

**Setting of Sustainability and Other Management Controls
for Stocks to be Introduced into the QMS on
1 October 2004**

Green-lipped Mussel (GLM)

Final Advice Paper

5 July 2004

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INTRODUCTION

Purpose

- 1 This paper provides advice on green-lipped mussel stocks to be introduced into the quota management system (QMS) on 1 October 2004. The advice pertains to the setting of total allowable catches (TACs), total allowable commercial catches (TACCs), and allowances for recreational interests, customary interests and other sources of mortality, and deemed values and overfishing thresholds.

New Stocks into the QMS

- 2 The Ministry of Fisheries (MFish) is introducing these stocks into the QMS on 1 October 2004 as part of its programme to introduce around 50 species by 1 October 2004.
- 3 The respective quota management areas (QMAs), fishing years and units of measure for these stocks to be introduced into the QMS on 1 October 2004 were *Gazetted* in October 2003 and outlined in Table 1.

Table 1: Quota Management Areas, Fishing Years and Units of Measure for green-lipped mussel stocks to be introduced into the QMS on 1 October 2004

Species (code)	Quota Management Areas	Fishing year	Unit of measure
Green-lipped mussel (GLM)	FMA's 1, 2, 3, 7A, 7B, 8, 9 & 10	1 October to 30 September	greenweight

Initial Position Paper and Consultation

- 4 On 9 March 2004 an Initial Position Paper (IPP) was released that contains MFish's initial position on the proposed management measures for the above stocks to be introduced into the QMS on 1 October 2004. MFish provided copies of the IPP to iwi, sector groups, and individuals and organisations considered to have an interest in the stock being introduced into the QMS. MFish also provided a copy of the IPP to those who requested a copy, as well as distributing further copies at consultation hui or meetings.
- 5 Stakeholders and iwi were asked to provide written submissions on the proposals for the stock by 16 April 2004.

Outline of Document

- 6 This paper provides you with MFish's **initial position** and **final advice and recommendations** on proposed TACs, TACCs, other allowances and management measures for the stocks to be introduced into the QMS on 1 October 2004.

- 7 This paper is structured so that the **Initial Position** section is followed immediately by the **Final Advice** section.
- 8 In addition, this paper includes a section from the IPP, titled Statutory Obligations and Policy Guidelines, that relate to the setting of TACs, TACCs and other allowances for these stocks.

Implementation of Decisions

- 9 Following your final decision on the management measures outlined in this document, you will forward formal notification to the Parliamentary Counsel Office for declaration in a *Gazette* Notice for all green-lipped mussel stock other than GLM 9. The GLM 9 stock is proposed to be introduced into the QMS on 1 October 2004 by the Fisheries Amendment Bill No. 3.
- 10 A meeting is being scheduled with you to discuss the content of this document.
- 11 In addition, s 12(2) of the Fisheries Act 1996 (1996 Act) requires that after setting or varying any sustainability measure, you are to, as soon as practicable, write to sector groups advising them of the reasons for your final decisions. MFish proposes to compile a decision letter once decisions on TACs, TACCs and allowances, and relevant regulatory amendments have been made for the stocks being introduced into the QMS on 1 October 2004.

STATUTORY OBLIGATIONS AND POLICY GUIDELINES

Purpose of the Fisheries Act 1996

- 1 The purpose statement of the 1996 Act describes its overriding objective of providing for the utilisation of fisheries resources while ensuring sustainability. The 1996 Act defines “ensuring sustainability” as to “maintain the potential of fisheries resources to meet the reasonably foreseeable needs of future generations; and avoiding, remedying, or mitigating any adverse effects of fishing on the aquatic environment”. Management of a specific stock must be consistent with these dual requirements in order that sustainability of the stock can be ensured.
- 2 “Utilisation” of fisheries resources is defined as “conserving, using, enhancing, and developing fisheries resources to enable people to provide for their social, economic, and cultural wellbeing.” Within the parameters of these sustainability standards, there is a positive obligation to provide for the use of fisheries resources.
- 3 The extent of management measures required to achieve the purpose of the 1996 Act will produce a continuum of potential outcomes. Utilisation may be provided for at different levels, and the extent of such use should be considered on a case-by-case basis. Where there is a significant threat to the sustainability of a fishstock, the measures adopted to achieve sustainability are likely to be more stringent than where there is a lesser threat.
- 4 Consideration of social, economic, and cultural wellbeing (in conjunction with other considerations consistent with the purpose and principles of the 1996 Act) may influence how measures to ensure sustainability are implemented. Hence, providing for utilisation while ensuring sustainability may be achieved in different ways, and the objective may be reached over time. Consideration of the purpose of utilisation may be relevant in determining which is the most appropriate approach.

Setting a Total Allowable Catch

- 5 Below the level of the purpose statement, the 1996 Act contains a number of specific provisions relating to ensuring a stock is managed sustainably. A key measure is the setting of a TAC for a QMS stock. The Minister is required to set a TAC for each QMS stock. The 1996 Act contains a number of different options in terms of the intended target level able to be implemented for a QMS stock. All of the options are consistent with the purpose of “ensuring sustainability,” but each option provides for a fundamentally different management outcome.

Maximum Sustainable Yield (s 13)

- 6 Section 13 represents the default management option that is to be applied when setting a TAC for a stock within the QMS, unless that stock qualifies under criteria for management under ss 14 or 14A.

- 7 Under s 13 there is a requirement to maintain the biomass of a fishstock at a target stock level, being at, or above, a level that can produce the MSY, having regard to the interdependence of stocks. MSY is defined, in relation to any fishstock, as being the greatest yield that can be achieved over time while maintaining the stock's productive capacity, having regard to the population dynamics of the stock and any environmental factors that influence the stock. A requirement to maintain stocks at a level that is capable of producing the MSY is generally recognised internationally as being an appropriate fishstock target, although there is some international support for MSY representing a minimum fishstock threshold level.
- 8 If a stock is currently below the target stock level, there is a requirement pursuant to s 13(2)(b) to set a TAC that will result in the stock being restored to the target stock level (ie, at or above a biomass that will support MSY) and in a way and rate which has regard to the interdependence of stocks and within a period appropriate to the stock, and having regard to the stock's biological characteristics and any environmental conditions affecting the stock. If the stock is above a target stock level, there is a requirement to set a TAC that will result in the stock moving towards the target stock level, or alternatively remain above the target stock level, having regard to the interdependence of stocks (s 13(2)(c)). In determining the way in which, and rate at which, a stock is altered to achieve the target stock level, the Minister is to have regard to such social, cultural, and economic factors as he or she considers relevant (s 13(3)). Section 13(3) makes it explicit that such factors are relevant in the determination of the way and rate of progress to the target level, rather than in the determination of the target stock level itself.
- 9 There is no set rate, or time frame, within which a rebuild or a "fishing down" of a stock must be achieved. However, the progress of moving towards the target stock level must be suitable to the fishery in question, having also considered those matters specified in s 13 of the 1996 Act. Hence, a TAC should be viewed as a tool for moving a stock towards the target stock level. Other measures may be adopted in conjunction with a change in the TAC. However any additional measures should not be relied on in place of the TAC.
- 10 Additional flexibility is encompassed within s 13 by the capacity to provide for an in-season adjustment to the TAC for certain stocks. Any TAC that is set or varied has effect on and from the first day of the next fishing year for the stock concerned. An exception applies to those stocks listed on the Second Schedule to the 1996 Act. This Schedule can apply to any stock with a highly variable abundance. For such stocks in years of high abundance, the TAC may be increased in-season, and the Minister may allocate all or part of that increase as Annual Catch Entitlements (ACE) to commercial fishers. At the commencement of the next fishing year the TAC reverts to the level set at the commencement of the previous fishing year. This means that commercial catch levels, not property rights in the form of individual transferable quota, are increased during the fishing year.
- 11 An in-season TAC increase may be distributed between commercial, customary and recreational fishers, and an allowance made for other sources of mortality to the stock. The increase allocated to commercial fishers does not result in an increase to the TACC during the fishing year.
- 12 The fundamental objective of an in-season adjustment is to manage a stock at or above the level that can produce the MSY. Information about what is the desirable

level of the TAC that can produce the MSY is available at such a time that a decision is made after the start of the fishing year. However, at the end of the fishing year, the TAC reverts to the level that was applicable at the start of the fishing year.

No Specified Target Stock Level (s 14)

- 13 Section 14 of the 1996 Act prescribes an exception to the target stock level based on an assessment of the MSY for those stocks where:
 - a) it is not possible to estimate MSY because of the biological characteristics of the species; or
 - b) a catch limit for New Zealand has been determined as part of an international agreement; or
 - c) the stock is managed on a rotational or enhanced basis.
- 14 For stocks that meet the above criteria, and as a result are listed on the Third Schedule of the 1996 Act, a TAC may be set other than in accordance with the requirements in respect of target stock levels stated in s 13, provided the TAC better achieves the purpose of the 1996 Act.
- 15 While any TAC must be set in a way that ensures use of the stock is sustainable, there is no requirement to take into account or be guided by the need to manage in accordance with MSY. In contrast to s 13, s 14 provides significant flexibility as to the target stock level set for a stock. The rationale for that flexibility is different for each of the categories of stocks eligible for listing on the Third Schedule.
- 16 The biological characteristics of some stocks mean that it is not possible or necessary to estimate the MSY to ensure the sustainability of the stock. For example, squid is a short-lived species. There is currently no ability to estimate the available abundance either before or within the fishing season. The extent of catch taken from the available biomass will not affect future recruitment or abundance of the species. For this reason, the TACs set for squid stocks have not been significantly changed during the last decade, but the actual catch levels have fluctuated markedly within that time.
- 17 Under an international agreement, a catch limit for a species may be set and allocated between individual fishing nations, eg, southern bluefin tuna. Typically such international agreements relate to highly migratory species or species that straddle national boundaries. The overall catch limit set for the species must be consistent with international fisheries management law; hence, the catch limit would need to ensure the sustainability of the species. There is no requirement that New Zealand separately manages that portion of the species it is allocated at MSY.
- 18 The third category relates to those stocks managed on a rotational or enhanced basis. The effect of rotational fishing or fisheries enhancement is that MSY may no longer be the appropriate target level (eg, scallops in area 7 (SCA 7)). Enhancement is designed to increase the level of abundance. While enhancement of the stock may not need to be consistently maintained, the ability to intervene to increase abundance means that the sustainability of the stock can be ensured. The available yield will change over time.

- 19 Rotational harvesting involves selective harvesting of a portion of the stock. Rotational harvesting is best suited to sedentary species or stocks with established fishing grounds. The yield taken in any one year may not be the MSY available for the stock overall. The ability to successfully manage a stock on a rotational basis may be dependent upon the biological characteristics of the stock.
- 20 A combination of rotational harvesting and enhancement may result in greater flexibility in setting a TAC that will ensure the sustainability of the stock. Enhancement may enable rotationally harvested areas to be restocked at a level above that which could be naturally produced. Enhancement may also provide an ability to maximise catch from each area as it is rotationally fished. Areas closed to fishing allow both enhanced and wild stocks to contribute to the spawning biomass and reach harvestable size before being subjected to commercial fishing. Area closures may protect sufficient adult stocks to ensure adequate recruitment to the fishery.
- 21 As with s 13, s 14 provides for an in-season increase to the TAC for stocks listed on the Third Schedule. The purpose of an in-season increase under s 14 is to take advantage of the available yield beyond any pre-determined target stock level. However, the level of the in-season increase must be consistent with the objective of ensuring sustainability of the stock.
- 22 An in-season TAC increase may be distributed between commercial, customary and recreational fishers, and an allowance made for other sources of mortality to the stock. Additional ACE is generated during the fishing year in respect of the increase in the TAC allocated to commercial fishers. At the close of the fishing year the TAC reverts to the level set at the beginning of that fishing year.

Above Level of Long Term Viability (s 14B)

- 23 A further exception to setting a TAC in accordance with the MSY is the management of a stock under s 14B of the 1996 Act. A TAC is to be set at a level that ensures the stock is maintained above the level that ensures its long-term viability. However, the Minister must be satisfied that the purpose of the 1996 Act would be better achieved by setting a TAC other than in accordance with s 13 (ie, at or above MSY). Maintaining a stock above the level that ensures its long-term viability is consistent with the purpose of the 1996 Act in relation to meeting the reasonably foreseeable needs of future generations.
- 24 The purpose of s 14B is to enable other related stocks to be fully harvested. The stock in question must be taken primarily as an incidental catch during the taking of one or more other stocks and must constitute only a small proportion of the combined catch taken. The 1996 Act does not prescribe a level that is deemed to be above that which ensures the long-term viability of a stock. That determination is required on a case-by-case basis, subject to the requirement that the TAC must be set at a level no greater than what is required to allow for the taking of another stock in accordance with its own TAC and TACC. Quota owners are required to take all reasonable steps to minimise the catch of the stock managed below the biomass that will support the MSY (B_{MSY}).
- 25 Section 14B addresses the difficulty of managing stocks within a mixed fishery to B_{MSY} without forgoing some economic return. In some mixed species fisheries the

TACs of minor bycatch species limit the ability of fishers to catch their entitlement of the target species and could result in closure of the target fisheries.

- 26 Section 14A specifies a number of significant tests apply in order to mitigate the risk of managing a stock below B_{MSY} . First, the stock must be able to be maintained above a level that ensures its long-term viability. Secondly, the Minister is required to consider the need to: (1) commission appropriate research to assess the impact of reducing the stock below B_{MSY} ; (2) implement measures to improve the quality of information about the stock; (3) close areas to commercial fishing to reduce any sustainability risk to the stock; and (4) avoid any significant adverse effects on the aquatic environment of which the stock is a component. Hence, the setting of a TAC under s 14B to allow for the taking of another stock may need to be balanced by the closure of areas to fishing to ensure the stock is maintained above a level that ensures its long-term viability. Consideration of significant adverse effects of fishing could have potential implications for the aquatic ecosystem as a result of reducing the biomass of the stock.
- 27 Consideration also needs to be given to the social, cultural and economic implications of managing a stock below B_{MSY} . The setting of a TAC above the level that ensures the stock's long-term variability must have the support of quota owners who hold 95% of the shares in the stock. Arrangements need to be in place to address the concerns of those quota owners who do not support the setting of a TAC under s 14B. The total benefits of managing the stock at a level other than that permitted under s 13 must outweigh the total costs. Managing the stock in a manner other than s 13 must have no detrimental effects on non-commercial fishing interests in the stock.
- 28 A final important check and balance when setting a TAC under s 14B is that the Minister for the Environment is required to concur with a proposal to enable a TAC to be set for a stock above the level that ensures its long-term viability.
- 29 The ability to set a TAC under s 14B is triggered by the submission of a proposal from quota owners to the Minister of Fisheries to manage the stock in this way. An Order in Council (ie, a regulation) must be made specifying the application of s 14B for the named stock. No proposal relating to s 14B has been received in respect of the stocks to be introduced into the QMS on 1 October 2004.

Other Statutory Obligations Applicable When Setting a TAC

- 30 When setting a TAC, a number of generic provisions of the 1996 Act need to be taken into account – in particular, the purpose of the Act (s 8), the environmental and information principles (outlined in ss 9 and 10 respectively), factors to be taken into account when setting sustainability measures (s 11), and the application of international obligations and the provisions of the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992 (s 5).

Information Principles

- 31 The nature of the data and assumptions used to generate fisheries assessments and the results produced contain inherent variation and uncertainty. The 1996 Act specifies, in s 10, the information principles to use when information is uncertain. Decisions should be based on the best available information that, in the particular circumstances,

is available without incurring unreasonable cost, effort, or time. Decision makers should consider any uncertainty in the information available and be cautious when information is uncertain, unreliable, or inadequate. However, the absence of, or any uncertainty in, any information should not be used as a reason for postponing or failing to take any measure to achieve the purpose of the 1996 Act.

Environmental Principles

- 32 The 1996 Act prescribes three environmental principles that the Minister must take into account when exercising powers in relation to utilising fisheries resources and ensuring sustainability. First, associated or dependent species (including non-fish bycatch) should be maintained above a level that ensures their long-term viability. Secondly, biological diversity of the aquatic environment should be maintained (ie, the variability of living organisms, including diversity within species, between species, and of ecosystems). Lastly, habitat of particular significance for fisheries management should be protected.
- 33 The 1996 Act defines associated and dependent species as any non-harvested species taken or otherwise affected by the taking of a harvested species. The term “long-term viability” is defined in the 1996 Act as a low risk of collapse of the stock or species, and the stock or species has the potential to recover to a higher biomass level. Long-term viability may be considered in the context of the natural dynamics of populations. At one level the concept implies the need to ensure the continuing existence of species in the sense of maintaining populations in a condition that ensures a particular level of reproductive success. At another level, long-term viability implies an ability to maintain populations at a level that ensures the maintenance of biodiversity. Long-term viability could be achieved at very low levels of population size, depending on associated risks, such as recruitment failure at low population sizes. Long-term viability also needs to be considered with respect to utilisation by different sector groups. Equally, where fishing is affecting the viability of associated and dependent species, there is an obligation to take appropriate measures, such as method restrictions, area closures, and potentially adjustments to the TAC.
- 34 “Biological diversity” includes the variability among living organisms, including diversity within species, between species, and of ecosystems. The aquatic environment is of broad scope and encompasses:
- a) the natural and biological resource comprising any aquatic ecosystem; and
 - b) all aquatic life and all places where aquatic life exists.
- 35 The maintenance of biodiversity needs to be considered in the context of the purpose of the 1996 Act that assumes that, where possible, a resource should be used to the extent that sustainability is not compromised. Determination of the extent of fishing or the impacts of fishing that can occur requires an assessment of the risk that fishing might cause a species to become extinct or biodiversity is reduced to an unacceptable level. In the absence of information to undertake a detailed assessment, the information principles specified in the 1996 Act provide guidance for decision makers on the approach to be adopted.
- 36 Habitat can be defined as “the place or type of area in which an organism naturally occurs” (NZ Biodiversity Strategy). The Magnuson-Stevens Fishery Conservation

and Management Act (USA) defines “essential fish habitat” as “those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity”. The maintenance of healthy fishstocks requires the mitigation of threats to fish habitat. However, the source of the threats may not be confined solely to the activity of fishing. A range of terrestrial activities may impact on fisheries habitats. Habitats that assist in the reproductive and productive process of a fishery, hence are of special significance, should be protected. Adverse effects on such areas are to be avoided, remedied, or mitigated.

International Obligations (s 5(a))

- 37 There is a range of international obligations that relate to fishing. The two key pieces of international law relating to fishing, and to which New Zealand is a party, are the United Nations Convention on the Law of the Sea, 1982 (UNCLOS) and the United Nations Convention on Biological Diversity 1992 (the Biodiversity Convention). It is MFish’s view that the provisions of the 1996 Act, and the proposed exercise of powers under the legislation are consistent with New Zealand’s international obligations.
- 38 The 1996 Act is to be interpreted, and all persons exercising or performing functions, duties, or powers under the Act are required to act, in a manner consistent with New Zealand’s international obligations relating to fishing. As a general principle, where there is a choice in the interpretation of the 1996 Act or the exercise of discretion, the decision maker must choose the option that is consistent with New Zealand’s international obligations relating to fishing (s 5(a) of the Act).
- 39 MFish is involved in a number of initiatives relating to the management of stocks within New Zealand fisheries waters that are consistent with its international obligations. MFish seeks to give effect to those obligations on a generic basis. Application of generic policies, such as the Marine Protected Area Strategy and MFish’s Environmental Management Strategy, to the management of specific stocks will follow in due course.

Treaty of Waitangi (Fisheries Claims) Settlement Act 1992 (s 5(b))

- 40 The 1996 Act is to be interpreted, and all persons exercising or performing functions, duties, or powers under the Act, are required to act in a manner consistent with the provisions of the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992 (s 5(b)). This requirement is intended to further the agreements expressed in the Deed of Settlement referred to in the Preamble to the Settlement Act. In particular, Māori non-commercial fishing rights continue to give rise to Treaty obligations on the Crown.
- 41 The species-specific sections in this document set out information relating to the customary interest in the species concerned. An allowance for customary fishing has been made for each stock on the basis of a qualitative assessment of that interest. The consultation process will provide Māori with an opportunity to comment on the customary use and management of the stocks. However, no explicit consideration has been given to the application of the specific customary management tools available under the 1996 Act to the stocks concerned. Introduction of the species into the QMS will not preclude adoption of appropriate management measures in the future to provide for customary use and management practices.

- 42 In accordance with the Settlement legislation, the Treaty of Waitangi Fisheries Commission will be allocated 20% of all quota shares in the TACC set for the stocks upon introduction into the QMS.

Additional Factors to be taken into Account (s 11)

- 43 Before setting or varying any sustainability measure (including a TAC) the following factors must be considered:
- a) Any regional policy statement, regional plan, or proposed regional plan under the Resource Management Act 1991 and any management strategy or management plan under the Conservation Act 1987 that apply to the coastal marine area and which the Minister considers to be relevant;
 - b) Any effects of fishing on the stock and the aquatic environment;
 - c) Any existing controls that apply to the stock or area concerned;
 - d) The natural variability of the stock concerned;
 - e) Any conservation services or fisheries services;
 - f) Any relevant fisheries plan approved under this Part; and
 - g) Any decisions not to require conservation services or fisheries services.
- 44 Where any of the above factors are relevant, they are discussed in the species-specific sections. MFish is not aware of any specific plans, statements or strategies that are relevant to the stocks in this document. No fisheries plans have been approved to date. MFish is not aware of any plans being contemplated at this time for any of the stocks being introduced into the QMS this year. No explicit decisions have been made not to require services in a fishery on the basis of any undertaking by stakeholders either within or outside a fisheries plan to undertake certain services directly.
- 45 Consideration also needs to be given to the most effective way of achieving the desired outcome of a sustainability measure. An important factor in supporting the use of non-statutory measures is the degree of support for the measure and the nature of the monitoring and enforcement regime proposed to support the measure. However, the process of introducing stocks to the QMS is unlikely to involve implementation of measures on a non-regulatory basis. The actual commercial participants in the fishery may be largely unknown until such time as quota is allocated.

Guidelines for Setting TACs for New Stocks

- 46 There are a number of closely interrelated factors that need to be taken into account when setting the TAC. The following factors are identified as being of particular significance:
- Identifying the appropriate TAC option for a stock (ss 13, 14, 14B) – The level at which the TAC is set will be heavily influenced by the statutory TAC option proposed for the stock. Existing estimates of yield based upon the MSY or an existing catch limit for a stock might not be applicable for a stock managed under ss 14 or 14B;

- The biological and fishery characteristics of the stock and associated stocks – The biological and fishery characteristics of the stock will influence the TAC option adopted for the stock. Implications of catch levels for associated stock complexes (target and bycatch relationships) should be expressly considered. In some instances information about current catch levels may not accurately reflect actual catch ratios in multi-species fisheries due to the nature of the reporting obligations for non-QMS stocks;
- The effects of harvesting the stock on the aquatic environment – The relative effects on the environment of different TAC options should be considered. Interactions with protected species and areas of high biodiversity need to be actively managed. Consideration of predator-prey relationships is an important factor. The effects of different fishing methods should also be considered;
- The capacity for development of the stock – The 1996 Act requires that consideration be given to the development of fisheries resources while ensuring the sustainability of those resources. In the purpose statement of the Act (s 8), the definition of the word “utilisation” includes “developing” fisheries resources. The QMS provides the most appropriate mechanism for development to occur. Development can be actively provided under the various TAC options. Rotationally harvested and enhanced fisheries provide scope for a TAC to be set at a level other than one that moves the stock towards B_{MSY} . A stock managed below B_{MSY} may provide for additional catch to be taken. In some instances stocks introduced into the QMS have been lightly fished and are deemed to be in a near virgin state; hence the stock is well above B_{MSY} . While there is no provision in the Act for TACs to be set at a nominal level, there is scope for additional catch to be taken in the short term as the stock is fished towards a level that can produce the MSY;
- Important factors to be considered when considering development potential are that –
 - i) setting TACs at the level of current catch (in some instances a zero or one tonne TAC) may artificially constrain development of a stock where there is virtually no risk posed to the stock by setting a higher TAC;
 - ii) existing catch limits (Competitive Catch Limit (CCL) or ICE) may not be appropriate for the purposes of setting a TAC/TACC. This is because they were originally designed to allow limited target fishing on a competitive basis for those fishers with existing permits. The CCLs may not be reflective of actual total landings for the species concerned;
 - iii) development may be constrained by a lack of a review of a stock in the immediate future once introduced into the QMS due to competing priorities for review of other stocks;
 - iv) a TAC may be set at a level that moves the stock over time towards a level that can produce the MSY (B_{MSY});
 - v) if a TAC is set at a level in order to move a stock towards B_{MSY} , information (catch and effort data or fishery independent research)

needs to be forthcoming to assess when the stock is at or above the level that can produce the MSY; and

vi) setting a TAC that provides for some level of initial development offers an incentive for fishers to invest in the fishery and develop initiatives such as adaptive management proposals and fisheries plans.

- The information principles – The 1996 Act specifies that the absence of, or any uncertainty in, any information should not be used as a reason for postponing or failing to take any measure to achieve the purpose of the Act. As noted above, the purpose of the Act contains two distinct elements “ensuring sustainability” and “providing for utilisation”. In the absence of an explicit hierarchy between the two objectives, a decision is to be made on a case-by-case basis that takes into account the available information to determine the relative weight given to each of the objectives. Any decision should explicitly identify the factors taken into account and the relative weighting placed upon the relevant information;
- Existing stock assessment information about the status of the stock – Information about current biomass and estimate of available yield may be available for only a limited number of stocks. An explicit Current Annual Yield or Maximum Constant Yield, or equivalent management approach, complementary with the characteristics of the stock, may be adopted with the reasons stated for that approach. The certainty, reliability, and adequacy of that information need to be taken into account. Existing estimates of yield might not be applicable for a stock managed under ss 14 or 14A;
- Current catch levels of the stock – In the absence of robust assessment information or an existing catch limit (CCL or ICE), current catch can be used as a basis for setting the TAC, subject to consideration of other relevant statutory obligations. The reliability of any information is to be taken into account;
- Monitoring of stock – Current and future monitoring of the stock is an important factor relating to an assessment of risk to sustainability. The ability to assess the stock, the nature of the assessment method and the likely robustness of that assessment, the level of observer coverage, and the nature of direct research are to be considered in the assessment of different potential TAC options; and
- Relevant social, economic, and cultural factors – The ability to set a TAC at different levels will have commensurate social, economic, and cultural implications. The way and rate at which a stock is fished towards B_{MSY} should explicitly take into account relevant social, economic, and cultural factors. The interests of future generations is an important social consideration that is reflected in consideration of the TAC option adopted, the level at which the TAC is set, and the effects of fishing for the stock on the aquatic environment. Treaty obligations arising in respect of a stock are encompassed within relevant cultural factors.

Development opportunity

- 47 MFish acknowledges that information on which to base catch limits in a number of non-QMS fisheries is deficient. However, in accordance with the use of the information principles, as discussed above, MFish believes that there is opportunity in a number of fisheries, upon introduction into the QMS, to place greater weight on utilisation opportunity in the absence of any discernable risk to the stock or the aquatic environment when considering TACs.
- 48 Catch in a number of the fisheries proposed for QMS introduction is not reflective of abundance, but rather has been influenced by the inability to obtain access to the fishery (as a result of the permit moratorium) and marketing/processing issues. In some cases there is also likely to be significant levels of underreporting, particularly for bycatch species. Introduction into the QMS will potentially provide more access opportunities and a better framework for managing the stock, given the reporting and catch balancing requirements on fishers.
- 49 The opportunity for development and the extent of utilisation provided for needs to be assessed on a stock-by-stock basis having regard to risk based on the following factors:
- Information on sustainability risk to the stock;
 - Biology of the stock, including potential for localised depletion;
 - Information on historical catch, if the stock has been lightly fished therefore biomass is likely to be close to virgin or at least above B_{MSY} ;
 - Likely impacts of fishing on aquatic environment, including bycatch species, etc;
 - Socio-economic and cultural issues; and
 - Anecdotal information on abundance, including consideration of the size of likely habitat in the management area.
- 50 In bycatch fisheries, in particular, interaction with other harvested stocks should be a consideration in any TAC proposed. In the absence of sustainability concerns fishers in bycatch fisheries will face punitive measures under the balancing regime if the TACs are not set appropriately.
- 51 As a consequence of providing development opportunity above existing levels of utilisation, the TAC may not be fully caught immediately following QMS introduction, pending the development of harvesting/marketing/processing capacity. However, this in itself is not a reason not to provide opportunity for development when potential risk to the stock based on the factors noted above is considered acceptable.
- 52 MFish notes that a development opportunity within the TAC does not predetermine subsequent allocation decisions.

Use of information

- 53 The nature of the information available about each stock is likely to vary. A hierarchy (refer Table 2) is proposed in respect of the nature of the information and hence the

weighting to be assigned to that information. As a general rule greater weight will be placed on information at a higher level on the hierarchy. Stock assessment information is afforded greater weight than a non-QMS catch limit set for the stock. A catch limit or CCL may be afforded greater weight than information about historical and current catch levels.

Table 1: Hierarchy of Information

1 Information about status of stock and estimates of available yield	Adopted in Plenary Report	Use as basis for setting TAC (subject to consideration of guidelines identified above – ie, general statutory obligations and TAC option, etc.)
	Not adopted in Plenary Report	Take information into account, but receive limited weighting
2 Existing catch limit set (CCL or ICE)	Catch limit or CCL and catch information of fishing sectors and other sources of mortality	Use as basis for setting TAC (subject to consideration of guidelines identified above, including validity of catch limit or CCL)
	Sustainability concern (in context of TAC option adopted)	Review and/or reduce existing catch limit when set TAC
3 Catch information and estimates of other sources of mortality	Apply criteria (identified below) for calculating catch information	Use as basis for setting TAC (subject to consideration of guidelines identified above)
	Sustainability concern (in context of TAC option adopted)	Review and/or reduce overall catch when set TAC

- 54 However, careful consideration is required in assessing the nature of any current catch limit. In some instances CCLs may not be reflective of actual total landings for the stocks concerned. CCLs may have also acted to constrain effort in a fishery in support of the permit moratorium (ie, to limit new entrants), rather than as a measure explicitly designed to ensure sustainability of the stock. They were originally designed to allow limited target fishing on a competitive basis for those fishers with existing permits.
- 55 The term “sustainability concern” is used to describe a situation where, after considering all relevant issues, there is a conclusion that the existing non-QMS catch limit or current catch is not sustainable and should not be used as a basis for setting a TAC. The term “sustainability” is intended to encompass issues relating to the stock itself and the effects of fishing on the aquatic environment (ie, impacts of fishing method, trophic relationships, target/bycatch stock complexes).
- 56 A significant increase in catch levels of a stock in recent years may not necessarily equate to increased abundance, but rather might be an indication of increased effort and targeting of the stock. Consideration of relevant information may result in a TAC being set that is more precautionary than the current catch level.

Criteria for Determining Catch Levels

- 57 Criteria have been developed for determining catch levels and other sources of mortality (refer Table 2). In the absence of other information TACs may be set at levels based on consideration of known or estimated levels of recreational, Māori customary, and commercial catch and all other sources of fishing-related mortality. The purpose of the exercise is to calculate the overall level of catch being taken from the fishery. The information about the catch of each sector group may act as a guide to the subsequent allocation of the TAC but, in itself, that will not be determinative of that exercise. After setting the TAC the Minister makes separate decisions about allocations for recreational, Māori customary and commercial catches and all other sources of fishing-related mortality.
- 58 In the absence of an estimate of sustainable yield from the fishery, or the presence of a robust and reliable catch limit or CCL, an assessment of commercial catch based on the criteria of “stable” or “developing” has been undertaken. The criteria of “stable” and “developing” fisheries for estimating commercial catch were adopted in 1998 for the introduction of species into the QMS on 1 October 1998. A fishery is considered “stable” when reported catches have remained relatively constant over an extended period of time (ie, in excess of three years). Included in the category of a “stable” fishery are those stocks where the catch level has fluctuated over time. In most fisheries such fluctuation is anticipated as a natural biological occurrence. For “stable” fisheries commercial catch has been calculated using the average catch for a period since 1986 where the catch level has been relatively stable in excess of three years.
- 59 A fishery is “developing” where a substantial increase in catch has been recorded over the last three completed fishing years. Where this has occurred the average total landings over the last three completed fishing years have been used as a basis for determining current commercial catch.
- 60 Calculation of commercial catch based on the criteria of “stable” or “developing” is one factor to be considered when setting a TAC. As indicated above, there may be the potential to provide some opportunity for development of a stock above existing catch levels.

Table 2: Criteria for determining catch levels and other sources of mortality

Commercial Catch	Current catch	Current commercial catch from the fishery
	Stable fishery	Average catch for a period since 1986 where catch level has been relatively stable in excess of 3 years
	Developing fishery	Average catch over last 3 completed fishing years where a significant increase in catch has occurred
Recreational Catch	Existing estimates (diary surveys, etc.)	Use as basis for determining current recreational catch
	No estimates but known recreational catch	Nominal catch level included
	No known recreational catch	No catch level included
Customary Catch	Existing estimates (customary permits/authorisations; information provided by tangata whenua, etc.)	Use as basis for determining current customary catch
	No estimates but known to be of significant importance to Māori above the level of recreational take	Catch level above the known recreational catch included
	No estimates but known to be of importance to Māori	Catch level similar to known recreational catch included
	No estimates but known customary catch (and stock of no particular importance to Māori)	Catch level half of known recreational catch included
	No known customary catch	No catch level included
Other Fishing-related Sources of Mortality	Quantitative information or estimates of illegal catch, discards, incidental gear mortality available	Use as basis for determining current level of other sources of mortality
	No estimates but other sources of mortality known to occur based on information about similar stocks and methods	Nominal mortality level included
	No known mortality	No mortality level included

Analysis of TAC Options

61 An analysis of different potential TAC options is undertaken in respect of each stock where there are viable alternatives. Where more than one statutory TAC option is available (ie, ss 13, 14 or 14A) an assessment of relevant information is provided. An important consideration is the respective trade-offs between different TAC options in terms of potential economic return, information levels (current and future), and sustainability concerns (stock specific and general environmental). The purpose is to

indicate the relative weighting assigned to different factors for each TAC option. In most instances only a relatively subjective qualitative assessment can be undertaken.

Allocation of Total Allowable Catches

- 62 The Minister is required to make allowances for different fishing interests under the Act. The Minister must have regard to the TAC and allow for:
- a) customary Māori;
 - b) recreational fishers;
 - c) all other sources of mortality to the stock caused by fishing; and
 - d) the TACC.
- 63 In the absence of other information TACs may be set at levels based on consideration of known or estimated levels of recreational, Māori customary, and commercial catch and all other sources of fishing related mortality. The information about the catch of each sector group informs the subsequent allocation of the TAC but that, in itself, will not be determinative of that exercise. The Minister makes a separate decision about allocation after setting the TAC.

Factors Determining Allocation

- 64 The Fisheries Act does not expressly state the manner in which, or the factors to be taken into account, when the Minister allows for non-commercial interests in a fishery and apports the TAC between stakeholders. The allocation of the TAC is a matter for the Minister's assessment taking into account all relevant considerations.
- 65 No explicit statutory mechanism provides guidance as to the apportionment of the TAC between sector groups either in terms of a quantitative measure or prioritisation of allocation. MFish considers that a number of provisions in the Fisheries Act provide some guidance on allocation of the TAC between the respective interests to be allowed for.
- 66 In terms of those considerations to be taken into account, MFish notes that s 8 of the Fisheries Act 1996, in the context of utilisation of fisheries resources, refers explicitly to the Act enabling people to provide for their social, economic, and cultural well-being. Further, s 13(3) states that regard is to be had to such social, economic, and cultural factors as the Minister's considers relevant when considering the way and rate at which a stock is moved towards, or above, a level that can produce the MSY. It is implicit that in considering such factors when setting or varying a TAC in accordance with s 13(3), such factors are also integral to the decision of apportioning allocation of a stock between stakeholders.

- 67 MFish considers that those factors which may be relevant to the exercise of the Minister’s discretion, in addition to the principles specified in s 5 (international law and Settlement Act obligations), s 8 (purpose statement), s 9 (environmental principles), and s 10 (information principles) of the Act, include:
- a) current status of stock;
 - b) existing allocations;
 - c) current catch levels;
 - d) previous decisions;
 - e) equity of allocation - notion of “shared pain” when stock declines / “shared benefit” when stock rebuilds;
 - f) participation levels and importance of the resource, including customary values;
 - g) population trends;
 - h) assessment of relative value of resource to respective sectors;
 - i) current and past fishing practices (including overfishing, voluntary shelving or closures by a stakeholder);
 - j) investment and initiatives undertaken to develop or enhance the resource;
 - k) impact on ability of sector to take allocation provided;
 - l) economic impact of allocative decisions; and
 - m) social and cultural impact of decisions.
- 68 Information about the current status of the stock relative to the statutory target level, existing catch levels, existing allowances and catch levels, plus previous decisions may be informative of the actions that need to be taken.
- 69 The customary fishing regulations do not provide for the Crown to place limitations on customary fishing, apart from ensuring the sustainability of a particular stock. Customary take is regulated through the authorisation system in the customary regulations which require that all customary fishing is to be undertaken in accordance with tikanga and the overall sustainability of the fishery. In determining the extent of customary take, the Minister is required to provide for the input and participation of tangata whenua and are to have particular regard to kaitiakitanga (s 12(1)(b)).
- 70 Where the TACC, or in the absence of a TAC/TACC then current commercial catch, is reduced for sustainability/conservation purposes there is a direct relationship between managing recreational catch and reducing current catch, and vice versa. From a purely legal perspective there is no obligation to undertake a proportional reduction between recreational and commercial interests where the TAC (or the current catch level) or an individual stakeholder allocation is reduced for

conservation/sustainability purposes. Both law and common sense dictate that where commercial catch is reduced for conservation reasons, reasonable steps should be taken to avoid the reduction being rendered futile through increased recreational fishing.

- 71 However, subject to this consideration, there is no legal requirement that a decrease or increase in the allocation of the recreational allocation is to result in a corresponding proportional adjustment of commercial catch, and vice versa. MFish notes that the Fisheries Act assigns no priority between commercial and recreational interests. The Act is directed at both commercial and non-commercial fishing. Within that duality the Act permits the preference of one sector to the disadvantage of another; for example to provide for greater allowance for recreational interests in proportion to the commercial allocation. Any reallocation of catch from the commercial fishers to non-commercial may be subject to claims for compensation to commercial fishers under s 308 of the Act, except at the time of introduction.
- 72 Notwithstanding the Minister's discretion to allocate catch, case law also considers that it is not unreasonable for commercial and recreational fishers to share some of the "pain" from a reduction in the TAC. There is no requirement that the interests of recreational or commercial fishers must be fully provided for. MFish considers in situations where there is an absence of information about the relative benefits (i.e. utility) to be derived from allocating a stock to one or other sector then it is equitable for both commercial and recreational fishers to ensure the sustainability of the stock through a reduction in the TACC and recreational allowance (along with the implementation of commensurate measures to effect a reduction in catch - such as bag limit reductions). (The issue of utility is discussed in more detail in the following section.) Equally, commercial and recreational fishers should derive shared benefit from the rebuild of a fishery in terms of the allocation provided to the respective sectors, all other things being equal.
- 73 Consideration should also be given to the ability of a sector to take the allocation provided. Impediments may exist that preclude the sector from exercising the full extent of its entitlement. Tools are available in the Act that enhance the ability of different sectors to exercise their right to fish. As well as implementing specific measures in support of allocative decisions, caution should be taken to ensure that a decision does result in a sector being precluded from being able to take the allowance allocated.
- 74 Logically those parties who are responsible for the enhancement of a resource should receive the benefit of the activity. However, the ability to ascertain the increased yield from a fishery as a result of enhancement activities and hence the extent of the allocation provided to the sector is problematic. The development of a fishery resource involves demonstrating through research and/or monitoring that an increase of catch from existing and new fisheries is sustainable. It is generally assumed that the development will occur as a result of a structured deliberate initiative. Arguably any one sector could seek to develop a fishery. It is arguable that the sector that undertakes the development of a fishery should be entitled to be allocated the benefits of that development.
- 75 Population trends are reflected in the level of recreational fishing undertaken, both on a national and regional scale. The growth of urban centres, in particular Auckland,

has a significant impact on particular fisheries. An allowance for the recreational interest and the corresponding management controls for a stock could take into account existing population distribution and growth. Hence where a greater recreational demand arises the Minister is not precluded by any proportional rule from providing an increased allowance to the recreational entitlement subject to weighing all competing demands on the TAC (see *New Zealand Fishing Industry Association (Inc) and Ors v Minister of Fisheries and Ors* (CA82/97, 22/7/97) page 18).

- 76 Certain fisheries are considered to be of particular importance to certain fishers. In considering the extent of the recreational and Māori customary allowance it is appropriate to consider the nature of the species and the importance of the species to fishers. The value attributed to a resource is not limited solely to economic value but may also include the aesthetic value and non-market value. For example, while snapper is a medium to high value commercial fish species, it is also an important recreational target species. Certain species may be valuable to particular sector groups, for example, charter boats, and may have significance for tourism by contributing to New Zealand's popularity as a tourist destination. The abundance of a species and the availability of particular size fish for a specific stakeholder group may be factors relevant to the Minister's decision.
- 77 Stakeholders may elect to exercise their fishing rights in a manner, which results in their allocation in a fishery being undercaught. Voluntary closures and shelving of allocation may be undertaken as a means of improving the abundance of a species and the availability of certain sized fish. Such methods may improve recruitment. In the absence of explicit shares in a fishery, any subsequent increase in the TAC as a result of such methods would be available to all stakeholders. Stakeholders are not immune from any subsequent decrease in the TAC for sustainability purposes simply on the basis of the previous undercatch of their allowance.
- 78 The Act does explicitly recognise underfishing rights of commercial fishers. Where the person holding annual catch entitlement for a stock (not the owner of the ITQ) undercatches the extent of their entitlement, the person may carry forward the extent of the undercatch to the second fishing year up to a maximum of 10% of the total Annual Catch Entitlement (ACE) they held in the first fishing year. The carry forward of underfishing rights does not apply when the TACC is reduced in the second fishing year (s 67A(2)(b)).
- 79 Setting of the TAC and the manner in which the TAC is allocated may have significant social, cultural, and economic implications for stakeholders and consequential downstream economic activity. In *New Zealand Fishing Industry Association (Inc) and Ors v Minister of Fisheries and Ors* (CA82/97, 22/7/97) it was held that there was a clear obligation to move a stock towards B_{MSY} and when deciding upon the time frame and the ways to achieve that statutory objective the Minister is to consider all relevant social, cultural and economic factors.
- 80 The Court of Appeal suggested that a careful cost-benefit analysis needs to be undertaken to support a particular decision to reduce the TACC and in respect of a reasonable range of options available to the Minister in moving a fishery toward B_{MSY} . Where a decision with major economic impact is considered necessary the rationale for that decision should be clearly transparent. Those affected ought to be able to establish that all other reasonable possibilities were analysed and that the

decision adopted was the preferable option. The general principles noted by the Court of Appeal appear equally applicable to allocative decisions on introduction of a stock into the QMS.

- 81 The economic factors referred to in s 13(3) need not be confined to matters directly affecting the fishing industry. Wider considerations affecting the national economic interest are capable of being regarded as relevant. MSY can be interpreted as being directed at the national interests as well as sectional interests (see *New Zealand Fishing Industry Association (Inc) and Ors v Minister of Fisheries and Ors* (CA82/97, 22/7/97) p 15).
- 82 In setting and reducing a TACC consideration is required of the economic impact of any such action on individual quota owners, those fishers dependent on obtaining annual catch entitlement and on the QMS generally. However, the reduction of the current commercial catch or a TACC is not rendered unlawful simply on the basis that the decision adversely impacts the property right inherent in the QMS. In the context of fisheries legislation, a property right constitutes a right to harvest, which is subject to the exercise of the Crown's statutory powers. Accordingly, MFish considers that financial security of a property right is a valid but not irrefutable consideration in the context of the Minister's TAC/allocative decisions.
- 83 The actual financial costs associated with allocative decisions are to be assessed according to the nature of the fishery. A decline in the commercial allocation may impact on quota and lease price, thus impacting on potential new entrants and existing quota holders and owners. The setting of a TAC, and allocative decisions in a general context, impact on economic investment in terms of upgrading of plant and fleet structure.
- 84 Downstream impacts may result as a consequence of allocative decisions made in respect of both recreational and commercial stakeholders. In addition to the commercial harvesting and processing sector a significant number of service industries are linked to fishing, including charter operators, sale of fishing gear, repair, and transport related services. Decisions may also impact on particular communities where the fishing and fishing related services provide a significant contribution to a local economy.
- 85 The impact on individual fishers may be difficult to assess and will be dependent on a range of factors, including the extent of any reduction in catch; the level of debt; the species mix of quota held; and the ability of individual fishers to adapt.
- 86 It is not entirely clear as to the nature and extent of any cost benefit analysis required to be undertaken in any given situation. A cost benefit analysis may be in the form of an analysis of the economic impact to stakeholders and fishing related sectors of the economy. Equally it could include the factoring of environmental and social costs and benefits. The Court of Appeal stated that when considering any reduction in the TACC the economic impact of that action must be carefully weighed. Later in the same judgment the Court referred to a cost-benefit analysis in the context of implementing a decision of major economic impact.
- 87 A cost benefit analysis is designed to act as a tool for deriving the most efficient and productive solution. In itself such an analysis is not intended to impose a barrier to

implementing measures considered necessary for fisheries management purposes. In many instances MFish is not in possession of the information necessary for a detailed cost benefit analysis to be undertaken. Invariably it is the stakeholders concerned who hold the relevant information. MFish has requested that stakeholders provide relevant information in the course of their submissions on management proposals. MFish considers that in all instances it is impractical and unnecessarily burdensome for the Crown to undertake an exercise for all fisheries. MFish considers that a balance ought to be adopted between the magnitude of the impact of the proposed decision, the information currently available and information readily obtainable, and the requirement to provide an analysis of the economic implications of the proposed solution.

- 88 Social impacts may include the affect of decisions on individuals and communities. There is no restriction on the nature of the social factors that may be taken into account. There is no explicit relationship in the Act between those classes of persons having an interest in a stock or the effects of fishing on the aquatic environment and the factors, which the Minister may consider pursuant to s 13(3). The latter may be considered to be significantly wider in scope than the former. Non-extractive uses, social values and expectations, and political imperatives may therefore all constitute relevant considerations in the course of the Minister's decisions as to the setting of TACs and allocation of the TAC between fishing interests.
- 89 Reference to cultural factors in s 13(3) can be interpreted as encompassing both those provisions of the Act relating to the interests of Māori and tangata whenua but also cultural practices and values. The precise nature of those practices and values are to be determined by tangata whenua.

Allocation Models

- 90 The various factors identified above essentially fall within one or other of two key approaches that can be adopted for purposes of allocating the TAC - a claims based allocation and an utility based allocation. For example factors relating to a claims based allocation include existing allocations, current catch levels, equity of allocation, participation levels, and importance of the resource to one or more sectors. Factors relating to a utility based allocation, include population trends, assessment of relative value to respective sectors, investment and level of development or enhancement, ability of sector to take allocation provided, and the social, cultural and economic impact of allocative decisions. An explanation and application of the two approaches are outlined below.

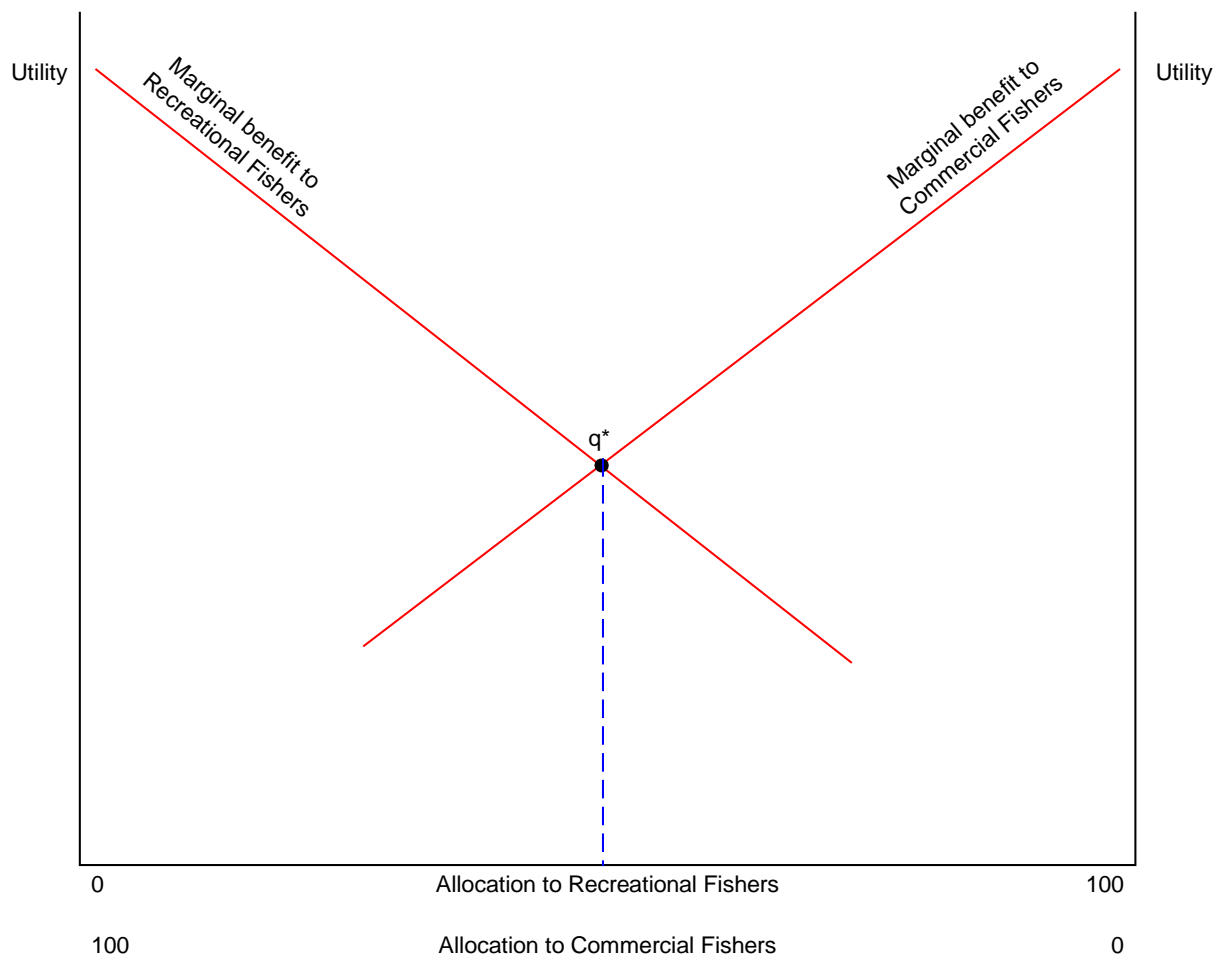
Claims based allocation

- 91 The term "*Claims based allocations*" describes a situation where allocations are made on the basis of a consideration of the legitimacy of claims to the resource. Generally these claims are based on some form of present or historical association with the resource, giving rise to expectations on the part of fishers (or classes of fishers) with respect to on-going future involvement. The claims based approach does not generally focus on future management opportunities or best value that could be derived from the fishery.

Utility based allocation

- 92 The term “*Utility based allocation*” describes a situation where allocations are based on the utility (or quantum of well-being) that would flow from a particular allocation. This method tends to favour allocations to those who value the resource most (downplaying the importance of past associations with the resource). As such it tends to have a focus on the future rather than the past. Within New Zealand fisheries management, the most obvious example of the utility based allocation approach is the on-going trading of Individual Transferable Quota that occurs under the QMS.
- 93 Under the utility based approach it is possible to conceptualise the allocation problem as one of determining the point at which it is not possible to reallocate the resource (amongst recreational and commercial fishers) without reducing the total quantum of utility that would flow from the resource. The concept is illustrated in Figure 1 below with respect to allocations between the commercial and recreational sectors. Assuming a (typical) downward sloping demand curve for both recreational and commercial fishers, the optimal point of allocation is given by q^* . For any point to the left of q^* , there is benefit in allocating more of the resource to recreational users (as the benefit to recreational fishers of an extra quantum of catch is greater than the benefit to commercial fishers foregone). Similarly, for any point to the right of q^* , there is greater benefit in allocating more to commercial fishers.
- 94 Undertaking this kind of utility comparison is in practice difficult. In particular, comparing the two marginal benefit curves is made problematic by both an absence of information and the lack of a readily available basis for making value comparisons between recreational and commercial fishers.
- 95 Determining an estimate of marginal benefit to commercial fishers tends to be the most straightforward part of the task. If the fishery is in the Quota Management System, quota values provide a readily available proxy valuation of a kilogram of fish to the commercial sector. If the fishery is not in the QMS, estimates of value can be made by, for example, considering quota value of like fisheries already in the QMS.

Figure 1: Determining the allocation between commercial and recreational fishers



96 However, determining an estimate of the value of a fishery to recreational fishers is, in contrast, much more difficult. There are no readily available indicators of value, at least not of a form that would allow a comparison between recreational and commercial fishers. (Note while indicators such as the number of recreational fishers or their expenditure on recreational fishing may provide some preliminary insights in this area, they do not provide a suitable basis for value comparison).

97 In response to this problem, non-market valuation techniques are sometimes brought to bear. Non-market valuation techniques use surveys or observations of behaviour coupled with sophisticated analytical methods to develop estimates of value sufficient to provide a basis for comparison with the value estimates available for the commercial fisheries. Analytical techniques of this type, however, and the results they generate need to be treated with a degree of caution. For example, survey respondents may seek to bias the results so as to produce outcomes in their favour (e.g. the allocation of a greater share of a fishery to recreational users).

98 Note, the figure above reflects a *static* approach to the allocation problem in the sense that it provides an estimate of optimal allocation at a single point in time. However, in reality the optimal allocation point will change over time in response to changing social, cultural and economic factors. A *dynamic* allocation framework would automatically respond to those changing factors with continual reallocations - in the

same way as quota and ACE are continually reallocated amongst commercial fishers via quota and ACE trades. A feature of an efficient dynamic allocation system (such as the on-going reallocation of quota) is the absence of any decision maker intervening to make allocation decisions on behalf of individuals. Changes in allocation reflect choices made by individuals, who are able to make independent decisions about use of the resource with a greater sense of certainty.

- 99 In order for a dynamic allocation system to operate effectively a single tradable right is essential. All participants would have the same type of right and make their own decisions about their involvement in a fishery (reflecting the utility consequences of the options available to them). However, there is no single right that is common across all sectors involved in NZ fisheries. As a consequence, the Government, by default, makes the decision for all sectors. In the future there is the potential that fisheries plans can provide a framework within which stakeholders can make their own collective decisions about allocation of a resource.
- 100 Currently there is an absence of a suitable dynamic allocation framework and only limited information on utility is available to decision makers to assist with allocation matters. At best, techniques such as the non-market valuation methods mentioned above can only suggest whether reallocation might be considered on utility grounds by indicating a utility benefit from reallocation away from the status quo. However, there may be no assessment of the extent of the re-allocation required to achieve the optimal allocation point. Furthermore, the insights provided by the non-market valuation work can become outdated in the period between the survey work being undertaken and the time at which the allocation decision is to be made. The potential for information to become outdated is not unique to non-market valuation surveys. The same can be said for stock assessments.
- 101 The decision maker (Government) is required to make an estimate of the optimal allocation point based on imperfect information. In this situation, allocations by Government will inevitably be sub-optimal and result in dissatisfaction from (at least some) stakeholders. Furthermore, commercial fishers could not plan with any degree of certainty in the face of an ongoing opportunity for Government intervention on allocation decisions. The use of thresholds could be developed in order to assess priority for reassessment and define trigger points or decision rules as to when decision makers should consider reallocation within a fishery. While the use of such thresholds and trigger points may remove some degree of the uncertainty about Government intervention, such a system still does not allow individuals to give effect to their own assessment about the value of the resource.
- 102 One particular aspect of the utility based allocation model that needs to be taken into account is the impact of any reallocation on Provisional Catch History (PCH). PCH is generated prior to introduction of a species into the QMS and provides eligible fishers with a contingent right to a share of the TACC, allocated as quota, following introduction.
- 103 Allocation models tend to stress the importance of the creation and preservation of “property rights” to the resource. Over time, it is the robustness of these property rights that will determine the amount of utility that will flow from the resource. There is utility attached to PCH because it reflects the opportunity of future access and provides some opportunity for investment prior to introduction into the QMS.

Theoretically, any fettering of this right undermines any utility value attributed to PCH.

- 104 In practice, the value commercial fishers ascribe to PCH will depend on the expectations of fishers about the quantum of quota they will receive. This expectation is limited by the framework of the Act that provides for a quantum of quota to be allocated following determination of the TACC. The TACC is determined after consideration of sustainable yield and allocation to other sectors. Submissions from commercial fishers have indicated that they are uncertain about the quantum of quota they will receive and that this uncertainty is in the main derived from uncertainty over sustainable catch. Changes may have occurred in the fishery subsequent to the qualifying years which suggest that fishers have not used PCH as a basis for decision making about participation on the fishery. As a consequence, in a generic sense, MFish would assess the utility of PCH as low given the characteristics of the right (lack of transferability, durability, divisibility, exclusivity). Economic analysis undertaken as part of the consideration of compensation for the prorating down of PCH for Fourth Schedule species on introduction to the QMS is supportive of this view. The analysis suggested that the benefit of quota outweighed the loss of up to 20% of PCH/quota right. However, no analysis was undertaken of the point at which the loss of PCH/quota right would outweigh the benefit derived from quota.
- 105 There is the potential for reallocation of catch to occur between sector on the setting of allowances when a stock is introduced into the QMS. There is no requirement under the Act for the Crown to compensate for the reallocation of PCH to recreational or customary fishers. This further emphasizes the relatively weak nature of the right associated with PCH and hence the weight that should be assigned it by the Minister when making allocation decisions on introduction of stocks to the QMS. In addition, the nature of PCH is but one factor that can be taken into account in decisions on allocation of the TAC.

Application of allocation models

- 106 There are circumstances where allocations on the basis of a past association with the resource (ie claims based) may maximise the utility of a resource at the time of allocation. In a theoretical sense where a stock or species is not scarce and largely unfettered access is provided to all sectors prior to introduction, it can be assumed that current catch will be a reasonable approximation of utility (particularly given the uncertainty attached to techniques for estimating value) because all sectors should be in a position to fully satisfy their demand for a stock or species. Therefore reallocation should be considered in fisheries where the proposed TAC will reduce the cumulative total of current catch or where current catch has been significantly influenced by non-market related factors. While noting that the permit moratorium may be an influencing factor in terms of limiting explicit development opportunities, the inevitable consequence bycatch provision provides commercial access to all fisheries. However, in practice, it is recognised that current catch may not constitute a reasonable approximation of utility. The level of current catch may be constrained by a lack of abundance or the effectiveness of fishing methods employed by different sectors.
- 107 Allocation of a TAC that is set above current catch can also be considered using utility-based arguments. MFish considers there is benefit in considering the initial

allocation of catch in light of both current and reasonable future needs or interests in the resource. Decisions at the point of introduction into the QMS may resolve some of the problems about allocation that may occur in the short to medium term at no or minimal cost to any sector where a TAC is able to set, in accordance with the provisions of the Act, at a level above the extent of current catch.

Other Management Controls

- 108 The TAC is invariably supported by a number of management controls that collectively ensure the sustainability of the stock and provide for utilisation within accepted limits. The 1996 Act explicitly provides for the setting of sustainability measures relating to size limits, biological state, fishing seasons, methods restrictions, closed areas, plus measures such as overfishing thresholds and bag limits.
- 109 The species-specific sections set out those measures that currently apply, which are being retained as part of the management framework for the stock under the QMS. The general intent is for the species-specific sections not to undertake a wide-scale review of all existing measures or potential measures that could be adopted. The ideal opportunity to discuss such issues will arise when quota is allocated to fishers and potentially within the context of developing fisheries plans. However, where necessary, consideration of appropriate measures is outlined in each species-specific section.

Regulatory framework

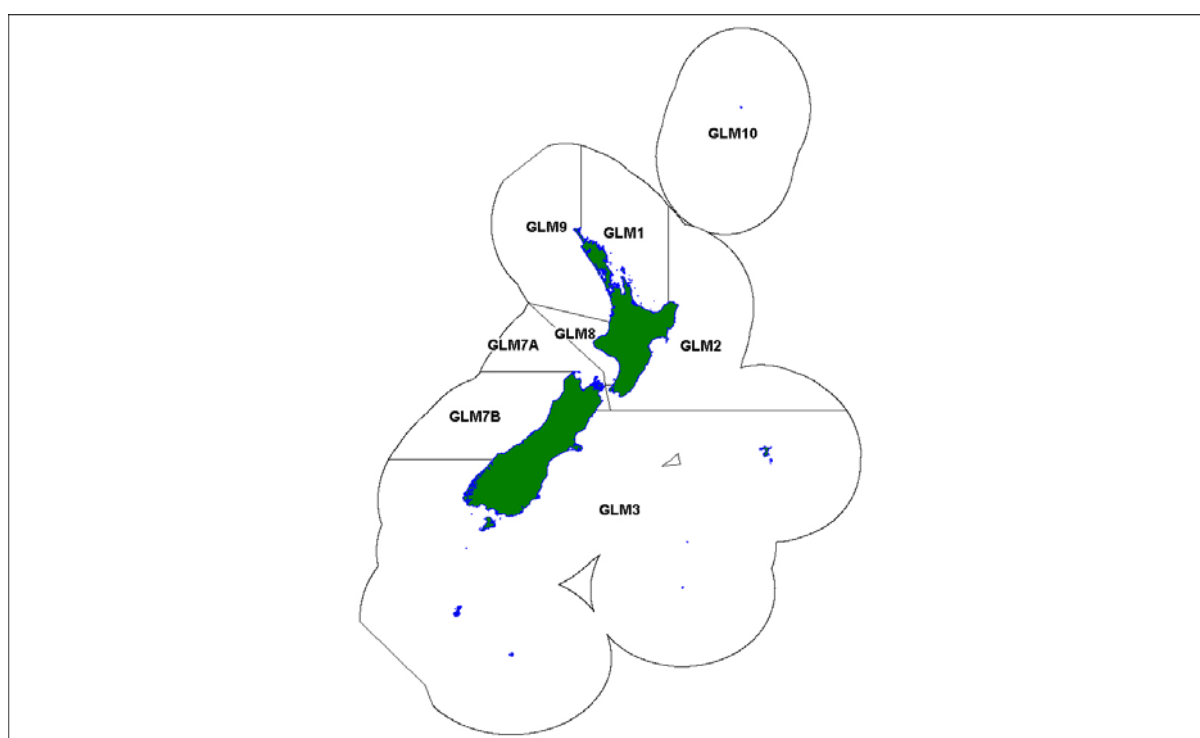
- 110 The intent of the QMS is to provide a broad management framework that provides the opportunity to maximise efficient utilisation of fishing resources while ensuring sustainability. The introduction of a species into the QMS requires that a TAC and other management controls are set in order to ensure overall sustainability of the species. Certain controls in place for these species will no longer be required following implementation of QMS management measures.

GREEN-LIPPED MUSSEL (GLM) – INITIAL POSITION PAPER

Introduction into the QMS

- 1 Green-lipped mussel (*Perna canaliculus*) has been gazetted for QMS introduction on 1 October 2004. The Quota Management Areas (QMAs) for green-lipped mussel are shown in Figure 1. The fishing year for green-lipped mussel will be from 1 October to 30 September, and Total Allowable Commercial Catches (TACCs) and Annual Catch Entitlements (ACE) are to be expressed in kilograms greenweight.

Figure 1: Quota Management Areas for green-lipped mussel



Key Issues to be Considered

- 2 The key issues to be considered for green-lipped mussel are as follows:
 - a) The GLM 9 fishery is currently limited to the harvest of juvenile green-lipped mussel¹. The harvest is unlikely to affect the sustainability of natural stocks;
 - b) Most s 67Q2(b) permits to harvest juvenile green-lipped mussel in GLM 9 do not expire until 30 June 2006, and this existing right needs to be recognised;
 - c) The GLM 7A fishery is enhanced through drop off from existing spat catching structures, development opportunities exist in the fishery, and there is a low risk to the sustainability of natural stocks;

¹ Juvenile green-lipped mussel is used in this section to mean post larval spat that has settled on natural material and is harvested without the use of structures. Currently the harvest is limited to 90 Mile Beach in the Far North of the North Island.

- d) Little, if any, commercial catch has been reported outside GLM 9 and GLM 7A;
- e) Dredging for green-lipped mussel could have adverse effects on the aquatic environment, particularly in areas where dredging or trawling has not previously been carried out;
- f) The biological characteristics of green-lipped mussel means it may be vulnerable to the effects of over fishing in the QMAs outside GLM 9 and GLM 7A; and
- g) Green-lipped mussel is an important resource to recreational and customary fishers.

Summary of Management Proposals

- 3 The proposed Total Allowable Catches (TACs,) TACCs, and allowances for green-lipped mussel are presented in Table 1.

Table 1: Proposed TACs, TACCs, and allowances for green-lipped mussel (tonnes)

Stock	TAC	Recreational allowance	Customary allowance	Other sources of mortality	TACC
GLM 1	415	162	243	0	10
GLM 2	35	10	15	0	10
GLM 3	155	58	87	0	10
GLM 7A	1 548	19	29	0	1 500
GLM 7B	13	5	8	0	0
GLM 8	43	17	26	0	0
GLM 9	348	39	59	180*	70
GLM 10	0	0	0	0	0

***Note the TAC for GLM 9 includes an allowance for other sources of mortality that recognises the proposal allowing existing s 67Q2(b) permit holders to catch up to 180 tonnes of juvenile green-lipped mussel (for more detail refer to the section subheaded ‘Rationale for proposed TACs’).**

- 4 It is also proposed to:
- a) Amend the reporting regulations to ensure the correct fishstock codes for green-lipped mussel are used under the QMS;
 - b) Add GLM 9 and GLM 7A to the Third Schedule to allow the TACs to be set under s 14;
 - c) Set an interim deemed value of \$0.06 per kg and an annual deemed value of \$0.12 per kg for the 2004–05 fishing year for all QMAs other than GLM 9;
 - d) Set deemed values for GLM 9 by one of two options. Option 1 is to set an interim deemed value of \$1.31 per kg and an annual deemed value of \$2.61 per kg for the 2004–05 fishing year. Option 2 is to set an interim deemed value of \$4.35 per kg with an annual deemed value of \$8.70 per kg for the 2004-05 fishing year. MFish prefers option 1;
 - e) Amend the Sixth Schedule to allow green-lipped mussel to be returned to the sea subject to conditions;

- f) Amend Fisheries (Auckland and Kermadec Areas Commercial Fishing) Regulation 4B to remove the prohibition on the commercial harvest of wild adult green-lipped mussel in GLM 9; and
- g) Revoke the regulatory restriction on taking beach cast seaweed on 90 Mile Beach.

TACs

- 5 This section sets out the overall objectives to be used when setting sustainability measures. MFish proposes the following:
- To set the TACs for GLM 9 and GLM 7A under s 14 to achieve the purpose of the 1996 Act; and
 - To set the TACs for GLM 1, GLM 2, GLM 3, GLM 7B, GLM 8, and GLM 10 under s 13 to maintain the stocks at or above a level that can produce maximum sustainable yield (MSY).

GLM 9

- 6 MFish recommends listing GLM 9 on the Third Schedule, so a TAC for GLM 9 can be set under s 14 of the Act. Section 14 prescribes an exception to having to manage a fishery to maintain the stock at or above a level that can produce MSY. Section 14 allows for a TAC to be set that better meets the purpose of the Act than a TAC set under s 13.
- 7 The Act allows TACs to be set under s 14, provided one of the three criteria specified in s 14(8) applies. The first criterion is that it is not possible, because of the biological characteristics of the species, to estimate MSY for a stock. The value of the GLM 9 fishery is in harvesting juvenile green-lipped mussel. The harvest of juvenile green-lipped mussel is unlikely to affect the productive capacity of the stock, because if juvenile green-lipped mussel is not harvested it lands on the beach and dies, or floats off into the Tasman Sea. Therefore, MSY is not considered to be a relevant target for managing this fishery at this time. Listing GLM 9 on the Third Schedule also provides for increases in the TAC during the fishing year, which potentially allows more flexibility to manage the variable availability of juvenile green-lipped mussel.

GLM 7A

- 8 MFish recommends listing GLM 7A on the Third Schedule, so a TAC for GLM 7A can be set under s 14 of the Act. Section 14 prescribes an exception to having to manage a fishery to maintain the stock at or above a level that can produce MSY. Section 14 allows for a TAC to be set that better meets the purpose of the Act than a TAC set under s 13.
- 9 The third criterion for listing a stock on the Third Schedule is the stock is managed on a rotational or enhanced basis. The management of the GLM 7A stock under a non-QMS regime has been on the basis that the stock is enhanced. Large volumes of green-lipped mussel fall off or are accumulated under and around spat catching structures resulting in an enhancement of the GLM 7A stock. Most of the harvest of green-lipped mussel in recent years has come from this source. Complex administrative arrangements involving special permits have been set up to manage the harvest of the enhanced stock. The fishing permit moratorium in place since 1992 has

prevented fishers to develop a more efficient approach to cleaning up beneath spat catching sites used on a rotational cycle.

- 10 Under the QMS, it makes sense to continue to manage the stock on an enhanced basis and to provide the opportunity for right-holders to formalise the management of the enhanced stock through mechanisms such as fisheries plans. The flexibility provided by listing GLM 7A on the Third Schedule would help to manage the variable biomass of this stock.

Other Stocks

- 11 MFish proposes to set TACs for the other green-lipped mussel stocks using the provisions under s 13 of the Act to maintain the stocks at or above a level that can produce MSY. These stocks do not currently meet the criteria of s 14.
- 12 Section 14B of the Act provides a further fishstock management option for setting a TAC. This provision enables the Minister to set a TAC that maintains a stock at a level below B_{MSY} that ensures its long-term viability to allow interrelated stocks to be taken at a TAC level based on B_{MSY} . MFish considers there is an absence of information to support such a strategy for green-lipped mussel.

Rationale for proposed TACs and TACCs

- 13 This section sets out for each stock the rationale that supports the proposed TACs and focuses in particular on the differing rationale for TACCs across stocks. The lack of stock assessment information for green-lipped mussel means the proposed TACs are based firstly on an estimate of the recreational and customary harvest, and secondly on TACCs set on a varying basis for different stocks. The TACs provide for all existing harvests and recognise the potential for further development. The framework provides for harvesting of green-lipped mussel at different life stages and for changes in how the species is utilised. MFish proposes the following:
 - To set the TAC for GLM 9 based on the current commercial demand for juvenile green-lipped mussel, and the estimated non-commercial catch of adult green-lipped mussel;
 - To set the TAC for GLM 7A based on an estimate of the annual commercial landing that is likely to occur from this enhanced stock, and an estimate of non-commercial catch; and
 - To set the TAC for GLM 1, GLM 2, GLM 3, GLM 7B, GLM 8 and GLM 10 based on estimates of existing non-commercial catch and nominal or zero TACCs.

GLM 9

- 14 MFish proposes the TAC of 348 tonnes for GLM 9 will include an allowance of 39 tonnes for the recreational harvest and an allowance of 59 tonnes for the customary harvest to cover the estimated existing non-commercial harvest. The TAC will also provide for the current commercial demand for juvenile green-lipped mussel with an effective allowance for commercial catch of 250 tonnes.

Existing s 67Q2(b) permit holders

- 15 MFish proposes allowing existing s 67Q2(b) permit holders to annually harvest 180 tonnes² of juvenile green-lipped mussel in GLM 9 for a two-year transitional period starting from 1 October 2004. The 180 tonnes will be recognised as an allowance for other mortality to the stock caused by fishing and will be taken into account when setting the TACC for GLM 9.

TACC Setting

- 16 Given the lack of pressing sustainability issues for the fishery, MFish proposes setting the effective allowable commercial catch to meet the estimated demand for juvenile green-lipped mussel. MFish expects the greater profitability of harvesting juvenile green-lipped mussel will mean the commercial harvest of adult stock will remain limited. The TACC is based on the estimate that juvenile green-lipped mussel greenweight is on average 50% of the weight of the landed material (refer to the section subheaded 'Measurement'). On this basis, most stakeholders, including the New Zealand Mussel Industry Council, the Coromandel Marine Farmers' Association, and the New Zealand Marine Farming Association estimate that 250 tonnes of juvenile green-lipped mussel will meet the foreseeable needs of the mussel farming industry.
- 17 In setting the TACC for GLM 9 for the two-year transitional period the existence of the proposed 180 tonnes allowance for existing s 67Q2(b) permit holders needs to be taken into account. MFish proposes a TACC of 70 tonnes to provide an effective allowable commercial catch of 250 tonnes of juvenile green-lipped mussel. The TACC would be reviewed before the transitory period expires to ensure that the mussel farming industry continues to have access to sufficient juvenile green-lipped mussel.
- 18 Setting an effective allowable commercial catch at 250 tonnes represents an estimated 50% increase on the highest previous annual catch estimated at 163 tonnes of juvenile green-lipped mussel. The increase in allowable commercial catch recognises the development opportunities for the fishery resulting from the increase in the area in mussel farms. It also provides for the expected high demand for juvenile green-lipped mussel that will exist when the fishery reopens after being closed because of a toxic algal bloom. The increase recognises the stranding of juvenile green-lipped mussel on 90 Mile Beach is variable.

Adverse Effects on the Aquatic Environment

- 19 MFish considers there will be a low risk of adverse effects to the aquatic environment because of the increase in allowable commercial catch compared to current catch levels. The main concern raised in the past has been over the potential of vehicle movement associated with harvesting activity in the intertidal zone causing incidental shellfish mortality. However, no evidence is available that shows the harvesting of juvenile green-lipped mussel has a significant adverse effects on the aquatic environment. In any event, it is unlikely the full allowable commercial catch will be gathered in all years as the proposed allowance is at a level that provides flexibility to

² The 180 tonnes allowance is based on the estimate that juvenile green-lipped mussel makes up 50% of the weight of landed material. The amount is equivalent to the existing catch limit of 360 tonnes for the 90 Mile Beach fishery that includes the combined weight of juvenile green-lipped mussel and the attached material.

make up for shortfalls in supply resulting from poor seasons. The two-year transition period could also allow for research to be carried out on the potential adverse effects on the aquatic environment of harvesting that could be incorporated into the review of the TACC for the 2006–07 fishing year.

GLM 7A

- 20 MFish proposes the TAC of 1 548 tonnes for GLM 7A include an allowance of 19 tonnes for the recreational harvest and an allowance of 29 tonnes for the customary harvest to cover the estimated existing non-commercial harvest. The TAC will also include an allowance of 1 500 tonnes to cover the estimate of the annual commercial landing.
- 21 The proposed TACC of 1 500 tonnes for GLM 7A is based on just over a 20% increase on the highest historic landing for the fishery. MFish considers the proposed TACC will be high enough to provide for the commercial harvest of green-lipped mussel in most years, and that it will not pose significant sustainability risks. The proposed TACC recognises the enhanced nature of the stock and provides for the development opportunities that stakeholders have suggested exist for the GLM 7A fishery.

Information on Reported Landings

- 22 The GLM 7A fishery is the principal adult green-lipped mussel fishery, and is mostly a bycatch of the southern scallop and Nelson Marlborough dredge oyster fisheries. Table 2 shows that recent landing levels are variable in GLM 7A.

Table 2: Landings of green-lipped mussel (MSG) for the period 1990–2002 taken from the landing section of catch effort landing returns (tonnes).

	GLM 1	GLM 7A	GLM 9
1990–91	4	12	0
1991–92	6	3	0
1992–93	4	0	0
1993–94	14	0	0
1994–95	6	0	0
1995–96	0	4	1
1996–97	0	0	0
1997–98	7	78	6
1998–99	0	185	2
1999–00	0	1 032	0
2000–01	0	1 239	0
2001–02	0	15	0
2002–03	0	408	0

- 23 The reported landings in GLM 7A in 1999–00 and 2000–01 largely exclude the 2 000 tonnes landed under the authority of a special permit issued for ‘cleaning-up’ under spat catching sites. The extent of the ‘clean-up’ harvest over this period is likely to have been even greater than 2 000 tonnes, as many more tonnes of green-lipped mussel were shifted and returned to the sea under the same special permit.
- 24 When considering the landing figures it should be noted that Challenger Commercial Fishing Regulation 14C prohibited dredging for green-lipped mussel in GLM 7A from

1989 to November 1998 unless specifically authorised by a fishing permit. This regulation is likely to have constrained landings during this period. The fact green-lipped mussel is a low value bycatch species also means that under-reporting of past landings is likely. This under-reporting and the variability of recent landings limit the usefulness of the data for estimating likely future harvest levels. However, the data is the best information available and provides the starting point for setting the TACC.

Variance in Abundance

- 25 MFish considers a TACC of 1 500 tonnes is likely to be high enough to provide for the commercial harvest of green-lipped mussel in most years. There are early indications that the risk of large variances in abundance occurring in GLM 7A may be reducing as improvements in spat catching activities reduces the need for seabed clean-ups.
- 26 If a large increase in stock abundance did occur it could be managed through in season increases in the TACC ensuring enough ACE is available to provide for a larger harvest. Annual post harvest monitoring of spat catching sites may help identify the need for in season increases. Making in season adjustments in the TACC is reliant on MFish having the resources available to administer such an adjustment. The proposed low deemed value for GLM 7A and providing for the return of green-lipped mussel to the sea are other proposals that mitigate the risk of abundance increasing and a shortage of ACE occurring. There is also potential for a stakeholder collective to form around GLM 7A quota shares, and to use mechanisms, such as fisheries plans to provide for flexible management.

Sustainability Issues

- 27 MFish considers a TACC of 1 500 tonnes poses a low risk to the sustainability of natural stocks given the enhanced nature of the fishery, and the extent of the area of farmed green-lipped mussel. The ability of green-lipped mussel spat to drift large distances also means any localised depletion that occurs is likely to be replenished overtime. For instance, it is likely that spat drifting on currents up the West Coast of the South Island provides recruits to the GLM 7A fishery.
- 28 It is also likely a TACC of 1 500 tonnes will pose a low risk of adverse effects on the aquatic environment being caused by dredging for green-lipped mussel. Any dredging is likely to occur in areas already modified by dredging and trawling, as this area is where most green-lipped mussel are found. There are also management controls in place in GLM 7A, such as closed areas and method controls to manage the adverse effects of dredging. The amount of dredging in GLM 7A will be linked to the dredging for the target species of scallop and dredge oyster. Studies of the effects on the aquatic environment of dredging for these species in GLM 7A have shown the impacts are appropriately avoided or mitigated.

GLM 1, GLM 2, GLM 3, GLM 7B, GLM 8

- 29 MFish proposes setting a nominal TACC of 10 tonnes in GLM 1, GLM 2, and GLM 3 and a TACC of zero for GLM 7B and GLM 8. The sustainability risks in these QMAs are low and limited development opportunities are expected.
- 30 In the past ten years there has been little if any green-lipped mussel commercially harvested in these QMAs (refer to Table 2). Green-lipped mussel is widely

distributed throughout New Zealand, but is most common in central and northern areas. It is absent from the Chathams and other offshore islands.

- 31 The low catch levels in these QMAs may not reflect low green-lipped mussel abundance. Instead it may suggest an inability to gain access to the fishery, and possibly the under-reporting of catch given that green-lipped mussel is a low value bycatch species.
- 32 Unlike the GLM 7A fishery, the green-lipped mussel beds in these QMAs are susceptible to over exploitation. Green-lipped mussel fisheries in the past have declined because of the impact of intensive dredging in areas that did not have enhanced stocks. Intensive dredging of green-lipped mussel beds may remove both juveniles and shell matter leaving an unstable soft substrate no longer suitable for settlement and attachment of green-lipped mussel. There is also a risk that dredging for green-lipped mussel may have adverse effects on the aquatic environment, especially in areas where dredging or trawling has not previously occurred, and where the environment may be less modified.
- 33 MFish proposes TACCs of ten tonnes for the east coast QMAs (GLM 1, GLM 2, GLM 3). Proposals to expand mussel farming in these areas may increase the bycatch of green-lipped mussel and create the need to 'clean-up' around the proposed mussel farms. The TACCs of ten tonnes will allow for further development of the green-lipped mussel harvest in these QMAs in the future if the available information showed this could be done in a sustainable manner. Note that existing Regulation 4B of the Fisheries (Auckland and Kermadec Areas Commercial Fishing) Regulations 1986 prohibits commercial fishers taking green-lipped mussel in GLM 1 apart from hand gathering in the area from North Cape to Cape Karikari.
- 34 There is no recent history of commercial green-lipped mussel harvesting, and no proposals for mussel farms in GLM 7B and GLM 8. The zero TACC for GLM 8 also takes into account the obligations under the deed of settlement with the Taranaki iwi Ngāti Ruanui and Ngāti Rauru to consult with the iwi before allowing the taking of green-lipped mussel for commercial purposes within their rohe.

GLM 10

- 35 MFish proposes to set the TAC at zero tonnes for GLM 10, because no catches have been reported from the Kermadec Fisheries Management Area (FMA). In addition, it is unlikely that green-lipped mussel occurs on offshore islands, and any likely habitat would occur in the marine reserve.

Allocation of TAC

Recreational allowance

- 36 An estimate of the recreational harvest of mussels is available from the 2000 national recreational surveys by FMA (refer to Table 3). Green-lipped mussel is assumed to make up most of the estimates, as it is more desirable than blue mussel. The accuracy of the estimates is uncertain as they have high coefficients of variation. However, the survey provides the best available information on the size of the recreational catch. The Recreational Working Group is satisfied with the general methodology used in the 2000 survey, and has concluded that results from the 1996 and previous national surveys should no longer be used.

Table 3: Harvest estimates of mussels (000s of individuals of *P. canaliculus* and *M. galloprovincialis* combined) from the 2000³ national recreational survey, by FMA. The estimated tonnage is based on green-lipped mussel, an average mussel being 10 cm shell height and weighing 70 g.

FMA	Harvest Estimate	Estimated Tonnage
1	2 316	162
2	145	10
3	822	58
5	176	12
7	347	24
8	242	17
9	561	39

37 Therefore, MFish proposes a recreational allowance of 162 tonnes for GLM 1, 10 tonnes for GLM 2, 70 tonnes for GLM 3, 17 tonnes for GLM 8, and 39 tonnes for GLM 9. To divide the estimate for FMA 7 between GLM 7A and 7B MFish assumes most green-lipped mussel is taken in GLM 7A given the larger population and better access to green-lipped mussel. Therefore 80% of the harvest estimate is attributed to GLM 7A to provide a recreational allowance of 19 tonnes. A recreational allowance of 5 tonnes is proposed for GLM 7B. No recreational allowance is proposed for GLM 10 to reflect the likelihood there is no green-lipped mussel in the Kermadec FMA, and that a marine reserve exists over any likely habitat.

Customary allowance

38 Green-lipped mussel is of high importance to Māori. It was historically used extensively, with remains of the shellfish appearing in middens throughout the country. Several customary fishers have noted the continuing importance of green-lipped mussel and that many Māori favour wild rather than farmed green-lipped mussel. There is no data available on the level of customary catch. However, given the significant importance of green-lipped mussel to Māori it is estimated the customary catch levels are greater than the recreational catch. To reflect this, the customary allowance should be equal to the recreational allowance plus 50% (refer to Table 4).

Table 4: Proposed recreational and customary allowances (tonnes) for green-lipped mussel

QMA	Recreational Allowance	Customary Allowance
1	162	243
2	10	15
3	58	87
7A	19	29
7B	5	8
8	17	26
9	39	59
10	0	0

39 In considering the proposed allowances for customary non-commercial interests, the Minister is required to take into account any mātaihai reserve or s 186A closure in the relevant QMA. MFish does not consider the allowances proposed for customary catches will detract from the intent of any mātaihai or s 186A closure now in place.

³ Boyd, R. and J. Reilly, (2002), 1999/2000 National Marine Recreational Fishing Survey: Harvest Estimates', New Zealand Fisheries Assessment Report.

Nor will the allowance be likely to be insufficient for the customary use of green-lipped mussel in these areas.

Allowance for other sources of mortality

- 40 The only allowance proposed for other sources of fishing related mortality is 180 tonnes in GLM 9 to recognise the allowance made for s 67Q2(b) permit holders to harvest juvenile green-lipped mussel.
- 41 MFish does not propose to provide any further allowances for other sources of fishing related mortality for green-lipped mussel for the following reasons:
- The level of illegal take of green-lipped mussel is likely to be low in the commercial fishery given it is a relatively low value species;
 - The green-lipped mussel taken illegally by non-commercial fishers is not expected to be significant when compared with the size of the non-commercial harvest; and
 - It is likely that green-lipped mussel returned to the sea in the wild adult commercial fishery will have high survival rates.

TACC

- 42 MFish proposes to base the TACC for GLM 9 on an estimate of the commercial harvest of juvenile green-lipped mussel that will be required to meet demand. The TACC also takes into account the proposed two-year transitory allowance of 180 tonnes for s 67Q2(b) permit holders. An initial TACC of 70 tonnes is proposed for GLM 9 to provide an effective annual commercial catch limit of 250 tonnes.
- 43 MFish proposes to set a TACC for GLM 7A of 1 500 tonnes to provide for the estimate of the annual commercial landing that is likely to occur, and that will not pose a significant sustainability risk.
- 44 MFish proposes to set a low nominal TACC of 10 tonnes for GLM 1, GLM 2, and GLM 3 based on the low reported landings and the development opportunity for the green-lipped mussel harvest in these QMAs.
- 45 A TACC of zero tonnes is proposed for GLM 7B and GLM 8 given the zero catch levels and lack of development opportunity in these QMAs.
- 46 A TACC of zero is proposed for GLM 10 to reflect the likelihood there are no green-lipped mussel in the Kermadec FMA, and if there were the marine reserve exists over any likely green-lipped mussel habitat. Other Management Measures

Consequential amendment to regulations

Codes

- 47 As a consequence of introducing green-lipped mussel into the QMS, MFish proposes to amend the Fisheries (Reporting) Regulations 2001 to ensure the effective and efficient operation of the QMS.
- 48 The framework to support the effective management of the juvenile and wild adult size classes will require the separate reporting of each size class on catch and effort

forms completed by permit holders. MFish proposes the ‘MSG’ code be used to report the catch of the adult size class, and the ‘MSP’ code be used to report the catch of the juvenile size class. However, from a QMS balancing perspective the harvest of green-lipped mussel (juvenile and adult size classes combined) would be reported as ‘GLM’ on monthly harvest returns. The GLM code would comprise both wild juvenile and adult size classes reported on catch and effort forms, and will be used to establish TACs, TACCs, balancing and deemed value setting.

- 49 A definition of juvenile and adult size classes is required to distinguish the use of the MSP and MSG code. The juvenile green-lipped mussel harvested from 90 Mile Beach is reported to be nearly always less than 5 mm. It is proposed to require the use of the MSP code for green-lipped mussel harvested that is less than 20 mm in length. The MSG code is to be used for all green-lipped mussel harvested that is equal to or greater than 20 mm in length.

Measurement

- 50 MFish recognises the difficulty in accurately measuring the weight of juvenile green-lipped mussel given that it is attached to other material. The TACC has been set on the basis that greenweight for juvenile green-lipped mussel is 50% of the weight of landed material. MFish does not propose regulating for how fishers measure the greenweight of juvenile green-lipped mussel. Fishers will be required under the Act to report the greenweight of green-lipped mussel taken. It is expected that fishers will use the same 50% of the weight of landed material to report greenweight as was used to set the TACC. The opportunity exists for right-holders in GLM 9 to use mechanisms such as fisheries plans to formalise a standard method of measure for the fishery.
- 51 More information on the proposed consequential amendments is set out in the introductory section to this document.

Return of green-lipped mussel to the sea

- 52 MFish proposes amending the Sixth Schedule of the Act to allow commercial fishers to return green-lipped mussel to the sea in all QMAs. The ability to return green-lipped mussel to the sea is an important management requirement. Green-lipped mussel is likely to be taken as a bycatch or as part of seabed ‘clean-up’ activities in association with spat catching and marine farming in GLM 7A, and potentially in other QMAs. Wild green-lipped mussel is of limited market value and may not always be marketable. Requiring the landing of green-lipped mussel may impose unnecessary costs on fishers through deemed value payments. Green-lipped mussel also has a high probability of survival if returned.
- 53 Juvenile green-lipped mussel harvesters have noted that up to 50% of the material harvested from 90 Mile Beach is discarded during the sorting process as it is material unwanted by customers. It is proposed that commercial fishers be able to return this material to the sea.
- 54 MFish proposes that a condition of green-lipped mussel being returned to the sea under the Sixth Schedule for all QMAs, other than GLM 9, be that the green-lipped mussel is likely to survive on return. Such a requirement is not necessary for GLM 9, as it does not matter if juvenile green-lipped mussel is returned dead or alive, as the juvenile green-lipped mussel is unlikely to contribute to the natural stock.

- 55 More details on the proposal to add green-lipped mussel to the Sixth Schedule is set out in Annex 1.

Removing the existing method control for 90 Mile Beach

- 56 MFish does not propose a method control for the harvesting of juvenile green-lipped mussel at 90 Mile Beach. The s 67Q(2)(b) permits issued for harvesting juvenile green-lipped mussel contain a condition that only allows the method of hand gathering or the use of hand-held tools to be used. The purpose of the method control was to address concerns that mechanical harvesting would result in vehicles associated with harvesting causing more incidental shellfish mortality in the intertidal zone.
- 57 MFish considers there is a lack of evidence to show the risk posed to the aquatic environment by harvesting methods other than hand gathering is high enough to justify regulating for a method control. A method control is likely to cause inefficient utilisation and to add cost. It constrains innovation in harvest methods that are likely to be more efficient, and may in fact have less impact on the aquatic environment.
- 58 Instead of regulating MFish proposes giving more responsibility to fishers. MFish expects anyone proposing to use new methods of harvesting will investigate the environmental effects of the proposed activity and provide the results to MFish for the method to be approved. If inappropriate harvesting methods were used without seeking MFish approval it is intended a regulation would be proposed to restrict commercial gathering of juvenile green-lipped mussel to existing methods. One option would be for right-holders in the GLM 9 fishery to use mechanisms, such as fisheries plans to set a code of practice to govern harvesting. Such an approach would be consistent with the strategic direction of MFish.

Removal of prohibition on taking beach cast seaweed from 90 Mile Beach

- 59 The Fisheries (Beach Cast Seaweed Area Prohibition) Notice 2002 prohibits commercial fishers from taking beach cast seaweed from 90 Mile Beach. Beach cast seaweed is defined under the Act as meaning seaweed of any species that is unattached and cast ashore. The prohibition was put in place for 90 Mile Beach to ensure only seaweed taken under s 67Q(2)(b) permits for harvesting juvenile green-lipped mussel was permitted. If the prohibition remains in place for 90 Mile Beach it is likely that it will constrain the harvest of juvenile green-lipped mussel. The harvesters of juvenile green-lipped mussel report that 20% of the material they take would be beach cast. MFish proposes the prohibition be amended to remove the 90 Mile Beach area. More information on this proposal is set out in Annex One.
- 60 It is proposed to introduce seaweed into the QMS on 1 October 2005. An Initial Position Paper outlining the proposal and seeking submissions will be released soon.

Removal of the prohibition on commercially taking wild adult green-lipped mussel in GLM 9

- 61 Regulation 4B of the Fisheries (Auckland and Kermadec Areas Commercial Fishing) Regulations 1986 prohibits commercial fishers taking adult green-lipped mussel in GLM 9 and GLM 1 apart from by dredging in an area at the entrance to the Kaipara Harbour and by hand gathering at 90 Mile Beach, the Waitakere coast, Manukau

Harbour to Raglan Harbour, and North Cape to Cape Karikari. MFish proposes amending the regulation to remove the prohibition on taking wild adult green-lipped mussel in GLM 9 as the regulation is not required for sustainability reasons and unnecessarily constrained the utilisation of adult green-lipped mussel.

- 62 The harvest of adult green-lipped mussel in GLM 9 is likely to be limited and not to cause sustainability concerns. The profitability of harvesting juvenile green-lipped mussel is much higher than for wild adult green-lipped mussel. The costs of harvesting wild adult green-lipped mussel are likely to include a sanitation and biotoxin programme. The economic incentives will be for GLM 9 ACE to be used for the harvest of juvenile green-lipped mussel. The parties that hold GLM 9 quota will also have an interest in the higher value juvenile green-lipped mussel fishery and will want to ensure the harvest of wild adult green-lipped mussel does not impact on the sustainability of the juvenile green-lipped mussel fishery. If sustainability concerns arise with the harvest of wild adult green-lipped mussel the issues can be addressed at that time. In the meantime, the regulatory framework should provide flexibility for right-holders to utilise the stock at different life stages.
- 63 MFish proposes retaining the controls on the taking of wild adult green-lipped mussel in GLM 1 under Regulation 4B, and Regulation 5E of the Fisheries (Auckland and Kermadec Areas Commercial Fishing) Regulations 1986 that prohibits commercial fishers taking green-lipped mussel spat in GLM 1 and GLM 9 apart from the area from Cape Reinga to the north head of Hokianga Harbour. Future right-holders may in the future consider these regulations to be inappropriate or unnecessarily constraining management flexibility. The right-holders may then decide to use mechanisms, such as fisheries plans, to outline how best the fishery should be utilised in a sustainable manner.

Options to address biosecurity issues in GLM 9

- 64 The s 67Q(2)(b) permits issued for harvesting juvenile green-lipped mussel at 90 Mile Beach contain a condition that controls the transfer or disposal of juvenile green-lipped mussel in New Zealand as required by MFish. The purpose of the condition is to support industry spat transfer protocols that have been developed to prevent the spread of toxic algae that may occur at 90 Mile Beach to other parts of New Zealand. MFish considers the best means to control the transfer of algae around New Zealand that may impact on mussel farming is through the existing industry protocols. Under the QMS mechanisms such as fisheries plans can be used to enforce right-holder agreements such as the existing industry protocol on spat transfer.
- 65 If the mussel industry wants regulatory support for its protocols, MFish considers the Biosecurity Act 1993, rather than the 1996 Act, is the more suitable piece of legislation to do this under.

Deemed values and overfishing thresholds

- 66 New QMS stocks are classified in the following balancing regime categories:
- High value single species fisheries – i.e., stocks that are of high value and taken mainly with little, if any, bycatch;

- Low knowledge fisheries - i.e., stocks for which there is relatively little information on fishery status and about which there is no sustainability concerns; and
 - All other fishstocks – i.e., those that do not necessary have a high unit value and there is adequate knowledge on which to base a TACC.
- 67 The proposed deemed value for all QMAs other than GLM 9 is based on green-lipped mussel being a ‘low knowledge’ fishery. Under this category, the annual deemed value is set at 60% of the average port price, and the interim deemed value is set at 50% of the annual deemed value.
- 68 MFish proposes to set an interim deemed value for GLM 1, GLM 2, GLM 3, GLM 7A, GLM 7B, GLM 8, and GLM 10 at \$0.06 per kg and a final deemed value of \$0.12 per kg for the 2004-05 fishing year. The proposed deemed value is set using a port price of \$0.20 per kg (based on information provided by industry).
- 69 MFish does not propose to set overfishing thresholds or tolerances for these stocks as they are considered to fit the ‘low knowledge’ category of fishstocks.
- 70 MFish is putting forward two options for the deemed value for GLM 9. Stakeholder views are sought on whether the deemed value should be based on juvenile green-lipped mussel being a high value single species fishery or a low knowledge fishery.
- 71 Under the high value single species category, the annual deemed value is set at 200% of the average port price. The MFish criteria for high value species include the port price being greater than \$4.00 per kg. Given the unique characteristics of the GLM 9 fishery there is debate over whether the port price for juvenile green-lipped mussel is higher than \$4.00 per kg. However, MFish considers the recent price for supplying juvenile green-lipped mussel to Coromandel mussel farmers of \$4.35 per kg is the best current indicator of port price. Consequently, the option of placing GLM 9 in the high value single species category needs to be considered. The two options are as follows:

Option 1

- 72 As a low knowledge fishery the interim deemed value for GLM 9 would be \$1.31 per kg with a final deemed value of \$2.61 per kg for the 2004–05 fishing year. The deemed value is set using a port price of \$4.35 per kg (based on information from industry).

Option 2

- 73 As a high value single species fishery the interim deemed value for GLM 9 would be \$4.35 per kg with a final deemed value of \$8.70 per kg for the 2004–05 fishing year. The deemed value is set using a port price of \$4.35 (based on information from industry).
- 74 MFish prefers option 1, as unlike most high value single species fisheries, the GLM 9 fishery does not have pressing sustainability concerns. In addition, if a problem with fishers not balancing catch with ACE occurred there would be the ability to increase deemed values in the future.

- 75 Overfishing thresholds apply to high value single species fisheries. If GLM 9 was deemed to be a high value single species fishery, this would mean that where interim deemed values have proved inadequate to prevent a fisher continuing to catch in excess of ACE the fisher's permit is conditioned to prevent the fisher fishing in the relevant geographical area.

Statutory Considerations

- 76 In proposing the management options the following statutory considerations have been taken into account:
- a) The purpose of the Act (as provided in s 8) is to provide for the utilisation of fisheries resources while ensuring sustainability. The management proposals seek to ensure sustainability of the fishstocks by setting TACs and other appropriate measures. Utilisation is provided by setting allowances for commercial, recreational and customary fishers;
 - b) The TAC under s 13 of the Act should be set at, or move the stock towards, a level that can produce the MSY. There is no stock assessment information for green-lipped mussel. The proposed TACs for GLM 1, GLM 2, GLM 3, GLM 7B, GLM 8 and GLM 10 are based on an estimate of recreational and customary harvest, and a small or zero nominal allowance for the commercial catch. The small TACCs reflect the lack of commercial landings in these QMAs and potential sustainability issues;
 - c) The TAC under s 14 of the Act should be set at a level that is appropriate to achieve the purpose of the Act. The proposed TAC for GLM 9 is based on industry's estimates of required catch and recognises there are no pressing sustainability issues. The proposed TAC for GLM 7A is based on a TACC that provides for the estimate of the annual commercial landing that is likely to occur and that will not pose a significant sustainability risk;
 - d) No specific environmental conditions have been identified that affect the abundance or recruitment of green-lipped mussel (required to be considered under s 13(2)(b)(ii));
 - e) Relevant biological characteristics have been considered in setting the stock management proposals for green-lipped mussel (as required to be considered under s 13(2)(b)(ii)). For instance, the risk of intensive dredging removing the solid objects that provide habitat for green-lipped mussel is taken into account in setting TACCs in QMAs where there have not been recent commercial landings;
 - f) Scallop and dredge oyster are the primary target species when green-lipped mussel are taken in the GLM 7A fishery. The effects of fishing on the above interdependent stocks are principally managed by the QMS using various TACs and regulatory mechanisms. Seaweed is taken in association with juvenile green-lipped mussel in the GLM 9 fishery. There is no evidence the interdependence of stocks is of significant magnitude to effect the setting of the TAC (required to be considered under s 13(2)(a));
 - g) Section 9(a) requires maintaining associated or dependent species above a level that ensures their long-term viability should be considered. Clumps of green-lipped mussel provide shelter to a large range of invertebrates and algae, and green-lipped mussel is also likely to be a food source for a range of

species. The management proposals are considered to provide for the long-term viability of these associated or dependent species;

- h) Section 9(b) requires maintaining biological diversity be taken into account. Green-lipped mussel is principally caught commercially in the GLM 7A fishery as a bycatch in the dredge fisheries for southern scallop and dredge oyster. Existing closed areas and method controls provide protection for the aquatic environment in these fisheries. The other main commercial fishery in GLM 9 also has closed areas and method controls in place to avoid undue adverse effects on the aquatic environment;
- i) Section 9(c) requires consideration of the protection of habitat of particular significance to fisheries management. The closed area restrictions in the GLM 9 and GLM 7A fishery provide protection for habitats of particular significance. For instance, the existing regulation closing most of GLM 9 to dredging for green-lipped mussel will assist in ensuring the sustainability of wild adult stock and the supply of juvenile green-lipped mussel to 90 Mile Beach;
- j) There is likely to be social and economic effects associated with the proposed TACs, although the precise nature of these effects cannot be readily quantified. The most obvious effect will be on fishers needing to balance catches with ACE or to pay deemed values. If the catch of green-lipped mussel exceeds the TACCs there could be economic effects on the associated target fisheries through having to pay deemed values. The TACCs proposed attempt to avoid unnecessarily constraining the harvest of green-lipped mussel and ensuring sufficient ACE is available to limit additional costs;
- k) There is a wide range of international obligations relating to fishing (including sustainability and utilisation of fishstocks, and maintenance of biodiversity). However, no obligations apply directly to green-lipped mussel. MFish considers issues arising under international obligations and the provisions of the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992 are adequately addressed in the management options proposed for green-lipped mussel in this document;
- l) Section 11(1)(b) provides the Minister may take into account existing controls under the Act when setting or varying a sustainability measure such as a TAC. A large range of controls under the Act already applies to the harvest of green-lipped mussel, including an amateur daily bag limit, a ban on using underwater breathing apparatus, closed areas, and method controls. These existing controls have been taken into account when developing the management proposals for green-lipped mussel;
- m) No fisheries plans exist or are proposed that would otherwise have to be taken into account when setting the TACs for the green-lipped mussel fishstocks. No decisions have been made to require services, or not to require services in this fishery;
- n) 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 any management strategy or plan under the Conservation Act 1987, that are relevant to setting TACs for green-lipped mussel now;
- o) As required under s 11(2)(c), the Minister has considered and determined the management proposals do not conflict with the requirements of the Hauraki

Gulf Marine Park Act 2000. The proposed TACs will allow for the sustainable utilisation of the species by all those with fishing interests. The commercial harvest of green-lipped mussel within the park boundaries will continue to be restricted by Regulation 4B of the Fisheries (Auckland and Kermadec Areas Commercial Fishing) Regulations 1986;

- p) The nature of the fishery and interests of the respective fishing sectors have been considered in setting the TAC, TACC, and allowances for customary and recreational interests and all other mortality to the stock caused by fishing; and
- q) The best available information on the status of green-lipped mussel is derived from a report prepared by NIWA under contract to MFish, and from industry sources. There is no other stock assessment information on this species, other than generalised descriptions of biology and distribution. In accordance with s 10 of the Act, the absence of information is not a reason for failing to provide for utilisation at levels considered to be sustainable.

Preliminary Recommendations

77 MFish recommends that the Minister:

- a) **Agrees** to set a TAC of 415 tonnes for GLM 1 and within the TAC set the following:
 - i) A customary allowance of 243 tonnes;
 - ii) A recreational allowance of 162 tonnes;
 - iii) An allowance for other fishing-related mortality of 0 tonnes; and
 - iv) A TACC of 10 tonnes.
- b) **Agrees** to set a TAC of 35 tonnes for GLM 2 and within the TAC set the following:
 - i) A customary allowance of 15 tonnes;
 - ii) A recreational allowance of 10 tonnes;
 - iii) An allowance for other fishing-related mortality of 0 tonnes; and
 - iv) A TACC of 10 tonnes.
- c) **Agrees** to set a TAC of 155 tonnes for GLM 3 and within the TAC set the following:
 - i) A customary allowance of 87 tonnes;
 - ii) A recreational allowance of 58 tonnes;
 - iii) An allowance for other fishing-related mortality of 0 tonnes; and
 - iv) A TACC of 10 tonnes.
- d) **Agrees** to set a TAC of 1 548 tonnes for GLM 7A and within the TAC set the following:
 - i) A customary allowance of 29 tonnes;
 - ii) A recreational allowance of 19 tonnes;
 - iii) An allowance for other fishing-related mortality of 0 tonnes; and
 - iv) A TACC of 1 500 tonnes.

- e) **Agrees** to set a TAC of 13 tonnes for GLM 7B and within the TAC set the following:
 - i) A customary allowance of 8 tonnes;
 - ii) A recreational allowance of 5 tonnes;
 - iii) An allowance for other fishing-related mortality of 0 tonnes; and
 - iv) A TACC of 0 tonnes.
- f) **Agrees** to set a TAC of 43 tonnes for GLM 8 and within the TAC set the following:
 - i) A customary allowance of 26 tonnes;
 - ii) A recreational allowance of 17 tonnes;
 - iii) An allowance for other fishing-related mortality of 0 tonnes; and
 - iv) A TACC of 0 tonnes.
- g) **Agrees** to set a TAC of 348 tonnes for GLM 9 and within the TAC set the following:
 - i) A customary allowance of 59 tonnes;
 - ii) A recreational allowance of 39 tonnes;
 - iii) An allowance for other fishing-related mortality of 180 tonnes; and
 - iv) A TACC of 70 tonnes.
- h) **Agrees** to set a TAC of 0 tonnes for GLM 10 and within the TAC set the following:
 - i) A customary allowance of 0 tonnes;
 - ii) A recreational allowance of 0 tonnes;
 - iii) An allowance for other fishing-related mortality of 0 tonnes; and
 - iv) A TACC of 0 tonnes.
- i) **Agrees** to amend the Third Schedule of the Act to allow GLM 9 and GLM 7A to be managed with an alternative TAC set under s 14.
- j) **Agrees** to amend the Sixth Schedule of the Act to allow green-lipped mussel to be returned to the sea.
- k) **Agrees** to amend Fisheries (Beach Cast Seaweed Area Prohibition) Notice 2002 to remove the restriction on commercial fishers from taking beach cast seaweed from 90 Mile Beach.
- l) **Agrees** to amend Fisheries (Auckland and Kermadec Areas Commercial Fishing) Regulation 4B to remove the prohibition on the commercial harvest of wild adult green-lipped mussel in GLM 9.
- m) **Agrees** to amend the Fisheries (Reporting) Regulations 2001 to outline the codes to be used by fishers when completing their statutory returns.
- n) **Agrees** to set an interim deemed value of \$0.06 per kg and an annual deemed value of \$0.12 per kg for the 2004–05 fishing year for GLM 1, GLM 2, GLM 3, GLM 7A, GLM 7B, GLM 8, and GLM 10.

o) **Agrees** to set:

EITHER

i) an interim deemed value of \$1.31 per kg and an annual deemed value of \$2.61 per kg for the 2004–05 fishing year for GLM 9;

OR

ii) an interim deemed value of \$4.35 per kg with an annual deemed value of \$8.70 per kg for the 2004-05 fishing year for GLM 9.

ANNEX ONE

Amendment to regulations

Return of green-lipped mussel to the sea

Background

- 78 MFish proposes to provide for the return of green-lipped mussel to the sea by adding green-lipped mussel to the Sixth Schedule of the Act for all QMAs.
- 79 The following condition will apply for returning green-lipped mussel to the sea in GLM 1, GLM 2, GLM 3, GLM 7A, GLM 7B, GLM 8 and GLM 10:
- a) That green-lipped mussel is likely to survive on return to the sea.
- 80 No conditions are proposed to apply to returning green-lipped mussel to the sea in GLM 9, as juvenile green-lipped mussel is unlikely to contribute to the natural stock.

Problem definition

- 81 Green-lipped mussel has a high likelihood of survival if returned to the sea. Green-lipped mussel is likely to be taken as a bycatch or as part of seabed 'clean-up' activities in association with spat catching and marine farming operations in GLM 7A, and potentially in other QMAs. Requiring the landing of green-lipped mussel may impose unnecessary costs on fishers through deemed value payments.
- 82 In GLM 9 up to 50% of the material harvested from 90 Mile Beach is discarded during the sorting process, as it is material unwanted by customers. MFish proposes that commercial fishers be able to return this material to the sea, to avoid unnecessary deemed value payments being imposed.

Preliminary consultation

- 83 The proposal to add green-lipped mussel to the Sixth Schedule was included in the s 18 IPP and was supported in submissions from stakeholders and in later discussions that MFish held with stakeholders.

Options

Non-Regulatory Measures

- 84 There are no non-regulatory mechanisms for allowing commercial fishers to return green-lipped mussel to the sea.

Regulatory Measures

- 85 To implement this measure it is necessary to add green-lipped mussel to the Sixth Schedule of the Act.

Costs and benefits of the proposal

86 Adding green-lipped mussel to the Sixth Schedule will allow commercial fishers to return this species to the sea and avoid having to pay deemed values, which will provide an obvious benefit to commercial fishers. Green-lipped mussel has a high likelihood of survival if returned, so there is likely to be no impact on the sustainability of stocks from allowing this species to be returned to the sea.

Administrative implications

87 There are no significant administrative implications.

Removal of prohibition on taking beach cast seaweed from 90 Mile Beach

Background

88 The Fisheries (Beach Cast Seaweed Area Prohibition) Notice 2002 prohibits commercial fishers from taking beach cast seaweed from 90 Mile Beach. Beach cast seaweed is defined under the Act as meaning seaweed of any species that is unattached and cast ashore. The prohibition was put in place for 90 Mile Beach to ensure only seaweed taken under s 67Q(2)(b) permits for harvesting juvenile green-lipped mussel was permitted. MFish proposes the prohibition be amended to remove the 90 Mile Beach area.

Problem definition

89 If the prohibition remains in place for 90 Mile Beach it is likely that it will constrain the harvest of juvenile green-lipped mussel. The harvesters of juvenile green-lipped mussel report that 20% of the seaweed they take is beach cast.

Preliminary consultation

90 MFish has discussed the proposal with existing harvesters of juvenile green-lipped mussel and mussel industry stakeholders. There is general support for the proposal.

Options

Non-regulatory measures

91 There are no non-regulatory alternatives to amending the beach cast seaweed prohibition.

Regulatory Measures

92 To avoid unnecessarily constraining the harvest of juvenile green-lipped mussel and attached seaweed the proposed amendment is required.

Costs and benefits of the proposal

93 The proposed amendment will provide the benefit of continuing access to beach cast seaweed for the harvest of juvenile green-lipped mussel. The need for the prohibition will be removed by deeming that seaweed taken in the 90 Mile Beach area has

juvenile green-lipped mussel attached. Thus, any seaweed taken for sale in the area will need to be balanced with green-lipped mussel ACE to avoid paying deemed values.

Administrative Implications

94 There are no significant administrative implications with the proposed amendment to the beach cast seaweed prohibition.

Removal of the prohibition on commercially taking wild adult green-lipped mussel in GLM 9

Background

95 Fisheries (Auckland and Kermadec Areas Commercial Fishing) Regulation 4B prohibits commercial fishers taking adult green-lipped mussel in GLM 9 and GLM 1 apart from by dredging in an area at the entrance to the Kaipara Harbour and by hand gathering at 90 Mile Beach, the Waitakere coast, Manukau Harbour to Raglan Harbour, and North Cape to Cape Karikari. MFish proposes amending the regulation to remove the prohibition in GLM 9.

Problem Definition

96 The prohibition unnecessarily constrains the utilisation of adult green-lipped mussel in GLM 9 when there are unlikely to be sustainability concerns.

Preliminary Consultation

97 MFish has discussed the proposal with existing harvesters of juvenile green-lipped mussel and mussel industry stakeholders. They expressed concern the proposal increases the risk of unsustainable harvesting of adult green-lipped mussel affecting the sustainability of the juvenile green-lipped mussel fishery.

Options

Non-regulatory measures

98 There are no non-regulatory alternatives to amending regulation 4B to allow for the utilisation of adult green-lipped mussel.

Regulatory Measures

99 To avoid unnecessarily constraining the utilisation of adult green-lipped mussel the proposed amendment is required.

Costs and benefits of the proposal

100 The proposal allows right-holders in GLM 9 to decide how best the GLM 9 fishery should be utilised in a sustainable manner. It will provide greater flexibility for right-holders to utilise all the life stages of green-lipped mussel in GLM 9. MFish considers there is a low risk of this greater flexibility causing sustainability concerns. The profitability of harvesting juvenile green-lipped mussel is much higher than for wild adult green-lipped mussel. The economic incentives will be for GLM 9 ACE to

be used for the harvest of juvenile green-lipped mussel. The parties that hold GLM 9 quota will also have an interest in the higher value juvenile green-lipped mussel fishery and will want to ensure the harvest of wild adult green-lipped mussel does not impact on the sustainability of the juvenile green-lipped mussel fishery. An initial TACC of 70 tonnes also reduces the risk of sustainability concerns arising.

Administrative Implications

- 101 There are no significant administrative implications with the proposed amendment to regulation 4B.

GREEN-LIPPED MUSSEL (GLM) – FINAL ADVICE

Initial Proposal

- 1 MFish proposed in the initial position paper (IPP) to set and allocate the TACs for each green-lipped mussel (*Perna canaliculus*) stock as outlined in Table 1.

Table 1: Proposed TACs (in tonnes), TACCs and other allowances for green-lipped mussel stocks

Stock	TAC	Recreational allowance	Customary allowance	Other sources of mortality	TACC
GLM 1	415	162	243	0	10
GLM 2	35	10	15	0	10
GLM 3	155	58	87	0	10
GLM 7A	1 548	19	29	0	1 500
GLM 7B	13	5	8	0	0
GLM 8	43	17	26	0	0
GLM 9	348	39	59	180	70
GLM 10	0	0	0	0	0

- 2 MFish also proposed in the IPP to:

- amend Part 1 of Schedule 3 of the Fisheries (Reporting) Regulations 2001 to introduce fishstock codes for green-lipped mussel to be used by commercial fishers when completing their statutory returns;
- amend the Third Schedule of the Act to allow GLM 9 and GLM 7A to be managed with an alternative TAC set under s 14;
- amend the Sixth Schedule of the Act to allow green-lipped mussel to be returned to the sea;
- amend Fisheries (Beach Cast Seaweed Area Prohibition) Notice 2002 to remove the restriction on commercial fishers from taking beach cast seaweed from 90 Mile Beach;
- amend Fisheries (Auckland and Kermadec Areas Commercial Fishing) Regulation 4B to remove the prohibition on the commercial harvest of wild adult green-lipped mussel in GLM 9;
- set an interim deemed value of \$0.06 per kg and an annual deemed value of \$0.12 per kg for GLM 1, GLM 2, GLM 3, GLM 7A, GLM 7B, GLM 8 and GLM 10; and

- set:

EITHER

(1) an interim deemed value of \$1.31/kg and an annual deemed value of \$2.61/kg for the 2004–05 fishing year for GLM 9;

OR

(2) an interim deemed value of \$4.35/kg with an annual deemed value of \$8.70/kg for the 2004–05 fishing year for GLM 9.

Background to stakeholder agreement

3 MFish received eleven submissions on the IPP from stakeholders involved in the 90 Mile Beach juvenile green-lipped mussel fishery (GLM 9). The submissions raised a number of issues regarding the proposed transitory regime for introducing GLM 9 into the QMS. MFish met with the parties on 5 May 2004 to consider a way forward that would meet their concerns. The stakeholders agreed on an alternative proposal to still enable GLM 9 to be introduced into the QMS.

4 You have been briefed separately on the stakeholder agreement and agreed on 11 May 2004 to progress the implementation of the agreement. The stakeholders have presented this alternative proposal to the Primary Production Select Committee considering the Fisheries Amendment Bill (No. 3) that set up a transitional regime for GLM 9. The Select Committee indicates it supports the stakeholder proposal if all parties are agreed to it.

5 The stakeholder agreement supports the following:

- Existing s 67Q(2)(b) permits to be cancelled on 1 October 2004;
- No allowance to be made for the existing catch limit for the s 67Q(2)(b) permits as ‘other sources of mortality’ when setting the TACC for GLM 9;
- The TACC for GLM 9 to be set at 180 tonnes (juvenile green-lipped mussel weight) for the fishing year commencing on 1 October 2004 on the basis that 25% of annual catch entitlement (ACE) would be shelved under an agreement between quota owners; and
- Amend the Fisheries Amendment Bill (No. 3) to allow the setting of a ratio for juvenile green-lipped mussel and seaweed for reporting purposes.

6 All parties that made submissions on GLM 9 issues in the IPP support the stakeholder proposal. Those parties are:

- **New Zealand Mussel Industry Council (NZMIC)** a stakeholder organisation representing the mussel industry nationally;
- **Te Ohu Kai Moana (TOKM)** is allocated 20% of quota shares on behalf of iwi when stocks are introduced into the QMS;
- **New Zealand Marine Farming Association Inc. (NZMFA)** represents marine farmers in the Tasman, Nelson and Marlborough districts. The NZMFA agrees to abide by the agreement negotiated by the NZMIC;

- **New Zealand Seafood Industry Council** (SeaFIC) representing the New Zealand seafood industry;
- **Robbie Denison, Kirk Denison, and Bill Spanhake** (s 67Q(2)(b) permit holders without provisional catch history (PCH));
- **Chris Hensley, Vic Hensley, Anne Hensley, Dianne and Terry Wedding, Marty Doody, and Ross Bellingham** (statutory catch year fishers and s 67Q(2)(b) permit holders);
- **Sanford Limited** (Sanford) is a large aquaculture and wild fisheries company;
- **Sealord Group Limited** is a large aquaculture and wild fisheries company;
- **Aqua King Limited** (Aqua King) is involved in spat harvesting using spat catching farms in the South Island and collecting juvenile green-lipped mussel from Ninety Mile Beach;
- **Pickering Brownlee Talley Limited** (Pickering Brownlee Talley) are involved in spat harvesting using spat catching farms in the South Island and collecting juvenile green-lipped mussel from Ninety Mile Beach; and
- **Peter Herbert** a fisher with eligible catch for GLM 9 from the statutory catch history years.

7 MFish notes that if the Fisheries Amendment Bill (No. 3) is not enacted by 1 October 2004, s 67Q(2)(b) permits can still be used to harvest juvenile green-lipped mussel and GLM 9 will be deferred for QMS introduction until 1 October 2005.

Remaining Issues

- 8 The stakeholder proposal is in effect a supplementary submission made by parties after their original submissions on the IPP had been received. MFish has interpreted the relevant submissions on the basis that the stakeholder agreement now represents the views of parties on introducing GLM 9 into the QMS, the TACC for GLM 9, and the need for a set ratio for reporting purposes. Only the issues not addressed by Fisheries Amendment Bill (No. 3) are considered in this paper.
- 9 A number of issues addressed in the initial submissions related specially to GLM 9, and these are addressed first before considering issues raised in relation to other stocks.

Setting the GLM 9 TAC under s 14

Submissions

- 10 The **NZMIC** and **TOKM** support the proposal to set the GLM 9 TAC under s 14 of the Fisheries Act 1996 (the Act).

MFish Discussion

- 11 The submissions received on this issue support setting the TAC for GLM 9 under s 14. MFish considers this approach is appropriate and potentially allows more flexibility to manage the variable availability of juvenile green-lipped mussel in GLM 9.

GLM 9 TAC and TACC

Submissions

- 12 The stakeholder proposal supports a TACC of 180 tonnes (juvenile green-lipped mussel weight) for GLM 9.

MFish Discussion

- 13 MFish supports setting the TACC for GLM 9 at 180 tonnes (juvenile green-lipped mussel weight) for the following reasons:

- There are no pressing sustainability issues for the fishery at this level of harvest;
- At this stage the TACC should be set to meet the estimated demand for juvenile green-lipped mussel as it is likely to dominate the harvest in GLM 9;
- Stakeholders agree that 180 tonnes will meet estimated demand; and
- The competitive catch limit for the fishery is currently 180 tonnes. MFish established the catch limit on the basis that no evidence exists that a harvest of this size poses a sustainability risk, or a risk of causing adverse effects on the aquatic environment.

- 14 The stakeholder proposal provides an alternative quota allocation for GLM 9 that avoids the need for the transitional regime proposed in the IPP. The transitional regime included taking into account the catch limit for existing s 67Q(2)(b) permits of 180 tonnes as other sources of mortality for GLM 9. This allowance is no longer required. MFish supports the recreational and customary allowances as proposed in the IPP (for more detail refer to the subheading 'Recreational Allowances').

GLM 9 Reporting

Submissions

- 15 The stakeholder proposal includes amending the Fisheries Amendment Bill (No. 3) to allow setting a ratio for juvenile green-lipped mussel and seaweed for reporting purposes. Submitters want more clarity as to how juvenile green-lipped mussel should be reported.
- 16 The **NZMIC** propose the definition of juvenile green-lipped mussel be changed from less than 20mm to less than 10mm.

- 17 **Sanford** seeks clarification on how catch effort landing returns (CELR) and monthly harvest returns (MHR) would be filled in for GLM 9.

MFish Discussion

- 18 MFish supports the stakeholder proposal to amend the Fisheries Amendment Bill (No. 3) to allow a set ratio for juvenile green-lipped mussel and seaweed to be set for reporting purposes. The proposal is still being considered via submissions to the Fisheries Amendment Bill (No. 3). Assuming legislative change is made, MFish will establish the necessary regulation to set the ratio. The regulation would provide greater certainty and enables the original proposal put forward by MFish in the s 18 IPP.
- 19 MFish supports defining green-lipped mussel to be reported as MSP to be green-lipped mussel less than 10mm, as this better corresponds to the actual size of juvenile green-lipped mussel harvested.
- 20 In response to Sanford's request to clarify how CELRs and MHRs should be filled in for GLM 9 an example is provided. If 10 tonnes of seaweed and juvenile green-lipped mussel is harvested and a 50:50 ratio is appropriate then five tonnes is recorded as juvenile green-lipped mussel (MSP) and five tonnes as seaweed on the CELR. The five tonnes of MSP is then recorded on the MHR using the GLM code, and 5 tonnes of GLM ACE is required to cover the catch. MFish will provide more detailed guidance on reporting to fishers before 1 October 2004.

Removing the existing method control for 90 Mile Beach

Submissions

- 21 **Statutory catch year fishers and s 67Q(2)(b) permit holders** support removing the method control as they consider it will allow more efficient forms of harvesting that result in less impact on the beach environment.
- 22 **Section 67Q(2)(b) permit holders without PCH** wanted clarity as to whether mechanised harvesting could be used or not, without having to seek approval from MFish. They oppose the proposal in the IPP that MFish would expect anyone using new harvest methods to seek MFish approval.
- 23 **TOKM** recognises that regulation is ultimately undesirable and quota holders should take more responsibility for these matters. TOKM agrees that quota holders should carry out an investigation into the potential adverse effects of new harvesting methods before they are utilised, and that these matters can be managed under a fisheries plan. However, TOKM is concerned that developing a fisheries plan containing a set of practices is likely to take time.
- 24 TOKM opposes the proposal in the IPP as it lacks legal authority, and only regulating when an inappropriate method is used means adverse effects on the environment may have already occurred. Until quota holders are in a position to develop a fisheries plan, TOKM submits that a method control regulation be put in place with perhaps a three-year sunset clause.

- 25 **Aqua King** and **Pickering Brownlee Talley** support the removal of the existing method control and consider harvesting guidelines should be developed under a fisheries plan.

MFish Discussion

- 26 MFish supports removing the existing method control for the following reasons:
- There is a lack of evidence to show the risk posed by alternative harvesting methods justifies a method control regulation;
 - A method control is likely to cause inefficient utilisation and add cost, and limit innovation in methods that may have less impact;
 - Now that stakeholders support GLM 9 being completely managed under the QMS from 1 October 2004, there are appropriate incentives in place for quota holders to take responsibility to address the effects of harvesting in a timely manner through mechanisms such as codes of practice or fisheries plans;
 - By not having a regulation, or an expectation that MFish will approve every new harvest method, there is clarity that quota holders are expected to take responsibility to manage the effects of harvesting; and
 - If quota holders do not act responsibly MFish can still regulate in the future.

Removal of the prohibition on commercially taking wild adult green-lipped mussel in GLM 9

Submissions

- 27 The **NZMIC** opposed removing the prohibition on taking wild adults in GLM 9. The NZMIC submits that it is possible that an extended biotoxin closure of the juvenile green-lipped mussel resource will encourage ACE holders to utilise their ACE for harvesting adult green-lipped mussel. The NZMIC also believes there may be commercial markets for dredged adult green-lipped mussel in GLM 9 and that this could destroy the parent stock of the juvenile resource. The NZMIC considers quota holders may be able to address the issue but that this takes time and effort and may not be a solution in the short term. The NZMIC does not believe prohibiting the take of adult green-lipped mussel after a problem occurs provides sufficient assurance.
- 28 The NZMIC supports retaining the existing regulation prohibiting the taking of adults until the QMS is bedded-in. The NZMIC also supports a maximum size limit for GLM 9 to prohibit the taking of adults to protect the juvenile resource.
- 29 **Section 67Q(2)(b) permit holders without PCH** support a regulation to protect the whole west coast from dredging for green-lipped mussel as little is known about the parent stock of the juvenile green-lipped mussel. They note that Maori interests have shown an interest in dredging for wild green-lipped mussel as they prefer wild stock, and there is the ability to use mussels for pharmaceuticals. The permit holders consider the dredging of green-lipped mussel is a direct threat to the juvenile resource. They believe it will be far more difficult to regulate after a problem occurs when businesses have already been established to dredge the adult resource.

- 30 **Statutory catch year fishers and s 67Q(2)(b) permit holders** raise concerns about why the harvest of adult green-lipped mussel is proposed but there is an area restriction for the harvest of juvenile green-lipped mussel. They consider the proposal to be inconsistent.
- 31 **Aqua King and Pickering Brownlee Talley** oppose removing the ban on taking adult green-lipped mussel. They make the same points as the NZMIC and the s 67Q(2)(b) permit holders in supporting retaining the existing regulation or establishing a maximum size limit to protect the juvenile resource.
- 32 **TOKM** supports the removal of the prohibition on taking adult green-lipped mussel as quota holders should have the flexibility to utilise the stock at different life stages. TOKM notes the proposal to retain the area closures on taking juvenile green-lipped mussel in GLM 1 and GLM 9. It asks that MFish clarify the reasons for the closures and to consider whether a closure is the best means of achieving the original objective.
- 33 **Peter Herbert** asks that the areas available to take adult green-lipped mussel in GLM 1 be the same as those available for paua and kina. He submits there is no obvious reason to open areas just according to the existing permits of Fisheries Management Area 1 (FMA 1) for green-lipped mussel.

MFish Discussion

- 34 MFish supports revoking regulation 4B of the Fisheries (Auckland and Kermadec Areas Commercial Fishing) Regulations 1986. Regulation 4B prohibits the commercial take of adult green-lipped mussel in GLM 9 and GLM 1 apart from by dredging in an area at the entrance to the Kaipara Harbour and by hand gathering at 90 Mile Beach, the Waitakere coast, Manukau Harbour to Raglan Harbour, and North Cape to Cape Karikari. MFish also supports revoking regulation 5E of the Fisheries (Auckland and Kermadec Areas Commercial Fishing) Regulations 1986. Regulation 5E prohibits the take of juvenile green-lipped mussel in GLM 9 and GLM 1 apart from in the area from Cape Reinga to the north head of Hokianga Harbour.
- 35 Regulations 4B and 5E were put in place in 1988 to transfer fishing permit conditions into regulation. The open areas were based on where permit holders had wanted to take green-lipped mussel. The area closures do not address sustainability issues or concerns over adverse effects on the environment.
- 36 Now that green-lipped mussel is being introduced into the QMS, MFish considers regulations 4B and 5E unnecessarily constrain utilisation. MFish considers the risk of commercial harvest in GLM 1 causing adverse effects is addressed by the TACC being set at only 10 tonnes.
- 37 The risk of the harvest of adult green-lipped mussel in GLM 9 impacting on the juvenile fishery is not considered high enough to justify a regulation constraining the rights of quota holders. The regulatory framework should provide the flexibility for quota holders to decide how best to utilise the stock at different life stages in a sustainable manner. The profitability of harvesting juvenile green-lipped mussel in GLM 9 is much higher than for wild adult green-lipped mussel. The parties that hold GLM 9 quota will want to ensure that the harvest of wild adult green-lipped mussel does not impact on the sustainability of the juvenile fishery. Now that stakeholders support GLM 9 being completely managed under the QMS from 1 October 2004

quota owners are able to address this issue in a timely manner through mechanisms such as contracts with ACE holders or fisheries plans.

Removal of control on the daily weight of green-lipped mussel commercially taken in GLM 1 and GLM 9

MFish Discussion

- 38 MFish proposes amending regulation 22A of the Fisheries (Auckland and Kermadec Areas Commercial Fishing) Regulations 1986 to remove the control on the daily weight of green-lipped mussel that can be taken by commercial fishers in GLM 1 and GLM 9. Regulation 22A allows a maximum daily weight of 600 kg of green-lipped mussel to be taken by dredging, and a maximum daily weight of 200 kg of green-lipped mussel to be taken by hand gathering.
- 39 Due to an oversight, MFish did not consult on amending this regulation and did not include the proposed amendment in the IPP. However, MFish considers the proposed amendment of regulation 22A is a minor technical amendment consequential to the introduction of green-lipped mussel into the QMS. The daily weight controls of regulation 22A are made redundant by the TACCs established under the QMS. All similar daily weight controls have been removed when other new species have been introduced into the QMS, and the same needs to be done for green-lipped mussel. In addition, it has been made clear at consultation meetings with mussel industry stakeholders that MFish proposed to remove regulatory controls on the commercial take of green-lipped mussel in GLM 1 and GLM 9.
- 40 MFish is satisfied that the proposed amendment to regulation 22A does not adversely impact anyone and that there is no need for a formal consultation process to make the proposed amendment.

Removal of prohibition on taking beach cast seaweed from 90 Mile Beach

Submissions

- 41 **TOKM** supports the proposal to remove the prohibition on taking seaweed from 90 Mile Beach.
- 42 The **NZMIC, Aqua King, Pickering Brownlee Talley, Section 67Q(2)(b) permit holders without PCH** and **Sanford** raise concerns regarding the introduction of seaweed into the QMS.

MFish Discussion

- 43 MFish supports removing the prohibition to take beach cast seaweed from 90 Mile Beach because the prohibition would unnecessarily constrain the harvest of juvenile green-lipped mussel. No submissions were received opposing the removal of the prohibition.
- 44 An IPP proposing the introduction of seaweed into the QMS is being consulted on separately and MFish will consider the concerns raised on this issue through the

seaweed consultation process. This commitment is noted in the stakeholder agreement.

Return to the sea for GLM 9

Submissions

- 45 The NZMIC, Aqua King, Pickering Brownlee Talley, Sanford, and Statutory catch year fishers and s 67Q(2)(b) permit holders support allowing the return of green-lipped mussel to the sea.

MFish Discussion

- 46 MFish supports listing GLM 9 on the Sixth Schedule so that green-lipped mussel can be returned to the sea whether dead or alive, as the juvenile green-lipped mussel taken is unlikely to contribute to the reproductive capacity of the stock. No submissions were received opposing the proposal to list GLM 9 on the Sixth Schedule.

GLM 9 Deemed values and overfishing thresholds

Submissions

- 47 **Statutory catch year fishers and s 67Q(2)(b) permit holders** support GLM 9 being categorised as a high value single species fishery for setting deemed values to provide an incentive for every commercial fisher to acquire sufficient ACE to cover their catch. They submit that they sell juvenile green-lipped mussel to customers in Coromandel for approximately \$6.00 per kg and to the Marlborough Sounds for approximately \$8.00 per kg. They consider an annual deemed value of \$2.61 per kg as proposed in the IPP would not provide an incentive for fishers to cover their catch with ACE and would not meet the requirements of the Act.
- 48 **TOKM** support GLM 9 being categorised as a high value single species fishery for setting deemed values. In this fishery, TOKM considers a key objective is to create greater efficiencies that will ultimately benefit quota holders and mussel growers alike. If this objective is to be achieved, TOKM believes the quota right needs to have value, and this requires there to be sufficient incentive for harvesters to obtain ACE to cover their catch.
- 49 TOKM notes that current permit holders maintain that they receive prices of anything from \$6 to \$8 per kg for their product. This being the case, TOKM considers the proposed annual deemed value of \$2.61 per kg provides little incentive for harvesters who do not hold ACE to go ahead and purchase it.
- 50 TOKM believes the following characteristics of the fishery support a higher deemed value:
- It is accessible;
 - It is reasonably lucrative; and
 - Accidental harvest is unlikely.

- 51 **Sanford** supports categorising GLM 9 as a high value single species fishery for setting deemed values and an annual deemed value of \$8.70 per kg. Sanford considers the following factors support this view:
- There will be no unavoidable bycatch in GLM 9 as it is proposed to list it on the Sixth Schedule;
 - Juvenile green-lipped mussel will be collected as a single QMS species;
 - Landings in GLM 9 are predictable; and
 - Even though there is no pressing sustainability concerns there is still a need to provide an incentive for fishers to balance their catch with ACE to protect the value of the property right.
- 52 **Section 67Q(2)(b) permit holders without PCH** note there are different views on the port price for GLM 9. They submit that the \$6-8 per kg prices received for juvenile green-lipped mussel includes processing and transport costs. They submit that a mussel farmer in the Far North paid \$2-3 per kg for juvenile green-lipped mussel and that this is a more accurate basis for the port price.
- 53 The **NZMIC, Aqua King, and Pickering Brownlee Talley** support categorising GLM 9 as a low knowledge fishery and setting a low deemed value because there is no sustainability issue.

MFish Discussion

- 54 In line with the preference stated in the IPP, MFish supports option 1 of categorising GLM 9 as a low knowledge fishery and setting the annual deemed value at \$2.61 per kg for the following reasons:
- The agreement with stakeholders to progress a non-constraining TAC and TACC means that the deemed value should be set to provide utilization;
 - The GLM 9 fishery does not have pressing sustainability concerns, so a high deemed value is not required to prevent the TACC being over caught for sustainability reasons;
 - The GLM 9 TACC is unlikely to stop the supply of green-lipped mussel from meeting demand. When a TACC is non-constraining a fishery should be managed as close as possible to an open access fishery to ensure there is competition. MFish is concerned that a high deemed value will limit competition and could unnecessarily increase the price of juvenile green-lipped mussel;
 - As an interim step, MFish considers a deemed value of \$2.61 will mean there is some incentive for ACE holders to remain efficient, as if they increase prices too high parties will have the opportunity to access the fishery by paying deemed values;
 - MFish considers a low deemed value provides added incentive to right holders to cooperate and to pursue cost efficiencies that can be gained by co-ordinating their harvest activities;

- MFish considers it unlikely that parties would continue to rely on paying deemed values as the basis for their investment in the fishery. There would be no guarantee for these operators that the deemed value would not be increased, and they are more likely to buy ACE if they are the more efficient operators; and
- MFish is currently reviewing its deemed value policy and proposes that fisheries such as GLM 9 where there is a non-constraining TACC, should have a low deemed value that provides only a small incentive to balance catch with ACE. It is likely that the deemed value for GLM 9 will be reviewed for the 2005–06 fishing year in line with this new policy.

55 MFish acknowledges there is debate over the market value of GLM 9. However, in line with the IPP MFish considers the most recent price¹ (\$4.35 per kg) paid for significant amounts of juvenile green-lipped mussel supplied to Coromandel mussel farmers is the best indicator of GLM 9 market value.

56 As GLM 9 is proposed to be categorised as a low knowledge fishery, overfishing thresholds and differential deemed values would not apply to GLM 9. Current MFish policy is that overfishing thresholds and differential deemed values only apply to high value single species fisheries. Overfishing thresholds ensure that where interim deemed values have proved inadequate to prevent fishers from catching in excess of ACE, the fisher's permit is conditioned to prevent the fisher fishing in the relevant geographical area. Different deemed value rates are set in respect of the same stock, according to different levels of catch in excess of ACE to ensure all fishers balance their catch with ACE.

Options to address biosecurity issues in GLM 9

Submissions

57 TOKM submits that industry protocols covering the transfer of juvenile green-lipped mussel are sufficient to address any biosecurity concerns.

58 The **Challenger Scallop Enhancement Company Ltd, Challenger Finfisheries Management Company Ltd and the Challenger Oyster Management Company Ltd** (Challenger) made a joint submission as the commercial stakeholder organisations representing the quota owners and other fishery participants responsible for non-farmed green-lipped mussel harvest in FMA 7.

59 Challenger is concerned that the issue of toxic algae being spread to the Challenger management area is not one that is purely internal to the mussel industry.

60 Challenger submits that should the alga *Gymnodinium catenatum* be transferred in viable quantities to the Marlborough Sounds or Nelson Bays, it will affect the scallop, oyster and dredge mussel fisheries at least as badly as the marine farming industry, as it has the potential to destroy such fisheries. Challenger considers relying on fisheries plans for self-regulation does not address the potential for harm beyond those who are capable of controlling it.

¹ Active s 67Q(2)(b) permit holders indicated the \$4.35 price was what was charged for juvenile green-lipped mussel supplied to Coromandel mussel farmers before the fishery closed in August 2003.

MFish Discussion

- 61 MFish does not support creating a regulation to control the transfer of wild green-lipped mussel. The current industry protocol addressing this issue has worked effectively, as demonstrated by the recent closures of the 90 Mile Beach fishery. MFish considers this success shows industry has the ability to deal with a problem that directly impacts on their interests. A regulation is not necessary and is likely to be less flexible and effective than an industry protocol supported by such mechanisms as contractual arrangements and a fisheries plan.
- 62 In any event, there will be a further opportunity to consult stakeholders, including Challenger on the biosecurity issue as part of the consultation on the issue of fishing for green-lipped mussel around marine farms as noted in the agreement with stakeholders.

GLM 7A TAC and TACC

Submissions

- 63 **Challenger** agrees with the Ministry proposal that GLM 7A is an enhanced fishery and that it is appropriate to list it on the Third Schedule and to set its TAC under s 14 of the Act.
- 64 Challenger is concerned the 1 500 tonne TACC for GLM 7A is overly conservative and will not provide sufficient headroom for catch of this stock. Challenger submits that the analysis in support of the proposed TACC does not include bycatch of the trawl fishery, which has been returned to the sea in the past. Should this catch be taken in the future there is no reason why it should not be landed. Challenger states that catches in the Marlborough Sounds have also been avoided in the past. However, it believes this is unlikely to be the case in the future and the TACC should not unnecessarily constrain prospective catches where the sustainability of the resource is ensured by the many thousands of tonnes residing on marine farms.

MFish Discussion

- 65 MFish supports setting the TAC for GLM 7A under s 14 recognising that the stock is managed on an enhanced basis and that this potentially provides more flexibility to manage the variable availability of this stock.
- 66 MFish considers the proposed TACC of 1 500 tonnes for GLM 7A is appropriate given the best information currently available. A TACC of 1 500 tonnes is based on a 20% increase on the highest reported annual landing in the past 13 years. Challenger did not put forward an alternative TACC figure for GLM 7A. The opportunity exists under the QMS for quota holders to provide the necessary information to demonstrate that the TACC can be increased while meeting sustainability and environmental standards.
- 67 Quota holders also have the opportunity to seek an in season increase in the TACC for GLM 7A if information on the abundance on the stock shows it is required. The proposed low deemed value for GLM 7A also mitigates the risk posed by a shortage of ACE.

GLM 7B TAC and TACC

Submissions

- 68 **Challenger** submits that setting a TACC of 0 tonnes for GLM 7B is not justified. Challenger notes the IPP states at paragraph 27 that “it is likely that spat drifting on currents up the West Coast of the South Island provides recruits to the GLM 7A fishery”. Challenger believes that this indicates there are sufficient adult green-lipped mussel in GLM 7B to produce that spat and maintain their own reproductive capacity. Challenger also believes the recreational and customary allowance for GLM 7B infers MFish accepts that there is a green-lipped mussel fishery in GLM 7B. Challenger states the IPP explains the reasons why commercial catches might have been taken in GLM 7B but no landings recorded.
- 69 Challenger can find no justification for the statement in the IPP that there is no development potential for GLM 7B. Challenger does not accept that there is no opportunity for development of GLM 7B. Challenger submits that GLM 7B should not be lumped with GLM 8, which is subject to particular obligations under the deed of settlement with two Taranaki iwi.
- 70 Challenger submits that a nominal TACC of 50 tonnes be established for GLM 7B to encourage investigation of the fishery. Challenger doubts that even a 100 tonnes TACC would present a stock sustainability problem for the GLM 7B fishery although Challenger accepts that it might give rise to consideration of environmental and localised depletion effects.

MFish Discussion

- 71 MFish supports a TACC of 10 tonnes for GLM 7B instead of the 0 tonne proposed in the IPP. MFish agrees with Challenger that there may be development opportunity for the GLM 7B fishery. With no information on stock levels in GLM 7B or on past catch levels, MFish considers it appropriate that a nominal TACC of 10 tonnes be set for GLM 7B. The 10 tonne nominal TACC is consistent with the TACCs set for other similar green-lipped mussel stocks and would provide quota owners in GLM 7B with the ability to investigate the fishery.

Reporting outside GLM 9

Submissions

- 72 **Challenger** requests that if the MSP and MSG codes are retained that they apply only in GLM 9.
- 73 Challenger submits the proposal to require the use of three reporting codes for green-lipped mussel is confusing and unhelpful. Challenger believes the proposal is made with reference to juvenile green-lipped mussel caught in GLM 9 and there is no justification provided. Challenger states that juvenile green-lipped mussel is as likely to be taken in the dredge/trawl fisheries as anywhere else.
- 74 Challenger believes fishers in GLM 7A and GLM 7B will be required to measure mussels so that they can report if they are under or over 20mm using codes separate from their quota code for no apparent real gain in management of the stock.

75 Apart from the obvious danger of asking people to remember when and how to apply three codes for the same stock and the problems associated with measuring a green-lipped mussel close to 20mm in length, it is clear that this proposal adds cost with no benefit in GLM 7A and GLM 7B.

MFish Discussion

76 MFish supports establishing three reporting codes for green-lipped mussel for all the QMAs. The three codes proposed in the IPP were:

- MSP for green-lipped mussel less than 20mm (now proposed to be less than 10mm) to be used on CELRs;
- MSG for green-lipped mussel equal to or greater than 20mm (now proposed to be equal to or greater than 10mm) to be used on CELRs; and
- GLM to be used on MHRs and to be a sum of MSP and MSG caught.

77 The MSP and MSG codes are proposed to distinguish catch data for juveniles and adults, so that adult catch levels can be monitored in GLM 9 to identify any sustainability risk. The same reporting framework needs to be established for other QMAs in case the harvesting of juvenile green-lipped mussel similar to that at 90 Mile Beach, occurs outside GLM 9. MFish considers the issues raised by Challenger are unlikely to arise, as in practice the MSG code will be the code used on CELRs in the dredge and trawl fishery. A different green-lipped mussel code for use on the MHR is required, as this code needs to combine the catch of both MSP and MSG for ACE balancing purposes.

Return to the sea outside GLM 9

Submissions

78 **Challenger** supports the inclusion of green-lipped mussel on the Sixth Schedule to allow its return to the sea.

79 Challenger notes the sole caveat on return to the sea expressed in the IPP is that it be likely to survive. Challenger considers it likely that capturing a green-lipped mussel and then returning it to the sea by attaching it to a marine farm rope would meet the strict terms of the authority. Challenger believes this action would have the impact of removing the green-lipped mussel from the fishery without counting it against ACE, which is not the intent of the proposal.

80 Challenger submits that the Sixth Schedule listing should exclude marine farms as a place in the sea where green-lipped mussel might be returned pursuant to that schedule. Challenger also suggests making a similar amendment to the conditions for return of scallops and oysters.

MFish Discussion

81 MFish supports the proposal in the IPP to list all green-lipped mussel stocks on the Sixth Schedule.

- 82 MFish does not consider there is a need to exclude marine farms as a place in the sea where green-lipped mussel or other species can be returned. The clear intent of placing stocks on the Sixth Schedule is to exempt commercial fishers from the prohibition on returning to or abandoning fish in the sea under s 72 of the Act. The intent of the Sixth Schedule is that the stock is returned to the sea so that it is no longer in the exclusive possession of anyone. Placing stock on a marine farm is outside the intent of the Sixth Schedule and is unlikely to be allowed regardless of whether there was a specific condition or not.
- 83 An alternative approach that could be pursued in the future is that all green-lipped mussel caught, including those returned, in the QMAs outside GLM 9 could be required to be balanced with ACE. The relevant TACCs would need to be adjusted to allow for all green-lipped mussel taken to be reported.

Deemed Values outside GLM 9

Submissions

- 84 **Challenger** states it has little data on which to submit on the deemed value proposal for GLM 7A except to observe that it is not clear what effect a deemed value in GLM 7A is expected to have apart from setting an upper limit for the price of ACE.

MFish Discussion

- 85 MFish supports an annual deemed value of \$0.12 per kg for GLM 1, GLM 2, GLM 3, GLM 7A, GLM 7B, GLM 8 and GLM 10. Overfishing thresholds and differential deemed values are not required for these stocks as it is MFish policy that these mechanisms do not apply to low knowledge fishstocks.
- 86 MFish notes that deemed values should not drive the price of ACE. The price of ACE should be related to the profitability of the fishery. A review of the deemed value system is examining this and other issues.
- 87 No submissions were received opposing the proposed deemed value.

Recreational Allowances

Submissions

- 88 **Sanford** opposes the use of the 2000 harvest survey in its current draft form and submits that the 1996 Recreational Harvest survey is the best available information as the research has been approved through a robust working group process.
- 89 Sanford notes that for these fisheries the recreational allowance has been set using the 2000 national recreational harvest survey. Sanford is concerned at a reference to the 2000 harvest survey being the best available information (IPP, paragraph 36), and secondly, the comment “the recreational working group is satisfied with the general methodology used in the 2000 survey, and has concluded that the results from the 1996 and previous national surveys be no longer used.” Sanford opposes these statements.

- 90 Sanford believes the 2000 recreational harvest survey is still in draft form, and that the 1996 recreational harvest survey results were to be used as the best available information. Sanford believes inconsistent use of the recreational harvest data is occurring with either the 2000 harvest survey data, the 1996 harvest survey data, or averaging both surveys being used.

MFish Discussion

- 91 MFish considers the 2000 national recreational survey provides the best estimates available for the recreational harvest of green-lipped mussel. Although the 2000 national recreational survey has not been formally published the Recreational Working Group has considered the survey and is satisfied with the general methodology used and supports the use of the 2000 survey results.

Conclusion

- 92 Twelve submissions were received on the proposed sustainability measures for green-lipped mussel for QMS introduction on 1 October 2004. Eleven of the submissions raised issues regarding the proposed transitory regime for GLM 9. A stakeholder proposal agreed to on 5 May 2004 superseded parts of these submissions. You agreed to progress implementing the stakeholder proposal on 11 May 2004. Despite this agreement there are a number of issues relating to GLM 9 that still require consideration.
- 93 In line with the stakeholder agreement, MFish supports making changes to the transitory arrangement proposed in the IPP for GLM 9. Agreement on an alternative quota allocation for GLM 9 means existing s 67Q(2)(b) permits can be cancelled and the proposed allowance of 180 tonnes for other sources of mortality is no longer necessary. The alternative quota allocation for GLM 9 is dependent on the enactment of the Fisheries Amendment Bill (No. 3). MFish notes that if the Fisheries Amendment Bill (No. 3) is not enacted, s 67Q(2)(b) permits can still be used to harvest juvenile green-lipped mussel and GLM 9 will be deferred for QMS introduction until 1 October 2005.
- 94 MFish supports setting the TACC for GLM 9 at 180 tonnes, as there are no pressing sustainability issues and stakeholders agree this amount best provides for utilisation of the stock.
- 95 MFish supports the stakeholder proposal to give legal authority to the proposed set ratio for juvenile green-lipped mussel and seaweed. Being able to give legal authority to the ratio is dependent on a legislative change. MFish considers the definition of juvenile green-lipped mussel for reporting purposes should be 10mm rather than the 20mm proposed in the IPP to better correspond with the actual size harvested.
- 96 Now that stakeholders agree that GLM 9 should be managed completely under the QMS from 1 October 2004 quota holders should be able to address a number of issues in a timely manner without regulatory intervention. MFish considers the best way to address issues such as biosecurity, method control, and the commercial take of adults, is through joint quota holder action. Eventually such initiatives could take the form of a fisheries plan, but if more urgent action is required, MFish believes contractual arrangements between quota holders and ACE holders can address these issues. The

risks associated with each issue do not justify regulation and the inflexibility and cost it imposes.

- 97 MFish supports categorising GLM 9 as a high value single species fishery for the purpose of setting deemed values as this will provide an incentive for fishers to balance their catch with ACE in an accessible and lucrative fishery. The higher deemed values will not impose a burden on fishers, as there is unlikely to be accidental landings in GLM 9.
- 98 One submission was received from Challenger on the GLM 7A and GLM 7B seeking changes to the TACCs for these stocks. MFish supports the TACC proposed in the IPP for GLM 7A of 1 500 tonnes, as it is based on the best information available and provides over a 20% increase on the highest reported annual landing in the past 13 years. The opportunity exists for quota holders to demonstrate the TACC can be increased while meeting sustainability and environmental standards. MFish supports a TACC of 10 tonnes for GLM 7B instead of the proposed 0 tonnes, as MFish agrees that there may be development potential for this fishery.

Final Recommendations

- 99 MFish recommends that you:
- a) **Agree** to set a TAC of 415 tonnes for GLM 1 and within the TAC set the following:
 - i) A customary allowance of 243 tonnes;
 - ii) A recreational allowance of 162 tonnes;
 - iii) An allowance for other fishing-related mortality of 0 tonnes; and
 - iv) A TACC of 10 tonnes.
 - b) **Agree** to set a TAC of 35 tonnes for GLM 2 and within the TAC set the following:
 - i) A customary allowance of 15 tonnes;
 - ii) A recreational allowance of 10 tonnes;
 - iii) An allowance for other fishing-related mortality of 0 tonnes; and
 - iv) A TACC of 10 tonnes.
 - c) **Agree** to set a TAC of 155 tonnes for GLM 3 and within the TAC set the following:
 - i) A customary allowance of 87 tonnes;
 - ii) A recreational allowance of 58 tonnes;
 - iii) An allowance for other fishing-related mortality of 0 tonnes; and
 - iv) A TACC of 10 tonnes.
 - d) **Agree** to set a TAC of 1 548 tonnes for GLM 7A and within the TAC set the following:
 - i) A customary allowance of 29 tonnes;
 - ii) A recreational allowance of 19 tonnes;

- iii) An allowance for other fishing-related mortality of 0 tonnes; and
 - iv) A TACC of 1 500 tonnes.
- e) **Agree** to set a TAC of 23 tonnes for GLM 7B and within the TAC set the following:
- i) A customary allowance of 8 tonnes;
 - ii) A recreational allowance of 5 tonnes;
 - iii) An allowance for other fishing-related mortality of 0 tonnes; and
 - iv) A TACC of 10 tonnes.
- f) **Agree** to set a TAC of 43 tonnes for GLM 8 and within the TAC set the following:
- i) A customary allowance of 26 tonnes;
 - ii) A recreational allowance of 17 tonnes;
 - iii) An allowance for other fishing-related mortality of 0 tonnes; and
 - iv) A TACC of 0 tonnes.
- g) **Agree** to set a TAC of 278 tonnes for GLM 9 and within the TAC set the following:
- i) A customary allowance of 59 tonnes;
 - ii) A recreational allowance of 39 tonnes;
 - iii) An allowance for other fishing-related mortality of 0 tonnes; and
 - iv) A TACC of 180 tonnes.
- h) **Agree** to set a TAC of 0 tonne for GLM 10 and within the TAC set the following:
- i) A customary allowance of 0 tonnes;
 - ii) A recreational allowance of 0 tonnes;
 - iii) An allowance for other fishing-related mortality of 0 tonnes; and
 - iv) A TACC of 0 tonnes.
- i) **Agree** to amend the Third Schedule of the Act to allow GLM 9 and GLM 7A to be managed with an alternative TAC set under s 14.
- j) **Agree** to amend the Sixth Schedule of the Act to allow green-lipped mussel to be returned to the sea in all QMAs on the condition that in those QMAs outside GLM 9 the green-lipped mussel is likely to survive on return.
- k) **Agree** to amend Fisheries (Beach Cast Seaweed Area Prohibition) Notice 2002 to remove the restriction on commercial fishers from taking beach cast seaweed from 90 Mile Beach.
- l) **Agree** to revoke regulations 4B and 5E of the Fisheries (Auckland and Kermadec Areas Commercial Fishing) Regulations 1986 to remove the prohibition on the commercial harvest of adult and juvenile green-lipped mussel in GLM 9 and GLM 1.
- m) **Agree** to amend regulation 22A of the Fisheries (Auckland and Kermadec Areas Commercial Fishing) Regulation to remove the control on the daily

weight of green-lipped mussel that can be taken by commercial fishers in GLM 1 and GLM 9.

- n) **Agree** to amend the Fisheries (Reporting) Regulations 2001 to outline the codes to be used by fishers when completing their statutory returns.
- o) **Agree** to set an interim deemed value of \$0.06 per kg and an annual deemed value of \$0.12 per kg for the 2004–05 fishing year for GLM 1, GLM 2, GLM 3, GLM 7A, GLM 7B, GLM 8, and GLM 10.
- p) **Agree** to set an interim deemed value of \$1.31 per kg and an annual deemed value of \$2.61 per kg for the 2004–05 fishing year for GLM 9.
- q) **Agree** overfishing thresholds and differential deemed values will not apply to GLM 1, GLM 2, GLM 3, GLM 7A, GLM 7B, GLM 8, GLM 9 and GLM 10.

Scott Williamson
for Chief Executive

APPROVED / NOT APPROVED / APPROVED AS AMENDED

Hon David Benson-Pope
Minister of Fisheries

/ /2004

