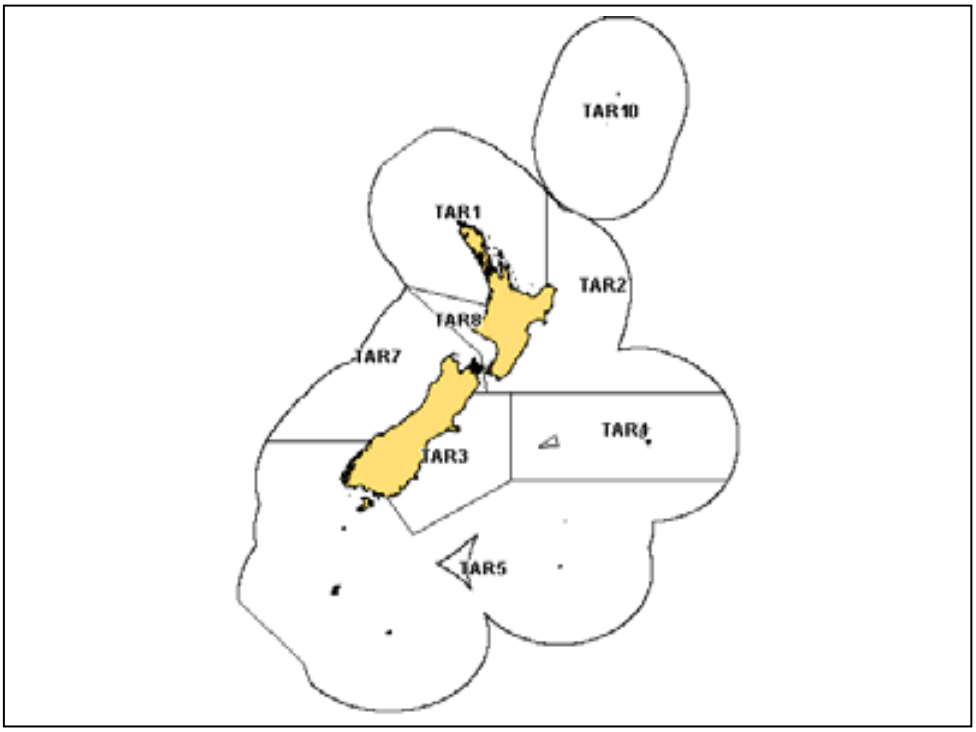
TARAKIHI (TAR 1) - INITIAL POSITION PAPER

Figure 1: Map showing Quota Management Areas for Tarakihi (TAR) stocks



Executive Summary

1 TAR 1 has been managed under a TAC since 2002. Commercial Stakeholder Organisations (CSOs) have made applications previously for an adaptive management program (AMP) to be implemented, the latest of which was received from the Northern Fisheries Management Stakeholder Company Ltd (Northern Fisheries) in March 2007. After confirmation that MFish was not accepting new AMP applications during the current financial year, Northern Fisheries requested that a TAC/TACC increase (as sought under the proposed AMP) be considered in the October 2007 sustainability round.

2 Northern Fisheries believes that a utilisation opportunity exists in TAR 1. Citing stable or increasing CPUE (catch per unit of effort) indices and a long, stable catch history since catch reporting began in TAR 1 in 1983/84, Northern Fisheries proposes that higher catches are likely to be sustainable. Recent catches have exceeded the TACC by up to 10% (averaging 5% over catch during the last 10 years) with no sustainability concerns becoming apparent. The May 2006 Plenary report notes that "current catches and the TACC for TAR 1 appear to be sustainable."

3 However, other than CPUE indices, TAR 1 is a comparatively information-poor fishery. There is little fishery-independent information currently available, with no estimates of stock size or maximum sustainable yield (MSY) available. Two research projects pertaining directly to TAR 1 are scheduled to begin on 1 October 2007, and these may provide more information for monitoring the stock. They are a CPUE

analysis to monitor relative abundance (TAR2007/01 – to be completed within one year) and two years of shed sampling to determine the length and age structure of commercial catches (TAR2007/02 – results from the first year will be available by early 2009). These two projects could form the basis for a formal stock assessment in the near future.

4 TAR 1 is an important shared fishery with strong recreational interest, especially in the Bay of Plenty and East Northland areas. In these areas, recreational fishers have previously noted overlap between commercial and recreational fisheries for tarakihi, though this is disputed by some commercial fishers. Recreational groups have previously opposed AMPs, primarily on the grounds that tarakihi size and availability could be reduced if the TACC were to be increased. Currently, there is no information to indicate whether or not the recreational allowance of 470 tonnes is constraining recreational use. There is little information as to whether or not the customary allowance of 70 tonnes provides for customary use.

5 As a shared fishery, setting a TAC to maintain stock biomass above the biomass level that can produce the MSY is an option available to the Minister. Maintaining the stock at a relatively large biomass is the strategy most likely to deliver the type of tarakihi fishery that would enable non-commercial fishers to derive their best wellbeing from the fishery. A high biomass is more likely to provide abundant fish of a greater average size, as often preferred by non-commercial fishers who are not able to use bulk fishing methods. However, since we do not have estimates of current stock size or maximum sustainable yield as references, the options presented in this paper deal only with small increases in the TAC to recognise the recent levels of reported commercial catch that have been taken in excess of the TACC without giving rise to sustainability concerns.

6 MFish considers that the development of fisheries plans over the coming five years will provide the open forum for stakeholders and tangata whenua to set out their respective management objectives for the TAR 1 fishery, and to explore those with the advantage of the improved information on the stock that should be available then.

7 Despite uncertainty, using the best available information, MFish proposes that the Minister sets the TAC under section 13(2)(a) of the Fisheries Act 1996: to maintain the stock at or above the biomass level that can produce the maximum sustainable yield (B_{MSY}), having regard to the interdependence of stocks. MFish proposes three TAC options for managing the TAR 1 fishery:

- maintaining the current TAC;
- increasing the TAC by 70 tonnes; or
- increasing the TAC by 140 tonnes.

8 Each of these options represents a different level of risk to the underlying stock. The Minister may choose from the three TAC options (but is not necessarily limited to these options), as well as alternative options under any TAC for determining allowances for customary Maori non-commercial fishing interests, recreational fishing interests, and all other sources of fishing-related mortality before determining the TACC. The options proposed are summarised below. MFish notes that a review of the

deemed values[51] for TAR 1 and other stocks is also underway (see relevant section in this paper, and Deemed Value Review paper in this volume). The review of deemed values should ensure that commercial catches are constrained within the TACC to achieve the purposes of the catch balancing regime.

Summary of proposed options

9 **Options 1 a, b and c** propose a status quo approach with retention of the current TAC at 1958 tonnes. MFish considers this to be the most cautious approach in view of the uncertainty and inadequacy of available information (in concert with a review of deemed values), allowing any future TAC review to be informed by research scheduled to begin this year. Given the stable CPUE indices and catch history in the fishery, it is considered probable that the current TAC is sustainable and will likely maintain the stock at a biomass level at or above B_{MSY}. These options are proposed on the grounds that maintenance of the TAC at its current level is unlikely to reduce the stock to a level below B_{MSY} or place sustainability risks on the stock. Within these options, the Minister may choose to retain the current allowances (**1a**); to assign a greater proportion of the TAC to the TACC (**1b**); or to assign a greater proportion of the TAC to non-commercial allowances (**1c**).

10 **Options 2 a, b and c** propose an increase to the TAC of 70 tonnes (5% of the current TACC), in line with the average commercial over catch during the last 10 years. Given the uncertainty in the best available information, these options provide some increased risk (though unlikely to be significant) that the TAC will not over time maintain the stock at a biomass equal to or above B_{MSY}. These options recognise the fact that current total catches are probably sustainable, and increases the TAC to the level of recent actual commercial catches above the TACC. These options could provide extra annual catch entitlement (ACE) for commercial fishers to balance their catch, and could thus reduce the amount of deemed values paid in the fishery. As these options should not result in an increase in overall commercial catch above that recently taken (if supported by the appropriate deemed values), it is unlikely to alter the current nature and extent of this fishery as utilised by non-commercial sectors. Within this option, the Minister may choose to assign the increase proportionally to all sectors (**2a**); to assign the increase to the TACC only (**2b**); or to assign the increase disproportionately to non-commercial sectors (**2c**).

11 **Options 3 a, b and c** propose an increase to the TAC of 140 tonnes (10% of the current TACC), in line with the highest level of commercial over-catch in the fishery since at least 1983/84. These options provide an enhanced utilisation opportunity, at least in the short term, providing for greater overall catch in the fishery and probably reducing deemed value payments provided that catches are balanced against the possible greater amount of available ACE. These options inherently pose more risk, relative to options 1 and 2, that the TAC will not over time maintain the stock at a biomass level equal to or above B_{MSY}. It is also not known whether or not this level of catch is likely to be sustainable in the long term. Within these options, the Minister may choose to assign the increase proportionally to all sectors (**3a**); to assign the increase to the TACC only (**3b**); or to assign the increase disproportionately to non-commercial sectors (**3c**).

[51] A deemed value is the per kilogram price a commercial fisher must pay to the government if annual catch entitlement cannot be obtained to cover catch.

12 Approximate TACs, TACCs, and allowances for the above options are presented in the following table (Table 1):

Table 1. Proposed management options for TAR 1

	Allowance Approach	TAC	Recreational Allowance	Customary Allowance	Other sources of mortality	TACC
Option 1. TAC unchanged	a. Status quo	1958	470	70	20	1399
	b. Non-proportional allocation to TACC	1958	410	59	20	1469
	c. Non-proportional allocation to non-commercial sectors	1958	539	80	20	1329
Option 2. TAC increase of 70 tonnes	a. Proportional	2028	487	73	21	1449
	b. Non-proportional allocation to TACC	2028	470	70	20	1469
	c. Non-proportional allocation to non-commercial sectors	2028	499	75	21	1433
Option 3. TAC increase of 140 tonnes	a. Proportional	2098	505	76	21	1498
	b. Non-proportional allocation to TACC	2098	470	70	20	1539
	c. Non-proportional allocation to non-commercial sectors	2098	530	80	21	1469

Rationale for management options

Background

Main characteristics of the fishery

13 The 2006 Plenary report states that tarakihi are caught in coastal waters of the North and South Islands of New Zealand, as well as the Chatham Islands and Stewart Island. The main commercial fishing target method is trawling. Major target trawl fisheries are in 100 – 200 metre depths. The overall fishery for tarakihi (all stocks) appears to have been relatively stable since initial development. Similarly, the commercial catch in TAR 1 has been relatively stable since at least 1991-92.

14 The 2006 Plenary report states that, in the North Island fisheries, about 70 – 80% of tarakihi commercial catch is taken by target trawling. In TAR 1, some quantity is also taken as a bycatch in trawls targeting several other species (including trevally, snapper, and John dory). Relatively small quantities are taken as a bycatch by other commercial methods (including lining) (Fisheries Information System May 2007).

15 There are three main fishery areas for tarakihi in TAR1. The largest target catch is generally taken from the Bay of Plenty (although catches vary between years), with slightly smaller quantities taken from the East Northland and West Northland areas.

16 The commercial fishery appears to have a seasonal peak in the autumn and winter months, although substantial landings are made throughout the year. Fishers have reported the view that tarakihi move into shallower waters during the cooler months.

17 Recreational fishers in TAR 1 have commented previously that they value the species highly. It is known for its good eating qualities, and probably ranks highly as a food

species (that can be caught in numbers – tarakihi fall within the current mixed species daily bag limit of 20 fish). Surveys of recreational catch, although quantitatively uncertain, have indicated that TAR 1 is the largest (by weight) tarakihi fishery in New Zealand. The TAR 1 recreational fishery was estimated to be the 4th largest nationally in the 1996 survey, and 9th largest in the 1999-00 survey.

18 Recreational fishers in TAR 1 are known to target the species using lining methods from boats. The depth distribution of tarakihi in TAR 1 means that it is not often taken by shore-based anglers. In previous discussions with recreational fishers they have indicated that the tarakihi fisheries in the Bay of Plenty and East Northland areas are most important to the sector.

19 Little is known about the extent of customary catch of tarakihi in TAR 1. While tarakihi is known to have value as a customary food source, recent and current harvest levels are unknown.

Information on stock size and maximum sustainable yield (MSY)

20 There is no formal stock assessment for TAR 1 to provide estimates of stock status with respect to B_{MSY}, nor estimates of the MSY. Thus, most information currently available about TAR 1 is derived from the commercial fishery; particularly from catch per unit effort (CPUE) data.[52] While there is often uncertainty associated with CPUE data, the 2006 Plenary report concluded that CPUE indices are probably monitoring tarakihi abundance in TAR 1.

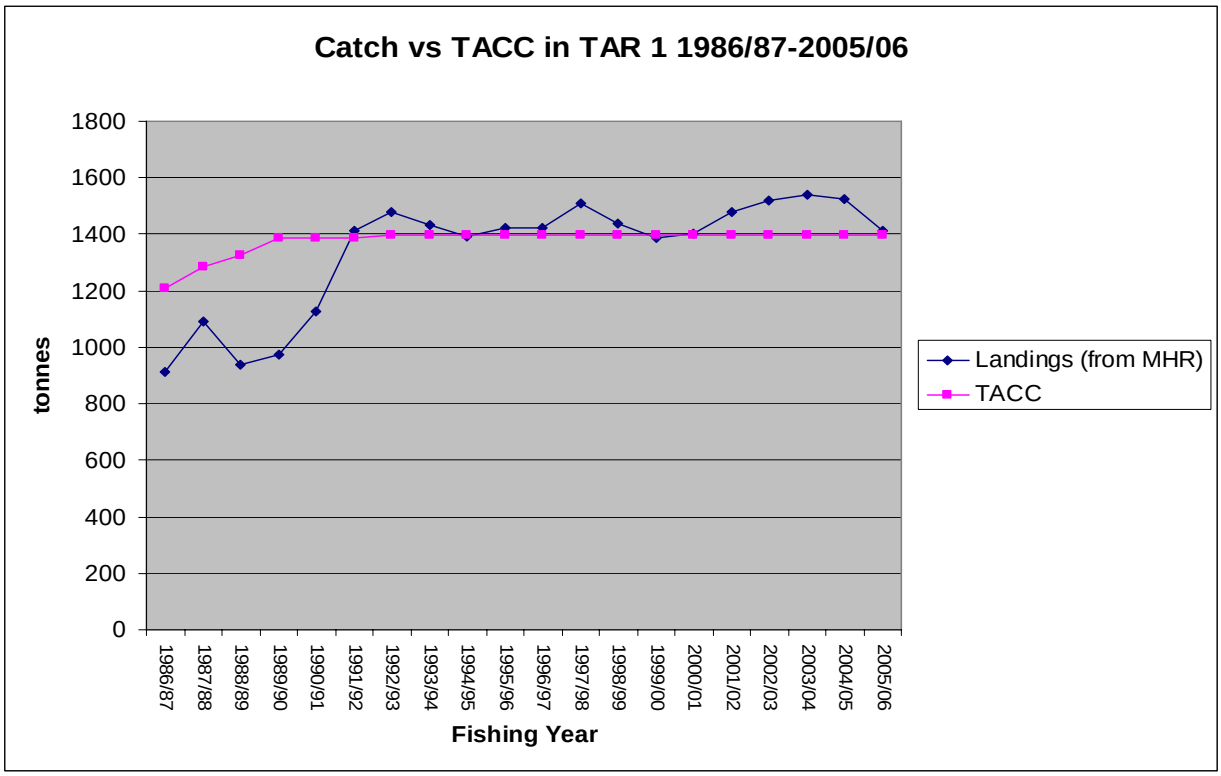
21 The 2006 Plenary report notes that CPUE indices for East Northland and the West Coast North Island fisheries (available for the period 1989-90 to 2003-04) show no trend between 1989/90 and 2003/04; and that CPUE in the Bay of Plenty was stable until 1999-00 when a sharp increase occurred, possibly as a result of good recruitment in 2000-01. Overall, the available CPUE indices in TAR 1 (until 2003-04) are stable or increasing slightly. CPUE indices are to be updated again in 2008. The 2006 Plenary report states that current commercial catches and the TACC appear to be sustainable. The 2006 Plenary did not comment on the TAR 1 stock's biomass in relation to B_{MSY}.

22 Analysing the catch history in TAR 1 is a further useful source of information regarding the potential yield from the fishery. Commercial landings have been relatively stable – varying between 912 tonnes and 1541 tonnes since 1983-84 and between 1387 tonnes and 1541 tonnes over the period 1991-92 to 2005-06. Landings have exceeded the TACC for most of the last ten years, with an average over-catch of approximately 5% during this period (fishing years 1996-97 to 2005-06) (see figure 1).

23 Taken together, these data suggest that increasing the TAC to reflect recent over-catch is likely to be sustainable.

Figure 2: Recent catch vs. TACC in TAR 1

[52] CPUE is a measure of relative abundance of a fish stock and refers to the expected catch for a unit of fishing effort. If catch rate changes, it is taken to indicate a relative change in the abundance of the stock.



Over catch of the TACC

24 As noted above, commercial landings have exceeded the TACC for most of the last ten years, with an average over catch of approximately 5% during this period (fishing years 1996-97 to 2005-06).

25 The over catch has resulted in substantial deemed value payments by fishers unable to balance catches against ACE. An analysis of the information available suggests that all ACE has been used in most years. A relatively large number of fishers/clients have paid deemed values for TAR 1 in each year, with the majority needing to cover relatively small quantities of catch. This is consistent with some fishers taking small amounts of tarakihi as an unavoidable bycatch when targeting other species.

26 Some fishers have, in several years, reported substantial quantities of TAR 1 as both target and bycatch. Fishers have balanced a large portion of that catch with ACE, but have also paid deemed values for further substantial quantities. It appears that those fishers have not found the current deemed value rates for TAR 1 to be a disincentive to catching well in excess of the available ACE. It is also evident that ACE prices can exceed the annual deemed value rate, weakening any incentive to obtain ACE or attempt to constrain catches.

27 The Ministry is reviewing the deemed value rates for TAR 1 (and other adjacent TAR stocks - see relevant section of this volume) with a view to setting the rates at appropriate levels to achieve the purpose of the catch balancing regime. Altering the individual over catch threshold at which ramping of deemed values begins is an option being considered to constrain over fishing.

AMP proposals in TAR 1

28 Industry has, over a number of recent years, expressed its view that a utilisation opportunity exists in TAR 1 and has proposed AMPs to explore this potential. Northern Fisheries requested that a TACC increase be considered in the 2007 October sustainability round. Northern Fisheries provided its AMP proposal for a 43% increase to the current TACC in support of this request. MFish has previously advised that it will not be considering AMPs this financial year. Outside of an AMP framework, MFish considers that increases as large as 43% would need to be supported by reliable information that such an increase would maintain, or move the stock to a level at or above B_{MSY}.

Key points to consider

29 The current stock size of TAR 1 in relation to B_{MSY} is not known, and neither are any estimates of the MSY.

30 The primary driver for this review is that the TACC has been fairly consistently exceeded for a number of years. The relatively stable commercial catch levels and indices of relative abundance (CPUE) available through to 2003-04 possibly support industry's view that the stock can provide for further sustainable utilisation above the current TAC. The CPUE indices will be updated in 2008. The 2006 Plenary report states that current catches and the TACC appear to be sustainable.

31 However, TAR 1 is a shared fishery, of importance to both customary and recreational fishers. Surveys to estimate recreational catches in 1996 and 1999-00 showed that the catches in TAR 1 were substantially larger than tarakihi catches in any other area. The 2006 Plenary report notes that the recreational catch estimated from the 1999-00 survey was 46% of the commercial catch in that period. As a shared fishery, setting TACs to maintain the stock above the B_{MSY} level is a valid objective. MFish notes also that the Auckland and Tauranga areas are experiencing substantial growth in human population. It is possible that an increasing regional population would be accompanied by increasing recreational interest in fishing for TAR 1 as well as increasing demand for the product by regional consumers.

32 In previous submissions on proposed AMPs in TAR 1, recreational interests expressed concern that an increase to commercial catch would impinge upon both the size and availability of tarakihi to recreational fishers. This was seen as particularly important in the areas where commercial and recreational interests are thought to overlap, primarily in the Bay of Plenty and East Northland areas. This was a contentious issue between commercial and non-commercial sectors in previous AMP applications in TAR 1.

33 With the exception of options **3a and 3b**, the options proposed in this paper would not see authorised commercial catch exceed recent actual catch levels (taken as the 10 year average of commercial landings) by more than 6 tonnes. If any of the options (other than **3a** and **3b**) were implemented, MFish considers that non-commercial sectors would be unlikely to see the nature and extent of their TAR 1 fishery reduced. If either options **3a** or **3b** were implemented, there is a greater risk of affecting the nature and extent of the fishery available to non-commercial sectors compared to the other options, though the level of this risk is unknown. This is because while catches

of up to 1541 tonnes (10% in excess of TACC) have been recorded in TAR 1, they have not been sustained over time, and it is not known if they would be sustainable.

34 Given the lack of estimates of current stock size and MSY, and the uncertainty associated with the available estimates of non-commercial catches, the options proposed in this paper consider either no change or relatively small increases to the TAC based on recent levels of catch. The research information that will become available over the coming two years should enable a stock assessment. The imminent fisheries planning process will provide an appropriate open forum for stakeholders to develop their respective objectives for the TAR 1 fishery with the benefit of improved information.

Hauraki Gulf Marine Park Act 2000

35 In setting a TAC, the Minister is required to have particular regard to s7 and 8 of the Hauraki Gulf Marine Park Act 2000 in so far as the decision relates to the Hauraki Gulf. Section 7 recognises the national significance of the Hauraki Gulf including its capacity to provide for the relationship of tangata whenua and the social, economic, recreational, and cultural well-being of people and communities. Section 8 sets out the objectives of the management of the Hauraki Gulf, which include the maintenance of the Hauraki Gulf for the social and economic well-being and its contribution to the recreation and enjoyment of the people and communities of the Hauraki Gulf and New Zealand. The maintenance and enhancement of the physical resources of the Gulf, which include tarakihi, is also an objective.

36 Relatively little tarakihi is caught commercially in the inner Hauraki Gulf (Statistical Reporting Areas 006 and 007). Tarakihi is caught in slightly larger quantities in the outer Gulf and northeast of Great Barrier Island (Statistical Areas 004 and 005), and significantly larger quantities east of the Coromandel and into the Bay of Plenty (in areas 003, 008 and 009, though the Hauraki Gulf Marine Park only covers a relatively small part of areas 008 and 009).

37 MFish understands that the bulk of nationwide landings of tarakihi (approximately 6 000 tonnes) is sold on the domestic market and that it is a popular species with consumers. Only about 116 tonnes or 2 % of landings nationally were exported in the 2006 calendar year, mostly to Australia. MFish has no information to suggest that this is not also the case for commercial landings from TAR 1. The wellbeing of commercial fishers of tarakihi and of consumers who would purchase commercially caught tarakihi could benefit from an increase to the TACC. The primary benefit to commercial fishers would arise if the amount of annual catch entitlements (ACE) was greater and deemed value payments were reduced. However, the amount of any increase to catch limits proposed under any option in this paper is unlikely to have a significant effect on employment opportunities for commercial fishers or processors, or the supplies of tarakihi at local domestic fish markets.

38 MFish has no information to suggest that tarakihi in the Hauraki Gulf are more or less important to non-commercial fishers than tarakihi elsewhere. Commercial and recreational catch reports and surveys suggest that tarakihi are available in the marine park, particularly in the deeper, more easterly areas.

39 As a species of some importance to recreational fishers, an increase in the allowances could provide a wellbeing benefit to that sector. However, in the absence of information to suggest that the current allowances are insufficient for recreational and cultural wellbeing, MFish is not in a position to qualify or quantify the relative benefits of increases to the respective sectors.

40 MFish invites submitters to provide any additional information that they have on the importance of tarakihi to the social, economic, recreational and cultural wellbeing of people in the area of the Hauraki Gulf Marine park.

Assessment of management options

Total Allowable Catch

41 MFish proposes to set the TAC for TAR 1 under section 13(2)(a) of the Act. Section 13(2)(a) is appropriate in cases where the stock biomass is at or above the B_{MSY} level and requires a TAC that maintains a stock biomass at or above a level that can produce the maximum sustainable yield, having regard to the interdependence of stocks.

42 The 2002 Plenary reported the view that the TAR 1 biomass was probably above the level that can produce MSY at that time. The currently available CPUE indices for TAR 1 (until 2003-04) are stable or increasing slightly, and commercial landings have been relatively stable for more than 15 years. Based upon that information, there is a reasonable probability that the current TAR 1 biomass is equal to or greater than the size that can support the MSY. However, estimates of current biomass or the biomass that can support the MSY for TAR 1 are not available, hence it cannot be reliably determined whether or not the proposed TAC options will maintain the stock at a size that will support MSY.

43 In the absence of reliable estimates of biomass and maximum sustainable yield for TAR 1, MFish proposes two options to vary the TAC based on assessment of past and current catches and allowances.

44 Three TAC options are proposed as set out in Table 1. The first represents the status quo as it is based on existing catch limits and allowances for customary and recreational catch and for other fishing-related mortality. The remaining two options propose TACs that reflect recent commercial landings and provide for increased utilisation opportunities in the fishery.

Option 1

45 In the absence of definitive information to support a TAC increase, **option 1** represents the most cautious approach by maintaining the TAC at the status quo level, if considered in conjunction with a review of deemed values to ensure better compliance with the TACC.

46 The current TACC was set in 2001 and reflects the level of previous catches in the fishery. The current TAC and allowances have been in place since 2003. The TAC was set following considerations of the combined recreational allowance (set at 470 tonnes, the mean of the 1996 and 1999/2000 recreational harvest survey point

estimates), the customary catch allowance (set at 70.5 tonnes – 15% of the estimated recreational catch – on the basis of similar allowances in snapper fisheries), and the allowance for other sources of fishing-related mortality (20 tonnes). There are no more recent estimates of non-commercial catches of TAR 1.

47 Maintaining the TAC at 1958 tonnes recognises the fact that the present level of fishing is unlikely to: risk the long-term sustainability of the fishery; significantly alter the ability of fishers from any sector to derive wellbeing from the fishery; or give rise to any other sustainability concerns.

48 MFish considers the status quo option is least likely to alter the existing overall social, cultural, and economic factors associated with the fishery.

Option 2

49 **Option 2** proposes an increase of 70 tonnes to the TAC, recognising the average commercial catch over the last 10 years. This option would set a TAC of 2028 tonnes, and provides for the average recent commercial over-catch within the fishery.

50 Catches have averaged approximately 70 tonnes in excess of the TACC for the previous 10 years. The 2006 Plenary report states that current catches and the TACC appear to be sustainable. The relative stability of the CPUE indices and catch levels suggests that biomass remained relatively stable under those catches (at least until the the most recent CPUE indices for 2003-04). A major advantage of recognising recent commercial catches in an increased TAC and TACC level is that it could provide an opportunity for better value to be realised, through increased availability of ACE and a consequent reduction in deemed value payments.

51 MFish considers the TAC proposed under this option is also unlikely to alter the existing overall social, cultural, and economic factors associated with the fishery, because the option recognises the average actual catches that have been taken as evidenced by the available information.

Option 3

52 Under **option 3**, the TAC would be increased by 140 tonnes, in line with the greatest recorded commercial catch in the fishery since at least 1983/84. This would see a total allowable catch of 2098 tonnes, meaning this option provides for the greatest utilisation opportunity.

53 However, catches at this level (or slightly lower) have not occurred consistently, and it is not known whether or not they are sustainable in the long term. Though the information on stock size is very uncertain, MFish also considers that this option provides the most risk of the three options proposed that the TAC will not maintain the stock at a biomass equal to or above B_{MSY} over time. Thus, this option inherently presents more risk to the sustainability of the stock than the options listed above.

54 Quantifying the risk posed by this option is difficult given the lack of information currently available in this fishery. However, an increase of 140 tonnes is not much greater than actual commercial catches, which have exceeded the TACC by an

average of 96 tonnes (7%) per year over the past five years. While an element of risk exists under this option, given the catch levels already occurring in the fishery, an increase of 140 tonnes is unlikely to pose an undue risk that the stock will not be maintained at a level that can produce MSY or to the sustainability of the stock, at least in the short term and provided that catches are constrained to the TACC.

55 MFish considers this option is associated with the greatest increased utilisation opportunity in the short term and hence carries the greatest short-term potential to obtain greater value from the fishery. However, it also carries a risk that it could adversely affect the nature and extent of the fishery available to non-commercial fishers.

Determining allowances and setting the TACC

56 Section 21 of the Fisheries Act 1996 requires the Minister to allow for Maori customary non-commercial catch, recreational catch, and other sources of fishing-related mortality before setting the total allowable commercial catch. In setting allowances and the TACC, the Minister should consider how best to provide for the social, economic and cultural wellbeing of the persons within each sector.

57 Within each of the TAC options above, the Minister has a range of options with which to distribute any increase (or change existing allowances). In broad terms, these options are:

- proportionally set the allowances (any increase is assigned across the sectors in the same proportions as currently used to manage the fishery);
- non-proportionally assign any increase to the commercial sector (only the TACC is increased, with recreational and customary allowances remaining unchanged); or
- set non-proportional allowances – an example being to assign to non-commercial sectors 50% of any increase (shared in proportion to existing allowances),[53] and 50% to the TACC.

58 Proportionally increasing the TACC and allowances above the status quo theoretically spreads the benefit of the increased catch level between all three sectors. In TAR 1, this would result in non-commercial allowances in excess of the currently used estimate of non-commercial catch. MFish recognises that the available estimates of non-commercial catch of TAR 1 are uncertain and only infrequently updated. Given the relatively small proposed changes in TACs and allowances, and the uncertainty in non-commercial catch levels, the potential benefit to that sector cannot be determined reliably.

59 Under a non-proportional approach, the Minister may choose to make a greater share of any increase available to the TACC (and thus, to the commercial sector). Assigning a greater share (or the total amount) of any TAC increase to the TACC could recognise that only an increase to the commercial sector is likely to have a tangible impact on utilisation. As consistent commercial over catch in the fishery has revealed

[53] 50% is a notional figure used to illustrate one possible approach to non-proportional allocation to non-commercial sectors. The Minister may choose a different figure in order to better allow for appropriate allocation between sectors.

a potential utilisation opportunity, it may be appropriate that any increase is assigned to the TACC.

Customary

60 Little is known about the extent of customary catch of tarakihi. While tarakihi is known to have value as a customary food source, recent and current harvest levels are unknown. Thus, there is no information presently available to suggest that the current allowance of 70 tonnes does not provide for customary catch. MFish looks forward to submissions from the customary sector which could help characterise the value of this fishery to Maori. Moreover, MFish encourages any suggestions toward improving quantification of customary catch.

61 The Minister must take into account any mātaitai reserve and any closure, method restriction, or prohibition imposed under s 186A. There are existing mātaitai reserves and closures under s 186A within the boundaries of TAR 1 (see paragraph 91 for details), however, MFish does not consider that any of these materially affect the management of TAR 1 at this time. Those measures are designed to manage fisheries within relatively small spatial areas and are unlikely to significantly influence the allocation of a fishery such as TAR 1.

Recreational

62 Tarakihi is an important fish to recreational fishers, and is actively targeted in many areas. According to both the 1996 and 1999-00 recreational harvest surveys, TAR 1 is the most important tarakihi fishery by weight. It was also estimated to be the 4th most important recreational fishery nationally (of any fish species, by weight) in the 1996 recreational harvest survey and 9th most important in the 1999-00 survey.

63 Based upon information provided by recreational fishers, the East Northland and Bay of Plenty areas are important areas to recreational fishers in TAR 1. In contrast, discussions with recreational fishers in 2003 did not reveal that there was much target fishing for tarakihi on the west coast of TAR 1.

64 MFish currently has no information to suggest that the existing allowance for the recreational sector is constraining recreational fishers' interests in TAR 1. However, MFish looks forward to submissions from the recreational sector that can provide further information towards characterising the value of the fishery to the sector and any concerns or issues they may have with regard to this fishery.

65 If the recreational allowance is increased or decreased, MFish intends to consider reviewing the daily recreational bag limit for tarakihi. The only option presented proposing a reduction to the recreational allowance is **option 1b**. MFish's preliminary view is that if **option 1b** is chosen, then it would be appropriate to consider a reduction in the daily bag limit in order to assist with constraining catch to a reduced recreational allowance. However, if the recreational allowance is increased, MFish's preliminary view is that any change to the daily recreational bag limit is unlikely to be necessary. There is no information available to suggest that up to 20 tarakihi (tarakihi is included in the 20 mixed-species bag limit) is insufficient in providing for the needs of recreational fishers. An increased allowance would likely authorise the taking of more daily bag limits.

66 The Minister must take into account any regulations that prohibit or restrict fishing in any area for which regulations have been made under section 311 of this Act. There are no such regulations prohibiting or restricting fishing within TAR.

Other sources of mortality

67 No quantitative information is available on the level of illegal or unreported catch, or other sources of mortality in the TAR 1 fishery. The primary method of catch for tarakihi is bottom trawl, and therefore some mortality can be expected where tarakihi escape through the net, but are fatally injured. As a minimum legal size applies, mortality must also be associated with the capture and release of undersized fish. In 2002, the Minister set an allowance of 20 tonnes within the TAC to cover other sources of mortality across all sectors.

68 MFish considers that the allowance for other sources of mortality should be increased in proportion to any increase in the TACC and allowances. As there is no new information to suggest a change in the proportion of the TACC estimated to account for other sources of mortality in the fishery, MFish considers it should be set at approximately 1.5% of the TACC.

TACC

69 The TAR 1 fishery is valuable to commercial fishers, both on the domestic market and as an export. The bulk of the national tarakihi catch is sold in domestic markets, and it is popular with consumers nationally. In addition to strong domestic demand for tarakihi, approximately 116 tonnes (2006 calendar year as an example) from all TAR stocks nationwide are exported annually, mostly to Australia. Export prices vary widely ($ 1.51/kg to $25.08/kg) according to product states (chilled or frozen as either fillets or whole fish). At the average export price of approximately $5.61/kg, the FOB value of the 2006 exports was $ 650 161.00. When compared to $7.04/kg for the traditionally high-value snapper, tarakihi is clearly a valuable fish to the commercial sector.

70 TAR 1 quota is owned by 79 individuals or entities. Quota ownership is concentrated, with the top three quota owners holding 72% of all available quota. The top 10 quota holders own 92% of all quota for TAR 1.

71 MFish looks forward to industry submissions providing more information on the value of tarakihi caught in TAR 1 to the commercial sector.

Proposed options

72 Under sections 20 and 21 of the Fisheries Act 1996, once the Minister has decided a TAC setting and considered the factors mentioned above, he must determine allowances and a TACC for TAR 1. The following options are proposed as representative of the options available to the Minister. The Minister is not, however, limited to the following options:

Option 1: TAC set at current level of 1958 tonnes:

- **Option 1a** reaffirms the status quo. It would leave all allowances at the current levels (as there is no increase to the TAC to assign between sectors). This option assumes that the current allowance and TACC settings enable people to adequately provide for their social, cultural, and economic wellbeing, and are not constraining any individual sector unnecessarily.

- **Option 1b** is open to the consideration that the current recreational and customary allowances are higher than necessary to provide for these sectors' wellbeing. This option proposes that 70 tonnes (the ten-year average commercial over-catch) be moved from these sectors and assigned to the TACC.

  This option might provide some economic benefit to the commercial sector through a probable reduction in deemed value payments (the potential extra commercial value based on average port price of $ 2.00/kg would be $ 140 000.00 – and recognising that port price is only a relative indicator of commercial value), but it would also see the recreational allowance drop below the currently used best estimate of recreational harvest. This option risks setting non-commercial allowances that do not provide adequately for customary and recreational interests to derive wellbeing from the fishery.

- **Option 1c** provides for the consideration that the current TACC is set too high with respect to recreational and customary allowances in the fishery. This option proposes to recognise the importance of this fishery to recreational and customary interests by moving 70 tonnes from the TACC and assigning these (in current proportions) to the recreational and customary sectors.

  This option could better recognise the importance of the TAR 1 fishery to the recreational and customary sectors, and could enable these sectors to better provide for their wellbeing. However, it would only do so at a cost to the commercial sector.

Option 2: TAC increased to 2028 tonnes

- **Option 2a** is based on the consideration that the current proportions are an appropriate division of the resource between the three sectors. This option would assign the extra 70 tonnes in the TAC between the three sectors according to the current proportions.

  This option would provide some additional allowance to all sectors in the same proportions as are currently used to manage access to the resource. The potential

benefits under this option are clear for the commercial sector, as it is most likely to take any increase allowed (the potential extra commercial value based on average port price of $ 2.00/kg would be $ 100 000.00). Any real benefit to the non-commercial sectors is difficult to determine.

- **Option 2b** assumes that the current recreational and customary allowances meet the needs of those sectors, and thus do not need to be increased. Under this option, the extra 70 tonnes in the TAC would all be used to increase the TACC to approximately 1470 tonnes.

  This option would benefit the commercial sector by increasing quotas and possibly reducing deemed value payments in the TAR 1 fishery (the potential extra commercial value based on average port price of $ 2.00/kg would be $ 140 000.00). This option is unlikely to disadvantage non-commercial sectors as it neither decreases their allowances nor provides for any additional commercial catch that has not been taken in recent years; rather, it recognises the average recent commercial catch levels already occurring in the fishery.

- **Option 2c** is based on the consideration that better overall social, cultural, and economic wellbeing could be realised in the fishery if recreational and customary fishers were awarded a greater share of the 70 tonne increase than current proportions allow. This option would see 35 tonnes split between the recreational and customary sectors, with 85% of this awarded to the recreational sector and 15% to the customary sector (according to the current ratio between the two non-commercial sectors). The remaining 35 tonnes would be used to increase the TACC to approximately 1433 tonnes (the potential extra commercial value based on average port price of $ 2.00/kg would be $ 70 000.00).

  This option would increase the non-commercial allowances by a greater amount than current proportions. While these additional allowances might not be utilised immediately (or at all), this option could help non-commercial fishers to better provide for their well-being. However, the proposed increases are small, and any improvements in the nature of the fishery could be difficult to detect. This option also benefits commercial fishers by creating more ACE and possibly reducing deemed value payments. However, it does not fully provide for the average commercial over-catch in the fishery during the last 10 years.

Option 3: TAC increased to 2098 tonnes

- **Option 3a** is based on the consideration that the current proportions are an appropriate division of the resource between the three sectors. This option would assign the extra 140 tonnes in the TAC between the three sectors according to the current proportions.

  This option would provide any benefit to all sectors in the same proportions as are currently used to manage access to the resource. The potential extra commercial value based on average port price of $ 2.00/kg would be $ 200 000.00.

- **Option 3b** assumes that the current recreational and customary allowances meet the needs of those sectors, and thus do not need to be increased. Under this option,

the extra 140 tonnes in the TAC would all be used to increase the TACC to approximately 1540 tonnes (the potential extra commercial value based on average port price of $ 2.00/kg would be $ 280 000.00).

This option would benefit the commercial sector by providing an additional (possibly short-term) utilisation opportunity. It would create additional ACE in the fishery and should reduce deemed value payments if catches are constrained to the TACC. This option could disadvantage non-commercial sectors if the increased commercial catches reduce the size and availability of tarakihi to these sectors.

- **Option 3c** assumes that better value could be realised in the fishery if recreational and customary fishers were awarded a greater share of the 140 tonne increase than current proportions allow. This option would see 70 tonnes split between the recreational and customary sectors, with 85% of this awarded to the recreational sector and 15% to the customary sector (according to the current ratio between the two non-commercial sectors). The remaining 70 tonnes would be used to increase the TACC to 1470 tonnes. This option benefits commercial fishers by providing for current commercial catches in the fishery, whereby creating more ACE and reducing deemed value payments if catches are limited to the TACC (the potential extra commercial value based on average port price of $ 2.00/kg would be $ 140 000.00).

  This option would provide a theoretical benefit to non-commercial sectors through increasing their allowances by a greater amount than current proportions suggest. However, there is no information to suggest that these additional allowances are likely to be utilised by non-commercial fishers. In practise, however, the quantity involved is small and unlikely to make a discernible difference in the short term.

Other Management Measures

Deemed Values

73 A review of the deemed value rates applicable in TAR 1 (among other fisheries) is currently occurring. From the history of over-catch in the fishery, it is apparent that the current deemed value rates have not deterred fishers from exceeding the TACC. MFish considers that deemed value rates should be set at levels that encourage fishers to obtain ACE to cover their catch, particularly in fisheries where most catch is targeted (such as TAR 1). See the deemed value paper in this volume for more information on changes to deemed value rates in this fishery.

Fisheries plans

74 The Ministry will be working with stakeholders over the next few years to develop fisheries plans for most fisheries. The plan development process will provide an open forum for stakeholders to put forward their respective objectives for the TAR 1 fishery with a view to obtaining best value.

Research

75 Two research projects pertaining directly to TAR 1 are scheduled to begin on October 1 2007, and these may provide more information for monitoring the stock. They are a CPUE analysis to monitor relative abundance (TAR2007/01) and a two-year shed

sampling analysis to determine length and age structure of commercial catch (TAR2007/02). The former is projected to be complete within one year and cost up to $25 000, while the latter is expected to be completed by 31 March 2010 and cost between $500 000 - $750 000 - results from the first year will be available in early 2009. These two projects could form the basis for a formal stock assessment in the near future.

76 Data on recreational catches of tarakihi within Quota Management Area 1 were collected for much of the 2004-05 fishing year. The analysis of those data to estimate recreational catch of tarakihi in that year should be available later in 2008.

Compliance

77 ACE for TAR 1 has often been unavailable to cover commercial catch. Compliance concerns can arise as in such cases fishers might have incentives to misreport (weights, area, and species) and to discard catch. In part, MFish relies on the incentives that quota provides for commercial fishers to fish the stock in a sustainable manner. More proactively, MFish will rely on monitoring and at-sea surveillance to detect dumping.

78 If the TACC is increased, the availability of ACE should improve, potentially reducing these problems. If the TACC is unchanged and deemed values are raised, the compliance problems might increase.

APPENDICES

Appendix 1

Statutory Considerations

79 **Section 8:** The purpose of the Fisheries Act 1996 is to provide for the utilisation of fisheries resources while ensuring sustainability. Utilisation is defined in the Act as including using and developing fisheries resources. An increase to the TAC, allowances and TACC could increase the value able to be extracted from this fishery, though potentially increasing risk to stock sustainability. The relative stability of past and recent commercial catches and indices of abundance derived from the fishery suggest that those risks are small, at least in the short to medium term. The options outlining an increased TAC, TACC and allowances recognise the development potential of the fishery (as evidenced by catch history and indices of stock abundance), and create the potential for people to provide better for their social, cultural, and economic wellbeing. There are likely to be economic benefits associated with reduced deemed value payments under all but the status quo option. In the case of option three, there would also be economic benefits inherent in a greater commercial catch and this option is likely to have some small positive economic effects on downstream industries such as processing and transport services.

80 **Section 13:** The TAC must be set to move the stock towards a level or maintain it at a level that is at or above the level that can produce MSY. That level has not been determined for TAR 1, as there is no formal stock assessment for TAR 1 to provide estimates of stock status with respect to B_{MSY}, nor estimates of the MSY. The 2006 Plenary does not comment on current stock size, but reports that current catches and the TACC for TAR 1 appear to be sustainable. However, since catches and catch per unit effort have been relatively stable over a long period, there is a reasonable probability that TAR 1 biomass is at or above the level that can produce the MSY. MFish considers that the options presented in this paper are consistent with section 13(2)(a) which requires the TAC to maintain the biomass of the stock at or above the level that can produce MSY. Based on relatively stable catches and CPUE data, MFish considers that the TAC options presented in this paper are likely to maintain TAR 1 at a level which can produce MSY and be sustainable, at least in the short term.

81 In considering the interdependence of stocks, a range of species is caught in the target trawl fishery for TAR 1. The three most significant commercial bycatch species reported in the TAR 1 target bottom trawl fishery in 2005–06 were snapper (9%), barracouta (7%), and hoki (3%) all of which are managed under the QMS with strong incentives to balance catches to the available ACE. There is no information to suggest that the interdependence of stocks should affect the level of the TAC set for TAR 1 at this time.

82 **Section 9(a)** provides that decision-makers must take into account the principle that associated or dependent species (non-harvested species) should be maintained above a level that ensures their long-term viability. There are no known interactions between the existing TAR 1 fishery and non-harvested species that are of concern or specific to

the fishery. The fishery does not dispose of any significant amount of fish waste or offal at sea, so the potential for interactions with seabirds is reduced. The National Plan of Action to Reduce the incidental By-Catch of Seabirds in New Zealand Fisheries (April 2004) document does not list tarakihi as one of the fisheries with seabird interactions that are of concern. The options proposed in this paper do not contemplate increased fishing beyond recent levels.

83 **Section 9(b)** provides that decision-makers must take into account the principle that the biological diversity of the aquatic environment should be maintained. MFish notes that an area off Spirits Bay in the far north is closed to trawling generally as a measure to avoid the adverse effects of fishing on the unique biodiversity there. There are no other known impacts on biodiversity that would be specific to the TAR 1 trawl fishery. Reporting of bycatch and protected species will allow for information to be collected to advance our knowledge of potential impacts.

84 **Section 9(c)** of the Act provides that decision-makers must take into account the principle that habitats of particular significance to fisheries management should be protected. No habitats of particular significance to fisheries management have been identified that might be affected by trawling for tarakihi in TAR.

85 **Section 5(a) and 5(b):** There is a wide range of international obligations relating to fishing (including sustainability and utilisation of fishstocks and maintaining biodiversity). MFish considers that the section 5 considerations arising from New Zealand's international obligations and the provisions of the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992 are adequately addressed by management proposals for TAR 1. MFish is not aware of any issues concerning those international obligations and the provisions of the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992 that will result from the proposed TACs, TACCs and allowances.

86 **Section 11 (1)(a)**: The Minister must take into account any affects of fishing on any stock and the aquatic environment in his decision. Tarakihi are taken in a target trawl fishery and in substantial quantities as a by-catch of target trawling for other inshore species including snapper. Tarakihi are also taken by various other commercial fishing methods. Bottom trawl gear affects the physical structure of the substrate and possibly the benthic community structure. Target trawling occurs throughout TAR 1, largely between the 100 and 200 metre depth contours. Due to ease of catch and proximity to processors, commercial fishers are likely to continue fishing in the same fishing grounds, and so effects are likely to be restricted to areas that have been trawled previously. Despite that, fishing might still have adverse effects. The extent of those effects is not known. Nevertheless, MFish considers that restricting any adverse effects of fishing to existing trawl areas is not inconsistent with the obligation to provide for the utilisation of fishery resources while ensuring sustainability. No other information about any effects of fishing on any stock or on the aquatic environment is considered relevant to the consideration of sustainability measures for TAR 1 at this time.

87 **Section 11 (1)(b):** The Minister must in his decision take into account any existing controls that apply to the stock. Apart from the existing TAC, TACC, and allowances, other important existing fisheries management controls for TAR 1 include the following:

- A minimum legal size of 25 cm fork length and a minimum net mesh size of 100 mm apply in TAR 1 for both commercial and non-commercial fishers;

- Tarakihi is one of the species that is subject to the recreational fishing combined finfish daily bag limit of 20 fish in the Auckland and Kermadec Fishery Management Areas; and

- Trawling is prohibited by fisheries regulation in large areas of the inshore zone within TAR 1. These areas include the waters in and adjacent to specified harbours, bays, and the inner Hauraki Gulf (see the Fisheries (Auckland and Kermadec Areas Commercial Fishing) Regulations 1986). On the west coast, trawling is excluded within 1 nm of the coast from Tirua Point northwards to Scott Point at the northern end of 90 Mile Beach. At harbour entrances and major river mouths on the west coast, trawling is also excluded from 'bubbles' of a 2 nm radius around the entrances/mouths. In the Bay of Plenty, trawling is excluded from an area within 2 nm of the coast from Homunga Bay to Cape Runaway. However, MFish considers that most of these areas are not prime habitat for tarakihi, which is generally found at depths of 100-200 metres.

88 **Section 11 (1)(c):** The Minister must in his decision take into account the natural variability of the stock. It is not known if tarakihi are prone to significant fluctuations in biomass. Although recruitment is not known to vary much, the 2006 Plenary report states that good recruitment was a likely reason for an increase in the CPUE index for the Bay of Plenty area in 2000-01.

89 **Section 11(2A)(b):** A fishery plan could provide another mechanism through which to explore the potential of the TAR 1 fishery and implement sustainability measures. MFish has recently stated that it intends all fish stocks to be incorporated into fisheries plans over the next five years. It is likely that TAR 1 would be included in one (or several) of the northern finfish plans. However, at present no such plan has been completed.

90 **Section 11(2A)(a) & (c)**: Before setting or varying any sustainability measure the Minister must take into account any conservation or fisheries service, or any decision not to require such services. MFish does not consider that existing or proposed services materially affect a TAC review for TAR 1. No decision has been made not to require a service that would be relevant to the TAR 1 fishery.

91 **Section 11(2)(a) & (c):** There are no provisions applicable to the coastal marine area known to exist in any policy statement or plan under the Resource Management Act 1991, or any management strategy or plan under the Conservation Act 1987, that are relevant to the setting or varying of any sustainability measure for TAR 1.

92 **Section 11(2)(c):** Relatively little target fishing for tarakihi is known to occur within the boundaries of the Hauraki Gulf Marine Park. Nevertheless, the proposals are considered to be consistent with the considerations set out in sections 7 & 8 of the Hauraki Gulf Marine Park Act 2000. Sections 7 and 8 of the Hauraki Gulf Marine Park Act 2000 relate to the consideration of the social, economic, cultural and recreational wellbeing of the people of the Hauraki Gulf, and of New Zealand more generally. The proposed TAC options seek to provide for levels of utilisation that will

enable people to derive social, economic cultural and recreational wellbeing from the fishery to varying degrees (depending on the option) while ensuring the sustainability of the broader stock. Those considerations are discussed in more detail in the body of the paper.

93 **Section 21(1)(a & b) and (4)(I & ii) and (5):** The nature of the fishery and the interests of the respective fishing sectors have been considered in setting the TAC, TACC, and allowances for recreational and customary interests and all other mortality to the stock caused by fishing. One mātaitai reserve exists in the QMA at Raukokere (NABIS May 2007), however, MFish considers that this reserve has little if any effect on the options proposed for TAR 1. Three areas are subject to section 186A closures under the customary fishing provisions of the Act, at Ohiwa Harbour (Green-lipped mussels closure), Mount Maunganui (Green-lipped mussels closure), and Kaipara Harbour (Scallops closure). MFish considers those closures to shellfish harvesting no effect on the options proposed for TAR 1. No restrictions have been placed on fishing in any area within the QMA for recreational interests using the provisions in s 311.

94 **Section 10:** The information principles of the Act require that decisions be based on the best available information, taking into account any uncertainty in that information, and applying caution when information is uncertain, unreliable, or inadequate. The Act also requires that the absence or uncertainty of information should not be used as a reason to postpone, or fail to take, any measure to achieve the purpose of the Act. MFish considers that the information used to support the TAR 1 proposals is the best currently available.

95 Estimates of the current biomass and the level that will produce MSY for TAR 1 are not currently available. The proposed management options are based largely on information derived from:

- recent and current commercial catches
- CPUE indices from commercial reporting
- estimates of recreational catch from the 1996 and 2000/01 recreational harvest surveys.

96 CPUE indices provide an indicator of relative abundance, but are inadequate to determine absolute stock size. Relatively stable CPUE indices suggest that the underlying stock biomass has not changed under recent and current catch levels, but actual stock size remains unknown at this time.

97 In the absence of a stock assessment, the catch history and CPUE indices provide the best available information on which to base considerations of opportunities and risks to TAR 1. However, the absence of estimates of biomass and MSY suggest caution when setting the TAC.

98 Two research projects pertaining directly to TAR 1 are scheduled to begin on October 1 2007, and these may provide more information for monitoring the stock in the near future. They are a CPUE analysis to monitor relative abundance (TAR2007/10) and a two-year shed sampling analysis to determine length and age structure of commercial catch (TAR2007/02). These two projects could form the basis for a formal stock assessment in the near future.

99 In the body of the paper, MFish has also endeavoured to set out the relevant uncertainty in, and inadequacy, of that information so that the appropriate caution can be applied in assessing the proposed management options. All options presented in this paper are relatively cautious, which reflects the nature of available information. Section 10 requires caution be exercise when faced with uncertain, unreliable or inadequate information. In the absence of better information, MFish does not consider options for greater increases to the TAC are appropriate in the circumstances.

TARAKIHI (TAR 1) – SUMMARY OF SUBMISSIONS

1 MFish received submission on the Tarakihi (TAR 1) TAC Review IPP from:

- Aotearoa Fisheries Limited (deemed value)
- Area 2 Inshore Finfish Management Company Ltd. (deemed value)
- Environment and Conservation Organisations of NZ Inc.
- New Zealand Big Game Fishing Council Inc.
- New Zealand Recreational Fishing Council
- New Zealand Seafood Industry Council Ltd (SeaFIC).
- New Zealand Seafood Industry Council Ltd. (deemed value)
- Nga Hapu o Te Uru
- Non-commercial Fishers (New Zealand Big Game Fishing Council and option4) (deemed value)
- Sanford Limited
- Seafood Industry Council Ltd.
- Te Runanga O Te Rarawa
- The Northern Fisheries Management Stakeholder Company Limited

Aotearoa Fisheries Limited

2 Aotearoa Fisheries Limited does not support the "aggressive increase" in deemed values for TAR stocks. They argue that a moderate increase in the differential rates is appropriate.

Area 2 Inshore Finfish Management Company Limited

3 The submission by Area 2 Inshore Finfish Management Company Limited principally addresses deemed value issues, including deemed value for TAR 1. These will be addressed in the FAP on deemed values.

Environment and Conservation Organisations of Aotearoa New Zealand

4 The Environment and Conservation Organisations of Aotearoa New Zealand (ECO) do not support any changes to the TACC in TAR 1. ECO cites a range of factors for this stance, including: a lack of information about the status of TAR 1; impending research; a strong recreational interest in the fishery with an allowance of 470 tonnes; concerns regarding recent and potentially continued overcatch in TAR 1, and whether

or not overcatch should be used to justify an increase to the TACC, and; an potential increase in trawling in the 100-200 metre depth zone if the TACC were increased. ECO states that the development of a fishery plan could be the most useful means of discussing competing interests in the fishery. ECO expresses a desire to for more research to better assess stock status in TAR 1.

New Zealand Big Game Fishing Council

5 The New Zealand Big Game Fishing Council's (NZBGFC) submission on TAR 1 is endorsed by Option 4.

6 NZBGFC object to the lack provision for tangata whenua to have meaningful input and participation under s 12 of the Act. It notes that it is not aware of any effort by the Minister, through MFish, to initiate input and participation into the formulation of the TAR 1 proposal or the subsequent consultation process. It strongly recommends that the Crown avoid creating new grievances by providing for the non-commercial interests of tangata whenua in future processes.

7 NZBGFC advises that recreational fishing gear and technology has improved significantly since the time of the most recent survey of recreational catch in TAR 1, and that many more fishers utilise depth sounders and GPS than previously. It contrasts this with reports from members of the NZBGFC's Bay of Plenty zone and the Northland Non-commercial Fishing Forum which indicate tarakihi is becoming harder to catch.

8 NZBGFC argues that commercial quotas should only be increased on the basis of quantifiable proof that a stock has rebuilt and they question the justification for increasing commercial catch in TAR 1. It also raises concerns about the reliability of CPUE data in this fishery. It quotes Larry Paul as concluding that tarakihi is vulnerable to overfishing and states that the Minister should be reminded that he must act with caution where information is uncertain, unreliable or inadequate.

9 NZBGFC express concerns that chronic overfishing (or "deeming") in TAR 1 is being "rewarded" by options proposing increases to the TAC to recognise these catch levels. They argue that most tarakihi catch is targeted, and commercial fishers could choose to balance their catch with ACE, but they choose not to. It also states that "deemed fish" are never replaced or properly accounted for, and argue that this overcatch should be subtracted from fishers' ACE the following fishing year. It notes that increasing the TAC to recognise this catch provides the wrong incentive to commercial fishers. The NZBGFC council supports increasing the deemed values in TAR 1 regardless of whether or not the TAC is increased.

10 In its submission, the NZBGFC describes AMPs in TAR 2 and TAR 3. It points to a number of alleged problems with the methodologies of these programs, and questions the value of the data arising from them. It also notes that commercial fishers in TAR 3 have had difficulty catching the TACC, and that declines in CPUE are concerning.

11 NZBGFC express the view that the TAR 1 proposal appears to be inconsistent with objective-based fisheries management, fisheries plans and fisheries standards. It argues that MFish should describe how this proposal fits with these processes.

12 NZBGFC argues that this review of the TAC in TAR 1 is premature given the pending fisheries plan process and research projects planned for this fishery. It also states that the TAR 1 management area should be split into east and west coast QMAs to fit better with the pending finfish plans.

13 NZBGFC feels that the current allowance for amateur fishing is seems adequate. It argues that given uncertainty surrounding the status of the TAR 1 stock and the concerns of non-commercial fishers, the Minister should maintain the current allowances to ensure the TAR 1 stock is managed above the level that can support the MSY. Thus, it expresses its support for option 1a.

14 NZBGFC are concerned about MFish's policy for setting customary allowances, noting the significantly different approach taken to determine this allowance in SCH 1 compared to TAR 1. NZBGFC notes that MFish may want to increase the customary allowance in TAR 1 once it has provided for the input and participation of tangata whenua.

New Zealand Recreational Fishing Council

15 The New Zealand Recreational Fishing Council (NZRFC) supports the submission made by the New Zealand Big Game Fishing Council (NZBGFC) (this volume). NZRFC concurs with the NZBGFC that the TAR 1 QMA is too large, and should be split into east and west coast areas, with catch limits in each set independently of each other. It contends that TAR 1 is a "significantly important" fishery for the recreational sector.

16 NZRFC contends that with the exception of "chronic over fishing", there is no information within the IPP to support an increase to the TAC in TAR 1. Given this and "the Minister having to take a precautionary approach when there is a deficiency in information to support a TACC increase" they argue that the status quo must remain.

17 NZRFC also submits that a formal stock assessment could take place in the near future and that Vessel Monitoring Systems are deployed on all vessels holding ACE in fisheries of importance to recreational fishers, such as TAR 1.

Nga Hapu o Te Uru

18 Nga Hapu o Te Uru provided two submissions. A hand written submission was of a general nature and not specific to the TAR 1 IPP. The submission sought that the Ministry abide with its Memorandum of Understanding with Nga Hapu o Te Uru and ensure Nga Hapu o Te Uru are consulted and have the opportunity to provide into the proposals.

19 The second submission, dated 24 July, stated a grave concern at the over-fishing by the commercial sector and considered this to be a breach of the objectives of the QMS and did not consider the payment of a deemed values to the Ministry as an appropriate compensatory measure.

20 Nga Hapu o Te Uru sought that the TAC for TAR 1 remains unchanged until such time as better stock information was available.

Non-commercial Fishers (New Zealand Big Game Fishing Council and Option4)

21 The submission by the Non-commercial Fishers (New Zealand Big Game Fishing Council and Option4) was principally in response to the IPP on deemed value and will be addressed in the FAP to that paper.

22 The submission did discuss tarakihi and noted that TAR 1 is being considered for a TAC increase. The submitter is of the opinion that the deemed value rates should be reviewed to ensure the TAC, irrespective of whether it is increased or not, is adequately protected by the deemed value rate. The submitter supports an annual deemed value of $3.00 per kilogram and differential rates at 10% catch in excess of ACE.

Northern Fisheries Management Stakeholder Company:

23 The Northern Fisheries Management Stakeholder Company (Northern Fisheries) notes that it represents the interests of quota owners in FMAs 1, 8 and 9, and is mandated to act on behalf of its shareholders on local, regional and national issues, including tarakihi.

24 Northern Fisheries reports that it is a shareholder of SeaFIC and supports their comments (this volume), especially in terms of their views on the "restricted range of options" and proportional allocation.

25 Northern Fisheries notes that it has previously proposed TACC increases under an AMP framework, and is disappointed that these were declined despite support from the Fisheries Assessment Working Group, quota share owners and conditional support from the Minister of Fisheries. It further expresses disappointment that the revised AMP proposal was not presented as an option in the IPP and consulted on. Northern Fisheries states that it was under the impression that it would be presented in the IPP, though not necessarily as an AMP proposal.

26 Northern Fisheries does not support any of the options proposed in the IPP. It supports an alternative fourth option in which the TACC would increase to 2000 tonnes and in which they would agree to obtain contractual agreements from other TAR 1 quota owners to ensure proposed management tools are met under an industry-led fish plan or AMP. Northern Fisheries notes that its members collectively hold 91% of TAR 1 quota, which provides significant support for management initiatives proposed under any AMP or industry-led fishery plan. It highlights the 2007 ORH 1 IPP, which includes an option for the existing AMP to be replaced by an industry-led fish plan, and asks why this cannot be done in TAR 1.

27 Northern Fisheries states that previously, the only "outstanding issue" regarding the AMP was the fact the fishery was shared with other sectors, claiming that "biologically" no reason existed to prevent a TACC increase under an AMP. It contends that previous indications from the Minister of Fisheries implied that if additional catch were to be taken outside statistical areas 009 and 010 or on the West Coast, then a TACC increase under an AMP would be viable. Northern Fisheries states it continued support for this option, and its desire to discuss how it could be achieved to the Minister's satisfaction.

28 Northern Fisheries confirm that if the TACC were to be increased to 2000 tonnes, they would agree to undertake annual performance reviews, standardised CPUE analysis, shed sampling and various contractual measures with quota owners.

29 Northern Fisheries raises concerns about the costs of research proposed in TAR 1. It claims that the same research could be carried out for a substantially reduced cost through an industry-led fish plan. It also notes that many of its quota owners are not aware of this planned research, and key licensed fish receivers have not been contacted regarding the use of their premises for any research.

30 Northern Fisheries also express concerns about proposed deemed value changes in TAR 1. While supportive of the proposed increase to the deemed value, it is concerned that inadequate consideration has been given to the risk that catches will decrease if deemed values are increased as proposed.

Sanford Limited

31 The submission by Sanford Limited addresses a number of broader policy issues prior to addressing specific stock issues.

General

32 Sanford is concerned at the Ministry's reliance and acceptance of anecdotal information. In particular Sanford considers that the need to rely on this information is due to a failure of the Ministry to gather reliable quantitative data. In particular, Sanford raises a concern over the statement on page 42 of the IPP where it states that the Ministry finds anecdotal information on recreational and customary fishing useful. Sanford concludes by stating that to ensure sustainable shared fisheries, accurate and robust recreational and customary catch and effort data, at both temporal and spatial levels, is a high priority."

33 Sanford reiterated its concerns to the proposed section 10 amendment.

34 Sanford comments that the IPP's reference to the kahawai judgement is flawed in that the case is currently before the court.

35 Sanford agrees with the statement in paragraph 85 of the IPP relating to the management of localised depletion or localised sustainability concerns. Sanford stresses the need to manage stocks at the QMA level and the effects of any sub-stock management proposal needs to be considered carefully regarding its potential impact on the QMS.

36 Sanford stated that it is a strong advocate for proportionally managed shared fisheries as this provides incentives for all sectors to take responsibility for their actions, and that all sectors must work together.

37 Sanford notes that the IPP for TAR 1 and SCH 1 proposed both proportional and non-proportional allocation or re-allocation options. Sanford does not support this approach and is of the opinion that there is no comprehensive cost benefit analysis that could support allocation of these stocks on anything but a proportional basis.

38 Sanford notes that the commercial sector's rights should not be undermined by increasing population pressure. In particular, Sanford comment that should the recreational sector demand outstrip its allocation, then management measures should be implemented that enable the existing allocation to be managed more appropriately. Sanford stresses the need for improved monitoring.

39 Sanford notes that paragraph 120 refers to determining value. Sanford strongly opposes any "value" assessment.

40 Sanford comments about the reference in paragraph 123 of the IPP on the impacts of over-fishing. Sanford states that perceived sustainability concerns are, in the first instance, attributed to the commercial sector. Sanford is of the opinion that this is simply because the commercial catch is quantifiable.

Comments Specific to the TAR 1 IPP

41 Sanford owns 34.4% of the TAR 1 quota shares, and is a shareholder of The Northern Fisheries Management Stakeholder Company Limited.

42 Sanford does not support any of the three options presented.

43 Sanford is disappointed that a proposed TACC to 2000 tonnes and associated AMP framework was not included in the IPP.

44 Sanford supports the AMP proposal presented to MFish by The Northern Fisheries Management Stakeholder Company Limited, however Sanford notes that the AMP could be converted into a industry-led fisheries plan.

45 Sanford stated that there is no biological reason why an increase in the TACC to 2000 tonnes managed through an industry-led fisheries plan should not occur. The submission suggests the Fisheries Assessment Working group had previously come to this conclusion.

46 In supporting the AMP, Sanford commented that previously the only outstanding issue was the shared fishery component, and suggests that this could easily be addressed by an agreed catch spreading arrangement. The submission notes that the Minister had previously indicated that if additional catches were provided for under an AMP and that they came from statistical areas 9 and 10, then a TACC increase was viable. Sanford supports this proposal.

47 The submission also provides detail of the monitoring programme under their proposed AMP.

48 In terms of the Ministry's proposed TAR 1 shed sampling programme, Sanford notes that significant cost savings would occur if it was undertaken under an AMP arrangement. Sanford notes that the two-year programme is likely to cost between $500,000 and $750,000. Sanford believes, if undertaken under the AMP programme, the costs would be halved, and states that before it supports the Ministry's proposal, it would need to be convinced that the cost was justifiable.

49 Sanford also notes that the IPP proposes a deemed value review, and inadequate consideration has been given to the likely impact of this at reducing catches. Sanford supports that deemed value increase.

50 **Seafood Industry Council** - Review of deemed value rates for selected fish stocks – 30 July 2007

51 This submission is largely in response to the deemed value IPP. This submission states a clear connection between the level of the TACC and deemed values. The submission clearly states a preference that where fishers are using deemed values; this is in some situations because the TACC is set too low.

52 In relation to TAR 1, the submission notes that it has been over-caught by a small amount in each of the last 10 years. This submission suggests the recent over-fishing is the result of one company that has subsequently left the fishing.

Seafood Industry Council:

53 The Seafood Industry Council (SeaFIC) believes that additional utilisation opportunities exist in TAR 1, including options beyond those specified in the IPP. It argues that the options proposed in the IPP are "extremely conservative" and are not representative of the full range of options that could achieve the purpose of the Act. SeaFIC contends that available information (including a long, stable catch history, stable or increasing CPUE indices, and text in several recent in Plenary reports judging catches in TAR 1 to be sustainable) suggests that TAR 1 is at or above B_{MSY} and that further utilisation opportunities exist. It argues that compared with the quality of information used to inform some sustainability decisions, the information in TAR 1 is "relatively certain and consistent". It further argues that MFish's advice to set the TAC under s 13(2)(a) and the absence of any information in the IPP to suggest the stock may be below B_{MSY} lend weight to the view that the stock is above B_{MSY}.

54 SeaFIC therefore believes that the only reason that MFish proposes small increases to the TAC is due to uncertainty surrounding the non-commercial catch. SeaFIC argues that this essentially means that utilisation by the commercial sector is constrained by a failure to gather information on non-commercial fishing. It notes that in this environment, it appears that any proposal put forward by industry would be declined on the basis of inadequate information on non-commercial catch. SeaFIC argues that this situation is unacceptable, especially given the apparently large non-commercial catch in TAR 1. It notes that an absence of information on non-commercial catch will constrain the fishery planning process.

55 SeaFIC states that frustration experienced by the commercial sector in this fishery is exacerbated by the failure to progress AMPs, both in 2007 and in previous years. It describes as "extraordinary" MFish's decision not to include Northern Fisheries' AMP proposal as an option in the IPP. SeaFIC recommends that the Minister be presented with a full range of options for this fishery, including the AMP proposal, and that this option should not be disadvantaged in the Minister's deliberations by the fact that MFish did not consult on it.

56 SeaFIC also notes that option 1 does not represent the status quo, as the proposed increase in the deemed value for TAR 1 would reduce catches below current levels.

57 SeaFIC raises concerns about the statutory considerations appearing in the IPP, especially with regards to the interpretation of s 21. It argues that the Minister must make various allowances *in* setting the TACC, not *before* setting the TACC. It also questions the use of the term "persons within in each sector" and advocates that in the interests of consistency, all authors writing IPPs should rely on the interpretations provided at the front of the IPP volume.

58 Finally, SeaFIC argues that while ideally allowances should be allocated proportionally between sectors, if only small increases are proposed in TAR 1, it is reasonable to allocate all of this increase to the TACC. It argues this as it believes both commercial utilisation and the TAC are "artificially constrained" by a lack of information on non-commercial catch, and that until better information exists, there is no justification for increasing non-commercial allowances. SeaFIC also state that if an increase is allocated to the TACC, it will increase the proportion of the fishery subject to reporting and effective monitoring.

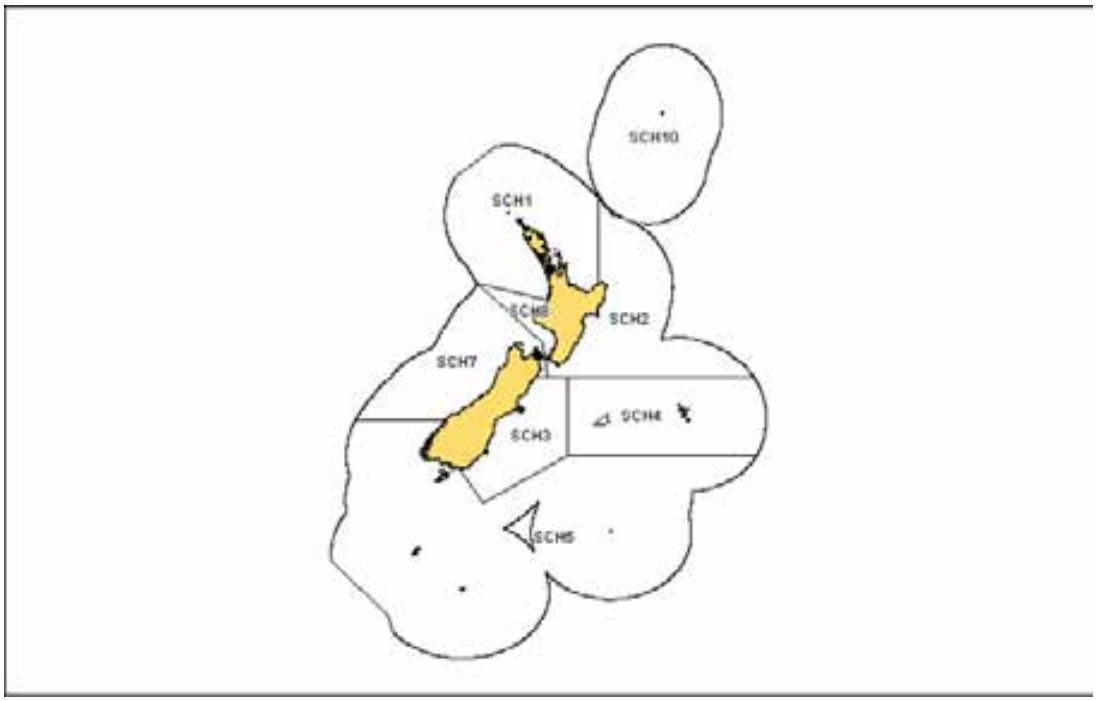
59 SeaFIC notes that its submission is designed to complement that of Northern Fisheries.

Te Runanga o Te Rarawa

60 The submission by Te Runanga o Te Rarawa recommends that the TAC for TAR 1 not be changed. Te Runanga o Te Rarawa note that they were not able to make an informed decision due to a lack of information regarding sustainable yields and that a stock assessment be undertaken before any increase in the TAC.

SCHOOL SHARK (SCH 1) - INITIAL POSITION PAPER

Figure 1: Map showing Quota Management Areas for School Shark (SCH) stocks



Executive Summary

1 The SCH 1 TACC has been set at 668 tonnes since 1994/95. Commercial Stakeholder Organisations (CSOs) have applied for this TACC to be increased under an adaptive management program (AMP) a number of times in recent years, most recently in March 2007. After confirmation that MFish was not accepting new AMP applications during the current financial year, the Northern Fisheries Management Stakeholder Company Ltd (Northern Fisheries) requested that a TACC increase be considered in the October 2007 sustainability round.

2 A TAC has not previously been set for SCH 1. MFish proposes to set a TAC for SCH 1 at a level that either: reflects current commercial catch limits and estimates of other catches (status quo); or is above the current limits to reflect recent and past catches. In setting the TAC under section 13(2)(a) of the Fisheries Act 1996 (the Act), the Minister must seek to maintain the stock at or above a level that can produce the maximum sustainable yield (MSY).

3 It is not known whether recent catch levels, or the current TACC, or the options presented in this paper are sustainable or if they are at levels that will allow the stocks to move towards a size that will support the MSY. However, catches and TACCs of SCH 1 and other SCH stocks have increased since 1986/87 and there are no indications that current catches are not sustainable in the short-term. Any increase in the TAC will depend on the Minister's consideration of the risk of the stock falling below a level that can produce the MSY, and the relative social, economic and cultural effects of the increase.

4 Commercial landings of SCH 1 were consistently above the TACC from 1995/96 to 2004/05 (inclusive). Landings fell below the TACC in 2005/06; advice from CSOs and MFish data suggest that this fall in landings was because a reduction in the SNA 8 TACC in 2005/06 led to less school shark being taken as bycatch in the snapper fishery. The TACC at its current level may be constraining fishing for SCH 1 and for the stocks with which it is taken as a bycatch, such as hāpuku, rig and red gurnard around the north of the North Island.

5 The inherent sustainability risks associated with fishing for school shark need to be considered carefully in this review. Estimates of school shark biomass are unavailable. School shark is a species that is late maturing, slow growing with low fecundity and productivity and it is predicted to have a slow rate of recovery from over fishing (rebound potential). The rebound potential of school shark from fishing pressure has been assessed as amongst the lowest for shark species. School shark around New Zealand is considered to be a single biological stock so any changes in catch limits for one stock area are likely to affect the stock as a whole. Stock boundaries (based on QMAs) are essentially in place to prevent localised depletion.

6 Other risks of fishing for school shark include the impacts on Maui's dolphin and pregnant female school shark in the Kaipara Harbour. School shark fisheries are found within the range of Maui's dolphin on the west coast of the North Island. Increasing the SCH 1 TAC could increase the risk of Maui's dolphin interaction with fishing gear. Pregnant female school shark gather in the Kaipara Harbour to pup. While catches of school shark in the harbour are low, removing pregnant females could be a risk to sustainability given the biological characteristics of the species. However, it is not known if fishing pressure on school shark in the Kaipara Harbour would increase if the TAC was increased.

7 Sharks, including school shark, are an important taonga species and anecdotal information suggests that school shark formed part of a significant traditional customary fishery. School shark is of moderate importance to recreational fishers and to commercial fishers.

8 MFish proposes to set allowances for customary and recreational catches based on estimates of current catches by recreational fishers. MFish proposes to set the TACC based on either the existing TACC, or recent commercial catch levels.

9 A review of the SCH 1 deemed value is included in the *Review of the Deemed Value Rates for the October 2007 Sustainability Round* section of this document.

Summary of Options

10 Option 1 proposes that the TAC for SCH 1 be set at 866 tonnes. This option represents the status quo, providing for the existing TACC of 668 tonnes and estimates of current customary and recreational catches and other fishing-related mortality.

11 Option 2 proposes that the TAC for SCH 1 be set at 893 tonnes, an increase of 27 tonnes above option 1. A TAC of 893 tonnes reflects the average reported commercial landings in the past five years, plus allowances for customary and recreational fishing and other fishing-related mortality. Within this option the Minister may choose to allocate the increase proportionally to all sectors or non-proportionally in favour of one sector.

12 Option 3 proposes that the TAC for SCH 1 be set at 944 tonnes, an increase of 78 tonnes above option 1. A TAC of 944 tonnes reflects the average reported commercial landings in the past ten years, plus allowances for customary and recreational fishing and other fishing-related mortality. Within this option the Minister may choose to allocate the increase proportionally to all sectors or non-proportionally in favour of one sector.

13 For reasons discussed in detail further on in this paper, MFish considers that where the TAC is allocated non-proportionally, any increase should be allocated to the commercial sector.

14 The TAC options and allocation options are outlined in Table 1, below.

Table 1: SCH 1 management options (tonnes)

Option	Allowance Approach	TAC	Recreational Allowance	Customary Allowance	Other fishing related mortality	TACC
Option 1. TAC set at current limits	Not applicable	866	66	99	33	668
Option 2. TAC increase of 25 tonnes	Proportional	893	68	102	34	689
	Non-proportional	893	66	99	35	693
Option 3. TAC increase of 74 tonnes	Proportional	944	72	108	36	728
	Non-proportional	944	66	99	37	742

Rationale for Management Options

Request for TAC review

15 Commercial Stakeholder Organisations (CSOs) have applied for the SCH 1 TACC to be increased under an adaptive management program (AMP) a number of times in recent years, most recently in March 2007. After confirmation that MFish was not accepting new AMP applications during the current financial year, Northern Fisheries requested that a TACC increase be considered in the October 2007 sustainability round.

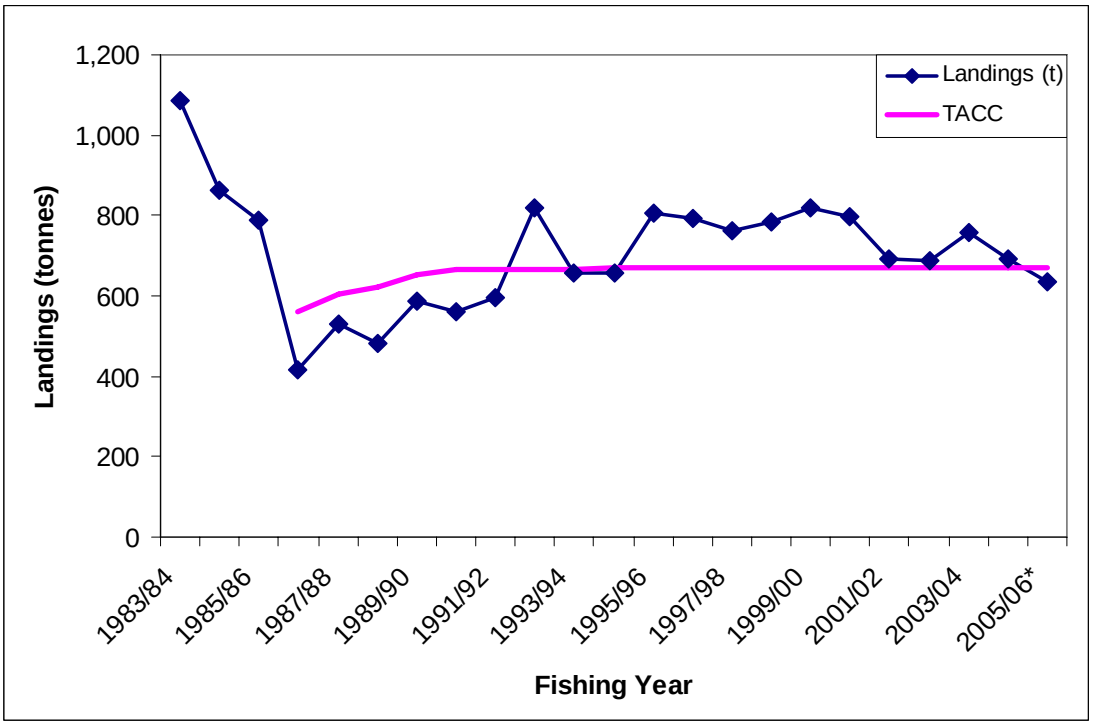
Current and recent commercial catches

16 MFish data[54] suggests that approximately 60% of SCH 1 was taken as a bycatch and 40% as a target stock in the last five fishing years. Of the target fishery, 64% has been taken by set-net and 34% by bottom long-line. Where school shark was taken as a bycatch, 45% was taken by bottom trawl (mainly while targeting tarakihi with some snapper and trevally), 32% by bottom long-line (mainly while targeting hāpuku with some snapper) and 19% by set-net (mainly while targeting rig, with some red gurnard and tarakihi). 30% of the total SCH 1 catch has been taken on the east coast with 70% on the west coast.

17 Commercial landings of SCH 1 have exceeded the TACC in all fishing years since 1994/95 except for 2005/06 (see Figure 2). The extent of overcatch has reduced since deemed values were introduced.

[54] These data are generated from catch effort reports (for fishing years 2001/02 to 2005/06) and will not include all catches of SCH 1 where taken as a bycatch. They therefore probably over-estimate the amount of SCH 1 which is taken as a target species. However, they are useful for indicative purposes.

Figure 2: SCH1 landings and TACC 1983/84 – 2005/06



18 The commercial sector has reported difficulties in securing sufficient ACE to cover all of their school shark catch. Deemed value payments have averaged $101,000 in the past five fishing years. Analysis of deemed value payments since 2003 shows that almost all fishers and fishing companies who made substantial deemed value payments for SCH 1 also held substantial amounts of ACE for SCH 1. Therefore, it does not appear that the overcatch is due to people deliberately fishing for SCH 1 without holding ACE. Rather, the overcatch appears to be mainly caught by those who have substantial ACE holdings, but not enough to cover their SCH 1 catch. Any increase in the TACC would increase the amount of ACE available.

19 Advice from CSOs suggests that the fall in landings in 2005/06 was because the SNA 8 TACC reduction in 2005/06 led to less school shark being taken as bycatch in the snapper fishery. MFish data[55] partially support this by showing that catches of SCH 1 when snapper was the target species fell from approximately 62 tonnes in 2004/05 to 35 tonnes in 2005/06, a drop of 27 tonnes. The fall in total SCH 1 landings between 2004/05 and 2005/06 was 60 tonnes.

20 Other school shark stocks in the South Island and the south-west coast of the North Island have had TACC increases of 5% (SCH 5) and 20% (SCH 3, 7 & 8) under adaptive management programmes[56]. As school shark around New Zealand is considered to be a single biological stock, the increases to the TACCs of school shark

[55] These data are generated from catch effort reports and will not include all catches of SCH 1 where taken as a bycatch. However, they are useful for indicative purposes.

[56] Adaptive Management Programmes are programmes under which commercial catch limits are temporarily increased in return for commercial fishers recording far more detailed information on things like fishing locations, fishing effort and size of fish caught. This information is then used to develop understanding of the status and biology of the stock concerned.

stocks are likely to impact both on abundance within the QMA where the TACC was increased and the wider stock.

Target fisheries

21 Discussions with commercial stakeholders suggest that the current TACC for SCH 1 is constraining their target SCH 1 fishery as they often only have sufficient ACE to cover bycatch. Increasing the TACC could therefore be expected to increase target fisheries for school shark using set nets and bottom long-lines.

22 There is a possibility that increasing the TACC may also increase commercial catches of some trawl fisheries with which SCH 1 is taken as a bycatch such as hāpuku (HPB 1), rig (SPO 1) and red gurnard (GUR 1).

23 Commercial landings of HPB 1, GUR 1 and SPO 1 have consistently been below their TACCs in recent years. Therefore if catches of HPB 1, GUR 1 and/or SPO 1 increased due to a SCH 1 TACC increase the increased catches may not exceed the TACCs of these stocks.

24 Commercial landings of other species with which SCH 1 has been taken as bycatch, such as TAR 1, SNA 1 and SNA 8, have been at or above their TACC levels. It is therefore considered that an increase to the SCH 1 TACC is unlikely to lead to increased catches of these stocks.

25 MFish considers that this discussion illustrates possible impacts on other commercially important species of increasing the SCH 1 TACC. However, it is not possible to say for certain what impact such an increase would have on the catch levels of these stocks.

Non-commercial catches

26 Compared to the commercial fishery, estimates of non-commercial catches are small. Nevertheless, recreational and customary fishers do target and catch school shark and the species is reportedly of particular value to Maori. If increasing the TACC increased commercial catch of school shark, there is a risk that this could cause a reduction in the size and abundance of school shark available to recreational and customary fishers, possibly reducing the value that these sectors obtain from the fishery.

Status of the SCH 1 stock

27 Historically, landings of school shark rose steeply from the late 1970s until 1983. Catches decreased by about 50% from 1986 onwards because of reduced catch limits within the QMS. TACs were originally set at half the 1983 catch because of apparently declining catch rates and concern about the low productivity of the species. As Figure 2 shows, the SCH 1 TACC has increased in various steps from 560 tonnes to 668 tonnes since 1986, and catches have also increased since 1986.

28 No estimates of current absolute biomass are available for any SCH stock. Estimates of relative abundance are based on CPUE analyses have been undertaken for target and bycatch fisheries around the country, using catches up to and including the

2001/02 fishing year[57]. No trends were found that could be interpreted as a change in abundance for the New Zealand stock as a whole. However, CPUE indices for school shark are characterised by high uncertainty.

29 Research is currently underway to determine more recent trends in relative abundance for SCH 1 based on catch and effort data. These results will be available later in 2007, but not in time to inform any decision this year.

30 MFish notes that trends in targeted CPUE time series can be unreliable for school shark populations because the fishery is unlikely to sample the population randomly due to the sparse, patchy, and variable distribution of school shark, a small variable target fishery, and a widespread bycatch fishery[58]. It has been recommended that because of the mobility of school sharks, New Zealand wide trends in landings or CPUE should take precedence over regional trends[4].

31 Nevertheless, CPUE analyses have produced indices that are flat or declining around the North Island (including SCH 1) and flat or increasing around the South Island. Although abundance of South Island fish stocks appeared to have increased, there is a view that this pattern may be due to a southward displacement of North Island fish.

32 The 2007 School Shark Plenary[59] reported that school shark catches and actual TACCs have steadily increased since 1986–87 and that CPUE indices are characterised by high uncertainty. However, there are no indications that current catches are not sustainable in the short-term. However, it is not known whether recent catch levels or the current TACCs are sustainable in the long-term, or if they are at levels that will allow the stocks to move towards a size that will support the maximum sustainable yield.

School shark biology

33 Tagged fish movements suggest that school shark around New Zealand is a single biological stock. However, there are no definitive data on which to base changes to the stock boundaries currently used for management purposes. The majority of recaptures have been within the same QMA, but some large scale, and even trans-Tasman, movements have been reported. Stock boundaries based on the current QMAs, are essentially in place to prevent localised depletion.

34 School shark is a relatively slow growing, late maturing species with low fecundity. Age at maturity has been estimated at 12-17 years for males and 13-15 years for females. Breeding occurs once either every two or three years. These factors suggest that the stock is less productive and hence more susceptible to overfishing than many other fisheries, including most target fisheries of which SCH 1 is a bycatch.

35 A study of the productivity of shark stocks and their ability to recover from fishing pressure found that the "rebound ability" (resilience) of school shark was one of the

[57] Ayers, D, Paul, L.J., Sanders, B.M. 2004. Estimation of catch per unit effort analyses for school shark (*Galeorhinus galeus*) from bycatch and target fisheries in New Zealand, 1989-90 to 2001-02. .*New Zealand Fisheries Assessment Report 2006/26.* 121 p.

[58] Bradford, E. (2001). Standardised catch rate indices for New Zealand school shark, *Galeorhinus galeus,* in New Zealand, 1989–90 to 1998–99. *New Zealand Fisheries Assessment Report 2001/33.* 75 p.

[59] This document summarises the conclusions and recommendations of scientists on the Inshore Working Group relating to school shark fisheries in New Zealand

lowest among shark species and that any recovery of school shark from fishing pressure would be slow. Shark species have a strong relationship between population size and recruitment, meaning that if the population declines, recruitment is likely to become progressively less successful.

36 School shark as a species is particularly vulnerable to over-fishing if the older, larger and more productive females are removed from the stock. Modelling work undertaken on the Australian school shark population indicates that it is important to protect the older, larger female school sharks during their years of greatest productivity.

37 These biological characteristics support setting a cautious TAC that would have a higher probability of ensuring sustainability.

Other impacts of fishing for SCH 1

38 MFish data suggests that in the past five fishing years around 40% of the SCH 1 caught has been taken within the probable range of Maui's dolphin. This includes 36% of SCH 1 taken by trawl and 17% of SCH 1 taken by set-net. Increasing the SCH 1 TAC could increase risk of Maui's dolphin interaction with fishing gear. In particular, CSOs have reported that the current TACC is constraining commercial target set-netting for SCH 1. Increasing the TACC could result in an increasing in targeting SCH 1 by set-net, a method considered to be a significant threat to Maui's dolphin. However, it is entirely possible that this increased fishing effort would occur outside of the range of Maui's dolphin. MFish is also working with the Department of Conservation and stakeholders to develop a Threat Management Plan for Maui's dolphin that seeks to mitigate fishing-related risks.

39 MFish is also concerned about the impact fishing for school shark in the Kaipara Harbour (statistical area 044) may have on the wider stock. The harbour may be a habitat of particular importance to the school shark fishery as pupping females migrate there to give birth. The results of the Australian modelling work suggest that removing the larger females from the population could be a significant risk to the sustainability of the stock.

40 As commercial catches of school shark in the Kaipara Harbour have declined from 35 tonnes in 2001/02 to 6 tonnes in 2005/06 (mainly due to retirements of fishers from the fishery) and only around 1% of the total SCH 1 commercial catch is now caught in the harbour, this risk may not be significant at current catch levels. However, it is possible that school shark catches in the Kaipara Harbour could increase if the TACC is increased. Levels of customary and recreational catch in the harbour are unknown.

41 MFish data suggests that in the past five fishing years around 28% of the SCH 1 fishery has been taken as a trawl bycatch. If an increased SCH 1 TACC would lead to increased target bottom trawl fishing for other finfish species, an increase could intensify the impact of bottom trawling on the benthic environment.

Assessment of Management Options

Total Allowable Catch

42 MFish proposes to set a TAC under section 13(2)(a) of the Act. In managing a stock under section 13(2)(a) the Minister must, in setting the TAC, seek to maintain the stock at or above a level that can produce the maximum sustainable yield (MSY), having regard to the interdependence of stocks. However, estimates of current biomass for SCH 1 or any other school shark stocks are unavailable. It is not known whether any of the proposed TAC options are sustainable, or if they are at levels which will allow the stock to move towards a size that will support the MSY.

43 In the absence of reliable biomass and MSY estimates for SCH 1, MFish proposes to set the TAC based on assessment of past and current catches and an estimate of other fishing-related mortality. MFish considers that the relatively stable level of commercial catches and the estimates of non-commercial catches constitute the best available information for considering the TAC for SCH 1. Further, school shark are considered to constitute a single biological stock around New Zealand and TACs have been set under section 13 for some of the other school shark stocks.

44 Three options have been proposed for setting the TAC. The first represents the status quo, based on existing catch limits and estimates of non-commercial catches and other fishing-related mortality. The other two options propose TACs that reflect recent and past commercial landings, and provide increased utilisation opportunities in the fishery.

Option 1: TAC of 866 tonnes (status quo)

45 Option 1 proposes that the TAC for SCH 1 be set at 866 tonnes. This option represents the status quo, providing for the existing TACC of 668 tonnes and estimates of current customary and recreational catches and other fishing-related mortality. This option poses the least risk of causing the stock to be fished at a level that would move the stock to below a size that would support the MSY.

46 It is unknown whether current catches are at a level that ensures the SCH 1 stock remains at a size that will support the MSY. Given that uncertainty and the biological characteristics of the stock, setting the TAC at 866 tonnes should ensure that any sustainability and environmental risks associated with the fishery are not increased. Under this option, the TACC would still be above the level of commercial landings in the last fishing year, but not the previous 10 fishing years.

Option 2: TAC of 893 tonnes

47 Option 2 proposes that the TAC for SCH 1 be set at 893 tonnes, an increase of 27 tonnes above option 1. A TAC of 893 tonnes reflects the average reported commercial landings in the past five years, plus allowances for customary and recreational fishing and other fishing-related mortality.

48 Given that catches have averaged at around this level for the past five years and above this level for the past five to ten years, this option is unlikely to increase sustainability risks beyond those that already exist in the fishery. However, the risks of this option are greater than those for option 1.

49 The benefit of option 2 is that it provides for recent catches of school shark, above the TACC, that are likely to have been taken as a bycatch in trawl fisheries targeted at other finfish stocks.

Option 3: TAC of 944 tonnes

50 Option 3 proposes that the TAC for SCH 1 be set at 944 tonnes, an increase of 78 tonnes above option 1. A TAC of 944 tonnes reflects the average reported commercial landings in the past ten years, plus allowances for customary and recreational fishing and other fishing-related mortality.

51 Commercial landings have averaged at around level for the past ten years. Given that commercial catches (constrained by both the TACC and the deemed values) have not reached this level in the past five years, this option provides for increased utilisation opportunities in the fishery and removes some constraints on commercial fishing for SCH 1 and the target stocks it is taken with as a bycatch.

52 However, considering the biological characteristics of the species (slow growth, late maturity, low productivity, not predicted to recover quickly from fishing pressure), a TAC that is 78 tonnes higher than the status quo would increase the sustainability risks associated with fishing for the stock. In particular, as the period of the past five to ten years includes most of the highest landings of SCH 1 recorded since the stock entered the quota management system (QMS), and as landings have fallen in recent years, there is a higher risk that annual catches of 944 tonnes will not be sustainable or maintain the stock at or above the level that can produce the MSY.

TACC and allowances

53 MFish proposes that the TACC and allowances for customary and recreational catches and other fishing-related mortality be set under section 20 of the Act.

54 Section 21 requires the Minister to make allowances for Maori customary non-commercial interests, recreational fishing interests and for any other sources of fishing-related mortality before setting the TACC. In setting allowances and the TACC, the Minister is required to consider the social, economic and cultural wellbeing of the persons within each sector.

55 School shark is of traditional importance to Maori and is an important taonga species, although the fishery has reportedly declined in recent decades. School shark is a species of moderate importance to recreational fishers but they do not value it as highly as many other gamefish.

56 The SCH 1 fishery has some value to commercial fishers but is a predominantly by-catch fishery with a port price that is relatively low compared to other stocks.

57 These points are discussed in more detail below. MFish invites respondents to submit any additional information which they feel is relevant to the Minister's consideration of social, economic and cultural factors associated with setting catch limits for SCH 1.

58 This paper proposes to set a TAC at either:

a) a level that accounts for existing commercial catch limits and estimates of non-commercial catches and other fishing-related mortality (option 1); or

b) a level (options 2 and 3) that provides for increased utilisation opportunities in the fishery. This increase in the TAC could either be allocated proportionally across all allowances and the TACC or allocated entirely to the TACC.

Proportional allocation

59 Proportionally allocating any increase in the TAC above the status quo would, notionally, share the benefit of the increased catch level between all three sectors. However, this would provide for non-commercial allowances that are above the estimate of current non-commercial catches. It is unlikely that any such additional allocation would be fully utilised and thus best value may not be realised through proportional allocation. MFish considers that a proportional allocation would not increase the value that non-commercial fishers can obtain from the fishery as existing levels of catch are considered to be provided for in full under all options.

Non-proportional allocation

60 The brief discussion above of the value of school shark to each sector may suggest that any proportional allocation of school shark should favour the customary sector above the others as the fishery could be of higher value to that sector. However, MFish does not consider that allocating a non-proportional increase to the customary sector would increase the value they could obtain from the fishery, as customary catches are considered to have already been provided for in full under all options.

61 MFish considers that it may be appropriate in this case to allocate any increase in the SCH 1 TAC above the level envisaged in option 1, entirely to the TACC for the following reasons:

a) The TAC is being set for the first time; there are no existing customary or recreational allowances to increase.

b) The estimates of current recreational and customary catch are considered to provide in full for the catches of those sectors and so an increase to recreational and customary allowances may have no effect on those fisheries, particularly as the increases to the allowances would be relatively small.

c) The TACs proposed in options 2 and 3 are based on recent commercial catches, plus estimates of current non-commercial catches.

Customary allowance

62 MFish has very little information on the level of customary catch of SCH 1.

63 Sharks in general are seen as one of the most important taonga species. Anecdotal information suggests that school shark is an important species for Maori. The fishery for mangō (a term that collectively covers a number of shark species including school shark, rig, and spiny dogfish) was traditionally important to many coastal communities who took part in regular annual fishing expeditions during which large

numbers of mangō were caught in coastal bays and sun-dried on trees or wooden frames for storage. However, this fishery has declined in recent decades and customary catches of shark species are reportedly smaller than they used to be.

64 In recognition of the importance of school shark to Maori, MFish proposes to base the customary allowance for SCH 1 at a level starting at 99 tonnes; this is 150% of the recreational catch estimate.

Option 1

65 Under TAC option 1, MFish proposes to set the customary allowance at 99 tonnes.

Option 2

66 Under TAC option 2, MFish proposes to set the customary allowance at either 102 tonnes (proportional allocation) or 99 tonnes (non-proportional allocation).

Option 3

67 Under TAC option 3, MFish proposes to set the customary allowance at either 108 tonnes (proportional allocation) or 99 tonnes (non-proportional allocation).

Recreational allowance

68 School shark is of moderate importance to recreational fishers – of 123 species included in the 1999/2000 recreational catch survey, school shark had the 45th highest catch estimate (by weight of catch). Although it is listed as a gamefish it is not thought to be particularly desirable to recreational fishers.

69 MFish proposes to set the recreational allowance on the basis of estimates of recreational catches of SCH 1. A review in 1996 estimated the recreational catch of SCH 1 to be around 46 tonnes per year. A review in 1999/2000 estimated the recreational catch of SCH 1 to be around 66 tonnes per year. The 1999/2000 survey is believed to be more accurate for school shark. MFish therefore proposes to set the recreational allowance for SCH 1 at a level starting at 66 tonnes.

Option 1

70 Under TAC option 1, MFish proposes to set the recreational allowance at 66 tonnes.

Option 2

71 Under TAC option 2, MFish proposes to set the recreational allowance at either 68 tonnes (proportional allocation) or 66 tonnes (non-proportional allocation).

Option 3

72 Under TAC option 3, MFish proposes to set the customary allowance at either 72 tonnes (proportional allocation) or 66 tonnes (non-proportional allocation).

Allowance for other fishing-related mortality

73 Other fishing-related mortality is an estimate of the amount of the stock killed by but not caught during a fishing operation (for example, where a fish escapes from a fishing net but dies due to its encounter with the fishing gear). For all options discussed MFish proposes an allowance for other fishing-related mortality of 5% of the TACC. This approach is consistent with allowances for other New Zealand school shark stocks and provides for allowances for other fishing-related mortality of between 33 and 37 tonnes depending on the option chosen (see Table 1).

TACC

74 In table 2, below, MFish has illustrated the potential economic impact of the TACC options by considering the export and domestic economic value of school shark. To determine how much SCH 1 is exported, MFish calculated that approximately 12.3% of all school shark TACCs in New Zealand was exported in the 2005/06 fishing year and therefore assumed that 12.3% of SCH 1 was exported with the remainder being sold domestically. MFish has assumed that this proportion will remain unchanged if the TACC is increased. For each option, MFish then calculated the value of the proportion of the stock which is exported (12.3%) against the export price and the value of the proportion of the stock which is sold domestically (87.7%) against the port price to get an overall value for the stock.

75 MFish acknowledges that this approach involves inherent uncertainties and that the port price may not represent the actual wharf-side value of the fish. However, MFish considers this coarse analysis illustrates the potential gains to industry in the short term under the management options MFish proposes.

Table 2: Value, by export price and port price, of each TACC option

Option	TACC	Export value[60]	Domestic value[61]	Total value	Increase in value from status quo
Option 1. TAC set at current limits	668	$726,330	$1,036,930	$1,763,259	$0
Option 2. TAC increase of 25 tonnes	689	$749,163	$1,069,528	$1,818,691	$55,432
	693	$753,513	$1,075,737	$1,829,250	$65,990
Option 3. TAC increase of 74 tonnes	728	$791,569	$1,130,067	$1,921,636	$158,377
	742	$806,791	$1,151,799	$1,958,591	$195,331

76 Deemed value payments have cost the commercial sector an average $101,000 in the past five fishing years. An increased TACC should reduce the cost to the sector of paying deemed value.

77 There will be other direct and indirect economic consequences of increasing the SCH 1 TACC. It is possible that increasing the TACC would increase the ability of fishers to catch stocks with which SCH 1 is taken as a bycatch, such as HPB 1, SPO 1 and GUR 1. However, MFish is not able to quantify the increased catch resulting from this or any resultant economic benefit.

78 A TACC increase may have "downstream" impacts on related industries such as processing and transport services. It could also improve the financial situation for coastal communities that are dependent on the inshore fishing industry.

79 There is a longer-term economic risk associated with increasing the TACC. If the TACC increase leads to catches that are not sustainable, it could lead to reduced catches and income from the fishery in future years. It is unknown how significant this risk is with regard to the TACCs proposed in this paper; however the higher the TACC the higher this risk will be. This risk is relevant to the fishing industry, related industries and to coastal communities that are dependent on the inshore fishing industry.

80 MFish invites respondents to this consultation to submit additional information on the economic impacts associated with the proposed management options.

Option 1

81 Under TAC option 1, MFish proposes to set a TACC of 668 tonnes, confirming current catch limits. This TACC has been regularly overcaught and the SCH 1 deemed value would need to be reviewed to ensure the TACC was not overcaught in future if this option were chosen. If the deemed value was increased, commercial

[60] Export value is $8.04/kg based export price of school shark for year ending December 2006.
[61] Domestic value is $1.77 based on the port price of school shark in the 2005/06 fishing year.

catches could be restricted closer to the TACC level and this could reduce commercial income from catches of SCH 1 to below the current level. The issue of proportional allocation does not arise with regard to this option.

Option 2

82 Under TAC option 2, MFish proposes to set a TACC of either:

a) 689 tonnes, an increase of 21 tonnes (proportional allocation); or

b) 693 tonnes, an increase of 25 tonnes (non-proportional allocation).

83 This option sets a TACC at or just below the level of average commercial landings in the past five fishing years. Because this does not increase the TACC above the level of average recent landings, it is unlikely that this option would significantly increase commercial fishing industry income from sales of school shark. The most likely impact would be a reduction in deemed value payments to MFish, which have averaged at $101,000 over the past five fishing years.

Option 3

84 Under TAC option 3, MFish proposes to set a TACC of either:

a) 728 tonnes, an increase of 60 tonnes (proportional allocation); or

b) 742 tonnes, an increase of 74 tonnes (non-proportional allocation).

85 This option sets a TACC at or just below the level of average commercial landings in the past ten fishing years. Because landings in the past five years have been lower, it is likely that this option would increase commercial fishing industry income from sales of school shark as well as reducing deemed value payments.

Other Management Measures

Pregnant school shark: Kaipara Harbour

86 Given the biological risks associated with removing the older, more productive females from the school shark population, measures to protect pregnant school shark in the Kaipara Harbour could be of value. For example, as school shark give birth from November to January, it may be sensible to prohibit the taking of school shark in the Kaipara during those months. MFish invites stakeholders to comment on this suggestion and make any alternative suggestions for the protection of pregnant school shark in the Kaipara.

Research

87 Results from a research project on school shark CPUE are expected to be available by the end of 2007, unfortunately too late to inform the Minister's decision on the setting of this TAC. The results of the research may change current views on the sustainability of school shark catches and may require a further review of school shark to take place in a future year.

88 Given the risks to stock sustainability, if the TAC is increased above the status quo, a full stock assessment to assess school shark biomass would be advisable. As school shark around New Zealand is thought to be a single biological stock, yield and biomass assessments are not possible for SCH 1 only but would need to be done for all school shark in New Zealand waters.

Deemed value

89 In setting a TAC, and potentially a new TACC, it is appropriate for the Minister of Fisheries to consider revising the deemed value level for school shark to help ensure that commercial catches do not exceed the level of the TACC in future. Deemed values for a number of stocks, including SCH 1, are being reviewed in the *Review of the Deemed Value Rates for the October 2007 Sustainability Round* section of this document.

Compliance

90 ACE for SCH 1 is often in short supply and can be unavailable to cover bycatch. Key compliance concerns in a fishery with this type of problem relate to misreporting (of weights, area and species) and dumping. In part, MFish relies on the incentives that quota provides for commercial fishers to fish the stock in a sustainable manner. More proactively, MFish will rely on monitoring and at sea surveillance to detect dumping.

91 If the TACC is increased, the availability of ACE should improve, reducing these problems. If the TACC is unchanged and deemed values are raised, the compliance problems may increase.

NPOA for sharks

92 The Ministry of Fisheries is developing a National Plan of Action (NPOA) for Sharks. This is an operational plan that records actions already under way and makes recommendations for actions that could enhance shark fisheries management in New Zealand. The NPOA identifies actions that are required to improve the conservation and management of shark species in New Zealand. These will be implemented separately to the proposals in this paper.

Hauraki Gulf Marine Park Act 2000

93 In setting a TAC for SCH 1, the Minister is required to consider the social, economic, recreational and cultural wellbeing of people in the Hauraki Gulf and, in particular, to maintain and enhance the physical resources of the Gulf, including school shark.

94 Relatively little school shark is caught commercially in the inner Hauraki Gulf (Fisheries Statistical Areas 005, 006 and 007). School shark is caught in larger quantities in Statistical Areas 003 and 008 but the Hauraki Gulf Marine Park only covers a relatively small part of these Areas. The Marine Park also covers a small amount of Areas 004 and 009 but relatively little school shark is caught in these Areas (see map in Appendix 2). It is therefore not apparent that the Hauraki Gulf Marine Park Area is of significant importance for the wellbeing of commercial fishers of school shark or for the wellbeing of those living in the Gulf who purchase commercially caught school shark.

95 MFish has no information to suggest that school shark in the Hauraki Gulf is more or less important to non-commercial fishers than school shark elsewhere. Traditionally Maori are known to have fished for shark species in the Firth of Thames and may have done so in other areas of the Gulf.

96 MFish invites respondents to this consultation to provide any additional information that they have on the importance of school shark to the social, economic, recreational and cultural wellbeing of people in the Hauraki Gulf.

97 Statutory Considerations are summarised in Appendix One.

APPENDICES

Appendix 1 - Statutory considerations

98 In developing the management options outlined in this paper, MFish has considered all of the relevant statutory obligations set out in the Fisheries Act 1996. These are summarised below:

c) *Purpose of the Act:* **Section 8:** The management options provide for utilisation by setting allowances for commercial, recreational and customary fishers. TAC options 2 and 3 should have economic benefits for commercial fishers and TAC option 1 does not reduce the amount of SCH 1 available to the commercial sector. Any increase of the TAC, to above the level of option 1, could increase the risk to stock sustainability as school shark have low productivity. Recent catches have been relatively stable and may indicate that those risks are small, at least in the short term.

d) *Total Allowable Catch:* **Section 13(2)(a):** The TAC under section 13(2) should be set at a level that maintains the stock at or above a level that can produce the maximum sustainable yield, having regard to the interdependence of stocks. As biomass information is unavailable, it is unknown whether the current TACC, current catch levels, or the options presented in this paper, are at levels that will support the maximum sustainable yield. However, recent catches have been relatively stable and there are no indications that current catches are not sustainable in the short-term.

e) *Natural variability of the stock:* **Section 11(1)(c):** Although no estimate of school shark biomass is available, it is assumed to fluctuate over time due to variable recruitment caused primarily by environmental conditions. This variability is likely to be less important than in other stocks. Indeed, variability of shark species is generally lower than for bony finfish with pelagic eggs and larvae.

f) *Associated or dependent species:* **Section 9(a):** Maui's dolphin occur within the range of school shark. Increasing the SCH 1 TACC could increase the risk of Maui's dolphin interaction with fishing gear, however this risk cannot be quantified.

g) *Biological diversity:* **Section 9(b):** There is no evidence that interactions between school shark and other species are of significant magnitude to impact on biological diversity.

h) *Habitat of particular significance for fisheries management:* **Section 9(c):** One school shark habitat of particular significance for fisheries management has been identified. The Kaipara Harbour is a location where female school shark congregate to pup and where the catch can be made up entirely of pregnant females. It is unknown whether the options presented will increase fishing pressure on the Kaipara Harbour school shark. However, an option to mitigate any risks have been explored in the paper and further suggestions have been sought from stakeholders.

i) *Existing controls under the Act:* **Section 11(1)(b):** For SCH 1 there is a current TACC of 668 tonnes. Under the Fisheries (Auckland and Kermadec Areas Amateur Fishing) Regulations 1986, school shark is included in the combined daily bag limit of 20 and has a minimum set net mesh size of 125mm.

j) *Effects of fishing on any stock and the aquatic environment:* **Section 11(1)(a):** A significant amount of SCH 1 is caught by bottom trawl, which does impact on the benthic environment. However, SCH 1 is only taken by bottom trawl as a bycatch and the bottom trawl operations do not generally target school shark. As a result, MFish does not consider that fishing for school shark has a significant impact on biological diversity of the aquatic environment.

k) *Application of International Obligations and Treaty of Waitangi (Fisheries Claims) Settlement Act 1992:* **Section 5(a) and 5(b):** There is a wide range of international obligations relating to fishing including sustainability and utilisation of fishstocks and maintaining biodiversity. MFish considers issues arising under international obligations – discussed in the Statutory Obligations and Interpretation section of this document – and the provisions of the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992 are adequately addressed in the management options for SCH 1.

l) *Conservation and fisheries services:* **Section 11(2A)(a) and (c):** A Threat Management Plan has been produced to develop options to mitigate the risk to Maui's dolphin. The potential impact of any SCH 1 TAC increase on Maui's dolphin has been discussed in this paper. Standard fisheries services such as research and enforcement of the fisheries regulations are ongoing. No decision has been made not to require conservation or fisheries services.

m) *Relevant fisheries plans:* **Section 11(2A)(b):** While fisheries plans that include school shark are in an early drafting stage, no relevant fisheries plans have been approved under section 11A(1).

n) *Resource Management Act 1991 and Conservation Act 1987:* **Section 11(2)(a) and (b):** There are no provisions applicable to the coastal marine area known to exist in any policy statement or plan under the Resource Management Act 1991, or any management strategy or plan under the Conservation Act 1987, that are relevant to the setting or varying of any sustainability measure for this stock.

o) *Hauraki Gulf Marine Park Act 2000:* **Section 11(2)(c):** The implications of sections 7 and 8 of the Hauraki Gulf Marine Park Act 2000 were considered in the main section of this paper.

p) *Non-commercial fishing interests and other mortality caused by fishing:* **Section 21(1):** The nature of the fishery and the interests of the respective fishing sectors have been considered in proposing TACCs and allowances for recreational and customary interests and all other mortality to the stock caused by fishing.

q) *Mataitai reserves and closures under sections 186A and 311 of the Act:* **Section 21(4) and (5):** There is one Mataitai reserve in the QMA – at Raukokore on the eastern Bay of Plenty, however it is not considered that this has significant implications for the SCH 1 TAC. There are three areas closed for customary

purposes in the QMA, all of these are closures are for certain shellfish species only and have no implications for the SCH 1 TAC. No section 311 closures have been enacted in the QMA.

r) *Information Principles:* **Section 10:** In preparing this paper, MFish relied primarily on the following information sources to develop the management options:

i. The Report from the Stock Assessment Plenary on School Shark, May 2006

ii. Commercial catch and landings data held by the Ministry of Fisheries.

iii. Ayres et al. Examination of catch per unit effort analyses for school shark from bycatch and target fisheries in New Zealand, 1989-90 to 2001-02 (*Fisheries Assessment Report 2006/26*)

SCHOOL SHARK (SCH 1) – SUMMARY OF SUBMISSIONS

1 MFish received submission on the school shark (SCH) 1 IPP from:

- Environmental and Conservation Organisations of New Zealand (ECO)
- New Zealand Big Game Fishing Council (NZBGFC)
- New Zealand Recreational Fishing Council (NZRFC)
- Nga Hapu o Te Uru (NHOTU)
- Northern Fisheries Management Stakeholder Company Ltd. (Northern Stakeholder Group)
- Royal Forest and Bird Protection Society of New Zealand (Forest & Bird)
- Sanford Ltd. (Sanford)
- Seafood Industry Council (SeaFIC)
- Te Runanga o Te Rarawa (Te Rarawa).

2 Specific issues addressed in the submissions include:

- The TAC review process
    - Timing
    - Tangata whenua input and participation in the process
- Discussion of the options
    - Range of options
    - Option 1 – Current TACC plus allowances
    - Option 2 – Increase in line with average commercial landings in past 5 years
    - Option 3 – Increase in line with average commercial landings in past 10 years
    - Management through an industry-led fisheries plan
    - Proportional vs. non-proportional allocation of the TAC
- Implications of the options
    - "Rewarding overfishing"
    - Impact/risks of fishing for SCH 1
    - Maui's dolphin
- Non-commercial catches

- Customary estimate
- Recreational estimate
- Recreational value

- Other management measures
  - East coast – west coast stock split
  - Link to new management processes
  - Sixth schedule
  - Research
  - Vessel monitoring systems
  - Deemed value
  - Reduction in TACC or ACE after over-catch
  - National Plan of Action for sharks.

THE TAC REVIEW PROCESS

TIMING

3 **NZBGFC CONSIDERED THAT THE TAC REVIEW FOR SCH 1 WAS PREMATURE, GIVEN THAT INSHORE FISH PLANS ARE DUE TO BE LAUNCHED SHORTLY AND THAT RESEARCH IS UNDERWAY ON SCHOOL SHARK CPUE WITH RESULTS DUE TO BE PUBLISHED LATER THIS YEAR, BUT TOO LATE TO INFORM THE MANAGEMENT DECISION ON THE OPTIONS SET OUT IN THIS YEAR'S FAP. NZRFC AGREED, CONSIDERING THAT IT WAS A WASTE OF MONEY TO REVIEW A FISHERY WITHOUT ANY NEW DATA, ESPECIALLY AS RESEARCH PROJECTS ARE CURRENTLY UNDERWAY FOR THIS SPECIES.**

TANGATA WHENUA INPUT AND PARTICIPATION IN THE PROCESS

4 **NZBGFC NOTED THAT THEY WERE NOT AWARE OF ANY EFFORT BY THE MINISTER, THROUGH MFISH, TO INITIATE ANY OR ADEQUATE INPUT AND PARTICIPATION INTO THE FORMULATION OF THE SCH 1 PROPOSAL. THEY OBJECT TO THE LACK OF PROVISION FOR TANGATA WHENUA TO HAVE MEANINGFUL INPUT AND PARTICIPATION AS REQUIRED UNDER SECTION 12 OF THE ACT.**

DISCUSSION OF THE OPTIONS

RANGE OF OPTIONS

5 **SANFORD AND NORTHERN STAKEHOLDER GROUP WERE DISAPPOINTED THAT THE RANGE OF OPTIONS DID NOT INCLUDE THE NORTHERN STAKEHOLDER GROUP PROPOSAL FOR A 167 TONNE TACC INCREASE UNDER THE AMP, INCLUDING COMPONENTS FOR INCREASING COLLECTION OF DATA ABOUT THE FISHERY SUCH AS A LOGBOOK PROGRAMME.**

OPTION 1 – CURRENT TACC PLUS ALLOWANCES

6 **ECO, FOREST & BIRD, NZBGFC, NZRFC AND NHOTU ALL SUPPORTED OPTION 1 AND OPPOSED ANY INCREASE IN THE TACC. NZRFC ARGUED THAT, GIVEN THE LACK OF KNOWLEDGE ABOUT THE STOCK STATUS AND THE LATE MATURING, SLOW GROWING AND LOW FECUNDITY OF THESE SPECIES, THEY COULD NOT SUPPORT ANY INCREASE IN THE TACC.**

7 **SEAFIC NOTED THAT OPTION 1 WOULD MEAN A CUT IN COMMERCIAL CATCHES IF IT WERE ACCOMPANIED BY A DEEMED VALUE INCREASE FOR SCH 1.**

OPTION 2 – INCREASE IN LINE WITH AVERAGE COMMERCIAL LANDINGS IN PAST 5 YEARS

8 **TE RARAWA SUPPORTED OPTION 2. SEAFIC ARGUED THAT NO REAL INCREASE IN COMMERCIAL CATCH IS PROPOSED UNDER OPTION 2 AS IT IS THE AVERAGE OF COMMERCIAL LANDINGS IN THE PAST 5 YEARS.**

OPTION 3 – INCREASE IN LINE WITH AVERAGE COMMERCIAL LANDINGS IN PAST 10 YEARS

9 **NO SUPPORT WAS EXPRESSED FOR OPTION 3 AS SET OUT IN THE IPP. HOWEVER, SANFORD AND NORTHERN STAKEHOLDER GROUP CHARACTERISED THEIR PROPOSED ALTERNATIVE OPTION (100 TONNE TACC INCREASE) AS AN ALTERNATIVE OPTION 3. SEAFIC SUPPORTED THE POSITION OF SANFORD AND NORTHERN STAKEHOLDER GROUP AND CONSIDERED THAT OPTION 3 (AS SET OUT IN THE IPP) PROVIDED FOR NO REAL INCREASE IN COMMERCIAL CATCH IF 10-YEAR COMMERCIAL CATCH FIGURES ARE USED.**

MANAGEMENT THROUGH AN INDUSTRY-LED FISHERIES PLAN

10 **IN THE ABSENCE OF THEIR PREFERRED OPTION OF A 167 TONNE TACC INCREASE UNDER AN AMP, SANFORD AND NORTHERN STAKEHOLDER GROUP NOW PROPOSE AN ALTERED OPTION 3 WITH TACC INCREASE OF 100 TONNES. THEY CONSIDER THAT THE FISHERY COULD BE MANAGED IN A SIMILAR FASHION TO AN AMP THROUGH AN INDUSTRY-LED STRUCTURED FISHERIES PLAN FOR THE FISHERY, UNDER WHICH MEASURES SUCH AS CATCH SPREADING AND EFFORT TO ADDRESS ENVIRONMENTAL AND SPATIAL DEPLETION CONCERNS COULD BE INCORPORATED.**

PROPORTIONAL VS. NON-PROPORTIONAL ALLOCATION OF THE TAC

11 **BOTH SANFORD AND NORTHERN STAKEHOLDER GROUP CONFIRMED THEIR SUPPORT FOR ALL TAC ADJUSTMENTS TO BE ALLOCATED PROPORTIONALLY. SEAFIC CONSIDERED THAT ANY DISCUSSION OF PROPORTIONAL VS. NON-PROPORTIONAL ALLOCATION OF THE TAC WAS MEANINGLESS IN THE CONTEXT OF**

SCH 1 AS THERE IS NO CURRENT TAC OR ALLOWANCES AGAINST WHICH TO COMPARE THE NEW ALLOWANCES. SEAFIC CONSIDERED THAT ALL OPTIONS REPRESENTED DIFFERENT MEASURES OF ACTUAL CATCH RATHER THAN CHANGES IN CATCH LEVELS. THEY THEREFORE DID NOT CONSIDER THAT THERE WAS ANY JUSTIFICATION FOR INCREASING NON-COMMERCIAL ALLOWANCES ABOVE THE LEVELS OF ESTIMATED NON-COMMERCIAL CATCH. TE RARAWA THOUGHT THE INCREASE PROPOSED IN OPTION 2 SHOULD BE ALLOCATED PROPORTIONALLY.

IMPLICATIONS OF THE OPTIONS

"REWARDING OVERFISHING"

12 **NZBGFC CONSIDERED THAT THE CHRONIC USE OF DEEMING TO ALLOW CATCH IN EXCESS OF QUOTA SHOULD NOT BE USED AS A JUSTIFICATION FOR INCREASING THE COMMERCIAL ALLOCATION. THEY ARGUED THAT THIS PROVIDES THE WRONG INCENTIVES TO COMMERCIAL FISHERS AND IS REMINISCENT OF THE CLAIMS-BASED FISHERIES MANAGEMENT OF THE PAST. NGA HAPU O TE URU WAS CONCERNED ABOUT THE CONSISTENT OVER-FISHING OF SCHOOL SHARK. NZRFC NOTED THAT RECREATIONAL FISHERS WOULD FIND IT UNACCEPTABLE FOR THE TACC TO BE INCREASED BASED ON THE INFORMATION OF EXCESSIVE COMMERCIAL OVER-CATCH.**

IMPACT/RISKS OF FISHING FOR SCH 1

13 **SEAFIC THOUGHT IT WAS UNLIKELY THAT ANY IMPACTS SUCH AS INCREASED SUSTAINABILITY RISKS, INCREASED INTERACTIONS WITH MAUI'S DOLPHIN, ETC WOULD OCCUR UNDER THE OPTIONS PROPOSED AS COMMERCIAL CATCHES HAVE ALREADY BEEN AT THESE LEVELS IN THE PAST 5-10 FISHING YEARS.**

14 **FOREST AND BIRD FELT THAT THE VULNERABILITY OF SCHOOL SHARK TO FISHING PRESSURE AND THE ENVIRONMENTAL EFFECTS OF TARGETING SCH 1 WERE INADEQUATELY ADDRESSED IN THE IPP.**

15 **NZBGFC DID NOT UNDERSTAND WHY TACC INCREASES WERE BEING PROPOSED WHEN CPUE SHOWED FLAT OR DECLINING INDICES AROUND THE NORTH ISLAND AND THE COMBINED MAXIMUM CONSTANT YIELD (MCY) FOR MOST SCHOOL SHARK STOCKS IS JUST 325 TONNES. ECO ALSO NOTED THE MCY FIGURE.**

16 **ECO NOTED THAT SCHOOL SHARK ARE LISTED AS A VULNERABLE THREATENED SPECIES BY THE WORLD CONSERVATION UNION, THAT THE MINIMUM MESH SIZE IN THE NORTH OF THE NORTH ISLAND IS 125MM RATHER THAN 150MM ELSEWHERE, AND THOUGHT THAT THE IMPACT OF PAST TACC INCREASES UNDER ADAPTIVE MANAGEMENT PROGRAMMES ON THE WHOLE NATIONAL SCHOOL**

SHARK STOCK SHOULD BE ASSESSED BEFORE THE CURRENT TACC IS CHANGED.

MAUI'S DOLPHIN

17 **ECO FELT THAT MEASURES TO MANAGE THE CAPTURE OF MAUI'S DOLPHIN NEED TO BE REVIEWED. FOREST & BIRD NOTED THAT THE USE OF SET NETS POSES A SIGNIFICANT THREAT TO THE GLOBALLY THREATENED MAUI'S DOLPHIN AND THAT SET NETS HAVE CAUSED OVER 60% OF MAUI'S DOLPHIN DEATHS WHERE THE CAUSE OF DEATH IS KNOWN SINCE 2000. THEY RECOMMEND PROHIBITIONS ON SET NETS AND TRAWLING WITHIN CERTAIN AREAS AND RECOMMEND THAT ALL TRAWLERS CARRY VESSEL MONITORING SYSTEMS PLUS HAVING OBSERVERS OR BYCATCH MONITORING EQUIPMENT ON BOARD.**

18 **SEAFIC ARGUED THAT IN THE UNLIKELY EVENT THAT A TACC INCREASE RESULTS IN AN INCREASE IN SET NET EFFORT, ANY RISK OF INCREASED INTERACTION WITH MAUI DOLPHIN WOULD BE MORE APPROPRIATELY DEALT WITH THROUGH THE THREAT MANAGEMENT PLAN PROCESS. NORTHERN STAKEHOLDER GROUP AND SANFORD DID NOT AGREE THAT ANY INCREASED TACC WOULD IMPACT ON MAUI'S DOLPHIN AS MAUI'S DO NOT CURRENTLY INTEGRATE WITH FISHING OPERATIONS IN SCH 1. THIS IS A COMBINED RESULT OF CURRENT REGULATIONS AND SPATIAL SEPARATION OF MAUI'S DOLPHIN AND COMMERCIAL FISHING OPERATIONS.**

19 **NORTHERN STAKEHOLDER GROUP NOTED THAT THERE HAS BEEN MUCH DISCUSSION OF OBSERVER COVERAGE TO VERIFY THE SPATIAL SEPARATION OF MAUI'S DOLPHIN AND COMMERCIAL FISHING OPERATIONS. NORTHERN STAKEHOLDER GROUP SUPPORTS INDEPENDENT VERIFICATION AS A 'SNAP-SHOT' OF THE FISHERY BUT DO NOT SEE ANY BENEFIT IN ONGOING COVERAGE OVER MANY YEARS. THEY ALSO NOTE THAT ANY PROPOSAL TO INCREASE THE NUMBER OF OBSERVER DAYS WILL NOT PROVIDE MORE INFORMATION AS MFISH DO NOT HAVE CAPACITY TO MEET THE NUMBER OF OBSERVER DAYS CURRENTLY REQUIRED.**

NON-COMMERCIAL CATCHES

CUSTOMARY ESTIMATE

20 **SEAFIC EXPRESSED DISAPPOINTMENT THAT NO PROGRESS HAS BEEN MADE ON THE ESTIMATION OF CUSTOMARY CATCH AND CONSIDERED THAT BASING THE ESTIMATE ON 150% OF THE ALREADY HIGHLY UNCERTAIN RECREATIONAL CATCH ESTIMATE IS NOT GOOD ENOUGH. NZBGFC THOUGHT THE PROPOSED CUSTOMARY ALLOWANCE OF 99 TONNES MAY BE TOO HIGH.**

RECREATIONAL ESTIMATE

21 **NZBGFC AND NZRFC THOUGHT THAT THE PROPOSED RECREATIONAL ALLOWANCE OF 66 TONNES WAS ABOUT RIGHT.**

RECREATIONAL VALUES

22 **NZRFC NOTED THAT THE RECREATIONAL FISHER DOES VALUE SCHOOL SHARK AS A FOOD SOURCE AND THAT ITS AVAILABILITY TO NON-COMMERCIAL FISHERS RANGES FROM FISHING FROM SHORE THROUGH TO THE BYCATCH OF DEEP-WATER BOTTOM FISHING FOR HÄPUKU AND BLUENOSE. NZBGFC ADVISE THAT SCHOOL SHARK:**

- **ARE TARGETED IN COMPETITIONS**
- **ARE THE LARGEST FISH THAT MANY JUNIOR ANGLERS HAVE CAUGHT**
- **ARE CAUGHT OFF BEACHES BY SURFCASTERS AND KITE FISHERS; AND**
- **THAT THE WORLD RECORD SCHOOL SHARK WAS CAUGHT IN PARENGARENGA HARBOUR IN 1986.**

OTHER MANAGEMENT MEASURES

EAST COAST – WEST COAST STOCK SPLIT

23 **GIVEN THAT THE INSHORE FISHERIES PLANS AND THE NEW CPUE ANALYSIS WILL BE SPLIT INTO EAST COAST AND WEST COAST OF THE NORTH ISLAND, NZBGFC RECOMMENDS THAT MFISH CONSIDERS SPLITTING SCH 1 INTO EAST AND WEST COAST STOCKS. NZRFC AGREED AND THOUGHT THAT THE QUOTA MANAGEMENT AREA (QMA) FOR THE FISHERY IS TOO LARGE AND UNMANAGEABLE IN ITS PRESENT STATE.**

LINK TO NEW MANAGEMENT PROCESSES

24 **NZBGFC DID NOT SEE WHERE THE SCH 1 PROPOSAL FITTED WITHIN THE PROCESSES OF OBJECTIVE-BASED FISHERIES MANAGEMENT, FISHERIES PLANS AND FISHERIES STANDARDS. NZBGFC CALLED FOR MFISH TO CLEARLY ARTICULATE THE MANAGEMENT OBJECTIVE FOR THE FISHERY, HOW THIS IS SUPPORTED BY THE BEST AVAILABLE INFORMATION, WHICH FISHERIES STANDARDS WILL BE MET AND WHY A BETTER OUTCOME COULD NOT BE ACHIEVED AS PART OF A FISHERIES PLAN PROCESS. ECO THOUGHT THAT THE DEVELOPMENT OF A FISHERY PLAN COULD BE THE MOST USEFUL MEANS TO DISCUSS THE COMPETING INTERESTS IN THE FISHERY.**

SIXTH SCHEDULE

25 **NZBGFC NOTED THAT THE MFISH PLENARY REPORT ON SCHOOL SHARK STATES THAT IT IS IMPORTANT THAT FISHING PRESSURE ON MATURE FEMALES SHOULD BE MINIMISED TO MAINTAIN THE PRODUCTIVITY OF THE SPECIES. IN THE LIGHT OF THIS, NZBGFC CONSIDERED THAT SCHOOL SHARK SHOULD BE PLACED ON THE 6TH SCHEDULE OF THE ACT TO ALLOW COMMERCIAL FISHERS TO RELEASE LARGE FEMALES, PROVIDED THEY WERE LIKELY TO SURVIVE, AS SOON AS IS PRACTICABLE AFTER THEY WERE CAUGHT. NZRFC AGREED WITH THIS PROPOSAL.**

RESEARCH

26 **NHOTU AND ECO CALLED FOR MORE RESEARCH TO BE CONDUCTED INTO SCHOOL SHARKS.**

VESSEL MONITORING SYSTEMS

27 **NZRFC ASKED THAT, IN ALL FISHERIES THAT ARE OF SIGNIFICANT IMPORTANCE TO RECREATIONAL FISHERS (INCLUDING SCHOOL SHARK), VESSEL MONITORING SYSTEMS BE DEPLOYED ON ALL VESSELS HOLDING ACE FOR THAT FISHERY.**

DEEMED VALUE

28 **NZBGFC THOUGHT THE DEEMED VALUE FOR SCH 1 SHOULD BE INCREASED REGARDLESS OF THE TACC LEVEL.**

REDUCTION IN TACC OR ACE AFTER OVER-CATCH

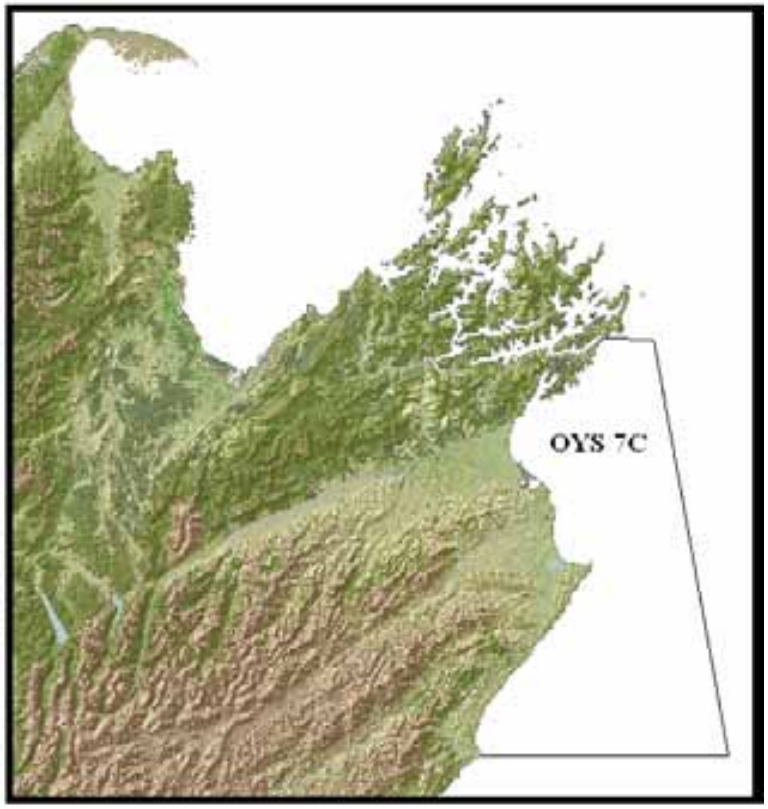
29 **NZBGFC ARGUED THAT IF FISHERS CATCH ABOVE THE TACC FOR A PARTICULAR STOCK, THEY SHOULD LOSE AN EQUIVALENT AMOUNT OF ACE OR THE TACC SHOULD BE REDUCED ACCORDINGLY IN THE NEXT FISHING YEAR.**

NATIONAL PLAN OF ACTION FOR SHARKS

30 **ECO WERE CONCERNED ABOUT THE MANAGEMENT OF SHARK FISHERIES AND PROPOSALS TO INCREASE SHARK TACCS WITHOUT AN OVERALL NATIONAL PLAN OF ACTION (NPOA) FOR SHARKS AND ECO CALLED FOR MFISH TO DEVELOP WITH URGENCY A NPOA FOR SHARKS. FOREST & BIRD RECOMMENDED THAT MFISH URGENTLY DEVELOPS AND IMPLEMENTS A NPOA FOR SHARKS.**

DREDGE OYSTER (OYS 7C) - INITIAL POSITION PAPER

Figure 1: Location of boundaries of the dredge oyster (OYS 7C) Quota Management Area



Executive Summary

1 The Ministry of Fisheries (MFish) recommends increasing the Total Allowable Catch (TAC) for the Dredge Oyster (OYS 7C) Fishery to provide the commercial sector with greater utilisation opportunities. The fishery extends from the east coast of the Marlborough Sounds (from West Head) in the north to Clarence River in the south. Most known dredge oyster beds are found within Cloudy and Clifford Bays.

2 The Minister of Fisheries set a nominal TAC of five tonnes (greenweight) for the OYS 7C stock when dredge oyster was introduced into the Quota Management System (QMS) on 1 October 2005. The Minister set the TAC at a conservative level to reflect the absence of relevant stock assessment information with which to determine a more appropriate sustainable harvest level. The TAC includes allowances of one tonne each for customary and recreational interests, and other sources of fishing-related mortality, and a Total Allowable Commercial Catch (TACC) of two tonnes.

3 A reason for setting the TAC at a nominal level was to encourage rights holders to invest and develop a viable sustainable fishery, while taking into account the effects of dredging on the benthic environment. However, new stock assessment information is now available that suggests the fishery can sustain a greater harvest yield than the current nominal TAC allows.

4 Industry is seeking a review of the TAC to enable a larger commercial harvest from the OYS 7C fishery based on the new stock assessment information.

5 The impacts of commercial dredging on the benthic environment will increase under a higher TACC and is an important consideration in setting an appropriate TAC level. Various areas within the fishery (mainly inshore and around rocky reefs/clumps ie, foul ground) are understood to support a range of sensitive invertebrate species including soft corals, large erect and divaricating bryozoans, starfish, horse mussel, crabs, etc. While the fishery has been subject to very little commercial dredging to date, the bottom type where dredge oyster beds occur is likely to be already modified by long-term commercial bottom trawling. Industry is proposing to voluntarily restrict commercial dredging to two specified harvest areas to mitigate the impacts of fishing under a higher TACC.

6 This paper presents four TAC options. These options range from retaining the current TAC at five tones to increasing the TAC to either 25 tonnes, 50 tonnes, or 100 tonnes.

Summary of Options

7 This paper presents the following four TAC options for the OYS 7C stock for the 2007-08 fishing year.

a) Option 1 – retaining the TAC at 5 tonnes (ie, *status quo*), or

b) Option 2 – increase the TAC to 25 tonnes, or

c) Option 3 – increase the TAC to 50 tonnes, or

d) Option 4 – increase the TAC to 100 tonnes.

8 Under each option, the current allowances of one tonne each for customary and recreational interests, and other sources of fishing-related mortality are retained. The TACC allocation is the remainder of the TAC.

9 The TAC options are based on a range of available sustainable yield estimates for the OYS 7C stock. As the level of the stock that produces the maximum sustainable yield (B_{MSY}) is poorly known for the OYS 7C fishery, each TAC option has a different, but uncertain likelihood of ensuring the stock is managed at, or above, the B_{MSY}.

10 MFish notes the Minister could consider alternative TAC options that lie within the range of those presented above, and which he may consider best address his obligations under the Fisheries Act 1996 (the Act).

11 MFish considers that Option 1 is not viable for the Minister to consider because it prevents the commercial sector from deriving greater utilisation opportunities from the fishery based on the available yield estimates. MFish's preliminary recommendation is Option 3, as it enables the commercial sector to obtain greater value from the fishery, while acknowledging the uncertainty the stock remains sustainable under higher harvest levels and the increased impacts of fishing on the benthic environment.

12 Under each option, all other current management measures that apply to the OYS 7C stock will be retained (ie, deemed values and the ability of commercial fishers to return legal size oysters that are likely to survive back to the sea).

Rationale for Management Options

13 The TAC for the OYS 7C stock is set under s 13 of the Act. Under s 13, the TAC must be set at a level that maintains the stock at, or above, a level that can produce B_{MSY} having regard to the interdependence of stocks.

14 A nominal TAC of five tonnes for the OYS 7C stock was set when dredge oyster was introduced into the QMS on 1 October 2005. The TAC was set at a conservative level to reflect the absence of relevant stock assessment information with which to determine a more appropriate sustainable harvest level. The TAC also acknowledged the biological characteristics of the species (ie, distribution, biology and life history), and the social and cultural value of oysters within the OYS 7C fishery.

15 One reason for setting the TAC at a nominal level was to allocate commercial harvest rights for the fishery. This would encourage commercial rights holders to invest and develop a viable sustainable fishery while taking into account the effects of fishing on the benthic environment.

16 Following QMS introduction, there has been negligible commercial catches within the OYS 7C fishery. Annual commercial landings since 1 October 2005 are shown in Table 1.

Table 1 Commercial landings of dredge oysters from the OYS 7C since 1 October 2005

Fishing Year	Annual Landings (kgs greenweight)
2005-06	Nil
2006-07 (to date)	82 kgs

17 The general lack of commercial fishing effort within the fishery since QMS introduction is a direct consequence of the nominal size of the TAC and the associated fishing costs involved to harvest oysters. These fishing costs include vessel time, fuel, crew wages, etc, as well as costs incurred to obtain the necessary sanitary and biotoxin certification[62] for waters from where dredge oysters are taken. The existing TAC effectively prohibits industry from developing a viable commercial fishery, since the fishing costs to harvest two tonnes of oysters outweigh any economic returns.

[62] The taking of bivalue molluscs (including dredge oysters) for human consumption must be taken from approved waters certified under the Animal Products Act 1999 (Animal Products (Specifications for Bivalve Molluscan Shellfish) Notice 2006.

Fishery assessment

18 A survey of dredge oyster beds within the OYS 7C Quota Management Area (QMA) was conducted in April and May 2007 to collect stock assessment information to review the TAC. This survey focused on specific strata within Cloudy and Clifford Bays where preliminary investigations had suggested sufficient commercial densities of oysters occur within these areas.

19 MFish's Shellfish Stock Assessment Working Group has reviewed the stock assessment information and considers it provides a suitable basis on which to review the OYS 7C TAC.

20 The survey indicates the recruited[63] dredge oyster biomass within the survey area is 1 778 tonnes (greenweight) comprising 19.5 million oysters. Mean density of recruited oysters is estimated at 447 oysters per hectare. About 90% of estimated oyster biomass is found within the southern half of the survey area.

21 Based on the 2007 survey information, six *maximum constant yield* (MCY) estimates are calculated to provide a range of yield estimates for the survey area. However, this paper only considers four of these estimates (refer to Table 2), which the Shellfish Stock Assessment Working Group considers to reflect a "plausible range" of sustainable harvest yields for the OYS 7C fishery. Each estimate is based on the following equation and uses a different combination of parameters to estimate dredge efficiency and natural mortality (M).

$$\mathbf{MCY = 0.25}M\ B_0$$

Note: B_0 is an estimate or virgin recruited biomass (assumed to equal the recruited biomass estimated from the survey, divided by dredge efficiency) and M is an estimate of natural mortality.

Table 2 **Range of MCY estimates using a range of estimated values for dredge efficiency and natural mortality**

MCY formula	MCY (tonnes)
$MCY_1 = 0.25*0.042*$(recruited biomass/1)	18
$MCY_2 = 0.25*0.042*$(recruited biomass/0.64)	28
$MCY_3 = 0.25*0.3*$(recruited biomass/1)	133
$MCY_4 = 0.25*0.3*$(recruited biomass/0.64)	213

[63] Recruited dredge oysters are those greater than 58 mm in size (unable to pass through a ring of 58 mm inside diameter).

22 MFish notes that specific parameter estimates of *M* and dredge efficiency are not available for the OYS 7C stock. In the absence of this information, values for *M* of 0.042 (Foveaux Strait[64]) and 0.3 (Tasman Bay[65]), and values of dredge efficiency of 0.64 (Tasman Bay using a slightly different dredge design[66]) and 1 (an intentionally conservative value) are used.

23 MFish highlights the inherent uncertainty in using the above non-OYS 7C parameters to estimate a range of sustainable harvest yields to reliably reflect the OYS 7C stock. This uncertainty arises from:

- Whether the estimate of *M* reflects the natural variability in oyster populations in the OYS 7C fishery from year to year;
- Problems with using a simple MCY-based approach where there may be significant spatial variations in the distribution of oysters and the subsequent concentration of fishing effort;
- Whether *M* can be reliably used given the unknown level of incidental fishing mortality under higher catch levels;
- Inherent variability with available dredge efficiency estimates derived from other dredge fisheries.

24 The Stock Assessment Shellfish Working Group agreed the lowest estimate of MCY presented to the meeting (ie, 22 tonnes, subsequently modified to 18 tonnes once corrected for methodological errors) was conservative and almost certain to be sustainable, apart from any issues related to benthic habitat. Without better information on the applicability of the less conservative estimates of *M* and dredge efficiency to the OYS 7C stock, it becomes increasingly difficult to be assured of sustainability as catch levels increase.

Assessment of Management Options

TAC

25 MFish proposes four different TAC options based on the range of MCY-based estimates derived from the 2007 dredge oyster survey. These estimates use a range of values for estimating *M* and dredge efficiency derived from other dredge oyster fisheries and, therefore, must be treated with caution.

26 MFish notes the available MCY estimates provide a guide as to a range of possible harvest levels that can be applied for OYS 7C fishery. The sustainability of each MCY estimate becomes increasingly uncertain under increasing values for *M* and decreasing values of dredge efficiency. This paper considers four TAC options based on MCY_1, MCY_2, MCY_3 and MCY_4 estimates (as presented in Table 2). Each TAC option has a different but uncertain likelihood of ensuring the OYS 7C stock remains at, or above, a level that produces the B_{MSY}.

[64] Dunn *et.al.* (1998)
[65] Osborne (1999)
[66] Bull (1989)

27 The effects of commercial dredging on the benthic environment will increase as catch levels increase. The effects of fishing on the benthic environment under higher catch levels are an important consideration in setting an appropriate TAC level. Very little commercial dredging has occurred in the fishery to date, and various areas within the fishery (mainly inshore and around foul ground) are understood to support a range of sensitive invertebrate species including soft corals, large erect and divaricating bryozoans, starfish, horse mussel, crabs, etc. The industry proposes to voluntarily restrict fishing to two specified harvest areas to mitigate the impacts of fishing on the benthic environment while more durable arrangements are made.

28 In considering each TAC option, a determination on an acceptable level of fishing impacts on the benthic environment is warranted. This is discussed in a separate section below.

Option 1 – retain the current TAC (status quo)

29 Under Option 1, the current TAC of five tonnes is retained. This option ensures the OYS 7C stock remains at, or above, a level that produces the B_{MSY}. Retaining the current TAC prohibits the industry from developing a viable fishery as the harvest costs (ie, vessel, crew, shellfish sanitation costs, etc.) outweigh any economic returns from harvesting only two tonnes of dredge oysters.

30 Option 1 will continue to prevent industry from deriving best economic value from the fishery, as the best available information suggests the stock can sustain a higher catch level than is currently provided for under the existing TAC. MFish notes that one of the premises of managing fisheries under the QMS is to provide a framework that enables commercial rights-holders to develop viable fisheries within a sustainable harvest level. The current TAC was set at a nominal level to allocate commercial development rights to the fishery while acknowledging the absence of stock assessment information. A decision to retain the TAC in response to the availability of new stock assessment is contrary to the intent of introducing the OYS 7C stock into the QMS.

31 Under Option 1, the impacts of fishing on the benthic environment will remain negligible.

Option 2 - increase the TAC to 25 tonnes

32 Option 2 provides a small TAC increase based on the two most conservative MCY estimates (MCY_1 and MCY_2) of 18 tonnes and 28 tonnes. MFish acknowledges the Shellfish Stock Assessment Working Group's views that the proposed TAC level is highly likely to be sustainable. Option 2 provides the lowest degree of risk, under the three proposed TAC increase options, of ensuring the OYS 7C stock is maintained at, or above, a level that can produce the B_{MSY}.

33 Adopting Option 2 will enable the industry to develop a new fishery on a sustainable basis and derive greater economic value from the OYS 7C stock.

34 Under Option 2, there will be a moderate increase in fishing impacts on the benthic environment.

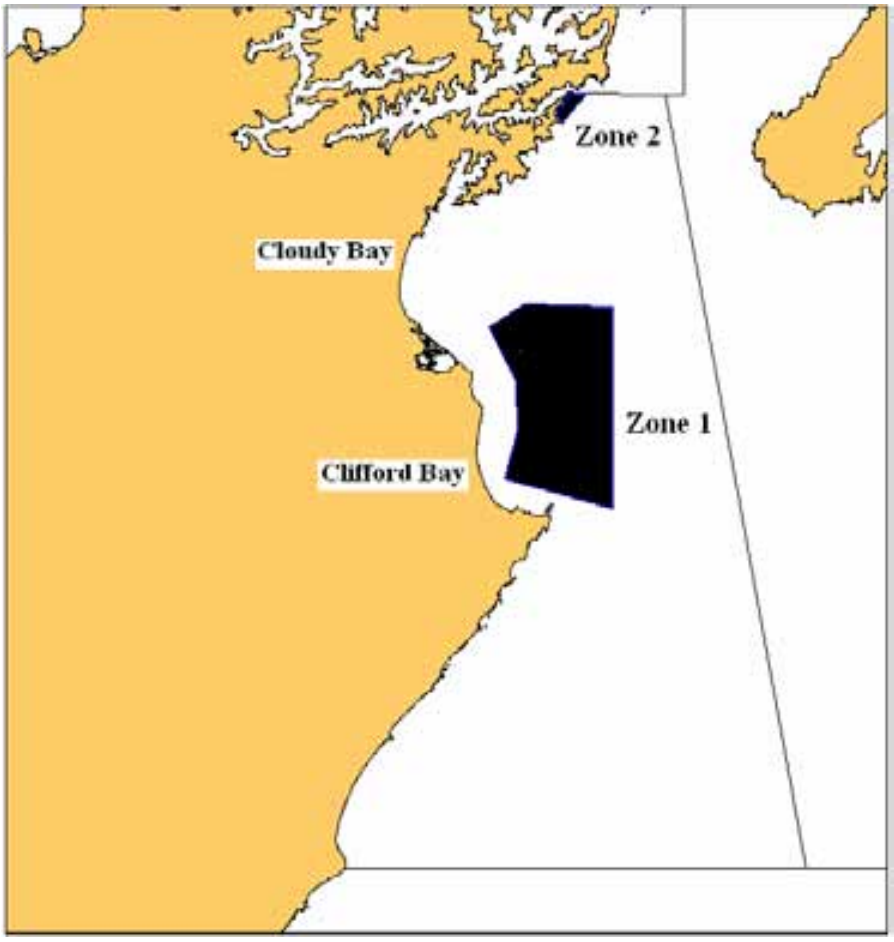
Option 3 – increase the TAC to 50 tonnes

35 Option 3 provides a moderate TAC increase based on MCY_2 and MCY_3 estimates of 28 tonnes and 133 tonnes. This approach accepts a higher degree of risk to the sustainability of the OYS 7C stock under a higher catch level. MFish notes the level of uncertainty of maintaining the stock at, or above, a level that can produce the B_{MSY} is higher under this option.

36 Adopting Option 3 will enable the industry to develop a new fishery on a sustainable basis and derive greater economic value from the OYS 7C fishery.

37 Under Option 3, there will be a significant increase in fishing effort on the benthic environment. To address the potential for this level of fishing effort to have a detrimental impact on the benthic environment, the industry has signaled it would voluntarily restrict harvest activities to two defined areas (or zones) – the bay immediately south of the entrance to Queen Charlotte Sound and an area between the Wairau Bar and Cape Campbell (refer to Figure 2). The 2007 survey suggests 90% of the known recruited oyster biomass occurs within these areas. It is likely the full TACC would be taken from both areas each year.

Figure 2 Proposed commercial harvest areas (depicted as Zones 1 and 2)



38 MFish favours Option 3 because it enables the industry to develop the OYS 7C fishery, while acknowledging the increasing uncertainty with the available MCY estimates. Relative to other shellfish fisheries, dredge oysters are a species of low productivity (ie, long-lived, slow-growing, brood relatively few larvae that do not disperse widely, and have high post-settlement mortality and low recruit mortality). These biological characteristics suggest dredge oysters are susceptible to the effects of localised fishing. Repeated dredging of localised oyster beds may cause significant incidental mortality of oysters and may alter the habitat required for recruitment. Dredging may also exacerbate and spread disease (including *Bonamia*), which is understood to be present in oyster populations throughout New Zealand.

Option 4 – increase the TAC to 100 tonnes

39 Option 4 provides the greatest TAC increase of the four options presented and is based on the MCY_3 estimate of 133 tonnes. This approach accepts the highest degree of risk to sustainability of the four options presented. MFish notes the level of uncertainty of maintaining the stock at, or above, a level that can produce the B_{MSY} is highest under this option.

40 There will be a substantial increase in fishing effort on the benthic environment under Option 4. As with Option 3, the industry has signalled it would voluntarily restrict harvest activities to two defined areas (refer to Figure 2) within the QMA to mitigate the environmental effects of fishing under the higher catch level.

TACC and allowances

41 Dredge oysters are an important species for many New Zealanders. Under a higher TAC, there is potential for an increased level of conflict between the industry and non-commercial fishers in accessing oysters, particularly those beds that are relatively accessible from shore. However, MFish considers the level of non-commercial harvest within the OYS 7C fishery to be relatively small and certainly away from the main commercial oyster beds within Cloudy and Clifford Bays. As industry intends to restrict commercial harvesting away from inshore areas to address fishing impacts on the benthic environment, this will have an additional effect of spatially allocating the most accessible oyster beds (ie, those beds found close to shore and within Port Underwood) to non-commercial fishers. In addition, commercial fishers are prohibited from taking dredge oysters between 1 September in any year and the last day of February in the following year (both days inclusive). This measure also reduces potential issues of conflict between commercial and non-commercial sectors over the main summer period.

42 MFish considers it appropriate to retain the existing allowances of 1 tonne each for customary and recreational interests under each TAC option. MFish contends these allowances do not constrain non-commercial fishers from taking dredge oysters from the fishery, and that there is no new information on non-commercial harvest levels to suggest a review of these allowances.

43 The current TAC includes a nominal allowance of 1 tonne for other sources of fishing-related mortality. This allowance acknowledges the potential for an illegal take of dredge oysters and impacts of dredging on oyster beds, while reflecting the absence of quantitative information for the OYS 7C stock. MFish notes there is uncertainty as to the level of other sources of fishing-related mortality under the four

TAC options but such mortality is likely to increase as catch levels increase. MFish proposes to retain the current allowance at 1 tonne under each TAC option until new information becomes available to warrant a review.

44 This paper considers four TACC options listed in Table 3. This table includes an indicative estimate of the landed value of the commercial fishery under each option and is based on a port price of $6.75 per kg for dredge oysters within the adjacent OYS 7 fishery.

Table 3 **Proposed TACC options and includes an indicative landed value estimate of oysters for each option**

Option	Proposed TAC (tonnes)	Proposed TACC (tonnes)	An estimate of the value of the commercial fishery
Option 1	5	2	$13 500
Option 2	25	22	$148 500
Option 3	50	47	$317 250
Option 4	100	97	$654 750

45 The potential immediate economic return to industry is greatest under the highest proposed TACC (ie, Option 4) and simply reflects the greatest level of utilisation under the four options presented.

46 However, the potential economic return to the fishery under a higher harvest level must be balanced against the uncertainty in the available stock assessment information and the environmental effects of an increase in fishing effort. This is further discussed in the next section.

Environmental impacts of dredging

47 The harvesting of dredge oysters under a higher catch level will have an impact on the soft, muddy benthic environment within Cloudy and Clifford Bays. These impacts concern both the oyster beds and other invertebrate species found in association with these beds. The environmental principles of the Act require an assessment of the potential impacts of increased fishing effort on the benthic environment under each TAC option.

48 The impacts of fishing on the benthic environment will increase under higher TACC levels. These impacts can include the direct removal of various invertebrates, as well as increased suspension of silt over oyster beds. Dredge oyster beds are susceptible to increased siltation through smothering of both adult oysters and recruitment surfaces, as well as inhibiting oyster growth and a loss or reduction of suitable habitat area. As noted above, dredge oysters are also susceptible to localised depletion due to various biological characteristics. All of these factors may cause an increase in fishing effort to have a significant impact on localised oyster beds and have direct adverse effects on other benthic species.

49 In assessing the impacts of fishing on the benthic environment under each TAC option, MFish highlights that large areas of the OYS 7C QMA are likely to have been already modified by bottom trawl fishing over the past 20 to 30 years. While MFish understands there has been little historical dredging activity within the OYS 7C QMA, the main oyster beds are found in areas already subject to long-term bottom trawling. As such, it is important to acknowledge the proposed commercial harvest areas for dredge oysters are unlikely to be in pristine condition with high biological diversity.

50 MFish notes the 2007 survey indicates there are several areas within Cloudy and Clifford Bays (particularly in inshore areas) where a wide range of sensitive invertebrate species occur (including soft corals, bryozoans, and horse mussels). However, these species are predominately found in inshore areas and/or areas of foul ground, and are generally away from where the main dredge oyster beds occur.

51 MFish notes that industry is prepared to take steps to mitigate the effects of fishing under a higher catch level. In the initial phase of developing the OYS 7C fishery, the industry has signaled it will voluntarily restrict fishing to two discrete areas within the QMA (refer to Figure 2). Under this measure, all commercial dredging would be voluntarily prohibited in the majority of inshore areas within the QMA, and this would include fishing away from areas of foul ground where the potential bycatch of invertebrate species would be higher. MFish understands the industry will require vessels participating within the OYS 7C fishery (which are likely to be no more than six vessels under the highest TAC option) to implement vessel monitoring technology to ensure that fishers adhere to the restricted fishing areas. Over subsequent stages, MFish would work with the industry to develop more durable management measures to ensure the impacts of dredging are minimised.

APPENDICES

Statutory Considerations

52 In forming the management options, MFish has considered all the statutory obligations described in the Act. These are summarised below.

a) **Section 8:** The purpose of the Act is to provide for the utilisation of fisheries resources while ensuring sustainability. The proposed TAC options seek to enable the commercial sector to derive greater value from the OYS 7C fishery to reflect the available resources while mitigating the effects of fishing on the benthic environment. The Act includes obligations to avoid, remedy, or mitigate any adverse effects of fishing on the aquatic environment. This paper discusses those effects and proposed management measures when decisions are made about sustainable utilisation of fisheries resources.

b) **Section 13(2):** Under s 13 of the Act, the TAC should be set at a level that ensures the stock is maintained at, or above, a level that can produce the B_{MSY}. This paper presents a range of TAC options each with a different but uncertain likelihood of achieving this objective.

c) The proposed TAC options are based on:

i) **Section 13(2)(a):** While there are interactions between dredge oysters and associated species, there is no evidence that the interdependence of stocks are of significant magnitude to impact on the setting of the TAC.

ii) **Section 13(2)(b)(ii):** Dredge oyster populations inhabit a wide range of habitats (from intertidal rocks to 100 m depth) and are subject to spatial and temporal fluctuations in stock size and structure due to the influence of environmental factors on population dynamics. Factors include temperature, salinity, hydrology, and the effects of *Bonamia*. Dredge oyster populations are susceptible to increased siltation, which can smother both adult oysters and recruitment surfaces; increase organic and mineral pollution may inhabit oyster growth and cause a loss or reduction of suitable habitat area. All of these factors make oysters susceptible to localised depletion.

iii) The biological characteristics of dredge oysters mean the stock may have low productivity (relative to other shellfish species) as it is long-lived, slow-growing, brood relatively few larvae that do not disperse widely, and have high post-settlement mortality and low recruit mortality. This suggests the stock may be susceptible to overexploitation and the effects of localised fishing.

d) **Section 13(3):** There will be social and economic implications under each TAC option. While this paper discusses the broad effects of each option, the precise nature of these effects has not been quantified. The long-term benefits of increasing the TAC are regarded as outweighing the effect of retaining the TAC at the current level to enable commercial fishers to derive greater economic value from the OYS 7C stock.

e) **Section 9(a) and (b):** MFish has no evidence that maintaining biological diversity and associated or dependent species will be threatened by retaining the TAC at its current level. Under each TAC option, the effects of higher catch levels on biological diversity and associated or dependent species will increase. However, it is anticipated that the effects of fishing on some bycatch species will be managed under the QMS framework. In addition, the industry proposes to initially constrain commercial dredging to two specific areas to mitigate the effects of fishing on the benthic environment.

f) **Section 9(c):** MFish has not identified any habitats of particular significance with regards to the OYS 7C stock. MFish notes that dredging can have adverse effects on the benthic environment. Dredging, especially in areas with high silt levels, can potentially remove settlement surfaces and suspend silt that can cause high mortality in newly settled recruits for various sessile species.

g) **Section 5(a) and (b):** MFish states the s 5 considerations arising from New Zealand's international obligations and the provisions of the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992 are adequately addressed by the TAC options discussed in this paper.

h) **Section 11(1)(a):** The effects of fishing on the stock and the aquatic environment under the current TAC are negligible. MFish notes that dredging under a higher catch level will have an impact on the benthic environment within the OYS 7C QMA. These impacts concern both the oyster beds and other invertebrate species found in association with these beds. While the fishery has been subject to very little commercial dredging to date, the bottom type where dredge oyster beds occur is likely to have already been modified by long-term commercial bottom trawling. The industry is proposing measures to mitigate the impacts of fishing under a higher TAC.

i) **Section 11(1)(b):** The commercial sector is restricted to a minimum size limit of 58 mm for dredge oysters, as well as a closed season from 1 September in any year and the last day of February in the following year (both days inclusive). There is a daily bag limit for recreational fishers of 50 oysters per person and a minimum size limit of 58 mm also applies.

j) **Section 11(1)(c):** MFish recognises that dredge oyster stocks can be inherently variable and that discrete oyster beds are prone to fluctuations in abundance that can render them susceptible to fishing.

k) **Section 11(2A)(b):** No fisheries plan have been approved that would have a bearing on the setting of a TAC for the OYS 7C stock.

l) **Section 11(2A)(a and c):** MFish is not aware of any fisheries or conservation service decisions, or any decisions not to require fisheries or conservation services that are relevant to setting a TAC for the OYS 7C stock.

m) **Section 11(2)(a and b):** MFish is not aware of any considerations in any regional policy statement, regional plan or proposed regional plan under the

Resource Management Act 1991 or the Conservation Act 1987 that are specifically relevant to setting a TAC for the OYS 7C stock.

n) **Section 11(2)(c):** The considerations of ss 7 and 8 of the Hauraki Gulf Marine Park Act 2000 are not relevant to setting a TAC for the OYS 7C stock.

o) **Section 21(1)(a and b) and (4)(i and ii) and (5):** The Minister has set allowances of 1 tonne for customary and recreational interests, respectively. There are no mātaitai within the OYS 7C QMA. No area has been closed or fishing method restricted under s 186A due to issues associated with dredge oysters. There are no areas closed to fishing under s 311 at this time.

p) **Section 10:** MFish has relied on the May 2007 survey report (TAL07402) prepared by the National Institute for Water and Atmospheric Research (NIWA) on behalf of the OYS 7C quota owners as its principle source of stock assessment information in developing management options presented in this paper.

DREDGE OYSTER (OYS 7C) – SUMMARY OF SUBMISSIONS

1 **ECO** asserts that MFish should have required the industry to assess the environmental effects of fishing under a higher TACC, as it is wrong to assume that muddy and sandy substrates have low biodiversity and would not be affected by bottom dredging.

2 ECO notes that Zone 1 includes foul ground, and asks what is to prevent fishers intensively dredging this area to expand the dredged area. ECO note that it takes over 75 years for reefs in the Foveaux Strait oyster fishery to begin recovery once dredging has ceased.

3 ECO concludes that the proposal to increase the OYS 7C TACC breaches both the *Strategy for Managing the Environmental Effects of Fishing* (SMEEF) and principles contained within the Fisheries Act 1996 and MFish's *Statement of Intent* (SOI) including:

- the requirement to provide for the utilisation of fisheries while ensuring sustainability; and to avoid, remedy or mitigate any adverse effects of fishing on the aquatic environment (s 8);
- the requirement to use best available information (s 10) including the need to monitor and assess the effects of fishing on an ongoing basis; and
- the requirement to maximise value (SOI), including the need to take into account wider, non-fisheries government priorities and international obligations.

4 On balance, ECO recommends the current TAC remains unchanged and that research be conducted into the impact of dredging on marine biodiversity and ecosystems.

5 **FDS** recommends the TAC be increased to 100 tonnes, as there are sufficient management measures in place to maintain the sustainability of the OYS 7C fishery and the surrounding environment. These measures include the minimum size limit of 58mm, proposed voluntary fishery closures (including 10m depth exclusions for sanitary purposes), and remoteness of the fishery.

6 **MRF** is concerned that any increase to the TAC for OYS 7C will have extremely detrimental effects upon both the blue cod fishery and the benthic environment. MRF note that a significant number of their members fish over foul ground in the Clifford Bay area for tarakihi, blue cod, sea perch and moki, and they suggest that blue cod in Queen Charlotte Sound originate from larvae from Clifford Bay.

7 MRF expresses concern that MFish has overlooked the importance of the area to recreational fishers.

8 MRF believes there has been little scientific research conducted in the OYS 7C area to determine the possible impact of an increase to the OYS 7C TAC on other commercial fisheries such as flatfish, red cod, sea perch and gurnard, or the impact on the benthic environment.

9 MRF strongly objects to a TAC increase for the OYS 7C fishery.

10 **Matthew Hardyment** states the TAC should be increased to a more appropriate level to allow more harvesting. He notes that a large proportion of the oyster stock are barely over the minimum size because oysters are competing for food and need to be thinned out to enable the remaining oysters to grow larger.

11 Matthew Hardyment suggests the amount of customary and recreational fishing is unknown, but notes the OYS 7C fishery is an introduced fishery that was seeded in the 1900s. He suggests that violent weather conditions in Cook Strait would mean recreational and customary fishing is minimal.

12 Matthew Hardyment suggests there is sufficient information and management options available for MFish to avert problems such as those that occurred in the Bluff oyster fishery, and that the NIWA survey was "done very conservatively".

13 Finally, Matthew Hardyment suggests that an increase in the OYS 7C fishery would take pressure off the Tasman and Golden Bays' oyster fishery.

14 **NZRFC** agrees that an increase to the TAC and TACC is warranted, and suggests the OYS 7C fishery is being developed with more caution and research than other fisheries.

15 NZRFC states that provided industry limit their effort to predefined areas, benthic impact will be reduced on adjacent communities. To ensure compliance, NZRFC recommends that all commercial boats operating in the OYS 7C fishery carry vessel monitoring systems, as used by commercial boats in the southern scallop fishery.

16 NZRFC notes the area is adjacent to important amateur fisheries such as blue cod, and therefore supports a conservative approach should be taken with developing the OYS 7C fishery, including protecting the Queen Charlotte Sound from sedimentation.

17 NZRFC agrees that a TAC of 50 tonnes will likely provide sufficient encouragement for industry to develop the fishery, while maintaining sustainability.

18 NZRFC disagrees with applying the same allowance for fishing-related mortality under each TAC option. NZRFC states that the allowance for fishing-related mortality should be at least 10% of the proposed TAC.

19 NZRFC is also concerned there is no intention to increase the recreational allowance, suggesting that if the fishery declines MFish would reduce both this allowance and the daily bag limit for amateur fishers. NZRFC suggest that a 24-fold increase in the TACC, whilst leaving other allowances unchanged, is neither logical nor fair, and that the amateur allowance ought to be at least 10% of the TAC.

20 NZRFC submits that oyster quota owners should be required to carry out pre-season biomass surveys and present the information to the Challenger Scallop and Dredge Oyster Recreational Advisory Group.

21 **SeaFIC** notes that estimates of recruited oyster biomass, numbers and density assume 100% dredge efficiency. Further, virgin biomass estimates on which maximum constant yield (MCY) estimates are based relate to only a small part of OYS 7C;

therefore these estimates can be considered the lower limits of recruited oyster biomass.

22 SeaFIC suggests that as a result of uncertainty in dredge efficiency and natural mortality, the yield estimates using survey biomass estimate vary considerably, and the range of MCY estimates provided in the IPP (18 to 213 tonnes) is not the full range of plausible MCYs, but rather a conservative range. The final survey report gave six estimates of MCY based upon various dredge efficiency and natural mortality estimates, which range from 18 tonnes to 639 tonnes. SeaFIC suggest that stakeholders may have been led to believe that only TACs of up to 100 tonnes could be considered.

23 SeaFIC suggests the risk characterisation for the range of TAC options presented is inadequate, such that only the relative risks of the options presented, rather than the risks associated with the entire range of MCY estimates are discussed. Further, risk should be discussed in terms of absolute risk, as well as relative risk.

24 SeaFIC perceives the IPP to show little foresight with regard to the ongoing development and management of the OYS 7C fishery, other than an undertaking by MFish to work with industry to manage the effects of fishing on the benthos. SeaFIC suggest the IPP gives the impression that the decision before the Minister represents a one-off solution, with only this opportunity to balance sustainability with utilisation.

25 SeaFIC considers a more realistic view is that continued development will require further research to refine long-term yield estimates and that development of the OYS 7C fishery must be managed to provide for the collection of this information. SeaFIC submit that periodic adjustment of the TAC in response to new information is a reasonable expectation.

26 SeaFIC notes that an MCY-based TAC represents a cautious management strategy, especially for an unexploited fishery, whereas many shellfish fisheries are managed on the basis of Current Annual Yield (CAY) strategies that enable the TAC to be varied annually.

27 SeaFIC suggests that ideally a management strategy would be selected that seeks to balance the economic potential of the fishery with the information needs of management. SeaFIC further notes that information gathering should be ongoing, and that there are opportunities to gather the information efficiently.

28 SeaFIC suggests that assertions in the IPP that higher TACs will result in a significant increase in benthic impact are made in the absence of any consideration of the likely effort required to take an increased TACC or of historical fishing effort in the area.

29 SeaFIC asserts that because of long-term bottom trawling in the area, the impact of increased oyster dredging may be inconsequential. Therefore, likely commercial catch rates should be considered in terms of historical trends in the fishing effort in QMA 7. SeaFIC acknowledges the IPP indicates oyster beds are likely to occur in areas historically fished by bottom trawling.

30 SeaFIC notes the proposal to voluntarily limit commercial oyster fishing to two specific areas within OYS 7C, as an interim arrangement, will limit the spatial extent

of benthic impact. SeaFIC states the maximum area fished will be limited independently of any TAC set.

RUBYFISH (RBY 8) – INITIAL POSITION PAPER

Executive Summary

1 The purpose of this paper is to propose a technical alteration to the total allowable catch (TAC) and total allowable commercial catch (TACC) for ruby fish in area 8 (RBY 8) from 55 tonnes to 6 tonnes, to correct an administrative error.

Management Option

2 MFish proposes that the TAC and TACC for RBY8 be amended from 55 tonnes to 6 tonnes so that it reflects the original proposal in the final advice paper approved by the Minister in September 2006.

3 MFish considers this correction to the TAC and TACC is permitted under section 13 of the Interpretation Act 1999. Section 13 of the Interpretation Act allows the authority which was used to approve the mistaken TACC of 55 tonnes in the first place, to be used again to correct that error.

Rationale for Management Option

4 As part of the October 2006 sustainability round a number of stocks, classed as low knowledge stocks, had their TACs, TACCs and their deemed value rates adjusted. The new TACs and TACCs were set using an average of landings over the past seven years. In the initial position paper (IPP) the proposed TACC for RBY8 was set at 5 tonnes.

5 Following receipt of submissions, the Minister was provided with an option of setting TACs and TACCs with an additional 10% to take account of the fact that the previous seven years landing data varied in the early years as fishers got used to the species being part of the QMS. This meant the TAC and TACC for RBY8 would become 5.5 tonnes, which should have been rounded up to 6 tonnes. However, an error in the analysis table listed the new TAC and TACC as 55 tonnes and this error was transferred to the Final Advice Paper (FAP) and was subsequently gazetted.

Assessment of Management option

6 The correction to the TAC and TACC may have implications for commercial quota owners who own RBY8 quota shares particularly if they invested in these quota shares on the basis of the incorrect TACC increase. However an assessment of quota trades for the period August 2006 to April 2007 indicates that no quota shares have been traded during this period.

7 An analysis of landings of RBY8 against the TACC indicates that between 1 October 2006 and 30 April 2007 only 201 kg of RBY8 has been harvested. This is in comparison to 7,881 kg reported for the same period last year. This suggests that fishers have not deliberately set out to harvest the higher RBY8 TACC.

Statutory considerations

8 As discussed in paragraph 5 above, MFish considers this correction is permitted under section 13 of the Interpretation Act 1999.

RUBYFISH (RBY 8) – SUMMARY OF SUBMISSIONS

1 Submissions regarding this proposal are discussed in the Final Advice Paper.