INITIAL POSITION PAPER - PROPOSAL TO REVIEW THE TAC FOR THE COROMANDEL SCALLOP FISHERY (SCACS) FOR 2007

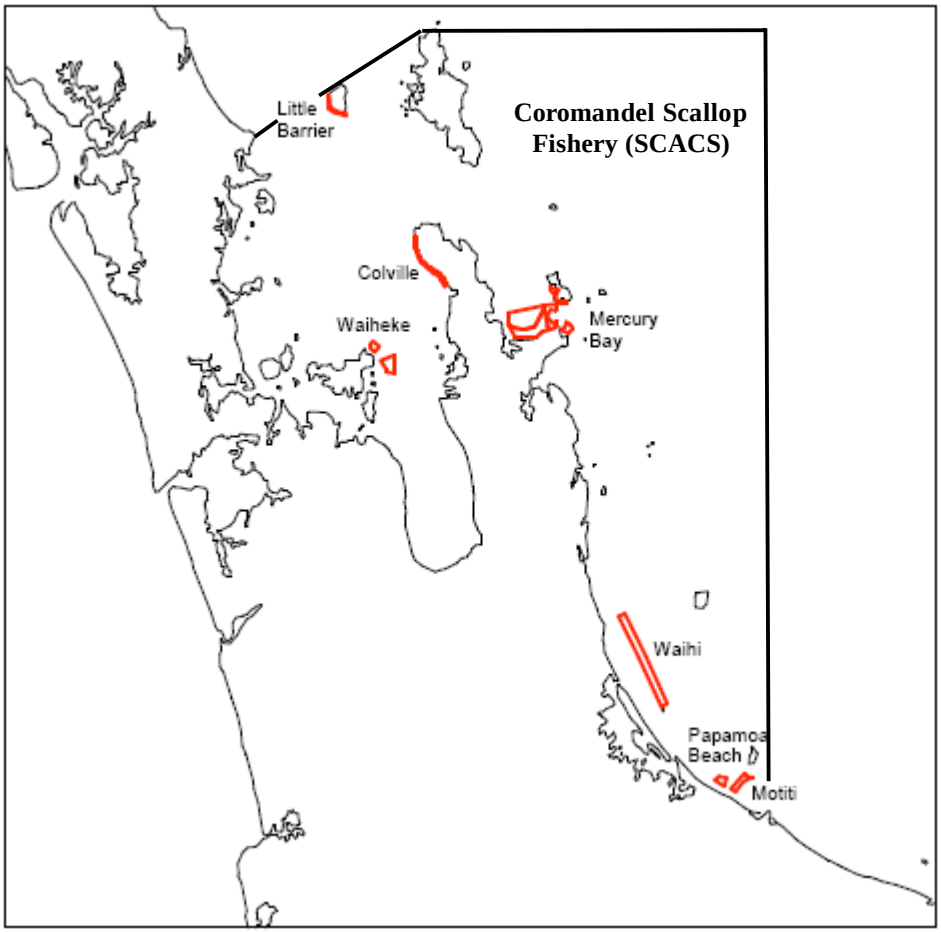

Figure 1: **Boundary of the Coromandel scallop (SCACS) Quota Management Area and the location of the main scallop beds fished by commercial fishers (shaded areas).**

Proposal

1 The Ministry of Fisheries (MFish) proposes to review the total allowable catch (TAC) of the Coromandel scallop fishstock (SCACS) for the purpose of providing for an in-season TAC increase for the 2007 fishing season. MFish proposes that the Minister of Fisheries (the Minister) considers the two management proposals below. The proposals are based on information about scallop abundance in SCACS obtained during the current fishing year.

2 **Option 1:** Increase the TAC from 48 to 165 tonnes meatweight, and within the TAC:

a) increase the allowance for recreational fishing from 7.5 tonnes meatweight to 10 tonnes meatweight;

b) increase the allowance for customary Maori fishing from 7.5 tonnes meatweight to 10 tonnes meatweight;

c) increase the allowance for other sources of fishing-related mortality from 11 tonnes meatweight to 37 tonnes meatweight;

d) increase ACE from 22 tonnes meatweight to 108 tonnes meatweight; and

e) at the end of the current fishing year for SCACS, the TAC will revert to 48 tonnes meatweight, the allowance for recreational fishing will revert to 7.5 tonnes meatweight, the allowance for customary fishing will revert to 7.5 tonnes meatweight, the allowance for other sources of fishing-related mortality will revert to 11 tonnes meatweight, and the ACE will revert to 22 tonnes meatweight.

3 **Option 2:** Increase the TAC from 48 to 160 tonnes meatweight, and within the TAC:

a) retain the recreational fishing allowance at 7.5 tonnes meatweight;

b) retain the customary fishing allowance at 7.5 tonnes meatweight;

c) increase allowance for other sources of fishing-related mortality from 11 tonnes meatweight to 37 tonnes meatweight;

d) increase the ACE for quota owners from 22 tonnes meatweight to 108 tonnes meatweight; and

e) at the end of the current fishing year for SCACS, the TAC will revert to 48 tonnes meatweight; the allowance for other sources of fishing-related mortality will revert to 11 tonnes meatweight, and the ACE will revert to 22 tonnes meatweight.

Management Framework

Coromandel scallops fisheries plan

4 Since the end of 2005, the Ministry of Fisheries and stakeholders have been working on a draft fisheries plan for the Coromandel scallop fishery. The draft plan sets out:

- the overall goals and objectives for the fishery. The goals reflect a commitment on the part of all stakeholders to cautious management of the fishery, so that scallops will be available for customary, commercial, and recreational use into the future – as well as continuing to perform their role in the marine ecosystem;

- an assessment of how well current management of the fishery is working towards meeting the goals and objectives specified in the plan;

- strategies for management, where current management does not fully reflect the goals stakeholders and the Ministry want to achieve; and

- an operational plan that outlines the specific management measures planned for the next 18 months.

5 The plan is still in a draft stage, and stakeholders and the public are currently being encouraged to provide additional comments on it. The draft fisheries plan is available on the Ministry of Fisheries website (www.fish.govt.nz) by selecting "Fisheries Plans" from the left hand menu and then "Ministry-led fisheries plans" and following the links.

Catch limits and allowances

6 Coromandel scallops were introduced into the quota management system on 1 April 2002. Most stocks in the quota management system – including Coromandel scallops – are managed under section 13 of the Fisheries Act 1996 (the Act). For stocks managed under section 13, the Minister of Fisheries must set a total allowable catch that:

a. Maintains the stock at or above a level that can produce the maximum sustainable yield (MSY); or
b. enables any stock that is currently below a level that can produce the maximum sustainable yield to be altered:
    (i) in a way and at a rate that will result in the stock being restored to or above a level that can produce the MSY having regard to the interdependence of stocks; and

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

c. enables the level of any stock currently above the biomass that can produce the MSY to be altered in a way and at a rate that will result in the stock moving towards or above a level that can support the MSY.

7 The maximum sustainable yield is the greatest yield that can be achieved over time, while maintaining the stock's productive capacity, and having regard to the population dynamics of the stock, and any environmental factors that influence the stock. Relevant factors include the stock's population dynamics (for example, whether stock numbers vary greatly from year to year), and environmental factors that influence the stock. The level that can produce the MSY may be a dynamic target rather than a fixed point, and this is the case for the SCACS stock.

8 Scallops have a number of biological characteristics that can contribute to marked fluctuations in population size from year to year. Such fluctuations are possible even if no fishing occurs (although the pattern of fishing effort is thought to contribute to how the population responds to such periods of low biomass—i.e. if it recovers quickly or slowly). Further information on scallop biology is found in appendix one of the draft fisheries plan.

9 An in-season increase is available because Coromandel scallops are listed on the Second Schedule of the Act. This schedule can apply to any stock whose abundance is known to fluctuate significantly year to year. The total allowable catch of stocks listed on the Second Schedule can be increased during the fishing year, in years when the stock is abundant. The aim of an in-season adjustment to the total allowable catch is to manage a stock at, or above, a level that can produce the maximum sustainable yield.

10 As scallop numbers can vary greatly from year to year, the baseline total allowable catch was set at a level MFish thought would be sustainable, even in years of low scallop numbers. However, in years when pre-season surveys show scallop numbers are comparatively high, there is a provision for the total allowable catch to increase (s 13(7) of the Act). Figure 1 shows the process for that increase.

11 The total allowable catch was set at 48 tonnes meatweight, and is assigned as follows:

Table 1: Total allowable catch and allowances for Coromandel scallops (tonnes meatweight)

	Total allowable catch	Recreational allowance	Customary allowance	Allowance for other sources of mortality	Total allowable commercial catch
Coromandel scallops	48 tonnes	7.5 tonnes	7.5 tonnes	11 tonnes	22 tonnes

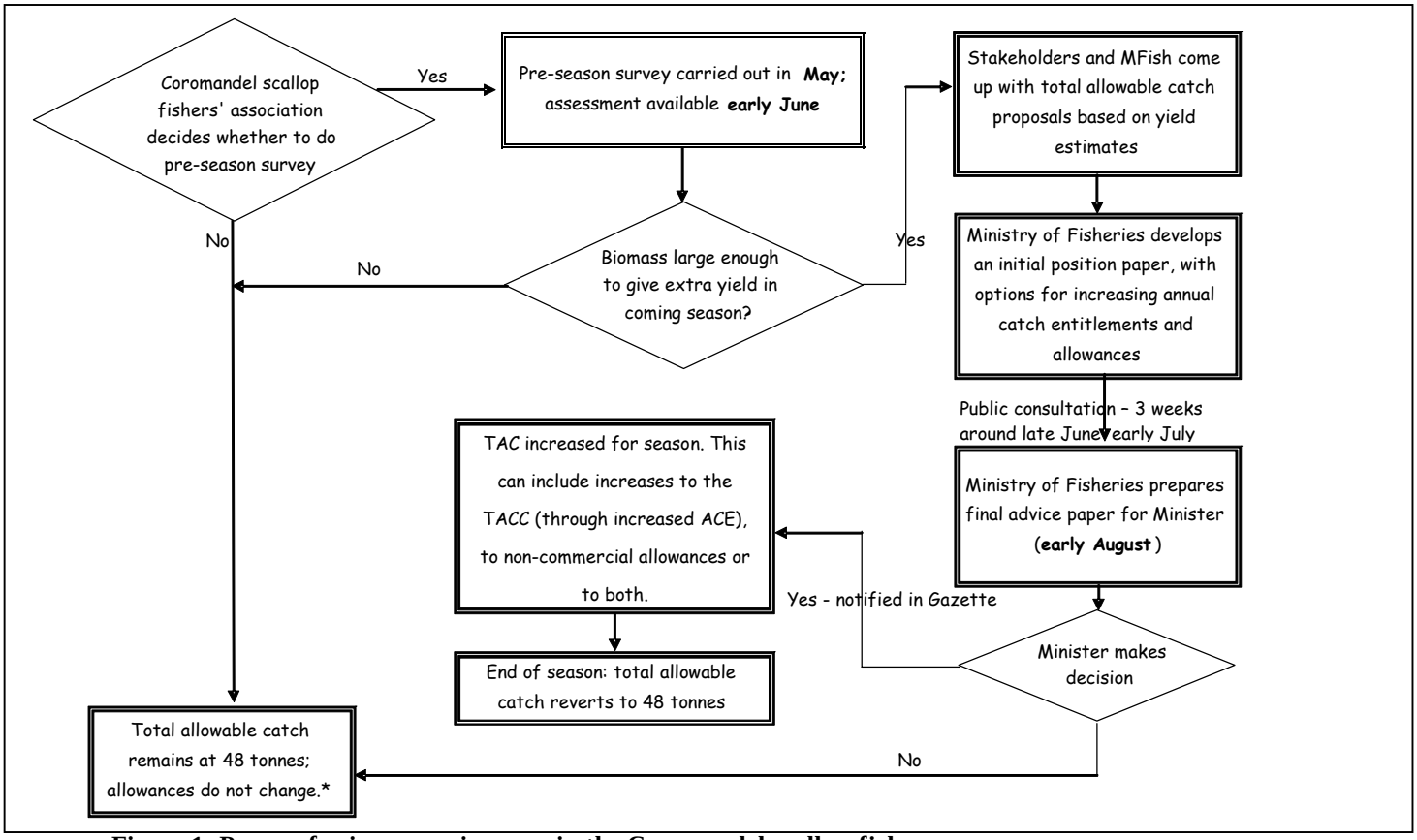

Figure 1: Process for in-season increase in the Coromandel scallop fishery

* In years of particularly low abundance, the total allowable catch could be reduced from 48 tonnes if necessary, however, this must occur before the start of the season on 1 April.

Fishery assessment

Biomass surveys

12 Since 1978, surveys have been used to estimate the abundance of scallops in the Coromandel scallop fishery. Yield estimates based on these surveys have been used to set limits on catch (including the TAC, TACC, and allowances) for the fishery. Further information on the management system used in the Coromandel scallop fishery is available in appendix one to the draft fisheries plan, available at the web address listed above, or through the Auckland office of the Ministry of Fisheries.

13 A research survey was undertaken in May 2007 to assess the Coromandel scallop fishery. Beds at Little Barrier, Colville, Waiheke, Mercury Bay, Waihi and Papamoa were surveyed.

14 Scallops are counted at each survey site and are converted to numbers per square metre of seabed according to the area swept by the dredge. The absolute density of scallops is estimated by correcting for the efficiency of the dredges. The numbers of scallops are calculated by multiplying the mean scallop density by the area of each survey stratum. Mean scallop weight is then estimated and used to calculate biomass.

15 The 2007 survey report by NIWA provides three current annual yield (CAY) estimates[1] for the SCACS stock. The first of these is a "pessimistic outlook" estimate, which essentially represents a worst case scenario for the fishery. The second is an "average outlook" estimate of 338 tonnes (meatweight). This average estimate has formed the basis of management proposals in recent years. This estimate assumes factors such scallop growth, mortality, dredge efficiency and greenweight to meatweight conversion rates will be in line with the averages recorded over recent years in the fishery. The third estimate uses the same assumptions as the second estimate, but also considers the "feedback" effects of habitat modification by dredging on juvenile scallop mortality. The results of the NIWA report, including a comparison between the numbers of scallops greater than 95mm over the years 1990–2007 (Table 3), are summarised in Appendix 2.

16 The 2007 survey of commercial scallop beds in the Coromandel fishery estimates a 30% decrease in total scallop biomass at time of survey compared to the same time last year. However, as with all biomass surveys, there is a degree of uncertainty associated with survey results and actual biomass may differ from that estimated.

Proposed TAC, allowances, and ACE

TAC setting

17 Under s 13 of the Act, the TAC must be set at a level that will maintain the stock at or above, or move the stock towards or above, the level that will support the MSY. As SCACS is on the Second Schedule to the Act, under s 13(7) the Minister can increase the TAC in-season after considering information about the abundance of the stock.

18 There is no current assessment of the entire SCACS stock on which to base a TAC. The available estimates of yield are based on a survey of the main commercial scallop fishing beds. The CAY method estimates sustainable yield from areas primarily utilised by commercial fishing. The survey has given estimates of sustainable yield for

[1] 'CAY' is an estimate of sustainable catches from a fishery. It is based on the concept of harvesting the same proportion of the total scallop population every year (i.e. of total biomass - which refers to the total weight of fish in the population). Because scallop numbers can change significantly from year to year, the CAY estimate may be different each year. For the Coromandel scallop fishery, biomass surveys are done every year to give us this information. Matching catches to the CAY estimate each year is one way of ensuring that, over time, the stock stays at or above the biomass level that can support the maximum sustainable yield.

The other common way of trying to achieve that goal (i.e. managing a stock at or above the level that can produce maximum sustainable yield) is to set a constant catch that in theory can be taken in any given year, and over time will maintain the stock around the target level (with fluctuations). This is how most of New Zealand's finfish fisheries are managed. However, due to the natural ups and downs of scallop populations, the *constant* catch that could be safely harvested *every year* would be close to zero. This is because in years in which scallop numbers are naturally low (e.g. because of environmental conditions), only a very small amount can be harvested without reducing the ability of the population to recover over a reasonable timeframe.

For scallops, although 'CAY' is an estimate of what can be sustainably taken from the fishery in a given year, research also indicates there are benefits to fishing more conservatively than this. In particular, the fishery could be more stable, with less risk of scallop numbers dropping below desirable levels. There are also other potential benefits, including higher catch rates, bigger fish, less fishing effort (lower costs), and lower environmental damage.

the coming year. Basing the catch limits for 2007–08 on the survey estimates is considered likely to move the stock towards or above the level that can produce the maximum sustainable yield over time.

19 On 13 June, MFish emailed a copy of the draft NIWA research report entitled "Biomass surveys and stock assessments for the Northland and Coromandel scallop fisheries, 2007" to sector leaders and participants in the fishery plan process. The report presents the results of the survey carried out in May. Based on this information, quota-holders considered it appropriate to adopt a cautious approach towards the in-season TAC increase. Quota holders recommended that the total available ACE should be increased to 108 tonnes, 10 tonnes less than the previous year.

20 The President of the New Zealand Recreational Fishing Council (NZRFC) has also commented to MFish on the draft NIWA report. The NZRFC considers that the Coromandel scallops fishery should continue to be managed conservatively. While appreciating that this year's proposed in-season increase is 10 tonnes lower than the previous year, NZRFC considers the reduction should be closer to 30%, given the 30% reduction in the biomass estimate for this year. A 30% reduction to the in-season increase (compared to the previous year) would result in commercial catch limit of 83 tonnes. NZRFC recognises this would be difficult for commercial fishers, and thus it would support a limit of up to 90 tonnes (meatweight).

21 NZRFC also feels that the option to increase the recreational allowance from 7.5 to 10 tonnes is insufficient to cover likely recreational catch. However, it notes that a customary allowance of 10 tonnes is unlikely to be fully utilised, and a combined non-commercial catch of 20 tonnes is probably close to actual non-commercial take. Finally, while NZRFC still believe an increase in the daily recreational bag limit from 20 to 30 scallops is justified, it acknowledges several recent changes to the recreational season and regulations (see paragraphs 31–33) have improved recreational access to the fishery. As such, NZRFC supports continued monitoring of the fishery with a view to seeking a bag limit increase next year.

22 The Environment and Conservation Organisations of Aotearoa New Zealand (ECO) has also commented to MFish on the draft NIWA report. ECO considers that this year's survey results are consistent with ECO's view that the high abundance of scallops over the last three years is the result of a "fortuitous recruitment window" rather than a "recovered fishery." ECO notes that this recruitment is not consistent across the fishery, with over 75% of total fishery biomass concentrated in the Mercury beds. ECO does not object to commercial fishers benefiting from this biomass while it is available, but expects acknowledgement of the short-term nature of this event and a more precautionary approach next season.

23 MFish appreciates the preliminary input of these stakeholders into this initial proposal. These views —and the views of stakeholders who lodge submissions on this proposal before Monday 23 July— will be incorporated into the final advice paper (FAP) to the Minister of Fisheries.

24 At this stage, MFish has not received any comments on possible TAC increases from customary Mäori fishers. MFish looks forward to submissions from this sector, and further submissions from the commercial, recreational and environmental sectors during the consultation period, so that they may be incorporated into the final advice paper to the Minister of Fisheries.

25 MFish proposes that the Coromandel scallop TAC should be increased from 48 tonnes meatweight to either 165 or 160 tonnes meatweight. The proposed TAC increases for both options are largely based on the proposal to increase the total available ACE for commercial fishers for the 2007 season from 22 to 108 tonnes meatweight. As explained below, the difference between the two options is whether or not the allowances for recreational and customary Maori fishing should be increased.

26 At the end of the current fishing year for SCACS, the proposed TAC, ACE, and allowances would revert to the baseline levels.

Allowances and ACE

27 MFish notes there is no statutory obligation to make an adjustment to Maori customary or recreational interests when the TAC is varied pursuant to s 13(7) of the Act. However, s 68(1) requires the Minister to consider the provisions of s 21, under which he has the discretion to determine allowances.

Recreational allowance

28 In considering an in-season TAC increase, and having regard to the matters under s 21, MFish proposes two options for the recreational allowance. Option 1 proposes to increase the allowance as the 2007 biomass survey suggests a greater biomass level in the fishery than the time at which the baseline allowance was set. Conversely, option 2 proposes no change due to the lack of quantitative information available on yield and harvest levels in the recreational scallop fishery. Option 2 also reflects that although biomass may be greater than at the time the original allowance was set, scallop biomass in the areas surveyed was estimated to be 30% lower than in 2006.

Option 1: Increase the recreational allowance

29 The preliminary survey results relate primarily to the scallop beds mainly fished by the commercial sector. However, MFish considers that trends in scallop abundance in the "non-commercial" beds are likely to be similar to abundance trends for the surveyed beds. While the surveys estimate scallop biomass has decreased by 30% since the same time last year, MFish still considers that scallops are relatively abundant compared to historical levels.

30 In years of comparative scallop abundance, consideration of an increased recreational catch is necessary for several reasons. Firstly, it is probable that "regular" fishers will fish more frequently for scallops in good years. Secondly, as people become more aware that scallops are relatively abundant, there are likely to be more "new" and "occasional" fishers fishing for scallops. In addition, when scallops are abundant, it is likely that fishers will more frequently attain their full legal entitlement of scallops (ie.

the current daily bag limit of 20 scallops per fisher per day). Thus, while scallop biomass (in commercial beds) is estimated to be 30% lower than the previous year, it is still relatively abundant by historical levels and recreational catch might still exceed the recreational allowance.

31 In addition, several decisions made by the Minister of Fisheries in the last few years are likely to have improved recreational access to the Coromandel scallop fishery. Two of these decisions were made in 2005 and addressed long-standing management issues relating to the amateur scallop fishing regulations. The first decision concerned the "primary taker" issue and allowed a diver to take a scallop bag limit on behalf of up to two "safety people" on board the vessel during the diving operation. The second decision removed the ban prohibiting scallops from being processed ("shucked") at sea.

32 As part of this regulation review, the Minister declined a proposal to increase the Coromandel scallop amateur bag limit from 20 to 30 scallops per gatherer per day. The Minister considered that there is not currently enough information available to support a bag limit increase. He requested the Ministry to obtain further information on the nature and extent of the recreational fishery (including through survey), and the potential impacts of an increase in the bag limit, particularly if the fishery were to enter a period of decline. There are several research projects currently underway (or scheduled to begin this year) which should provide further information (see paragraphs 53–54).

33 A third decision altering the timing of the recreational scallop season between Cape Runaway and North Cape comes into force this year. This change moves the recreational scallop season forward six weeks, so that it now runs 1 September – 31 March (inclusive). This is expected to increase recreational catch as the season now coincides with a period in which scallops are in better condition.

34 Given that the recreational catch may increase, it is reasonable to propose an increase in the recreational allowance. Therefore, MFish proposes to increase the allowance to recreational fishing from 7.5 tonnes meatweight to 10 tonnes meatweight for 2007-08. As part of this proposal, the recreational allowance would then decrease to 7.5 tonnes meatweight at the end of the current fishing year for SCACS (31 March 2008). Proposing an increase to 10 tonnes recognises that while recreational catch could be higher than the 7.5 tonne allowance, it is unlikely to be as high as last year, given the preliminary survey results which estimate 30% lower scallop biomass.

<u>Option 2: No change to the recreational allowance</u>

35 There is a lack of quantitative information available on the recreational scallop fishery. Specifically, no reliable estimates of yield or harvest levels are available in the areas closed to commercial scallop fishing. While one biomass survey has been completed on recreational beds in 2006, this is part of an ongoing project attempting to establish a link between scallop abundance in commercial areas and abundance in recreational areas. As yet, conclusions cannot be drawn from the data, however, it is hoped that

this project will provide quantitative data on the recreational scallop beds in the near future.

36 At present, however, it cannot be determined whether or not the current allowance of 7.5 tonnes is likely to be undercaught or overcaught. Accordingly, under option 2, MFish proposes no change to the recreational scallop allowance and the level would remain at 7.5 tonnes meatweight for the 07–08 recreational season.

Māori customary interests

37 In common with many other shellfish, scallops (*tipa*) are important to Mäori as a traditional food. However, no quantitative information on the level of customary take of SCACS is available. MFish has applied a general policy that, in the absence of quantitative catch information and where the fishery is of known importance to Maori, the recreational allowance is used as a benchmark to set the customary allowance.

38 Accordingly, MFish proposes two options for the customary allowance. Option 1 is to increase the customary allowance to the level of the proposed recreational allowance —10 tonnes meatweight. The customary allowance would then revert to 7.5 tonnes meatweight at the end of the current fishing year for SCACS (31 March 2008). Option 2 is to retain the customary allowance at the current level —7.5 tonnes meatweight.

Other sources of fishing-related mortality

39 The level of incidental mortality expected in the commercial dredge fishery has been calculated by NIWA to be 34.4% of the catch level. Therefore, MFish proposes to increase the allowance for other sources of fishing-related mortality from 11 tonnes meatweight to 37 tonnes meatweight for 2007. Research suggests that incidental mortality from recreational dredging is likely to be minor. Therefore, no additional allowance for other sources of fishing-related mortality is proposed, even if the non-commercial allowances are increased.

ACE for commercial fishers

40 If the decision is made to increase the TAC in-season, the Minister can create additional ACE for fishers within a season after following the process outlined above.[2]

41 MFish proposes that the level of ACE for the SCACS fishery for the 2007 season be increased from 22 to 108 tonnes meatweight.

42 Based on a port price of $14.69 per kilogram of meatweight ($14,690 per tonne), the proposed increase in ACE of 86 tonnes meatweight equates to an increased gross return to the commercial fishers of $1,263,340 for the 2007 season.

[2] The total allowable commercial catch during the fishing year does not increase, although additional annual catch entitlements are made available during the season under section 20(4) of the Fisheries Act. When deciding to increase annual catch entitlements, the Minister must consider all the factors he/she has to take into account when making any decision about setting or changing a total allowable commercial catch (section 68(1) of the Fisheries Act 1996).

Environmental Issues

43 Section 9 of the Act prescribes the following environmental principles that must be taken into account when exercising powers in relation to utilisation of fisheries resources while ensuring sustainability:

- associated or dependent species (including non-fish bycatch) should be maintained above a level that ensures their long-term viability;
- biological diversity of the aquatic environment (ie, the variability of living organisms, including diversity within species, between species, and of ecosystems) should be maintained; and
- habitat of particular significance for fisheries management should be protected.

44 The history of commercial dredging in the Coromandel scallop fishery dates back to 1968, and trawling has occurred in the area since the late nineteenth century. There is no doubt that these fishing methods have had an impact on the seabed. There is some information available providing evidence of broad-scale changes in benthic communities that can be directly related to fishing. The seafloor in the area has also been modified by the impact of land-based activities over a much longer period. However, significant areas of habitat in the Firth of Thames and inner Hauraki Gulf are not open to commercial dredging.

45 MFish is not currently aware of any habitat of particular significance for fisheries management that requires additional protection within the Coromandel scallop fishery. MFish does not consider that the catch levels proposed below in this paper will put at risk the long term viability of associated species or biological diversity within the area of the fishery.

Hauraki Gulf Marine Park Act:

46 In setting a TAC, the Minister is required under s 11(2)(c) of the Act to have particular regard to ss 7 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 scallops, is also an objective.

47 The main commercial and non-commercial beds in the Coromandel Scallop fishery all fall within the Hauraki Gulf Marine Park (Marine Park).

48 MFish understands that at present, all landings from the Coromandel scallop fishery (118 tonnes meatweight last year) are sold on the domestic market and that it is a popular species with consumers. The wellbeing of commercial scallop fishers and of

consumers who would purchase commercially caught scallops are likely to benefit from an in-season increase to the TACC. The primary benefit to commercial fishers would be an increase to ACE, which would allow these fishers to benefit from scallop abundance. Given that the increase proposed would increase ACE from 22 to 108 tonnes, this is likely to have a significant effect on fishers' incomes and possibly create temporary employment opportunities in processing sheds.

49 It is probable that the Coromandel scallop fishery is of considerable importance to the people of the Hauraki Gulf. MFish is aware of many recreationally fished beds within in the Marine Park (e.g. around Kawau Bay or Whitianga). While other beds are accessible outside the park (such as in Manukau Harbour or the Bream Bay), it is likely that a significant number of recreational fishers from within the Hauraki Gulf area derive wellbeing through this fishery.

50 As a species of considerable importance to recreational fishers, an increase in the allowances could better recognise the value of the Coromandel scallop fishery to the recreational sector and the wellbeing they derive from accessing this fishery. 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.

51 MFish invites submitters to provide any additional information that they have on the importance of the Coromandel scallop fishery to the social, economic, recreational and cultural wellbeing of people in the area of the Hauraki Gulf Marine Park.

Administrative implications

Current and future research

52 This year, an optional biomass survey was conducted to estimate biomass and yield from the Coromandel's commercial scallop beds. These surveys are required if an in-season increase is sought, and are generally conducted most years.

53 Building on surveys of recreational beds in Northland and Coromandel conducted in 2006 and 2007, research beginning 1 October 2007 (SCA2007/03) aims to establish a relationship between scallop abundance in commercial beds and abundance in recreational fishing areas. It is hoped this research will assist decision-makers to better provide for non-commercial scallop catch in these areas.

54 A pilot study (REC2007/11) investigating the feasibility of estimating recreational catch in the Coromandel recreational scallop and rock lobster fisheries is also scheduled to begin on 1 October 2007. If successful, this study could provide information on the extent of catch from the main Whitianga scallop bed, and may enable further studies of recreational scallop catch across the wider Coromandel fishery.

Consultation

55 Prior to the statutory consultation with stakeholders, MFish has talked with several key stakeholders from the commercial and non-commercial sectors regarding the ACE increase. However, the 2007 in-season review of the Coromandel scallop TAC is primarily based on the statutory consultation process that has operated for this fishery since 2002.

56 Stakeholders will have around three weeks to 23 July 2007 to provide MFish with written submissions commenting on the management proposals contained within this paper. MFish is also willing to facilitate a consultative meeting before this date if stakeholders wish to discuss the proposals in more detail. MFish will contact representatives of the various sectors to ascertain whether or not this meeting would be useful to stakeholders.

57 A relatively short consultation period is necessary because of the comparatively short commercial fishing season, which closes on 21 December. Commercial fishers in Coromandel are generally able to catch their "baseline" TACC and ACE quickly. If the increased amount of ACE is immediately available, fishers are required to stop fishing, or pay deemed values on any catch. To avoid potentially major disruption and increased costs to commercial fishers, in-season changes to the management measures for SCACS need to be implemented as early in the season as practical.

Summary

58 The Act imposes an obligation to provide for the utilisation of fisheries resources as long as sustainability is ensured. The proposed management options take into account the survey information showing relatively high biomass levels for the Coromandel scallop fishery compared to the "average" abundance levels during the 1990s.

59 There is general support amongst key stakeholder groups for the TAC to be increased. However, not all support increasing ACE from 22 to 108 tonnes meatweight, with some preferring a smaller increase. MFish looks forward to further submissions from the various sectors outlining their views on the costs and benefits of the proposed in-season increase to ACE and any increase to the non-commercial allowances. MFish considers that the proposed measures for the SCACS fishery are consistent with the purpose and principles of the Act and associated obligations.

Preliminary recommendation

60 MFish proposes two management options.

61 **Option 1:** Increase the TAC from 48 to 165 tonnes meatweight, and within the TAC:

a) increase the allowance for recreational fishing from 7.5 tonnes meatweight to 10 tonnes meatweight;

b) increase the allowance for customary Maori fishing from 7.5 tonnes meatweight to 10 tonnes meatweight;

c) increase the allowance for other sources of fishing-related mortality from 11 tonnes meatweight to 37 tonnes meatweight;

d) increase the Annual Catch Entitlement (ACE) from 22 tonnes meatweight to 108 tonnes meatweight; and

e) at the end of the current fishing year for SCACS, the TAC will revert to 48 tonnes meatweight, the allowance for recreational fishing will revert to 7.5 tonnes meatweight, the allowance for customary fishing will revert to 7.5 tonnes meatweight, the allowance for other sources of fishing-related mortality will revert to 11 tonnes meatweight, and the ACE will revert to 22 tonnes meatweight.

62 **Option 2:** Increase the TAC from 48 to 160 tonnes meatweight, and within the TAC:

a) retain the recreational fishing allowance at 7.5 tonnes meatweight;

b) retain the customary fishing allowance at 7.5 tonnes meatweight;

c) increase allowance for other sources of fishing-related mortality from 11 tonnes meatweight to 37 tonnes meatweight;

d) increase the ACE for quota owners from 22 tonnes meatweight to 108 tonnes meatweight; and

e) at the end of the current fishing year for SCACS, the TAC will revert to 48 tonnes meatweight; the allowance for other sources of fishing-related mortality will revert to 11 tonnes meatweight, and the ACE will revert to 22 tonnes meatweight.

Appendix One: Fishery Characteristics

63 The management arrangements for commercial and non-commercial fishers differ. Extensive parts of the Hauraki Gulf and many inshore scallop beds within SCACS are closed by regulation to commercial scallop fishing. Therefore, the non-commercial and commercial fishing sectors are separated spatially to a large extent. The main beds in the commercial scallop fishery are found north of Whitianga (at the Mercury Islands), east of Waiheke Island, around Little Barrier, Cape Colville, and in the Bay of Plenty principally around Motiti Island and Papamoa Beach (see Figure 1). However, in some cases, commercially-fished beds are adjacent to non-commercial beds, and recreational fishers are known to fish in the commercial beds from time to time.

64 Within the SCACS, different minimum legal size limits apply to different sectors. The commercial sector cannot take scallops smaller than 90mm, while non-commercial fishers cannot take scallops smaller than 100mm. Also, the fishing season differs depending on the sector, with commercial fishers operating 15 July to 21 December (inclusive) and non-commercial fishers now able to fish for scallops between 1 September and 31 March (inclusive) of the following year. The commercial and recreational fisheries can also be closed under shellfish sanitation requirements. In addition, recreational fishers are restricted to a maximum daily bag limit of 20 scallops per fisher per day in SCACS (except when a diver collects the daily bag limit for up to two safety people on a boat —see paragraph 31 above).

65 Maori customary fishers are able to take scallops in excess of this limit or under the minimum size limit for hui and tangi purposes in accordance with regulation 27A of the Fisheries (Amateur Fishing) Regulations 1986. Kaitiaki have not yet been gazetted under the Fisheries (Kaimoana Customary Fishing) Regulations 1998 within the SCACS management area.

Commercial fishery

66 The reported commercial catches have been variable in this fishery (see Table 2). Since 1992, limits on the overall commercial catch have been determined from the results of dredge and dive surveys undertaken before the start of each fishing season. However, the catch limits for SCACS have often not been caught, notably in 1998, 1999 and 2000 (Table 2).

Table 2: Catch limits and landings (tonnes (greenweight or meatweight)) from the Coromandel fishery since 1974. Data before 1986 from Fisheries Statistics Unit (FSU) forms. Landed data are from the landed section of the Catch Effort Landing Return (CELR) forms and from Licensed Fish Receiver Returns (LFRR). "Estimated" data are from the CELR effort section and are pro-rated to sum to the CELR landed greenweight. The estimated catch by sub-areas within the fishery is based on the following scallop statistical reporting areas: "Hauraki" = 2X, 2W; "Mercury" = 2L, 2K; "Barrier" = 2R, 2S, 2Q; "Plenty" = 2A–2I. Catch limits (since 1992) are specified in meatweight ("Green" assumes the gazetted conversion factor of 12.5% and probably overestimates the actual greenweight taken in most years). The catch limits were based on the sum of permit condition entitlements (tonnes meatweight) for 1995 to 2000, a commercial catch limit was set for the 2001 season, and a TACC/ACE level has been set since 2002.

	Catch limits		Landings (t)							
			LFRR	CELR			Estimated catch (t greenweight)			
Season	Meat	Green	Meat	Meat	Green	Total	Hauraki	Mercury	Barrier	Plenty
1974	–	–	–	–	26	26	0	26	0	0
1975	–	–	–	–	76	76	0	76	0	0
1976	–	–	–	–	112	112	0	98	0	14
1977	–	–	–	–	710	710	0	574	0	136
1978	–	–	–	–	961	961	164	729	3	65
1979	–	–	–	–	790	790	282	362	51	91
1980	–	–	–	–	1 005	1005	249	690	23	77
1981	–	–	–	–	1 170	1170	332	743	41	72
1982	–	–	–	–	1 050	1050	687	385	49	80
1983	–	–	–	–	1 553	1553	687	715	120	31
1984	–	–	–	–	1 123	1123	524	525	62	12
1985	–	–	–	–	877	877	518	277	82	0
1986	–	–	162	–	1 035	1035	135	576	305	19
1987	–	–	200[3]	–	1 431	1431	676	556	136	62
1988	–	–	182	–	1 167	1167	19	911	234	3
1989	–	–	104[4]	–	360	360	24	253	95	1
1990	–	–	153	–	903	903	98	691	114	0
1991	–	–	203	–	1 392	1392	472[5]	822	98	0
1992	154	1 232	147	–	901	901	67	686	68	76
1993	132	1 056	62	–	455	455	11	229	60	149
1994	66	528	49	–	323	323	17	139	48	119
1995	86	686	88	79	574	574	25	323	176	50
1996	88	704	81	80	594	594	25	359	193	18
1997	105	840	94	89	679	679	26	473	165	15
1998	110	880	37	19	204	204	1	199	2	1
1999	31	248	8	7	47	47	0	12	17	18
2000	15	123	7	10	70	70	0	24	2	44
2001	22	176	22	20	161	161	1	63	85	12
2002	35	280	32	32	204	204	0	79	12	112
2003	58	464	58	58	451	451	63	153	13	223
2004	79	632	79	78	624	624	27	333	27	237
2005	118	944	119	121	-	968	21	872	75	0
2006	118	944	118	127	-	930	28	842	75	0

[3] The combined commercial catch for 1987 from the LFRRs is reported as 384 tonnes meatweight, but the Ministry and commercial fishers consider this catch total is unreliable due to catch reporting problems. There were general reporting problems in many commercial fisheries immediately following the introduction of the Quota Management System in 1986. The Ministry considers that 200 tonnes is a more reliable estimate of the commercial catch based on a review of the commercial catch-effort data for that year.

[4] The catch for 1989 may have been under-reported due to mis-recording problems involved with the transition between the Ministry's commercial catch reporting systems in 1989.

[5] The Hauraki Gulf catch for 1991 includes a substantial catch taken from near Colville township (around 45 meatweight tonnes) that was mis-recorded as catch from the eastern Waiheke Island statistical area (2X).

Recreational fishery

67 Telephone/diary surveys were undertaken during 1993-1994, 1996 and 1999-2000. The recreational harvest estimate from the 1993-94 survey was 8.8 tonnes meatweight. The 1996 survey estimate of the recreational catch was 7.5 tonnes meatweight. The recreational catch estimate from the survey in 1999-2000 was 3.8 tonnes meatweight. The average of these recreational catch estimates is 6.7 tonnes.

68 The recreational diary surveys include catches reported from areas closed to commercial fishing by regulation. The areas closed to commercial dredging by regulation include popular recreational and customary fishing areas such as Kawau Island, Omaha Bay, parts of Waiheke Island and the Firth of Thames, Great Mercury Island, Otama Beach, Opito Bay, Slipper Island, and Motiti Island. The rationale for these closed areas in this fishery is to protect key non-commercial scallop fishing areas from the effects of commercial scallop dredging. Some of these closed areas were initially agreed under a three-year plan negotiated by the sectors. In general, the closures are utilisation measures, rather than sustainability measures.

Māori customary fishery

69 In common with many other shellfish, scallops are important to Mäori as a traditional food. However, no quantitative information on the level of customary take in SCACS is available. The level of customary catch is unknown. The Minister has set the customary allowance at the level of the recreational allowance. MFish has applied a general criterion that, in the absence of information and where the fishery is of known importance to Maori, the recreational allowance is used as a benchmark to set the customary allowance.

Other sources of fishing-related mortality

70 Quantitative information on the level of illegal catch is not available. However, quantitative information on other sources of fishing-related mortality was gathered in the Coromandel scallop fishery as part of MFish project AKSC03 during the 1996-97 fishing year. This work by NIWA assessed the incidental effects on growth and mortality of scallops from encounters with commercial dredges of various designs.

71 Individual-based population modelling and yield per recruit analysis suggested there are incidental effects of dredging on growth and mortality rates that are highly influential on the determination of yield from scallop dredge fisheries. Using NIWA's model, the level of incidental mortality was estimated to be 34.4% of the level of the commercial catch. Based on this model, an allowance for fishing-related mortality is proposed in this paper.

Appendix Two: SCACS Stock Assessment Summary for 2007

72 A research survey of the main Coromandel scallop beds used for commercial fishing was conducted in May 2007. For the overall survey area, a simple "area-swept" analysis suggests there were 23.1 million scallops (with a coefficient of variation (CV) of 12%) at or above a size of 90 mm at the time of the survey. However, this is an under-estimate, as this assumes that dredges are 100% efficient at catching all the scallops in the path of the dredge.

73 Dredge efficiency was assessed as part of most of the surveys in the 1990s by conducting experiments to compare scallop catch rates between divers and dredges operating in the same area at the same time. The vessel and skipper used for the 2007 survey were the same as used in many of the dredge efficiency experiments in the 1990s. Accordingly, for the 2007 assessment, the historical average dredge efficiency was used, as this most closely relates to the performance of the vessel and skipper used for the 2007 survey. By allowing for average dredge efficiency catch rates, the number of scallops above 90 mm is estimated to be 86.7 million.

74 To allow a comparison of trends over the history of the fishery since 1990, estimates based on scallops 95mm and above are provided (Table 3). The total survey estimate for 2007 (44.2 million 95 mm+ scallops) is lower than the previous two surveys, but continues to be high compared to the 1990s and early 2000s, which ranged from 3.3 million (1999) to 33.2 million (2004). The overall improvement in the last three years is most pronounced in the Whitianga beds, which have historically been the most important beds for the commercial fishery.

Table 3: Millions of scallops (95 mm or larger) estimated at the time of the survey in the main areas of the Coromandel commercial fishery since 1990. Historical average dredge efficiency has been assumed for all years, including 2001–03 when different vessels were used. Totals include data from all surveyed beds and are not directly comparable among years. Dashes (–) indicate no survey in an area or year.

Year	Whitianga / Mercury Is	Waihi Beach	Motiti / Papamoa	Little Barrier	Cape Colville	Waiheke Island	Total
1990	7.4	–	–	–	–	6.4	13.8
1991	11.1	–	–	–	–	2.8	13.9
1992	10.7	–	–	–	–	0.7	11.4
1993	6.6	7.1	–	–	0.3	0.4	14.4
1994	4.8	1.5	–	–	–	0.0	6.3
1995	4.4	0.6	4.5	2.5	0.1	0.3	12.5
1996	6.1	0.2	2.2	3.3	0.1	0.3	12.6
1997	6.1	0.7	1.9	4.0	0.3	5.4	18.4
1998	6.4	0.1	1.2	1.0	0.2	5.3	14.2
1999	1.8	0.2	0.9	0.2	0.0	0.2	3.3
2000	–	–	–	–	–	–	–
2001	1.5	–	0.7	1.6	–	0.2	4.2
2002	2.7	–	0.7	0.8	–	1.0	5.3
2003	4.2	–	2.1	1.4	3.5	1.7	12.9
2004	23.5	1.0	2.4	1.2	0.3	4.7	33.2
2005	53.2	3.7	1.8	2.8	2.5	2.4	66.6

2006	46.2	0.5	2.1	3.1	7.3	–	58.7
2007	34.8	1.8	2.4	2.0	2.6	0.6	44.2

75 At the time of the survey, the total greenweight biomass (90mm+ scallops) can be calculated by multiplying the estimate of the numbers of scallops against the average weight of a scallop (87 grams). This provides an estimate of 7701 tonnes (greenweight) allowing for historical average dredge efficiency.

76 The biomass of scallops at the start of the season can be estimated by projecting forward the numbers of scallops at the time of the survey, and by using assumptions concerning growth (determined from previous tagging programmes) and natural mortality (assumed to be M=0.5 spread evenly through the year). This approach resulted in a median estimate of biomass over 90 mm in length of 8428 tonnes (greenweight) with a CV of 22%, based on historical average values for dredge efficiency.

77 A further consideration in estimating start of season biomass is the critical density of scallops, below which scallop fishing is considered to be uneconomic. While critical density is likely to vary for different operators involved in the fishery, MFish considers 0.04 m^{-2} (ie. one recruited scallop for each 25 m^2 of seabed) to be the most appropriate figure for the Coromandel scallop fishery. This is because this figure translates closely to a catch rate of 50 kg greenweight per hour, the catch rate the Coromandel Scallop Fishery Management Committee believe to be about the minimum for an economic return from the fishery. Excluding areas with scallop density below 0.04 m^{-2} would reduce the total fishery estimate by around 22%, though this would vary at individual beds.

78 Using the assumptions of historical average dredge efficiency and a reference rate of fishing mortality of $F_{0.1}$ (MFish standard rate), the CAY is estimated to be 2684 tonnes greenweight. It is then necessary to convert the greenweight to meatweight, as meatweight is the standard unit of measurement used in the Coromandel scallop fishery. This conversion results in a meatweight CAY estimate of 338 tonnes (using the average recovery rate from 1995 to 2002 (12.6%) for extracting scallop meat from the scallop shell in processing sheds). As above, if an allowance is made for areas of low scallop density at a level of 0.04 m^{-2}, then the CAY would be reduced by about 22%, depending on which beds were fished.

79 Scallop recruitment could be affected by dredging in two ways.[6] Firstly, scallops that are disturbed by a dredge, (but are either not captured or returned to the water) can suffer sub-lethal effects that appear to slow gonad development prior to spawning and hence could reduce fertility. Secondly, the destruction and removal of foliose material (e.g. horse mussel shells) by dredges might reduce the surfaces available for spat settlement. Such changes to the benthic environment could be incremental, as fishing

[6] See Cryer, M and Morrison, M 1997 Yield per recruit in northern commercial scallop fisheries: inferences from an individual-based population model and experimental estimates of incidental impacts on growth and survival. Final Report to Ministry of Fisheries on Project AKSC03. Unpublished report held by Ministry of Fisheries, Wellington.

activity gradually decreases the amount of foliose or highly structured material in the environment and, thereby, could gradually constrain recruitment.

80 Reducing habitat structure also increases the "natural" mortality of spat-sized juvenile scallops by rendering them more susceptible to predation. If these indirect “feedback” effects of habitat modification by dredging on juvenile scallop mortality are included in the yield estimate, the CAY is estimated to be 231 tonnes meatweight at $F_{0.1.}$

81 The survey report also includes a “pessimistic outlook” yield estimate. This estimate is calculated by making a number of pessimistic assumptions, such as zero scallop growth between the time of survey and the start of season, the lowest meatweight recovery factor recorded in the fishery and 100% survey dredge efficiency. This provides a yield estimate of 61 tonnes (meatweight), a figure that represents the “worst-case scenario” for the fishery for the 2007–08 fishing year. This estimate is not generally used to determined catch limits, rather it provides a further reference point to compare the fishery between years.

Appendix Three: Statutory Considerations

82 **Section 5** of the 1996 Act requires that the Minister shall act in a manner consistent with New Zealand's international obligations and Treaty of Waitangi (Fisheries Claims) Settlement Act 1992. To this end, the provisions of general international instruments such as UNCLOS and the Fish Stocks Agreement have been implemented through the provisions of the 1996 Act. The Ministry is not aware of any specific international obligations relating to the Coromandel scallop fishery. The proposed options are consistent with the obligations relating to the Treaty of Waitangi (Fisheries Claims) Act 1992.

83 **Section 8**: the purpose of the Act is to provide for the utilisation of fisheries resources while ensuring sustainability—as discussed in the body of the paper.

84 **Section 9** Environmental Principles—see paragraphs 43-45 in body of the paper.

85 **Section 11** Sustainability measures: Before setting or varying any sustainability measure, s 11(1) of the Act requires the Minister to take into account specified matters. These include:

i) any effects of fishing on any stock and the aquatic environment;

ii) any existing controls that apply to the stock or area concerned;

iii) the natural variation of the stock concerned.

86 Evaluation of the available information on the effects of fishing has led to a number of restrictions that underpin the existing commercial fishery management regime for SCACS. These restrictions are consistent with the overriding obligation to avoid, remedy or mitigate the adverse effects of fishing. They are implemented through a combination of regulations and voluntary agreement and include:

a) restrictions on dredge size to reduce adverse effects on the seafloor;

b) five day fishing week and daylight only fishing (reduces fishing intensity);

c) daily catch limits to reduce fishing intensity (Coromandel Scallop Fishers' Association voluntary initiative).

87 The proposal recognises that biological systems can be inherently variable, and stocks are prone to fluctuations in abundance. This is particularly applicable to scallop populations.

88 **Section 11(2)**: Before setting or varying any sustainability measure under subsection (1) of this section, the Minister shall have regard to any provisions of:

(a) any regional policy statement, regional plan, or proposed regional plan under the Resource Management Act 1991; and

(b) any management strategy or management plan under the Conservation Act 1987 that apply to the coastal marine area and are considered by the minister to be relevant; and

(c) sections 7 and 8 of the Hauraki Gulf Marine Park Act 2000 (for the Hauraki

Gulf as defined in that Act).

89 MFish is not aware of any regional policy statements, regional plans or proposed regional plans under the Resource Management Act1991 or any management strategies or management plans under the Conservation Act 1987 that are relevant to the setting of a TAC in SCA 1. Sections 7 and 8 of the Hauraki Gulf Marine Park are addressed in paragraphs 46–51.

90 **Section 11(2A)** of the Act requires that before varying any sustainability measure the Minister must take into account:

(a) any conservation services or fisheries services;

(b) any relevant approved fisheries plans

(c) any decisions not to require conservation or fisheries services.

91 The current fisheries service applying to the fishery is a pre-season survey to estimate CAY for the fishery. The survey estimate has been considered and forms the basis for the proposals contained in this paper. There are no conservation services applying to the fishery.

92 Currently, there is no approved fisheries plan for the Coromandel scallop fishery. However, the Ministry and stakeholder leaders are preparing a draft fisheries plan for this fishery. The plan is currently in the process of formal statutory consultation with stakeholders and the general public.

93 In relation to s 11(2) of the Act, 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 considered relevant to the setting of sustainability measures for the Coromandel scallop fishery.

94 Under s 11(2)(c), the Minister must have regard to sections 7 and 8 of the Hauraki Gulf Marine Park Act 2000 as part of the Coromandel scallop fishery is part of the area defined as the Hauraki Gulf for the purpose of that legislation. In summary, sections 7 and 8 articulate the national significance of the Hauraki Gulf to sustain the life-supporting capacity of the environment and note that management objectives for the Hauraki Gulf are to protect the life supporting capacity of the environment and to maintain the contribution of the natural resources to the social, recreational, and economic well-being of the people and communities of the Hauraki Gulf and New Zealand. Setting a sustainable commercial catch limit on a fishery resource, having taken into account the environmental principles of the Act, is consistent with these objectives as it provides for utilisation while ensuring sustainability.

95 **Section 11** of the Act also provides for the setting or varying of sustainability measures other than a TAC or catch limits. The Minister may determine that area closures and seasonal constraints required for the annual management of this fishery be set as sustainability measures. As mentioned, a number of commercial closed areas

are already in place in the Coromandel scallop fishery, although these are not considered sustainability measures.

96 **Section 68**: under section 68 if the TAC is increased during a fishing year and the Minister believes that, after considering the matters referred to in section 21(1) he would have increased the TACC but for section 20(4), the Minister shall create additional ACE for the stock that equals the amount by which he would have increased the TACC. Section 21(1) relates to Maori customary non-commercial interests, recreational interests all other mortality caused by fishing.