonne in this fishery. There is no new information to suggest that a review of this allowance is required.

Allowance for other sources of fishing-related mortality

59 An allowance for other sources of fishing-related mortality has not previously been included in the TAC for STA 7. MFish considers an allowance should be introduced regardless of the option chosen. In their proposal for a TAC review for STA 7, SeaFIC acknowledged the need for a fishing-related mortality allowance and suggested the allowance be calculated at the rate of 2.5 % of the TAC.

60 The robust physical nature of stargazer was provided as the rationale for this figure. The failure of a tag and release programme associated with the East Coast South Island trawl survey suggests that giant stargazer may not be as robust as assumed, however MFish has no independent information on which to base an allowance and proposes that it be set at 2.5% of the TAC in the absence of any other information. MFish invites tangata whenua and stakeholders to provide further information that would assist in determining the appropriate level of this allowance.

Total Allowable Commercial Catch (TACC)

61 STA 7 is largely a commercial fishery so it is proposed that increases in the TAC are directed to the commercial sector.

62 Option 1 retains the status quo TACC of 997 tonnes.

63 Option 2 increases the TACC to 1042 tonnes. This figure is equal to the average STA 7 catch landings over the past ten years and would result in a TACC increase of 45 tonnes.

64 Option 3 increases the TACC to 1097 tonnes. This figure represents a 10% increase in total landed catch for the STA 7 fishery and would result in a 100 tonne TACC increase.

Option 1		Option 2		Option 3	
Proposed TACC	**Potential Additional revenue**	**Proposed TACC**	**Potential Additional revenue**	**Proposed TACC**	**Potential Additional revenue**
997	-	1042	$51,500	1097	$105,000

Table 2: Proposed TACCs (t) and corresponding change in annual economic return ($) for STA 7

Other management measures

Deemed values

65 SeaFIC has suggested that STA 7 commercial landings are likely to significantly exceed the TACC of 997 tonnes in the 2009/10 fishing year. This suggestion is supported by the reported landings up to 30 April 2010, which total approximately 746 tonnes, compared to approximately 555 tonnes for the same period in the 2008/09 fishing year.

66 STA 7 is primarily taken as bycatch, but fishery information and information provided by SeaFIC indicates giant stargazer can be both avoided and targeted when trawling. Therefore the current deemed value rate (refer Table 3 below) may not be constraining catch to the TACC at this time.

Stock	ACE price	Port Price	Deemed value
STA 7	$0.64 per kg	$1.05 per kg	$1.45 (20% differentials)

Table 3: Current ACE price ($), port price ($) and annual deemed value ($) for STA 7

67 MFish therefore proposes an increase to the annual deemed value rate to increase incentives on fishers to fish within their ACE holdings. In addition, MFish proposes an increase to the interim deemed value rate (from 50% to 90% of the annual deemed value rate for STA7) to encourage fishers to balance their catch with ACE more regularly.

68 The following deemed value rates for STA 7 are proposed for the 2010/11 fishing year:

a) Annual deemed value rate to be increased to $1.65 per kg;
b) Interim deemed value rate to be increased to $1.56 per kg;
c) Standard differential deemed value rates adjusted to reflect the proposed new annual deemed value rate, outlined in the table below.

Current differential rates		Proposed differential rates	
Catch in excess of ACE holdings (%)	**Current deemed value rate for TRE1 ($)**	**Catch in excess of ACE holdings (%)**	**Proposed deemed value rate for TRE1 ($)**
20	1.74 per kg	20	1.98 per kg
40	2.03 per kg	40	2.31 per kg
60	2.32 per kg	60	2.64 per kg
80	2.61 per kg	80	2.97 per kg
100	2.90 per kg	100	3.30 per kg

Table 4: Proposed differential deemed value rates for STA 7

69 No additional management measures are proposed for this fishery.

Preliminary Recommendations

70 MFish's initial view is that Option 2 provides the most appropriate catch limits at this time. Available information is uncertain but suggests stock size is stable or increasing under current catch levels. A small increase in catches is therefore likely to be sustainable and would provide for increased utilisation benefit in the short-medium term.

71 MFish's initial view on deemed values is that the interim and annual deemed value rates should be increased by $0.20 and $0.83 per kg respectively in order to increase incentives for fishers to balance their catch with ACE. The standardised differential DV rates would be adjusted to reflect the new annual deemed value rate.

INITIAL POSITION PAPER
TREVALLY 2 (TRE 2)

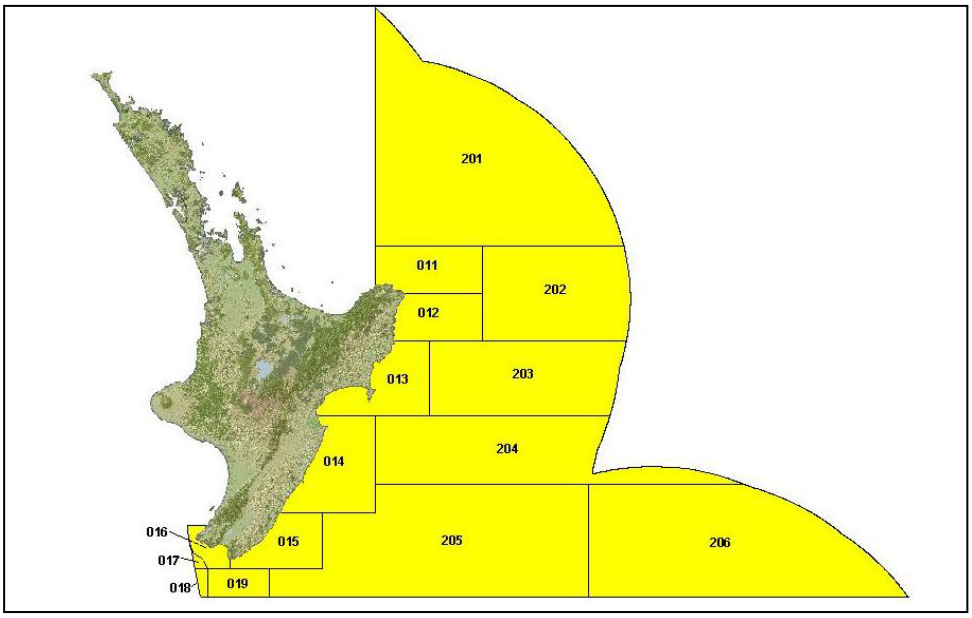


Figure 1: Quota Management Area (QMA) for TRE 2 and statistical areas.

Summary

1 The Ministry of Fisheries (MFish) is seeking tangata whenua and stakeholder information and views to inform a review of catch limits for trevally in Quota Management Area 2 (TRE 2; refer figure 1).

2 The following catch limit options are being considered for TRE 2:

a) Option 1 – set a TAC of 349 t. The TAC would be achieved by retaining the current TACC of 241 t and setting allowances of 1 t for Maori customary interests, 100 t for recreational interests and 7 t for other sources of fishing-related mortality.

b) Option 2 – set a TAC of 371 t. The TAC would be achieved by increasing the TACC to 262 t (the average of the annual reported commercial landings for the past 23 years) and setting allowances of 1 t for Maori customary interests, 100 t for recreational interests, and 8 t for other sources of fishing-related mortality.

c) Option 3 – set a TAC of 402 t. The TAC would be achieved by increasing the TACC to 292 t (the average of annual reported commercial landings over the last ten years) and setting allowances of 1 t for Maori customary interests, 100 t for recreational interests, and 9 t for other sources of fishing-related mortality.

3 MFish's initial view is that either Option 1 (the status quo TACC with setting of a TAC, and allowances for other sources of fishing related mortality and Maori customary and recreational interests) or Option 2 (a small increase to the TACC in addition to TAC and allowance setting) are appropriate. Current information is uncertain but suggests a small TAC increase is likely to be suitable. However, new

information on relative abundance in TRE 2 relative abundance may become available in 2011. This new information may provide a more robust foundation to vary TACs and monitor stock health and set TACs.

4 MFish also considers all TAC and allowance options should be accompanied by the following deemed value (DV) changes for TRE 2:

a) Annual DV rate to increase from $1.10 per kg to $1.25 per kg.
b) Interim DV rate to increase from $0.55 per kg to $0.70 per kg
c) The 110% differential DV rate to increase from $2.00 per kg to $3.50 per kg and the 120% differential DV rate to increase from $3.00 per kg to $5.00 per kg

5 Increases to the interim, annual and differential (ramping) deemed value rates are desirable to incentivise fishing within the TACC. MFish notes recent overfishing of this stock has been carried out by a small number of fishers and that trevally is considered to be both avoidable and targetable when using trawl methods.

Background

6 TRE 2 was introduced into the QMS in 1986. The initial TAC was set at 190 t and applied only to commercial fishing. From 1990, the TAC became the TACC. The TACC increased as a result of a Quota Appeal Authority decisions, reaching 241 t in 1992/93. It has remained at that level since. A TAC and allowances for non-commercial fishing and other sources of fishing-related mortality have not yet been set for TRE 2 and are proposed for the first time in this paper.

Biological Characteristics of TRE 2

7 Trevally are both pelagic and demersal in behaviour. Juvenile fish up to 2 years old are found in shallow inshore areas including estuaries and harbours. Young fish enter a demersal phase from about 1 year old until they reach sexual maturity. At this stage adult fish move between demersal and pelagic phases.

8 Schools occur at the surface, in mid-water and on the bottom, and are often associated with reefs and rough substrate. Trevally are known to reach in excess of 40 years of age. The growth rate is moderate during the first few years, but after sexual maturity at 32 to 37 cm fork length (FL), the growth rate becomes very slow. The largest fish are typically around 60 cm FL and weigh about 4.5 kg, however, much larger fish of 6–8 kg are occasionally recorded. Reproduction is relatively low until females reach about 40 cm FL. They appear to be partial spawners, releasing small batches of eggs over periods of several weeks or months during the summer. Estimates of natural mortality and growth parameters for the TRE 2 stock are not available.

TRE 2 Fishery

Commercial fishery

9 Since entry into the QMS in 1986, the TRE 2 TACC has been exceeded in 15 of 23 years, by between 1% and 73%. Although commercial landings have varied over that time, the average landings per fishing year since 1986 is approximately 262 t. The average landings per fishing year over the past 10 years is approximately 292 t, and

the average for the last 5 years is approximately 327 t. Reported TRE 2 landings and actual TACCs are shown in Table 1, below.

Table 1: Reported landings (t) of trevally from 1983 to 2008/09 and actual TACCs (t) from 1986/87 to 2008/09. QMS data from 1986-present.

Year	Landings	TACC
1983	77	–
1984	335	–
1985	162	–
1986	161	–
1986–87	237	190
1987–88	267	219
1988–89	177	235
1989–90	275	237
1990–91	273	238
1991–92	197	238
1992–93	247	241
1993–94	230	241
1994–95	179	241
1995–96	211	241
1996–97	317	241
1997–98	223	241
1998–99	284	241
1999–00	309	241
2000–01	211	241
2001–02	243	241
2002–03	270	241
2003–04	251	241
2004–05	319	241
2005–06	417	241
2006–07	368	241
2007–08	230	241
2008–09	302	241

10 Over the last 10 years, the proportion of TRE 2 catch taken as target has varied from 5 – 17%. TRE 2 is most commonly caught as bycatch in the gurnard (GUR 2), tarakihi (TAR 2) and snapper (SNA 2) target bottom trawl fisheries. For example, since 1999, an average of 54% of TRE 2 catches have been caught by fishers when targeting GUR2 and an average of 26% of TRE 2 catches have been caught by fishers when targeting TAR 2.

11 Both TAR 2 and GUR 2 landings appear to have been relatively stable in recent years. The number of hours fished for TAR 2 has been relatively constant since 1996/97 although vessel numbers have almost halved between 1994/95 and 2006/07. However, the remaining vessels may be more efficient, resulting in more TRE bycatch in the TRE and GUR fisheries.

12 MFish notes it has previously been informed by the finfish commercial stakeholder organisation for FMA 2 that trevally catch can be avoided or minimised when trawling; trevally is a fast swimming fish and reducing trawl speed can result in lower bycatch of trevally.

Maori customary non-commercial fishery

13 MFish understands that TRE 2 is an important stock for Maori customary fishers, although information on the amount of TRE 2 harvested using customary fishing permits is limited as summary information on permits issued is not provided by all permit issuers at this time. MFish records suggest harvest of TRE 2 under customary permit is low; total harvest under permits reported to MFish since 2007 is 50 fish.

14 MFish welcomes customary catch permit and other information from tangata whenua to assist.

Recreational fishery

15 Estimates of recreational catch from recreational harvest surveys are available. However, the MFish Recreational Technical Working Group suggests caution when using the data from these surveys, noting that they "may be very inaccurate", that earlier surveys "may contain methodological errors", and that recent survey estimates are "implausibly high".

16 The most recent recreational TRE 2 catch estimates are 160 t in 2000 and 339 t in 2001. MFish recognises that recreational catch will vary between years and accepts that the estimated 339 t in 2001 is implausibly high, especially when viewed in the context of commercial TRE 2 catches of 243 t in the same year.

17 The inaccuracy of the TRE 2 recreational catch estimates are supported by TRE 1 recreational catch analysis from 2005 boat ramp and aerial over flight surveys. These surveys estimated that only 105 t of trevally was being taken from QMA 1 by recreational fishers. QMA 1 encompasses Auckland and the largest number of recreational fishers in New Zealand.

TRE 2 Stock Status

18 No estimates of current stock size ($B_{current}$) or the stock size that would support the maximum sustainable yield (B_{MSY}) are available for TRE 2. Nor is there an index showing relative abundance through time for the fishstock. Catch information is the only available information. On its own, catch is not considered a reliable indicator of abundance or stock status.

19 An estimate of maximum constant yield (MCY) of 310 t for TRE 2 was determined from average commercial landings over the period 1977 to 1986. That estimate has not been revised since. While the MFish *Harvest Strategy Standard Guidelines* refer to MCY as an applicable interpretation of MSY under a constant catch strategy, the risk to the TRE 2 stock posed by harvesting at the MCY has not been assessed. The MCY estimate was based on catches prior to QMS introduction and there is the risk that the catch landings data were unreliable then. In addition, catches between 1983 and 1986 varied widely, which raises further uncertainty about the MCY estimate as a basis for management.

Management Options

20 MFish proposes the following options for TRE 2 TAC allowances:

Table 2: Proposed Management Options for TRE 2

Option	TAC	Customary allowance	Recreational allowance	Other sources of mortality	TACC
1	349	1	100	7	241
2	371	1	100	8	262
3	402	1	100	9	292

Total Allowable Catch Setting

21 The current status of TRE 2 in relation to B_{MSY} is unknown and is unable to be reliably estimated using the best available information. In such circumstances, the Minister may set a TAC under s 13(2A) of the Fisheries Act.

22 Section 13(2A) requires the Minister to have regard to the interdependence of stocks, the biological characteristics of the stock, and any environmental conditions affecting the stocks. It requires the Minister to set a TAC:

a) Using the best available information; and
b) That is not inconsistent with the objective of maintaining the stock at or above, or moving the stock towards or above, B_{MSY}.

23 The Minister must not use the absence of, or uncertainty in, the best available information as a reason for postponing or failing to set a TAC.

24 In considering the way in which and rate in which a stock is moved towards or above a level that can produce maximum sustainable yield, the Minister must have regard to such social, cultural, and economic factors that he considers are relevant.

25 Relevant matters for the Minister to take into account in setting or varying a TAC include:

- any effects of fishing on any stock and the aquatic environment
- any existing management controls under the Fisheries Act that apply to the stock or area concerned; and
- the natural variability of the stock.

26 The Minister must also take into account the following environmental principles:

- associated or dependent species should be maintained above a level that ensures their long-term viability
- biological diversity of the aquatic environment should be maintained; and
- habitat of particular significance for fisheries management should be protected.

Setting a TAC using best available information and that is consistent with the B_{MSY} objective

27 For TRE 2, best available information to inform TAC setting at this time is commercial catch history, which provides an indication of the TRE 2 fishery performance over the 23 year period since QMS introduction.

28 The TAC proposed under each option is below the estimate of MCY, which is the best available estimate of sustainable yield. There is no evidence that any of the options is inconsistent with the objective of maintaining the stock at or above, or moving the stock towards or above, a level that can produce the MSY.

29 However, information on TRE 2 is limited and there is a very high level of uncertainty in available information. This uncertainty includes uncertainty in the MCY estimate, uncertainty in catch information, uncertainty about the link between catch information and abundance of the stock, and uncertainty about the behaviour and distribution of the TRE 2 stock. The risk to the B_{MSY} objective arising from this uncertainty differs depending on the TAC option chosen.

30 The latest scientific information set out in the Plenary Report states that it is not known if the catches over the last few years are sustainable. While there is no direct evidence to suggest that recent over-catch of the TRE 2 TACC is related to an increased abundance of trevally, there is also no evidence to suggest that a higher TACC could not be successfully implemented along with appropriate monitoring and management responses to ensure sustainable utilisation of the stock.

31 However, it must be noted that the inter-annual variability in catch over time, and the often small number of fishers responsible for the overcatch, suggests that this is not a simple situation of increasing bycatch of TRE 2 in other stable target fisheries. The catch variability is likely to be driven either by changes in fisher behaviour (variable targeting) or changes in the catchability/availability of TRE 2. A comprehensive understanding of those factors is not currently available but analyses and discussions with fishers in respect of deemed value setting suggest a portion of overcatch in recent years is a response to economic incentives whereby profitable markets for sale of deemed trevally have been secured by some fishers.

32 MFish notes also that the aggregating behaviour of trevally and evidence of some spatial differences in population size and age structure suggest that trevally catches could be maintained despite an underlying biomass decline.

Social, cultural and economic factors

33 The social, cultural and economic implications of TAC setting vary depending on the option chosen. The implications for each option are set out in the next section.

Effects of Fishing

34 The majority of TRE 2 commercial take is as bycatch in bottom-trawl fisheries targeting gurnard and tarakihi. As the TAC proposals do not affect catch limits for the key species targeted when TRE 2 is taken or exceed historical recorded landings of TRE 2, it is not anticipated that the proposed TAC (and TACC) options would result in a significant change to fishing operations. Therefore, it is not anticipated there will be an increase in impacts on the marine environment or on the harvest of other stocks.

Existing management controls

35 Apart from the existing TAC, TACC, and customary Maori and recreational allowances, standard management controls apply to the TRE 2 fishery, for example amateur bag limits, amateur minimum size limits, and fishing method constraints. The proposed changes to the TAC do not affect these measures.

Natural variability of the stock

36 Trevally is not known to be naturally highly variable from year to year. Trevally is relatively long-lived and moderately productive. The species is therefore vulnerable to overfishing and caution should be taken when increasing catch limits.

Environmental Principles

37 As noted above, the TAC proposals do not affect catch limits for the key species targeted when TRE 2 is taken or exceed historical recorded landings of TRE 2. Therefore, it is not anticipated there will be a significant increase in impacts on the marine environment or associated and dependent species**.** A significant number of areas on FMA 2 are closed to trawling[3]. The Wairoa Hard is an example of a habitat important to fisheries management as significant numbers of juvenile fish of a variety of species have been known to congregate there that is closed.

Analysis of Options

Option 1 –Status quo and new allowances

38 The TAC proposed under Option 1 is based on the current TACC and includes allowances for customary interests (1 t), recreational interests (100 t) and other sources of fish related mortality (7 t). The basis for allowances is set out below.

39 Option 1 proposes a TAC that is likely to maintain the stock at current levels. Although the current stock level in relation to B_{MSY} is not known, the proposed TAC is less than the MCY and should satisfy s 13(2A) requirements.

40 This option does not provide for any additional economic benefit to commercial fishers.

41 This option presents the lowest sustainability risk of all options presented as it maintains risk at current levels while introducing the new allowances for customary and recreational interests and other sources of mortality allowances.

Option 2 – TAC increase based on commercial catch history

42 Option 2 proposes a TAC based on an increased TACC (262 t) to reflect average reported commercial landings over the 23 year years since TRE 2 entered the QMS and commercial catch recordings are likely to be most reliable. Allowances for customary interests (1 t), recreational (100 t) interests and other sources of mortality (8 t) are proposed.

[3] http://www.legislation.govt.nz/regulation/public/1986/0217/latest/DLM106539.html?search=ts_all%40act%40bill%40regulation_fisheries+commercial_resel&p=1&sr=1

43 Option 2 proposes a TAC that is likely to satisfy the requirements of s 13(2A) of the Act. Although the current stock level in relation to B_{MSY} is not known, the proposed TAC is less than the MCY and should maintain or move the stock towards or above the B_{MSY} level, noting the uncertainties in the MCY estimate and other information.

44 Given that average fishing-year landings over 23 years are greater than the current TACC at 262 t, this suggests that increased catches at that level might be sustainable in the medium term. At those levels of extraction, no evidence of adverse changes to the performance of the fishery have become evident.

45 This option provides modest additional utilisation benefits of approximately $32,300 (based on current port price) over option 1, while attracting unquantified sustainability risks greater than option 1, but lower than option 3.

46 The proposal for increased DVs will provide an incentive to avoid TRE 2 bycatch and over catch.

Option 3 – TAC increase based on recent commercial catch history

47 Option 3 proposes a TAC based on an increased TACC reflecting average commercial landings over the past 10 years, noting this is average is influenced by relatively high commercial catches in four of the last five years. This option includes allowances for customary interests (1 t), recreational interests (100 t) and other sources of mortality (9 t).

48 Option 3 proposes a TAC that is likely to satisfy the requirements of s 13(2A) of the Act. Although the current stock level in relation to B_{MSY} is not known, the proposed TAC is slightly less than the MCY and should maintain or move the stock towards or above the B_{MSY} level, noting the uncertainties in the MCY estimate and other information.

49 The TAC suggested under Option 3 presents greater risk to the medium and long-term sustainability of the TRE 2 stock than Option 2, but provides for greater value of the stock's utilisation benefits, providing a TACC increase of over 20%. This option poses most risk to sustainability as it is based on commercial landings over the past ten years. During that period, landings have exceeded the TACC by substantial amounts. The working group has noted that it is not known if catches at recent levels are sustainable. The biology of trevally, in particularly the longevity and time to spawn, coupled with other risks discussed above suggest that this option would pose substantial risks to sustainability.

Total Allowable Commercial Catch (TACC)

50 Based on recent port prices of $1.54 per kilogram, the following table sets out the potential *additional* revenue that the proposed options 2 and 3 would bring to the TRE 2 fishery.

Table 3: Proposed TACCs (t) and corresponding change in annual economic return ($) for TRE 2

Option	Proposed TACC	Potential additional revenue over status quo
1	241	nil

2	262	$32,340
3	292	$78,540

Allocation of the TAC

51 When setting any TAC, that TAC must be apportioned between the relevant sectors and interests set out under the provisions of s 21 of the Act. Section 21 requires the Minister to allow for Maori customary non-commercial interests, recreational fishing interests, and for any other sources of fishing-related mortality, when setting or varying the TACC.

52 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, the Minister has the discretion to make allowances for various sectors based on the best available information.

Maori Customary Non-Commercial Interests

53 MFish does not have quantitative information on the level of TRE 2 customary Māori catch. Customary permit information is reported for only parts of the TRE 2 quota management area. These customary permits indicate permits are issued only rarely for trevally; with TRE 2 harvest under customary permits reported MFish totalling just 50 fish since 2007. MFish considers it likely that traditional Maori harvest of TRE 2 is occurring comfortably under existing recreational regulations. MFish therefore proposes a customary allowance of 1 t for all options.

54 Section 21(4) requires that any mātaitai reserve or closures/restrictions under s 186A to facilitate customary Maori fishing be taken into account. MFish is aware of the Moremore Mātaitai reserves. MFish notes that the proposals in this paper will not impact, or be impacted by, the mātaitai reserve.

55 Further information from tangata whenua and stakeholders is invited to ensure an allowance is set that appropriately recognises and reflects Maori customary fishing for TRE 2 under customary regulations.

Recreational Interests

56 In light of the current inaccuracies around TRE 2 recreational catch estimates, MFish proposes setting an initial recreational allowance of 100 t. This proposal accepts that the estimated catches of 160 t in 2000 and 339 t in 2001 are likely to be over estimates and that the catch is not likely to be more than the recent and improved estimate for TRE 1. MFish notes that this allowance can be reviewed when improved information becomes available.

57 Mfish also invites information from tangata whenua and stakeholders to inform the accuracy of estimates of recreational harvest.

Allowance for other sources of fishing-related mortality

58 There are various sources of fishing-related mortality for TRE 2. These include mortality caused by fish passing through the trawl net, undersized fish being returned

dead or not surviving from the recreational fishery, and illegal take or discarding of trevally.

59 MFish proposes providing an allowance for other sources of fishing related mortality similar to that set for kahawai fisheries, which is 2% of the TAC, To reflect the greater proportion of total TRE 2 catch that is taken by the trawl method when compared to kahawai, an additional 1% has been added, leading to a proposed mortality allowance of 3% of TAC.

60 MFish notes that this proposed initial allowance will be reviewed when any relevant new information becomes available and MFish welcomes any information that stakeholders can provide MFish to allow a better initial setting of this allowance.

Other management measures

Deemed values

61 Under s 75(1) of the Act, the Minister is required to set interim and annual DV rates for each quota management stock. Section 75(2A) requires the Minister, when setting DV rates, to take into account the need to provide an incentive for every commercial fisher to acquire and hold sufficient annual catch entitlement (ACE) in respect of each fishing year that is not less than the total catch of that stock taken by the commercial fisher.

62 MFish developed a DV Standard in 2007 to set out a process for managing the setting, reviewing and amendment of DV rates. This standard is available to view on the MFish website[4].

63 MFish's general policy is to set DVs for a fishstock between the ACE price and port price (see table below). This approach creates an economic incentive for fishers to act appropriately and balance any overcatch against ACE, if ACE is available. Alternatively, if ACE is not available, this approach creates an economic incentive to land and record any overcaught fish rather than discard them at sea. MFish notes that ACE price has increased on the previous year[5] by $0.32.

Table 4: Current ACE price, port price and annual deemed value for TRE 2

Stock	ACE price	Port Price	Current Deemed value	Proposed Deemed value
TRE 2	$0.82	$1.54	$1.10	$1.25

64 For all options, MFish therefore proposes increasing the existing annual DV from $1.10 per kg to $1.25 per kg in order to retain incentivise fishers for balance catches with ACE. MFish also proposes to increase interim DV rates from $0.55 per kg to $0.70 per kg. The proposed new DV rates are consistent with the current MFish deemed value standard that allows for the setting of DV rates up to 90% of port price.

65 In addition, MFish is proposing a new differential deemed value structure for TRE 2. This is because:

[4] http://fs.fish.govt.nz/Page.aspx?pk=119
[5] As at 28 February 2010

a) It has been consistently over fished in recent seasons (on average, 135% of available ACE since 2004/05)
b) Deemed value invoices of $103,188 were issued at the end of the 2008/09 fishing season.

66 Trevally is caught as bycatch when targeting snapper but is also a target stock in its own right. MFish notes information indicating TRE 2 is not an unavoidable bycatch species and that the number of fishers significantly exceeding their ACE holdings is small.

67 Therefore, MFish proposes that current unique differential DV rates (ramping) will remain in TRE2, but that the value of the 110% ramp will increase from $2.00 per kg to $3.50 per kg and the 120% ramp will increase from $3.00 per kg to $5.00 per kg. This will ensure that any opportunity to gain financially from fishing significantly on DVs is removed.

68 Therefore the proposed DV rates for TRE 2 for the 2010-11 fishing season under all options are as follows:

a) Annual DV rate to increase from $1.10 per kg to $1.25 per kg.
b) Interim DV rates to increase from $0.55 per kg to $0.70 per kg.
c) Differential DV rates adjusted as set out in the table below:

Table 5: Current and proposed deemed value ramp rates for TRE 2

Percentage above Deemed Value	Current Deemed Value	Proposed Deemed Value
110 – 120%	$2.00 per kg	$3.50 per kg
120% +	$3.00 per kg	$5.00 per kg

Additional Management Measures

69 No additional management measures are proposed for this fishery.

Future Considerations

70 MFish currently has a research project underway that is characterising the FMA 2 fisheries and will provide CPUE indices of abundance for key species (including TRE 2) by March/April of next year. Future management of the stock can be reviewed in light of the new information available in 2011.

Preliminary Recommendations

71 MFish's initial view is that Option 1 (the status quo TACC with setting of a TAC, and allowances for other sources of fishing related mortality and Maori customary and recreational interests) or Option 2 (a small increase to the TACC in addition to TAC and allowance setting) is appropriate given the high level of uncertainty in available information. New information on relative abundance in the TRE 2 fishery may become available in 2011 and this may provide a better foundation to vary TACs and monitor stock health in the future.

72 MFish's initial view in respect of deemed values for TRE 2 is that the interim and annual DV rates be increased by $0.15 per kg in order to encourage fishers to fish to

the TACC and that differential DV rates are increased by $1.50 per kg for 110 – 120% ramp and $2.00 per kg for 120%+ ramp to provide the appropriate incentives to either constrain their fishing to their available ACE holdings or to acquire more ACE instead of fishing on DV.