

**Setting of Sustainability Measures and Other Management
Controls for Stocks to be Introduced into the Quota
Management System on 1 October 2006**

Initial Position Paper

7 February 2006

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INTRODUCTION

- 1 The Ministry of Fisheries (MFish) proposes to recommend to the Minister of Fisheries the management frameworks outlined in this document for those fishstocks gazetted for introduction into the Quota Management System (QMS) on 1 October 2006. These stocks and their Quota Management Areas (QMAs) are outlined in Table 1 below.
- 2 In accordance with sections 12, 21 and 75A of the Fisheries Act 1996 (the 1996 Act), the purpose of this document is to consult on behalf of the Minister of Fisheries on the Total Allowable Catches (TACs), Total Allowable Commercial Catches (TACCs), allowances and other management measures proposed for these stocks.
- 3 MFish requests that you provide your written comments no later than **Monday, 20 March 2006** on the proposals set out within this document.
- 4 Because of the administrative timeframe to introduce species into the QMS on 1 October 2006, if your comments are received after the date stated above, MFish may not be able to consider them in the final advice to the Minister of Fisheries. Please send your written comments on this consultation document to:
- 5 Kristin Philbert, Ministry of Fisheries, P O Box 1020, Wellington, ph (04) 470 2585, fax (04) 470 2669, Kristin.Philbert@fish.govt.nz.
- 6 If you have any questions regarding this information you are encouraged to contact the person responsible for the relevant fisheries outlined in the list below, or contact your nearest MFish office:

Scott Williamson, Private Bag 14, Nelson (03) 548 1069 (Central Inshore)

Table 1: QMAs for species/stocks gazetted for QMS Introduction on 1 October 2006

Species (code)	Quota Management Areas*
King Clam (PZL)	PZL 1, PZL 2, PZL 3, PZL 4, PZL 5, PZL 7, PZL 8 and PZL 9
Knobbed whelk (KWH)	KWH 1, KWH 2, KWH 3, KWH 4, KWH 5, KWH 6, KWH 7A, KWH 7B, KWH 8 and KWH 9

Management Framework for QMS Introductions

- 7 The purpose of the initial management frameworks proposed in this document is to ensure that following QMS introduction each fishery operates effectively by achieving the requirements outlined in the 1996 Act. The initial management framework consists of the following elements:
- a) TACs;
 - b) TACCs;
 - c) Allowances for recreational, customary, and other sources of fishing-related mortality to the stock; and
 - d) Regulations and other management controls.

Outline of the Consultation Document

- 8 The first section of this document explains the statutory obligations and policy guidelines for the elements that make up the proposed initial management frameworks.
- 9 The next section sets out generic information on the setting of interim and annual deemed values and overfishing thresholds for the stocks.
- 10 This is followed by a generic section on the consequential amendments to the Fishing Reporting Regulations as a result of QMS introduction.
- 11 Subsequent sections outline MFish's proposed management frameworks for the respective stocks.

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 (B_{MSY}) is generally recognised internationally as being an appropriate fishstock target, although there is some international support for B_{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 B_{MSY}) 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; or
 - d) The stock comprises one or more highly migratory species.
- 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 is not considered the main determinant of 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. However, there is no ability for New Zealand to separately manage the stock at B_{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 B_{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 The forth category relates to those stocks comprised of one or more highly migratory species.
- 22 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.
- 23 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)

- 24 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.
- 25 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}).

- 26 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.
- 27 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.
- 28 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.
- 29 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 it long-term viability.
- 30 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 to the QMS on 1 October 2006.

Other Statutory Obligations Applicable When Setting a TAC

- 31 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

- 32 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

- 33 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.
- 34 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.
- 35 “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.
- 36 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.

- 37 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.
- 38 There is insufficient information available to undertake a systematic assessment of biodiversity for the stocks to be introduced to the QMS on 1 October 2006. No ecosystem, population, assemblage assessment has been undertaken in respect of the stocks reviewed. However, an assessment of the relevant information available and the degree of risk in relation to the environmental principles are outlined in this document for each stock.

International Obligations (s 5(a))

- 39 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.
- 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 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).
- 41 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))

- 42 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.

- 43 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.
- 44 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)

- 45 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.
- 46 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.
- 47 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 Species

48 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;
 - 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.
 - 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

- 49 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.
- 50 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.
- 51 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 the 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.
- 52 In bycatch fisheries, in particular, interaction with other harvested stocks should be a consideration in any TAC proposed. Despite an absence of sustainability concerns fishers in bycatch fisheries could face punitive measures under the balancing regime if the TACs are not set appropriately.
- 53 While the initial TACs proposed are likely to provide some opportunity for development of the fishery by existing and/or new entrants, they might not provide the maximum utilisation possible for the stock. Further increases will require, in most cases, additional supporting information on the impacts of fishing on the stock and aquatic environment. These matters are best incorporated within stakeholder-driven initiatives following QMS introduction.

- 54 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 deny opportunity for development when potential risk to the stock based on the factors noted above is considered acceptable.
- 55 MFish notes that a development opportunity within the TAC does not predetermine subsequent allocation decisions.

Use of information

- 56 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 2: 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

- 57 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.

- 58 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).
- 59 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

- 60 Criteria have been developed for determining catch levels and other sources of mortality (refer Table 3). 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 the allocations. 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.
- 61 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.
- 62 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.
- 63 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 3: 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

64 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 TAC

- 65 The Minister is required to make allowances for different fishing interests under the 1996 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.
- 66 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 also acts as a guide to 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.
- 67 The allocation of the TAC is an important element of the QMS introduction process. The amount allocated to the respective interest occurs (except for Fourth Schedule stocks) without any compensation of current interests in the fishery. For example, 20% of the commercial allocation to the Treaty of Waitangi Fisheries Commission occurs by pro-rating downwards the total provisional catches if they exceed more than 80% of the TACC. The QMS introduction process allocates quota to commercial fishers as a property right. Any subsequent redistribution of the commercial allocation of the fishery to another sector may be subject to payment of compensation. (No compensation is payable where measures are taken to ensure sustainability.) MFish considers there is benefit in considering the initial allocation of catch in light of both current and reasonable future needs, and 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 1996 Act, at a level above the extent of current catch.
- 68 Generic factors relevant to the determination of allocation of the TAC include:
- a) Population trends;
 - b) Existing catch levels (including popularity and importance of the resource to each sector);
 - c) Current fishing practices (including overfishing, voluntary shelving, or closures by a stakeholder);
 - d) Economic impact of allocative decisions; and
 - e) Social and cultural impact of decisions.

- 69 Population trends are reflected in the level of recreational fishing undertaken, both on a national and regional context. 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 should take into account existing population distribution and growth.
- 70 Certain fisheries are considered to be of particular importance to a particular sector. The value attributed to a resource is not limited solely to economic value but may also include the non-market value. The abundance of a species and the availability of particular size fish for a specific stakeholder group may also be factors relevant to the allocation decision.
- 71 The consistent overfishing of the TACC or an allowance, which results in the reduction of the TAC, as a general principle, ought to be attributed to the stakeholder group responsible for the overfishing. Equally stakeholders may elect to exercise their fishing rights in a manner, which results in their allocation in a fishery being under caught. Voluntary closures and temporary shelving of allocation may be undertaken as a means of improving the abundance of a species and the availability of certain sized fish. Current catch by customary Māori may not reflect the extent of customary interests in a species. Decisions may be made not to fish a species due to non-availability. The allocation process should endeavour to take account of customary needs and not simply reflect the current level of catch, which may have been constrained by a lack of abundance.
- 72 The setting of a TAC and allocative decisions in a general context may impact on economic investment in terms of upgrading of plant and fleet structure. 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 the fishing industry, 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. Information on these matters, if available, is to be taken into account.

Recreational Allowance

- 73 In some cases estimates of recreational catches are available from recreational surveys. Where available, these estimates have been included and used as the basis for setting the recreational allowance for stocks introduced into the QMS. Where estimates are not available but there is known to be recreational catch, a nominal allowance has been made. For species and stocks where there is no or negligible recreational catch, no allowance is proposed. In all instances the allowance proposed also takes into account the factors identified above. MFish also notes that recreational fishers are not accorded a priority in the allocation of the TAC. The recreational allowance does not need to fully satisfy estimated recreational requirements.
- 74 Where appropriate, bag limits may need to be set for the stocks introduced to the QMS. The purpose of a bag limit is to ensure that the recreational allowance is not exceeded. The bag limit may also act as a means by which the sustainability of the fishery is ensured. For a number of stocks introduced under this process there is no current bag limit. The need to set a bag limit may be averted in the short term where

the recreational allowance is based not on current catch but takes into account future recreational interests in the resource. In the immediate term it may be unlikely that the recreational allowance for some stocks will be exceeded even in the absence of a bag limit.

Māori Customary Non-Commercial Allowance

- 75 There are no quantitative estimates of the size of Māori customary non-commercial catch for any of the stocks. Where estimates of customary catch are available from permits or authorisations under customary fishing regulations that information has been taken into account. However, as noted above, the current level of catch may not entirely reflect the importance of the resource to customary fishers. Where estimates are not available, but there is known to be customary catch, a nominal allowance has been made. In some instances the customary interest is considered to be greater than the level of recreational catch, and that is reflected in the respective allowances. For stocks of importance to customary Māori the allowance is based on the level of the recreational catch. For species and stocks where there is some catch, but the stock is not considered of importance to customary Māori, then the allowance is based on half the recreational catch. Where there is no catch and negligible if any interest in the stock, such as for deepwater species, no explicit allowance is proposed. In all instances the allowance proposed also takes into account the factors identified above. MFish notes that the allowance made for customary fishers is not intended to act as a constraint of the level of catch taken.

All Other Fishing-related Mortality

- 76 No quantitative information is available to assess the level of all other fishing-related mortality applicable to the stocks introduced into the QMS or to attribute such mortality to a particular sector group. However, some level of mortality may occur as a result of the particular method used to exploit a stock. Where appropriate MFish proposes to make an allowance for all other mortality to a stock caused by fishing. In addition, MFish proposes that the allowance for other fishing-related mortality be deducted from the allowance for a particular sector that is primarily responsible for the mortality.

Total Allowable Commercial Catch

- 77 The TACC for the stocks introduced into the QMS has been proposed on the basis of the criteria used to determine the TAC in the absence of stock assessment information. The criteria applied are:
- a) Existing catch limits or CCLs; or
 - b) Average catch based on a “stable” or “developing” fishery category; or
 - c) Potential development opportunity.
- 78 Where sustainability concerns exist as to the level of total landings, the TACC has been modified appropriately. In all instances the TACC proposed also takes into account the generic factors identified above.
- 79 The 1996 Act provides that under specific circumstances foreign licensed access to a stock is to be provided within the TACC set for a stock. Foreign access is to be

provided to that portion of the TACC held by the Crown where the quota is not tendered off and the ACE remains unsold after the Crown has offered the ACE for sale to persons entitled to own quota. MFish intends to undertake formal tenders for any quota and ACE allocated to it post-introduction of these stocks into the QMS. Where a TACC is set in excess of the current commercial catch there is the potential in some stocks for some ACE to remain unsold as from 1 October 2006. Technically this could be made available to foreign vessels through the Minister establishing a foreign allowable catch under s 81 of the 1996 Act. Practically, there may be limited interest in fishing small quantities of fish available to foreign vessels. MFish will not be in a position to advise the Minister on the potential to establish foreign allowable catches until sometime this year, at the earliest.

Other Management Controls

- 80 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.
- 81 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, such as method restrictions, is outlined in each species-specific section.

Regulatory framework

- 82 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. The review of regulations prior to QMS introduction will ensure that regulations inconsistent with the QMS management are removed. Proposed amendments to regulations are included as annexes at the end of each species-specific section.

Setting of Deemed Values and Overfishing Thresholds

- 83 As noted, a separate section of this document outlines the general principles relating to the setting of interim and annual deemed values and the deemed values proposed for the stocks to be introduced into the QMS on 1 October 2006. The section contains information on categories of stocks, determinates of market value and the setting of overfishing thresholds and tolerance levels.

DEEMED VALUES AND OVERFISHING THRESHOLDS

Introduction

- 1 This section sets out generic information on the setting of interim and annual deemed values and overfishing thresholds. The proposed deemed values for species gazetted for QMS introduction on 1 October 2006 are set out in Table 1 below.

Deemed Values

- 2 It is necessary to set deemed values for species being introduced into the QMS. The Fisheries Act 1996 (the 1996 Act), amended by the Fisheries Amendment Act 1999, brought about a major change in the way catches are controlled in the QMS. The new balancing regime established in the 1996 Act came into effect on 1 October 2001. The major elements of the new system are set out below.

Fisheries Act 1996 Balancing Regime

- 3 Under the 1996 Act, instead of it being a criminal offence to take catch in excess of quota - as under the Fisheries Act 1983 - overfishing is controlled in the first instance by the application of graduated administrative disincentives (interim and deemed values). Non-payment of deemed values will lead to suspension of permits.
- 4 Section 75 of the 1996 Act establishes the basis for setting interim and annual deemed values. Sections 77, 77A and 78 provide the basis for imposing the second part of the administrative regime - overfishing thresholds.
- 5 In the new balancing regime, interim and annual deemed values must be set for all QMS stocks. Deemed values are charged on a monthly (interim deemed values) and annual basis (annual deemed values) for any catch of QMS stocks in excess of a person's ACE holdings. Balancing of catch against ACE occurs on the 15th day of each month. Deemed values are charged immediately following this balancing process.
- 6 The Minister of Fisheries has the responsibility for setting interim and annual deemed values by *Gazette* Notice under s 75 of the 1996 Act. In setting interim and annual deemed values, the Minister must take into account the need to provide an incentive for fishers to cover catch with ACE. In addition, the Minister *may* have regard to:
 - a) The desirability of commercial fishers to land catch for which they do not have ACE;
 - b) The market value of ACE;
 - c) The market value of the stock;
 - d) The economic benefits gained by the most efficient person gaining benefit from that stock, or stocks taken in association with that stock;
 - e) Whether or not the catch has or is likely to exceed the TACC; and

- f) Any other matters the Minister considers relevant.
- 7 Section 75(5) of the 1996 Act allows the Minister to set a different deemed value in respect of fish landed and received by a licensed fish receiver (LFR) at the Chatham Islands to a stock of the same species landed and received by a LFR elsewhere.

Annual Deemed Values

- 8 The annual deemed value is the main deterrent to fishers not balancing their catch with ACE. The Minister must set annual deemed values at a level that provides an incentive for every commercial fisher to acquire sufficient ACE to cover catch.

Interim Deemed Values

- 9 The interim deemed value plays an important role in ensuring that the overall objective of the balancing regime - ensuring catch is covered by ACE - is achieved. It does this by encouraging fishers to trade ACE during the year, thereby helping ensure they are in balance at the end of the year. It should be noted that the interim deemed value is designed to encourage fishers to balance throughout the year - not penalise them if they do not (provided they pay the interim deemed value demanded).
- 10 The interim deemed value also serves another role by helping prevent continued excessive fishing not covered by ACE during the year. It achieves this in conjunction with the permit suspension provisions in s 79 of the 1996 Act. Under this provision, a fisher's permit is suspended if a deemed value debt of more than \$1 000 is not paid within 20 days of the demand. This helps ensure that a fisher does not continue fishing in excess of ACE with no intention of either acquiring ACE before the end of the year or paying annual deemed values at the end of the year. Without the requirement for payment of interim deemed values, such a fisher would only be excluded from the fishery at the end of the year.
- 11 The 1996 Act provides the same guidance to the Minister when setting an annual deemed value as for an interim deemed value. The only additional considerations are that the deemed value must be set at a higher rate than the interim deemed value, and that different deemed value rates may be set in respect of the same stock which apply to different levels of catch in excess of ACE. The 1996 Act further provides that the Minister must not have regard to the personal circumstances of any individual or class of people, or set separate deemed values in individual cases, when setting an individual or annual deemed value rate.
- 12 It is proposed to meet the Minister's obligation under s 75(3) by setting interim deemed values at 50% of the annual deemed value rate, for all stocks.

Categories of stocks

- 13 The policy framework for setting deemed values (approved by the Minister in 2001 and amended in 2003) separates commercial fisheries into four categories as follows:

High Value Single Species Fisheries Fishstocks

- 14 High value single species fisheries fishstocks are those that have high port prices and ACE values and are taken with little, if any, bycatch. They include all stocks of spiny rock lobster, packhorse rock lobster, paua, oysters, eels and scallops.
- 15 Annual deemed values for species in this category will be set as follows:
- Initially, deemed values to be set at 200% of the highest port price in the previous year.
 - Increase by 20% each time total catch exceeds available ACE by more than 2% in one year or by more than 1% in two consecutive years.
 - Review to occur where the port price for a stock has changed significantly since deemed values were last set.
 - May be reduced if total catch does not exceed available ACE for several years.
 - Differential deemed values to be applied.

Low Knowledge Fishstocks

- 16 Low knowledge fishstocks are stocks for which there is relatively little information on the fishery status, and there are no sustainability concerns. Fishstocks in this category are to be reclassified into another category within five years or once MFish has more confidence in the TACC, whichever is the sooner.
- 17 Annual deemed values for species in this category will be set as follows:
- Initially, deemed values to be set as a proportion of port price in the previous year.
 - To be adjusted, as required, to encourage fishers to cover catch with ACE, and to land any catch in excess of ACE.
 - Differential deemed values not to be applied.

All Other Fishstocks

- 18 Fishstocks in the All Others category are those that do not necessarily have a high unit value, and for which there is adequate knowledge on which to base a TACC.
- 19 Annual deemed values for stocks in this category will be set as follows:
- Initially, the deemed value to be set at a proportion of the port price in the previous year.
 - Increase by 20% each time total catch exceeds available ACE by more than 10% in one year or by more than 1% in two consecutive years.
 - Review to occur where the port price for a stock has changed significantly since deemed values were last set.
 - May be reduced if total catch does not exceed available ACE for several years.
 - Differential deemed values to be applied.

Low/Medium Value Bycatch Fishstocks

- 20 This is a new category covering low/medium value stocks where the majority of catch is taken as a bycatch and for which the TACC is to be reviewed within the next few years. The category includes stocks introduced into the QMS in 1998 and in subsequent years (ie, cardinal fish, frostfish, pale and dark ghost shark, ribaldo, rubyfish, sea perch, trumpeter, white warehou and yellow-eyed mullet), and other by-catch stocks meeting the following criteria:
- The stock is principally a bycatch fishery.
 - Stocks are managed under s 13 of the Act.
 - There has been insufficient stock assessment information to justify an increase in the TAC through the normal stock assessment process.
 - Available information indicates there are no sustainability concerns. The information suggests an increase in the TAC may be appropriate.
 - Catch has exceeded the TAC in a manner that would trigger an increase in deemed values for all other fishstocks under the balancing regime guidelines.
 - The stock is not currently managed under the AMP framework.
 - There has been no TACC increase for the stock for at least three years as a result of a review of management controls.
- 21 Deemed values will be set in the same manner as stocks in the “All Others” category except that, as an interim measure, MFish is proposing not to apply differential deemed values to those stocks until the review of the TACC is undertaken.

The Determination of the ‘Market Value’ for Stocks

- 22 Deemed values are initially set as a proportion of the value of the stock. A range of values, including the port price, wholesale price, export price and retail price, can represent a stock’s market value. The most common measures are port price and export price. Port price is the value of fish sold ex-vessel. Export price, usually notional free on board (FOB), incorporates the price of processing and harvesting of the fish, but not the cost of transporting it to the international market place. The policy guidelines note that there are potential problems in collecting port price information, but states that the port price remains a useful indicator of the value of the stock to commercial fishers. Importantly, port price figures can be determined for all species.
- 23 MFish has very limited available information on port process for stocks gazetted for QMS introduction on 1 October 2006. MFish uses an estimated or nominal port price/deemed value when port price information is not available to base a deemed value.
- 24 MFish proposes to set the initial deemed value as a percentage of the port price as follows:
- a) 200% of the highest port price for high value singles species fisheries fishstocks;
 - b) 60% of the port price for low knowledge fishstocks; and

- c) 75% of the port price for all other fishstocks.

Species for QMS introduction on 1 October 2006

- 25 Each of the papers contained in this document includes a discussion of the proposed deemed values for species scheduled to enter the QMS from 1 October 2006. Table 1 summarises that information, setting out the proposed category for each species (high values single species fisheries fishstock, low knowledge or all other), the port price, the percentage of the port price, the annual deemed value and whether or not differential deemed values and overfishing thresholds apply.

Table 1: Proposed categories, annual deemed values, differential deemed values and overfishing thresholds for species to be introduced into the QMS on 1 October 2006 (2006-07 fishing year)

Species (all stocks)	Category	Port Price (\$/kg)	Proposed % factor	Proposed Annual Deemed Value (\$/kg)	Differential Deemed Value (Y/N)	Overfishing threshold / tolerance (Y/N)
King Clam (PZL)	High value single species	\$10.00	200%	\$20.00	Y	Y
Knobbed Whelk (KWH)	Low knowledge	\$1.00	60%	\$0.60	N	N

- 26 The Joint Crown and Industry Working Group on Deemed Values (JWG) has been reviewing policies for setting and adjusting deemed values and the information basis for those policies. Arising from the JWG's recommendations, in future –
- a) The approach taken to setting deemed values may differ depending on stock characteristics, eg, shared or not shared, bycatch or target, sustainability risks, and whether a fishery plan is in place.
 - b) The information used to set deemed values may be expanded from solely using port price to include a broader range of information inputs, in particular ACE prices, but may also include export prices, cost recovery levies, and by-catch rates relative to target catches.
- 27 If agreed, the JWG's recommendations will inform future processes for setting deemed values for new QMS introductions.

Consultation

- 28 Industry participants are invited to make submissions in respect of the proposed deemed values for the stocks set out in Table 1.

Differential Deemed Values

- 29 The Act provides that the Minister of Fisheries may set different deemed value rates in respect of the same stock, which apply to different levels of catch in excess of ACE. A differential deemed value rate will apply only to the amount of catch above the threshold that triggers the differential annual deemed value. Differential annual deemed values apply to the individual fisher rather than for the fishery as a whole. The policy framework specifies that differential annual deemed values only apply to

those stocks categorised as “high value single species” and “all other fishstocks”, not those categorised as “low knowledge”.

- 30 The regime set out in Table 2 below, approved by the Minister of Fisheries, will apply to all stocks to be introduced into the QMS on 1 October 2006 for which differential deemed values are to be used (refer Table 1). Differential deemed values are promulgated by *Gazette* Notice.

Table 2: Differential Annual Deemed Values

Individual Catch as a Percentage of ACE Held	Differential Annual Deemed Value
100% < x ≤ 120% of ACE	Basic annual deemed value
120% < x ≤ 140% of ACE	120% of basic annual deemed value
140% < x ≤ 160 % of ACE	140% of basic annual deemed value
160% < x ≤ 180% of ACE	160% of basic annual deemed value
180% < x ≤ 200% of ACE	180% of basic annual deemed value
x > 200% of ACE	200% of basic annual deemed value

Overfishing Thresholds

- 31 Overfishing thresholds (ss 77, 77A and 78 of the 1996 Act) ensure that, where interim deemed values have proved inadequate to prevent fishers continuing to catch in excess of ACE and where overfishing thresholds are applied, the fisher’s permit is conditioned to prevent the fisher fishing in the relevant geographical area.
- 32 Tolerance levels (ss 77 and 78 of the Act) are designed to prevent overfishing thresholds being triggered by trivial amounts of catch in excess of ACE.
- 33 The Minister has established a policy framework for the imposition of overfishing thresholds and tolerances. Different approaches to the imposition of overfishing thresholds and tolerances exist depending on whether the fishery is a “high value single species fisheries fishstocks”, a “low knowledge fishery” or “All other”. MFish proposes to apply overfishing thresholds to all deepwater clam stocks introduced into the QMS on 1 October 2006.

Consultation

- 34 Industry participants are invited to make submissions in respect of the proposal to not set fishing thresholds or tolerances.

Preliminary Recommendations

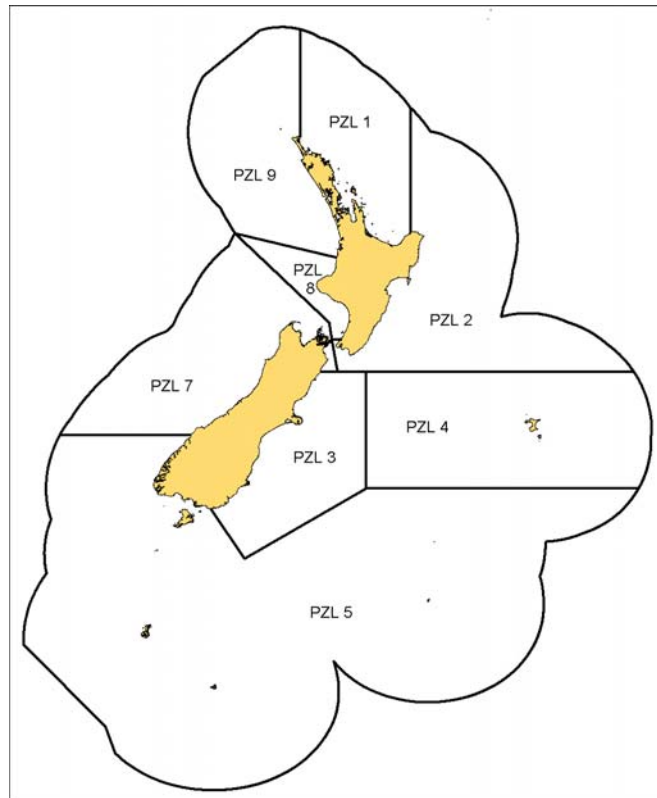
- 35 MFish recommends that the Minister:
- a) **Notes** the preliminary (subject to consultation) annual deemed values for those species entering the QMS from 1 October 2006, as set out in Table 1
 - b) **Notes** that differential deemed values and overfishing thresholds will apply to all deepwater clam stocks.

DEEPWATER CLAM (PLZ)

Introduction into the Quota Management System (QMS)

- 1 Deepwater clam (*Panopea zelandica*), also referred to as geoduck, geoduck and king clam, will be introduced into the Quota Management System (QMS) on 1 October 2006. Deepwater clam will not be introduced in the Kermadec Fishery Management Area.
- 2 The future Quota Management Areas (QMAs) for deepwater clam are shown in Figure 1.
- 3 The fishing year for deepwater clam will be from 1 October to 30 September in the following year.
- 4 The unit of measurement for Total Allowable Catch (TAC), Total Allowable Commercial Catch (TACC) and Annual Catch Entitlement (ACE) will be kilograms greenweight.

Figure 1 Map of deepwater clam Quota Management Areas



Key Issues to be Considered

- 5 The Ministry of Fisheries (MFish) considers the key issues affecting the setting of sustainability measures and other management controls for deepwater clam stocks are as follows:
- There are no estimates of total biomass and sustainable yield for any deepwater clam stock.
 - Discrete deepwater clam populations are susceptible to localised depletion because of their biological characteristics.
 - Fishers are likely to target predominately female deepwater clams, which reduces the amount of reproducing females in the population.
 - The harvesting method may cause substantial fishing-related mortality of small and juvenile deepwater clam, and impact on the benthic environment.
 - Current harvesting methods for deepwater clam require fishers to use underwater breathing apparatus (UBA); currently UBA cannot be used when commercially diving for any species.

Management Options

Summary of MFish Proposals

- 6 MFish proposes setting the TAC for deepwater clam stocks under s 13 of the Fisheries Act 1996 (the Act).
- 7 MFish proposes setting TACs, TACCs, and allowances for recreational and customary fishers and other sources of fishing-related mortality for each deepwater clam stock as listed in Table 1.

Table 1 Proposed TACs (tonnes), TACCs (tonnes), and allowances (tonnes) for deepwater clam.

Stock	TAC	Customary allowance	Recreational allowance	Other sources of fishing-related mortality	TACC
PZL 1	1.5	0	0	0.5	1.0
PZL 2	1.5	0	0	0.5	1.0
PZL 3	1.5	0	0	0.5	1.0
PZL 4	1.5	0	0	0.5	1.0
PZL 5	1.5	0	0	0.5	1.0
PZL 7	10	0	0	3.3	6.7
PZL 8	1.5	0	0	0.5	1.0
PZL 9	1.5	0	0	0.5	1.0

- 8 MFish proposes to amend the Fisheries (Reporting) Regulations 2001 to outline the codes to be used by commercial deepwater clam fishers when completing their statutory catch returns.

- 9 MFish proposes allowing commercial fishers to use UBA to harvest deepwater clam, provided Automatic Location Communicators (ALCs) are deployed on all commercial vessels targeting deepwater clam.
- 10 MFish proposes to set an annual deemed value at \$20 per kg (excluding GST) and an interim deemed value of \$10 per kg (excluding GST) for the 2006-07 fishing year.
- 11 MFish also proposes to set an overfishing threshold of 5% for deepwater clam stocks of a fisher's available ACE holdings with a tolerance level of 25 kg for fishers with a small or zero ACE holding.

Proposed TACs

- 12 MFish proposes setting TACs for deepwater clam stocks using the provisions of s 13 of the Act. Section 13 requires the TAC to be set at, or above, a level that can produce the maximum sustainable yield (MSY) having regard to the interdependence of stocks. While there is no stock assessment information to indicate whether deepwater clam stocks are presently at, or above, a level that can produce MSY, the proposed TACs will enable deepwater clam stocks to be managed at MSY in the long-term.
- 13 Alternative TAC setting options exist. The Act allows TACs to be set under s 14 if the quota management stock is listed in the Third Schedule. A stock can be added to the third Schedule provided it satisfies one of four criteria specified in s 14(8). MFish considers none of the criteria specified are applicable to deepwater clam. Firstly, MSY can be estimated for deepwater clam stocks. Secondly, a catch limit for deepwater clam has not been determined as part of an international agreement. Thirdly, there is currently insufficient rationale to support management on a rotational or enhanced basis. Fourthly, deepwater clam is not comprised of one or more highly migratory species.
- 14 Section 14 B of the Act provides another fishstock management option for setting a TAC. This section enables the Minister to set a TACC below B_{MSY} (the average stock biomass or level corresponding to MSY), but above a level that ensures its long-term viability. The intention of s 14 B is to ensure the harvest of a target stock is not constrained by the TAC of an associated bycatch species. MFish considers deepwater clam to be a single species fishery, and it is not taken often as bycatch in any other fishery. Accordingly, MFish is not aware of any information to support such a strategy for deepwater clam.

Rationale for proposed TAC

- 15 The TACs proposed for deepwater clam stocks are set out in Table 1. The TACs proposed reflect the absence of stock assessment information and the biological characteristics of the species while still providing development opportunities for utilisation of deepwater clam.
- 16 There are no stock assessments for deepwater clam stocks. Consequently, there are no estimates of total biomass and sustainable yield for any deepwater clam stock.

- 17 There is insufficient catch information (refer Table 2) to extrapolate or estimate deepwater clam total biomass for any QMA, and then use this information as a guide for TAC setting for deepwater clam.
- 18 The following biological characteristics (discussed in more detail in Annex Two) of deepwater clam make them susceptible to localised depletion.
- a) Deepwater clams are sedentary and form discrete, localised beds.
 - b) Individuals are relatively long-lived (up to 85 years) and recruitment is variable between years (based on research on deepwater clam populations in Golden Bay).
 - c) Deepwater clam are protandric, developing first as males with a proportion of the population becoming female as they grow (age). This causes sex ratios within discrete populations to change with the majority of the larger (older) deepwater clams being mostly females. Because divers use the presence of siphon holes to locate deepwater clams (large siphon holes usually mean large (old) female clams), fishing may inadvertently remove females from localised beds. The loss of female clams from beds could reduce fecundity of localised populations and this could lead to sustainability issues.
- 19 The biological characteristics have been taken into account when setting the TACs. The latter two biological characteristics of deepwater clam distinguish this species from other species, such as pipi and cockle which have had larger initial TACs in the absence of detailed stock information.
- 20 Although low, the proposed TACs allow for utilisation and investigation to develop the fisheries. The proposed TACs can be adjusted as new information becomes available. Adjustment to TACs would require supporting information on stock size. Information on the impacts of the harvesting method on deepwater clam recruitment and the benthic environment (refer paras 47-51) may also be required.

Table 2 Deepwater clam (*Panopea zelandica*¹) landings (kilograms) by fishing year and Fisheries Management Area (FMA) reported from 1988-89 to 2004-05. Source: Catch Effort Landing Returns (CELR) and Catch Landing Returns (CLR)

Fishing Year	FMA 1	FMA 3	FMA 7	Total
1988-89	0	0	15 282	15 282
1989-90	315	0	95 232	95 547
1990-91	0	0	29 293	29 293
1991-92	0	725	31 394	32 119
1992-93	0	53	0	53
1993-94	0	0	0	0
1994-95	0	0	0	0
1995-96	0	0	0	0
1996-97	0	0	0	0
1997-98	0	0	0	0
1998-99	0	0	0	0
1999-00	0	0	0	0
2000-01	0	146	0	146
2001-02	3	68	0	71

2002-03	0	0.5	0	0.5
2003-04	0	0	1 444	1 444
2004-05	0	0	2 944	2 944
Total	318	992.5	175 589	176 899.5

* No catch history recorded from FMA 2, FMA 4, FMA 5, FMA 6, FMA 8, FMA 9 and FMA 10.

PZL 1, PZL 2, PZL 3, PZL 4, PZL 5, PZL 8, PZL 9

- 21 There is not enough catch information to indicate sustainable harvest levels for PZL 1, PZL 2, PZL 3, PZL 4, PZL 5, PZL 8 and PZL 9. Consequently MFish proposes a TAC of 1.5 tonnes for each of these stocks (as listed in Table 1).
- 22 An alternative TAC option is to set a zero TAC. However, MFish considers it unlikely the proposed TACs will pose a risk to the sustainability of each deepwater clam stock.

PZL 7 (Challenger Area)

- 23 MFish proposes a TAC of 10 tonnes for PZL 7. The proposed TAC reflects the availability of some biological information and limited fishing information on this stock to guide an appropriate TAC.
- 24 Special permits were issued between 1988 and 1992 for the purpose of investigative research. Subsequent harvesting has been approved for the 2004-2006 period under a single special permit to harvest a maximum of 30 tonnes each year. MFish considers this catch limit is not a suitable basis on which to base a TAC at this time for the following reasons:
- i) The 30 tonnes per year catch limit under the current special permit is set for a two-year period only.
 - ii) The impact of harvesting deepwater clam on the benthic environment is a source of concern and requires investigation before a TAC of this magnitude can be approved. The conditions of the current special permit address this impact in an interim way, but it is preferable not to impose these conditions in the QMS environment.
 - iii) New information on the population dynamics of New Zealand deepwater clam suggest a more precautionary approach to deepwater clam harvesting is required, particularly to account for the high estimated fishing-related mortality.
- 25 Some biological information on deepwater clam beds within Golden and Tasman Bays, and the Marlborough Sounds is available. This information suggests that deepwater clam populations are present within these areas and could sustain limited fishing effort. Based on the biological information of this stock, and past commercial catch levels, MFish recommends a cautious approach to setting the TAC. The proposed TAC can be adjusted as new information becomes available.

- 26 An alternative TAC option is to set a lower or zero TAC for the PZL 7 stock. However, MFish considers it unlikely the proposed TAC will pose a risk to the sustainability of this deepwater clam stock.

Allocation of TAC

- 27 When setting any TAC, a TACC must be set, as well as allowances for customary and recreational fishing interests and for any other sources of fishing-related mortality.
- 28 The Act does not provide an explicit statutory mechanism to apportion available catch between sector groups either in terms of a quantitative measure or prioritisation of allocation. Accordingly, the Minister has the discretion to make allowances for various sectors based on the best available information.

Recreational allowance

- 29 MFish proposes no allowance for recreational fishing interests for any of the deepwater clam stocks. MFish does not have information on the quantities (if any) of deepwater clam that are harvested by recreational fishers, but believes the current recreational catch is likely to be zero. This is primarily due to the difficulties in harvesting this species, as water-jets and UBA are required.

Customary Maori allowance

- 30 MFish proposes no allowance for customary fishing interests for any of the deepwater clam stocks. MFish does not have information on the quantities (if any) of deepwater clam that are harvested by customary fishers, and is unaware of any information indicating the existence of a customary take of deepwater clam. MFish believes the current customary catch is likely to be zero, again, due to the difficulties in harvesting this species, as water-jets and UBA are required.

Allowance for other sources of fishing-related mortality

- 31 MFish proposes an allowance for fishing-related mortality of 50% of the proposed TACC for each of the deepwater clam stocks.
- 32 Divers use water-jet guns to liquify the substrate around the targeted clams, and it is likely that some small and juvenile individuals will be removed from the substrate. It is likely that a proportion of these individuals will die due to direct predation and an inability to re-establish themselves back into the substrate. The available research suggests that fishing-related mortality when harvesting deepwater clam may be as high as 50% of the exploited fishery (Breen 1992).

TACC

PZL 1, PZL 2, PZL 3, PZL 4, PZL 5, PZL 8, PZL 9

- 33 MFish proposes setting a TACC of 1 tonne for the PZL 1, PZL 2, PZL 3, PZL 4, PZL 5, PZL 8, and PZL 9 stocks. This approach acknowledges the absence, or negligible amount of commercial fishing for deepwater clam in these QMAs (refer to Table 2), as well as the biological characteristics of the species. While the proposed

TACCs may not support viable economic fisheries in the short-term, the participants will be able to investigate their respective fisheries, including the collection of appropriate stock assessment and biological information to facilitate a review of the TACC.

PZL 7 (Challenger Area)

- 34 MFish proposes a TACC of 6.7 tonnes for the PZL 7 stock. The proposed TACC reflects the availability of some limited fishing and biological information that suggests the deepwater clam populations within the top of the South Island are able to sustain a higher commercial catch level.
- 35 The proposed TACC will likely support a limited fishery in the short-term, and will enable participants to investigate the fishery via the collection of appropriate stock assessment and biological information to facilitate a review of the TACC, where appropriate.

Other Management Measures

Use of Underwater Breathing Apparatus

- 36 MFish proposes allowing commercial fishers diving for deepwater clam to use UBA. This is because:
- a) Deepwater clams are found at depths that are generally inaccessible to free diving (5-25 m), and
 - b) Divers require a long period of time under water to be able to extract deepwater clam from the benthos.
- 37 Currently UBA cannot be used when commercially diving for any species¹. MFish considers allowing UBA to be used for harvesting deepwater clam appropriate for the following reasons:
- a) The sustainability risk associated with localised depletion for this species is less than for other divable, sedentary, commercially-valuable species such as paua and kina.
 - b) Small TACs are a better tool to manage risks to sustainability for this species, given the difficulties in harvesting deepwater clam.
 - c) Deepwater clam populations do not overlap with other commercially valuable sedentary species minimising the compliance risk.
- 38 The risks of localised depletion of deepwater clam from allowing UBA is less than for other sedentary, commercially-valuable species because:
- a) Deepwater clam are not as easily accessible from the coast.

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¹ Regulation 76 of the Fisheries (Commercial Fishing) Regulations 2001 prohibits commercial fishers from using and have underwater breathing apparatus while taking or possessing any fish, aquatic life, or seaweed, and to have underwater breathing apparatus on board any New Zealand fishing vessels or foreign-owned New Zealand fishing vessel.

- b) Harvesting of deepwater clam requires experienced divers, as the clams are buried in the substrate and both detection and extraction are more difficult.
 - c) The harvesting of deepwater clam requires specialised harvesting equipment (water-jets) and bigger boats.
- 39 The small TACs proposed also help to mitigate and manage any sustainability risks for this species. Consequently, MFish considers a ban on using UBA is not necessary for deepwater clam.
- 40 For more detailed information on the proposal to allow UBA, refer to Annex One.

Automatic Location Communicators

- 41 MFish proposes the mandatory use of ALCs on board vessels fishing for deepwater clam using UBA gear.
- 42 Currently UBA cannot be used when commercially fishing for any species. MFish acknowledges that providing an exception to the general prohibition on UBA, for deepwater clam, may increase non-compliance in other fisheries, particularly high-value inshore species such as paua and kina. This compliance risk needs to be managed.
- 43 MFish considers requiring vessels fishing for deepwater clam to have ALCs would mitigate any increased risk arising from allowing the use of UBA. Requiring ALCs provides a deterrent to non-compliance activity because MFish can:
- a) Monitor vessel activities in relation to habitat type: deepwater clam are unlikely to be found in areas with suitable habitats for other high value species such as paua or kina. The presence of deepwater clam fishers targeting deepwater clam in areas where paua and kina are found can be used as an indicator of potential non-compliance activity.
 - b) Identify and monitor participating vessels in real time: the requirement for ALCs to be activated at the initiation of a fishing trip means there can be more effective targeting of compliance effort.
- 44 In addition, ALCs offer benefits to the sustainability of deepwater clam. ALCs provide data detailing where harvesting of deepwater clam has occurred and is occurring. This type of information will assist MFish in assessing any future requests for an increase in a TAC.
- 45 For more detailed information on the proposal to require ALCs, refer to Annex One.

Environmental effects of harvesting methods for deepwater clam

- 46 Deepwater clams are typically found buried within the top 30-45 cm of the substrate with only the siphon (feeding) hole visible. As such, the primary method to extract deepwater clam is using water jets to liquefy the surrounding substrate to harvest individuals, which are then collected in mesh bags.
- 47 This method disturbs the substratum within a 0.5-1 m radius of the targeted individual, and results in the disturbance of all associated infaunal species within the

disturbed area. This infauna includes small and juvenile deepwater clam, as well as oysters, scallops, polychaetes, starfish, various annelid species and other infaunal species. The loss of juvenile deepwater clam when harvesting adult clams may create a sustainability risk. MFish considers the proposed TACs will effectively manage this risk.

- 48 The commercial harvest of deepwater clam can have an impact on the benthic environment. There are no studies on the extent of impact associated with commercial deepwater clam fishing in New Zealand. Overseas research suggests the benthos recovers quickly after harvesting of clams. In addition, the benthic habitat in which deepwater clam are found is usually subjected to temporal disturbance by environmental conditions such as currents and swells, and in some instances is already modified by long-established existing fishing practices (ie, oyster and scallop dredge fisheries). MFish considers the proposed TACs will effectively limit the environmental impacts on the benthic environment, until more information is known.
- 49 MFish is not aware of any bycatch associated with the deepwater clam fishery.
- 50 MFish acknowledges the introduction of deepwater clams into the QMS may result in participants wanting to explore new fishing beds. The proposed TACs are conservative and act to limit the effects of fishing (water-jets) on the environment. MFish would expect participants to consider the effects of fishing on the benthic environment as well as the effect on juvenile deepwater clam as part of any proposal to review the TAC.

Amendments to regulations

- 51 The introduction of deepwater clams into the QMS requires amending the Fisheries (Reporting) Regulations 2001 to prescribe reporting codes for deepwater clams when commercial fishers are completing their statutory catch returns.
- 52 Details of the amendments to regulations proposed in this paper are set out in Annex One. In summary:
- Allowing fishers to use UBA would require the amendment of the relevant regulations (including r 76 and 77) under the Fisheries (Commercial Fishing) Regulations 2001.
 - The proposal for deepwater clam fishers to deploy ALCs in conjunction with UBA would be implemented by either amending r 3 of the Fisheries (Satellite Vessel Monitoring) Regulations 1993 or amending the 1994 *Gazette* notice made pursuant to that regulation.

Deemed Value and Overfishing Threshold

- 53 Separate sections of this document set out generic information on the setting of interim and annual deemed values.
- 54 Deepwater clam fall within the 'high value single species fisheries' fishstock category as prescribed under MFish's policy framework for the setting of deemed values. For those stocks where a TACC is set above zero, MFish's policy is to set the annual

deemed value at 200% of the highest port price in the previous year, and the interim deemed value at 50% of the annual deemed value.

- 55 In adopting this approach, MFish proposes to set an annual deemed value of \$20 per kg (excluding GST) and an interim deemed value at \$10 per kg (excluding GST) for deepwater clam for the 2006-07 fishing year. The proposed deemed values are based on an indicative port price of \$10 per kg to reflect recent value of deepwater clam on the Auckland domestic fish market.
- 56 MFish also proposes to apply differential deemed values for deepwater clam. This is consistent with the policy framework for high value single species fishstocks.
- 57 MFish proposes to set an overfishing threshold of 5% for deepwater clam stocks of a fisher's available annual catch entitlement (ACE) holdings with a tolerance level of 25 kg for fishers with a small or zero ACE holding.

Statutory Considerations

- 58 The following statutory considerations have been taken into account in evaluating the management options as proposed in this document.
- a) The purpose of the Act (s 8) is to provide for the utilisation of fisheries resources while ensuring sustainability. The management proposal seeks to ensure sustainability of the stock by setting a TAC and other appropriate measures. Utilisation is provided for by way of setting allowances for commercial, recreational and customary fishers. Section 8 requires that social and economic effects be considered. This document proposes setting TACs to provide for development opportunities for utilisation of the deepwater clam resource, while reflecting the absence of stock assessment information.
 - b) The Act prescribes three possible harvest strategies in setting a TAC. MFish considers it appropriate to manage deepwater clam stocks under s 13 (2)(a). This requires the TAC to be set at, or above, a level that can produce the maximum sustainable yield (MSY) having regard to the interdependence of stocks. While there is currently no stock assessment information to indicate whether deepwater clam stocks are at, above, or below a level that can produce MSY, the proposed TACs enable deepwater clam stocks to be managed at this target level (MSY) in the long-term.
 - c) The proposed TACs also consider the interdependence of stocks (s13(2)). There is no evidence to suggest that deepwater clam and any other stocks are interdependent.
 - d) Section 11(1)(c) requires that the natural variability of the stock concerned is taken into account when setting or varying a sustainability measure such as a TAC. MFish does not have information on the natural variability of deepwater clam stocks. However, MFish has proposed conservative TACs to ensure harvesting levels will not contribute to a sustainability risk if there is high natural variability of deepwater clam stocks due to natural fluctuations and environmental conditions.
 - e) Section 9 requires the Minister to take into account the following environmental principles.

- i) Associated or dependent species should be maintained above a level that ensures their long-term viability – s 9(a).
- ii) Biological diversity in the aquatic environment should be maintained – s 9 (b).
- iii) Habitat of particular significance for fisheries management should be maintained – s 9 (c).

Deepwater clam are sedentary species that occur in sub-tidal habitats along New Zealand's coastline. The method of extraction of deepwater clam (water-jet fishing) will have associated environmental effects on the benthic environment. MFish has assessed the risks associated with this in accordance with the environmental principles from s 9 listed above.

Divers target deepwater clam, so it is unlikely any associated or dependent species will be affected by the harvesting of deepwater clam.

MFish considers there may be localised depletion of deepwater clam. However the biological diversity within each QMA will be maintained, as deepwater clam should be found in similar sediment types across these regions. The proposed management measures for deepwater clam (TACs and TACCs), and ongoing monitoring once the species enters the QMS, ensures the sustainability of the species.

MFish has recommended a conservative TACC to limit the impact of the extraction method on the benthic environment. MFish considers limiting the TACC, will also limit the amount of habitat that is affected by the water-jet fishing method, thereby ensuring habitats of particular significance for fisheries management are maintained with the current limit on commercial harvesting.

- f) There is a wide range of international obligations relating to fishing (including sustainability and utilisation of fishstocks and maintaining biodiversity). MFish considers the s 5 considerations arising from New Zealand's international obligations and the provisions of the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992 are adequately addressed by the management proposals for deepwater clam stocks, particularly with the introduction of a TAC to ensure sustainable use of the resource. MFish is not aware of any issues concerning international obligations and the provisions of the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992 that will result from the proposed TACs, TACCs or allowing the use of UBA for deepwater clam.
- g) Section 11(1)(b) requires that existing controls be taken into account when setting or varying a sustainability measure such as a TAC. MFish notes the existing controls on this fishery are the permit moratorium and the prohibition on using UBA. MFish has taken account of these controls in setting a TAC for deepwater clam stocks.
- h) Section 11(2) requires the consideration of various other matters relating mainly to planning documents. 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 management plan under the Conservation Act 1987 that are specifically

relevant to setting TACs for deepwater clam stocks. Similarly, in terms of section 11(2A), MFish is not aware of any fisheries or conservation services, relevant fisheries plans, or any decisions not to require conservation or fisheries services,- that are relevant to setting TACs for deepwater clam stocks.

- i) As required under s 11(2)(c), MFish considers that the proposals for deepwater clam meet the requirements of ss 7 and 8 of the Hauraki Gulf Marine Park Act 2000. Implementation of catch limits and associated measures for deepwater clam stocks into the QMS will allow for the sustainable utilisation of the species.
- j) Sections 21(1)(a) & (b) and 21(4)(i) & (ii) and 21(5) require the Minister to allow for non-commercial fishing interests (recreational and customary), and other mortality to the stock caused by fishing. The proposed TACs reflect the absence of information on customary and recreational fishing for deepwater clam.
- k) Section 21(4) requires that when considering the proposed allowances for customary non-commercial interests, the Minister must take into account any mātaitai reserve or s 186A closure in the relevant QMA. The proposed zero allowances for customary non-commercial fishing reflect the absence of any knowledge of customary fishing for deepwater clam. Given that absence, MFish does not consider the zero allowances proposed for customary harvest will detract from the intent of any mātaitai or s186A closures presently in place.
- l) Section 21(5) requires that when considering the proposed allowances for recreational interests, the Minister must take into account any regulations that prohibit or restrict fishing under s311 (area closures). The proposed zero allowances for recreational fishing reflect the absence of any knowledge of recreational fishing for deepwater clam. Again, given that absence, MFish does not consider the zero allowances proposed for recreational harvest will detract from the intent of any area closures presently in place.
- m) Section 10 sets out information principles that are to be taken into account when setting a sustainability or utilisation measure, such as TACs, TACCs and the use of UBA for deepwater clam. The principles are particularly important in relation to deepwater clam stocks considered in this document as the status of these stocks remains unknown. MFish has adhered to these principles in considering the management options for these deepwater clam stocks.

Preliminary Recommendations

59 MFish recommends that the Minister of Fisheries:

- a) **Agree** to set a TAC of 1.5 tonnes for PZL 1 and within that TAC set:
 - i) A customary allowance of 0 tonnes;
 - ii) A recreational allowance of 0 tonnes;
 - iii) An allowance for other fishing-related mortality of 0.5 tonne; and
 - iv) A TACC of 1 tonne.

- b) **Agree** to set a TAC of 1.5 tonnes for PZL 2 and within that TAC set:
 - i) A customary allowance of 0 tonnes;
 - ii) A recreational allowance of 0 tonnes;
 - iii) An allowance for other fishing-related mortality of 0.5 tonne; and
 - iv) A TACC of 1 tonne.

- c) **Agree** to set a TAC of 1.5 tonnes for PZL 3 and within that TAC set:
 - i) A customary allowance of 0 tonnes;
 - ii) A recreational allowance of 0 tonnes;
 - iii) An allowance for other fishing-related mortality of 0.5 tonne; and
 - iv) A TACC of 1 tonne.

- d) **Agree** to set a TAC of 1.5 tonnes for PZL 4 and within that TAC set:
 - i) A customary allowance of 0 tonnes;
 - ii) A recreational allowance of 0 tonnes;
 - iii) An allowance for other fishing-related mortality of 0.5 tonne; and
 - iv) A TACC of 1 tonne.

- e) **Agree** to set a TAC of 1.5 tonnes for PZL 5 and within that TAC set:
 - i) A customary allowance of 0 tonnes;
 - ii) A recreational allowance of 0 tonnes;
 - iii) An allowance for other fishing-related mortality of 0.5 tonne; and
 - iv) A TACC of 1 tonne.

- f) **Agree** to set a TAC of 10 tonnes for PZL 7 and within that TAC set:
 - i) A customary allowance of 0 tonnes;
 - ii) A recreational allowance of 0 tonnes;
 - iii) An allowance for other fishing-related mortality of 3.3 tonnes; and
 - iv) A TACC of 6.7 tonnes.

- g) **Agree** to set a TAC of 1.5 tonnes for PZL 8 and within that TAC set:
 - i) A customary allowance of 0 tonnes;
 - ii) A recreational allowance of 0 tonnes;
 - iii) An allowance for other fishing-related mortality of 0.5 tonne; and
 - iv) A TACC of 1 tonne.

- h) **Agree** to set a TAC of 1.5 tonnes for PZL 9 and within that TAC set:
 - i) A customary allowance of 0 tonnes;
 - ii) A recreational allowance of 0 tonnes;

- iii) An allowance for other fishing-related mortality of 0.5 tonne; and
 - iv) A TACC of 1 tonne.
-
- i) **Agree** to amend the Fisheries (Commercial Fishing) Regulations 2001 to allow underwater breathing apparatus to be used when fishing for deepwater clam.
 - j) **Agree** to require any commercial vessel to possess and deploy automatic locator communicators when fishing for deepwater clams using underwater breathing apparatus.
 - k) **Agree** to amend the Fisheries (Reporting) Regulations 2001 to outline the codes to be used by commercial deepwater clam fishers when completing their statutory catch returns.
 - l) **Agree** to set an annual deemed value at \$20 per kg (excluding GST) and an interim deemed value of \$10 per kg (excluding GST) for the 2006-07 fishing year, and that differential deemed values will apply.
 - m) **Agree** to set an overfishing threshold of 5% for deepwater clam stocks of a fisher's available ACE holdings with a tolerance level of 25 kg for fishers with a small or zero ACE holding.

ANNEX ONE

Allowing underwater breathing apparatus to be used for commercial harvesting of deepwater clam, and mandatory use of automatic location communicators

Background

At present, r 76 of the Fisheries (Commercial Fishing) Regulations 2001 prohibits commercial fishers from using UBA when fishing. This regulation states:

Except as provided in regulation 77, commercial fishers must not—

- (a) Use or have underwater breathing apparatus when taking fish, aquatic life, or seaweed; or
- (b) Have underwater breathing apparatus while in possession of fish, aquatic life, or seaweed; or
- (c) Have underwater breathing apparatus on board New Zealand fishing vessels or foreign-owned New Zealand fishing vessels.

Regulation 77 of the above regulations enables commercial fishers to use UBA in limited circumstances, such as emergencies and to retrieve lost fishing gear. This regulation states:

- (1) *Underwater breathing apparatus may be carried on board and used from a New Zealand fishing vessel if the underwater breathing apparatus is sealed on the fishing vessel by a fishery officer and only carried or used—*
 - (a) *to retrieve lost fishing gear that cannot effectively be recovered by another means; or*
 - (b) *For emergencies involving the preservation of life or the safety of the vessel or other vessels.*
- (2) *If underwater breathing apparatus has been used for a purpose specified in subclause (1), the operator, notified user, or master must,—*
 - (a) *as soon as practicable, inform a fishery officer, by some form of communication from the vessel, of the circumstances involving the use of the apparatus; and*
 - (b) *Not permit the vessel to put to sea again after entering a port or refuge until the apparatus has been resealed by, or under the direction of, a fishery officer.*
- (3) *Underwater breathing apparatus may be carried on board and used from a registered fishing vessel if—*
 - (a) *the apparatus is not used for commercial fishing; and*

- (b) *The chief executive authorises the apparatus to be carried and used; and*
- (c) *It is carried and used in accordance with conditions specified by the chief executive.*

Regulation 3 of the Fisheries (Satellite Vessel Monitoring) Regulations 1993 specifies the vessels that are required to carry and operate automatic location communicators. The regulation states:

- (1) *An automatic location communicator must be carried and operated on board—*
 - (a) *Foreign licensed fishing vessels [[excluding foreign licensed fishing vessels used to fish for tuna]]; and*
 - (b) *foreign-owned New Zealand fishing vessels; and*
 - (c) *Registered fish carriers; and*
 - (d) *New Zealand fishing vessels exceeding 28 metres in overall length; and*
 - (e) *New Zealand fishing vessels of 28 metres or less in length that are used at any time during a fishing year in fishing for orange roughy or scampi; and*
 - (f) *New Zealand fishing vessels of any class specified by the chief executive by notice in the Gazette given for the purposes of this regulation after consultation with an organisation considered by the chief executive to be representative of the classes of persons having an interest in New Zealand fishing vessels or foreign chartered fishing vessels; and*
 - (g) *foreign licensed fishing vessels used to fish for tuna specified by the chief executive by notice in the Gazette given for the purposes of this regulation; and]]*
 - (h) *individual New Zealand fishing vessels specified by the chief executive by notice in writing to the person who registered the vessel under section 103 of the Act.]*
- (2) *If a vessel ceases to be registered under [section 103 of the Act or licensed under section 83 of the Act], as the case may be, an automatic location communicator shall no longer be required to be carried and operated on board the vessel.*
- (3) *The [chief executive] may in like manner amend or revoke any notice given under subclause (1) of this regulation.*

Problem definition

- 60 MFish proposes that an ALC must be carried and operated on board all vessels fishing for deepwater clam using underwater breathing apparatus (UBA) or in possession of deepwater clam with UBA on board. MFish considers that this requirement can be implemented by either amending r 3 of the Fisheries (Satellite Vessel Monitoring) Regulations 1993 or by amending the Fisheries (Fishing Vessels Subject to Satellite Monitoring) Notice 1994 made pursuant to that regulation.
- 61 Deepwater clam are found at depths that are generally inaccessible to free-diving. Therefore, the ability of commercial fishers to harvest deepwater clam requires the use of UBA.
- 62 Currently UBA cannot be used when commercially fishing for any species. This is due to perceived risks to the sustainability of species and compliance.
- 63 The sustainability risks associated with fishers using UBA focus mainly around the localised depletion of stocks that could occur. For example, in the paua fishery divers currently cease free-diving in an area for paua when their catch versus effort drops. This prevents depletion in areas where paua are found. It is desirable to prevent localised depletion of paua, as research has shown it takes a long time for paua to return to an area they are depleted from. The risk of localised depletion would likely increase with UBA, as fishers could stay down longer and continue to harvest. Risks to sustainability from illegal fishing would also increase. Species such as paua are very vulnerable to illegal fishing because:
- a) The fishery is easy to access;
 - b) Paua are a high value species;
 - c) The cost to enter the fishery is low; and
 - d) It is not necessary to be a specialised diver to harvest paua.
- 64 MFish acknowledges allowing UBA for harvesting deepwater clam may increase the risk of localised depletion, but considers this risk mitigated by the proposed low TACs and TACCs. Risks to sustainability from illegal take of deepwater clam (with or without UBA) are much less than for other high value species, such as paua, because of the following distinguishing factors:
- a) Deepwater clam are not as easily accessible from the coast;
 - b) Harvesting of deepwater clam normally requires experienced divers as they are buried in the substrate, and both detection and extraction is more difficult; and
 - c) The harvesting of deepwater clam requires specialised harvesting equipment (water-jets) and bigger boats.
- 65 However, providing an exception to the general prohibition on UBA, for deepwater clam, could increase sustainability risks in other fisheries, particularly high-value inshore species with high levels of non-compliance. The non-compliance risks associated with fishers using UBA focuses mainly around the ability for divers to be underwater for long periods of time out of sight. For a species such as paua, this means fishers could take large amounts of paua and leave it inshore to be picked up

later. Therefore, MFish takes a cautious approach in allowing methods or fishing equipment that may increase the frequency or risks of non-compliance activity.

66 MFish considers requiring vessels fishing for deepwater clam to have ALCs would mitigate any increased risk arising from allowing the use of UBA. Requiring ALCs provides a deterrent to non-compliance activity because MFish can:

- a) Monitor vessel activities in relation to habitat type: deepwater clam are unlikely to be found in areas with suitable habitats for other high value species such as paua or kina. The presence of deepwater clam fishers targeting deepwater clam in areas where paua and kina are found can be used as an indicator of potential non-compliance activity
- b) Identify and monitor participating vessels in real time: the requirement for ALCs to be activated at the initiation of a fishing trip means there can be more effective targeting of compliance effort.

67 In addition, there are benefits to the sustainability of deepwater clam. ALCs provide data detailing where harvesting of deepwater clam is occurring. This type of information would assist MFish in assessing any future requests for an increase in a TAC.

Preliminary consultation

68 No preliminary consultation has been undertaken.

Options

Non-Regulatory Measures

69 The use of UBA is currently prohibited by regulation. Therefore, non-regulatory measures to allow commercial fishers to harvest deepwater clams using UBA are not appropriate.

70 A non-regulatory option for mitigating the risk associated with allowing the use of UBA it to increase compliance effort in potentially vulnerable fisheries such as paua and kina would be required to ensure compliance within this fishery.

Regulatory Measures

71 Authorising the use of UBA to enable commercial fishers to harvest deepwater clams requires an amendment to the Fisheries (Commercial Fishing) Regulations 2001.

72 The proposed amendment will require the mandatory use of ALCs when commercially fishing for deepwater clam. The use of ALCs would apply for the duration of the entire fishing trip (ie, from the time of vessel departure until time of vessel return).

Costs and benefits of the proposal

73 The proposed regulatory amendment to allow UBA when fishing for deepwater clam, enables utilisation of deepwater clam. This will have economic benefits for the

commercial sector and is consistent with the purpose of the Act and MFish's strategic plan to maximise value from fisheries resources.

- 74 To offset risks arising from the use of UBA, MFish proposes to require the mandatory use of ALCs when fishing for deepwater clam with UBA. The proposal to require ALCs has two associated costs. The first is the cost of the ALC itself (approximately \$5000) and the second is the cost of MFish accessing the data (registration fee of \$180 plus download fees). The vessels and specialised harvesting equipment used in this fishery cost approximately \$100,000. Therefore, purchasing ALCs represents a small proportion of the capital cost of participating in the deepwater clam fishery.
- 75 MFish considers the purchase of an ALC is cheaper than alternative such as amending the Fisheries (Reporting) Regulations 2001 (to make industry report their catch on a smaller spatial scale than is currently required by the current statistical area boundaries) and may reduce compliance costs by acting to deter non-compliance activity and enabling compliance effort to be targeted
- 76 MFish considers the benefits, both from being able to use UBA and from using ALCs, outweigh the costs to fishers of requiring ALCs.

Administrative implications

- 77 There are no significant administrative implications associated with changing this regulation.

ANNEX TWO

Species Information

Species Biology

- 78 There are two New Zealand *Panopea* species, *P. zelandica* and *P. smithae*. While these species are very similar in size and appearance, *P. smithae* is understood to burrow deeper in the sediment than *P. zelandica* and occurs at greater depths on coarse shell bottoms. MFish considers the differences in distribution characteristics of these two species mean it is unlikely *P. smithae* will be harvested instead of *P. zelandica*.
- 79 Deepwater clam occur mainly in shallow waters (5-25 m, with the most dense regions appearing to be anywhere between 8-15 m) in sand and mud off sandy ocean beaches throughout New Zealand including Stewart Island.
- 80 There is little precise information on the specific distribution of deepwater clam beds. While this species is widely distributed, local populations are likely to be patchy in nature. There are no estimates of current or reference biomass, or sustainable yield for harvestable deepwater clam populations.
- 81 Deepwater clam experience very high mortality when removed and then placed back into the sediment (Gribben, 2003 cited in Gribben and Creese 2005). Small deepwater clam have difficulty re-burying themselves because digging liquefies the substrate and they float on its surface, vulnerable to predation (Breen 1992, FAR report). An estimate of fishing related mortality estimated half the mortality rate of exploitation rate of adults (Breen 1992, FAR report).
- 82 The localised distribution characteristics of deepwater clam mean they are susceptible to the effects of fishing. This species is sedentary in nature and forms discrete beds.
- 83 Research on deepwater clam populations in Golden Bay suggest the species is relatively long-lived (up to 85 years) and recruitment is variable between years.
- 84 Deepwater clam are protandric. Deepwater clam initially mature into males in their third year with individuals developing into females in subsequent years (Gribben and Creese, 2005). This results in changes in sex ratios when populations are divided into age classes with the majority of the larger/older deepwater clam being female. Given that the largest siphon holes are most easily found and generally contain the largest deepwater clam, there is the possibility that any fishery may inadvertently target female deepwater clam resulting in populations that are egg-limited (Gribben and Creese, 2005).
- 85 There have been no biological studies to determine if deepwater clam have separate biological stocks. Studies indicate there are regional differences in growth rates (with regard to both shell length and weight) and mortality estimates (Gribben and Creese, 2005). The species are broadcast spawners. Deepwater clam are likely to have a two to three week larval stage and it is unclear whether this may or may not lead to intermixing of populations.

Fisheries Characteristics

Commercial Catch

- 86 The non-QMS moratorium on the issuing of fishing permits to new entrants has restricted commercial access to deepwater clam since 1992. To coincide with the revocation of the 1992 permit moratorium in October 2004, deepwater clam was listed on Schedule 4C to continue to prohibit the issue of fishing permits. As such, no commercial fishing permits to target deepwater clam have been issued since 1992.
- 87 Despite the past and current restrictions on the commercial access to deepwater clam, there are reported catches of this species taken under special permits as part of investigative research. The largest catches were recorded between 1988-93 (Table 1) and were mainly taken from Golden Bay, with small catches coming from Tasman Bay and the Marlborough Sounds. Further exploratory catch was taken in the Bay of Plenty, in the waters between Cape Farewell and Cape Foulwind, and on the Kapiti Coast. A small bycatch was taken as a result of trawl activity in the Canterbury Bight in 1992-93, 2000-01 and 2001-02 fishing years.
- 88 A single special permit for deepwater clam has been granted in FMA 7 for the 2004-2006 period. While this permit includes a condition that authorises the permit holder to sell deepwater clams, it does not confer any future access rights to the deepwater clam fishery.

Table 1 Deepwater clam (probably *Panopea zelandica*) landings (kilograms) by fishing year reported from 1988-89 to 2004-05. Source: Catch Effort Landing Returns (CELR) and Catch Landing Returns (CLR)

Fishing Year	FMA 1	FMA 3	FMA 7	Total
1988-89	0	0	15 282	15 282
1989-90	315	0	95 232	95 547
1990-91	0	0	29 293	29 293
1991-92	0	725	31 394	32 119
1992-93	0	53	0	53
1993-94	0	0	0	0
1994-95	0	0	0	0
1995-96	0	0	0	0
1996-97	0	0	0	0
1997-98	0	0	0	0
1998-99	0	0	0	0
1999-00	0	0	0	0
2000-01	0	146	0	146
2001-02	3	68	0	71
2002-03	0	0.5	0	0.5
2003-04	0	0	1 444	1 444
2004-05	0	0	2 944	2 944
Total	318	992.5	175 589	176 899.5

* No catch history recorded from FMA 2, FMA 4, FMA 5, FMA 6, FMA 8, FMA 9 and FMA 10.

Recreational and Customary Catch

- 89 There is no quantitative information on non-commercial harvest levels of deepwater clam. No deepwater clam catches were recorded in the three national telephone/diary surveys of recreational fishers during 1996, 2000 and 2001. Non-commercial catches of deepwater clam are likely to be negligible, as individuals are found in a habitat infrequently dived and the method of extraction is not used within the non-commercial fishery.

Regulatory framework

- 90 There are no existing regulations that specify catch limits or other sustainability measures for deepwater clam. There is no minimum size limit for amateur or commercial fishers for this species. There is no species-specific bag limit restriction on deepwater clam for amateur fishers.

Fishery Assessment

- 91 There are no stock assessments for deepwater clam stocks. Consequently, there are no estimates of total biomass and sustainable yield for any deepwater clam stock.

Current and potential research

- 92 There have been no fisheries assessment reports on deepwater clam. MFish expects if commercial fishers would like to have the TACC increased, this will be accompanied with more information on the biomass of the deepwater clam stocks.

Social cultural and economic factors

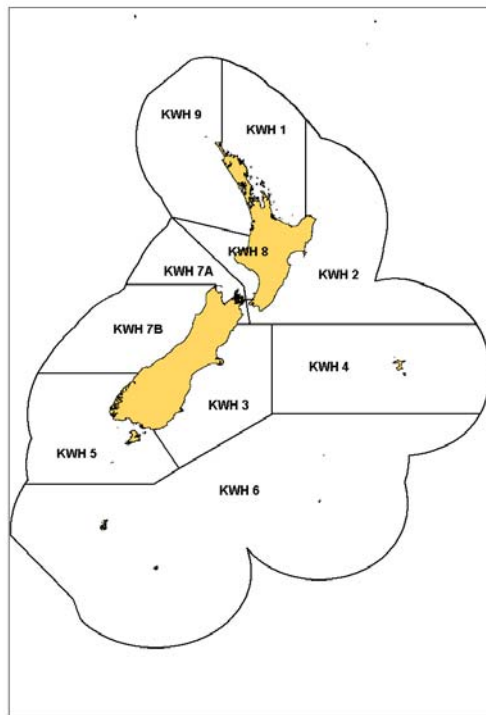
- 93 MFish is not aware of any information on particular social, economic, or cultural matters that could influence the setting of TACs and TACCs for deepwater clam stocks beyond those considered in the relevant section earlier.

KNOBBED WHELK (KWH)

Introduction into the Quota Management System (QMS)

- 1 Knobbed whelk (*Austrofulvus glans*) will be introduced into the Quota Management System (QMS) on 1 October 2006. Knobbed whelk will not be introduced in the Kermadec Fishery Management Area.
- 2 The future Quota Management Areas (QMAs) for knobbed whelk are shown in Figure 1.
- 3 The fishing year for knobbed whelk will be from 1 October to 30 September in the following year.
- 4 The unit of measurement for Total Allowable Catch (TAC), Total Allowable Commercial Catch (TACC) and Annual Catch Entitlement (ACE) will be kilograms greenweight.

Figure 1 Map of knobbed whelk Quota Management Areas



Key Issues to be Considered

- 5 The Ministry of Fisheries (MFish) considers the key issues affecting the setting of sustainability measures and other management controls for knobbed whelk stocks are as follows:

- a) There are no estimates of total biomass and sustainable yield for any knobbed whelk stock.
- b) Knobbed whelks are sedentary and may be susceptible to localised depletion.
- c) Knobbed whelks are taken by a range of fishing methods (potting, dredging and bottom trawling) and there is a low capital cost to enter the fishery.

Management Options

Summary of MFish Proposals

- 6 MFish proposes setting the TAC for knobbed whelk under s 13 of the Fisheries Act 1996 (the Act).
- 7 MFish proposes setting TACs, TACCs, and allowances for recreational and customary fishers and other sources of fishing-related mortality for each knobbed whelk stock as listed in Table 1.

Table 1 Proposed TACs (tonnes), TACCs (tonnes), and allowances (tonnes) for knobbed whelk

Stock	TAC	Customary allowance	Recreational allowance	Other sources of mortality	TACC
KWH 1	3	1	1	0	1
KWH 2	3	1	1	0	1
KWH 3	5	1	1	0	3
KWH 4	8	1	1	0	6
KWH 5	3	1	1	0	1
KWH 6	4	1	1	0	2
KWH 7A	53	1	1	1	50
KWH 7B	3	1	1	0	1
KWH 8	3	1	1	0	1
KWH 9	3	1	1	0	1

- 8 MFish proposes to include all knobbed whelk stocks on the Sixth Schedule to allow commercial fishers to return unwanted whelks caught as bycatch back to the sea (Annex One).

Proposed TACs

- 9 MFish proposes setting TACs for knobbed whelk stocks using the provisions of s 13 of the Act. Section 13 requires the TAC to be set at, or above, a level that can produce the maximum sustainable yield (MSY) having regard to the interdependence of stocks. While there is no stock assessment information to indicate whether knobbed whelk stocks are presently at, or above, a level that can produce MSY, the proposed TACs will enable knobbed whelk stocks to be managed at MSY in the long-term.
- 10 Alternative TAC setting options exist. The Act allows TACs to be set under s 14 if the quota management stock is listed in the Third Schedule. A stock can be added to

the Third Schedule provided it satisfies one of four criteria specified in s 14(8). MFish considers none of the criteria specified are applicable to knobbed whelk. Firstly, MSY can be estimated for knobbed whelk stocks. Secondly, a catch limit for knobbed whelk has not been determined as part of an international agreement. Thirdly, there is currently insufficient rationale to support management on a rotational or enhanced basis. Fourthly, knobbed whelk is not comprised of one or more highly migratory species.

- 11 Section 14B of the Act provides another fishstock management option for setting a TAC. This section enables the Minister to set a TACC below B_{MSY} (the average stock biomass or level corresponding to MSY), but above a level that ensures its long-term viability. The intention of s 14B is to ensure the harvest of a target stock is not constrained by the TAC of an associated bycatch species. MFish is not aware of any information to support such a strategy for knobbed whelk.

Rationale for proposed TAC

- 12 The TACs proposed for knobbed whelk stocks are set out in Table 1. The TACs proposed reflect the absence of stock assessment information and the biological characteristics of the species, while still providing opportunities for utilisation of knobbed whelk.
- 13 There are no stock assessments for knobbed whelk stocks. Consequently, there are no estimates of total biomass and sustainable yield for any knobbed whelk stock.
- 14 Catch information is unlikely to be indicative of knobbed whelk abundance. Reported catches are likely to be less than total catches due to non-reporting (discarding) and mis-reporting of catches.
- 15 The primary method used to target knobbed whelk is baited pots ('potting'). Whelks are also commonly caught as bycatch in the dredge oyster and scallop fisheries, and bottom trawling fisheries.
- 16 Low economic returns from knobbed whelk means little targeted commercial fishing has occurred. The low economic return also means commercial fishers frequently return knobbed whelk bycatch to the sea, rather than landing and reporting it. Consequently, it is unlikely that recorded landings are in any way indicative of total knobbed whelk biomass or total commercial knobbed whelk catch.
- 17 MFish does not have quantitative information on non-commercial (recreational and customary) catch of knobbed whelk for any of the QMAs.
- 18 MFish has no information to indicate that past landed catches of knobbed whelk by all sectors in any QMA are unsustainable.
- 19 The biological characteristics of knobbed whelk are described in Annex Two. The sedentary nature of knobbed whelk makes them susceptible to localised depletion. If TACs are set too high, targeting by potting may lead to localised depletion.
- 20 Given the available information, MFish considers it appropriate to set TACs for each knobbed whelk stock based on reported commercial catches and likely

non-commercial catches in each fishery. This approach takes into account the absence of stock assessment information and the biological characteristics of the species, while acknowledging reported catches are likely to be less than the total catch in each of the fisheries.

- 21 The proposed TACs can be adjusted as new information becomes available. Adjustment to TACs would require supporting information on stock size. Information on the impacts of trawling and dredging and the associated effects on the benthic environment (see paras 44-48) may also be required.

Table 2 Landings of whelks (WHE) for the period 1990 – 2005 - sourced from Fisheries Information System (FIS) (kilograms).

	FMA 1	FMA 2	FMA 3	FMA 4	FMA 5	FMA 6	FMA 7	FMA 8	FMA 9
1990-91	0	0	0	0	0	0	44 976	0	0
1991-92	0	0	0	0	0	0	26 935	0	0
1992-93	21	0	18	0	0	0	1 762	0	0
1993-94	0	135	0	0	0	0	49 278	0	0
1994-95	0	707	545	0	0	0	21 458	593	0
1995-96	0	89	178	0	0	0	27 596	0	0
1996-97	2	174	144	0	3	0	8 959	0	0
1997-98	0	0	102	150	0	0	884	0	0
1998-99	0	0	223	2 205	2 470	150	570	0	0
1999-00	0	0	2 286	7 953	3 250	790	80	0	0
2000-01	0	0	10 467	17 497	3 538	4 765	141	0	0
2001-02	0	0	1 474	3 995	515	1 755	2	0	0
2002-03	0	0	212	20	4	780	77	0	0
2003-04	35	0	491	0	0	335	4217	0	0
2004-05	8	0	21	0	0	335	228	0	47
TOTAL	66	1 105	16 161	31 820	9 777	8910	187163	593	47

Allocation of TAC

- 22 Once a TAC has been set, a TACC must be put in place, as well as allowances for customary and recreational fishing interests and for any other sources of fishing-related mortality.
- 23 The Act does not provide an explicit statutory mechanism to apportion available catch between sector groups either in terms of a quantitative measure or prioritisation of allocation. Accordingly, the Minister has the discretion to allocate the TAC based on the best available information.

Recreational allowance

- 24 There is no information on recreational catches for any of the knobbed whelk stocks. MFish considers recreational catches are likely to be very small, but may increase in future. MFish proposes an allowance of one tonne for recreational fishing interests for each knobbed whelk stock. MFish considers the allowances probably will reflect the upper limit of knobbed whelk harvest by this sector in any QMA.
- 25 MFish can review the proposed allowance if relevant information is forthcoming in the future.

Customary Maori allowance

- 26 There is no information on customary catches for any of the knobbed whelk stocks. MFish understands that some customary fishing for knobbed whelk occurs, particularly in some parts of the North Island. MFish proposes an allowance of one tonne for customary fishing interests for each knobbed whelk stock. MFish considers the allowance probably reflects the upper limit of knobbed whelk harvest by this sector in any QMA.
- 27 MFish can review the proposed allowance if relevant information is forthcoming in the future.

Allowance for other sources of fishing-related mortality

- 28 MFish proposes a zero allowance for other sources of fishing-related mortality for the proposed TACC for each of the knobbed whelk stocks, except KWH 7A. KWH 7A has a larger TACC of 50 tonnes so MFish recommends a nominal allowance for this stock.
- 29 There are no estimates of fishing-related mortality for knobbed whelk. However, knobbed whelks have relatively hard, robust shells, suggesting they are likely to survive if returned back to the sea.
- 30 MFish proposes allowing knobbed whelk to be returned to sea, so fishing-related mortality should be low.

TACC

- 31 The TACs proposed for knobbed whelk stocks are set out in Table 1. The TACCs proposed are based on largest recorded commercial landings between 1990-2005.
- 32 Determining what proportion of the past reported catch is knobbed whelk is difficult, because all whelk species have been grouped together when reporting catch. Reported commercial landings under the generic code “whelk” since 1990-91 are shown in Table 2.

KWH 1, KWH 2, KWH 7A, KWH 7B, KWH 8, KWH 9

- 33 MFish considers a large proportion of the landings recorded under the generic code ‘whelk’ in FMAs 1, 2, 7, and 8 will be knobbed whelk.
- 34 Recorded landings of knobbed whelks in KWH 1, KWH 2, KWH 8, (as indicated in Table 2) have been bycatch, and relatively low and variable since the early 1990s. A target fishery has not developed within these areas as a consequence of the non-QMS permit moratorium.
- 35 There were higher recorded landings in FMA 7 in the early 1990s. Several fishers held special permits to participate within an experimental target fishery to provide stock assessment information on knobbed whelks in Golden and Tasman Bays. Recorded landings of knobbed whelk are likely to reflect catches under this programme.

KWH 3, KWH 4, KWH 5, KWH 6

- 36 MFish considers that a smaller proportion of landings under the generic code 'whelk' in FMAs 3, 4, 5 and 6 will be this species. The whelk *Struthiolaria papulosa* is believed to be more commonly taken in these areas. MFish proposes to use the same criteria as for other FMAs, but to assume that only one-third of landings for these stocks are knobbed whelk.

Other Management Measures

Sixth Schedule – allow fishers to return knobbed whelk to the sea

- 37 MFish proposes adding all knobbed whelk stocks to the Sixth Schedule of the Act. MFish considers it appropriate to add knobbed whelk to the Sixth Schedule with the following requirements:
- a) Knobbed whelk are only returned if they are likely to survive
 - b) Knobbed whelk are returned to the same waters from which they were taken as soon as practicable.
- 38 Adding knobbed whelk to the Sixth Schedule will allow commercial fishers who harvest unwanted knobbed whelk to return individuals to the sea without the requirement to balance catches with annual catch entitlement (ACE) or incur deemed value charges. Knobbed whelk is a robust species that is highly likely to survive being returned to the sea.
- 39 For more detailed information on the proposal to add knobbed whelk to the Sixth Schedule, refer to Annex One.

Environmental effects of harvesting methods for knobbed whelk

- 40 Commercial harvesting of knobbed whelk using baited whelk pots will have negligible associated effects on the aquatic environment and on biological diversity.
- 41 Commercial harvesting of knobbed whelk by dredging or bottom trawling will result in effects on the benthic environment. Dredging, especially in areas with high silt levels, is thought to remove settlement surfaces and suspend silt that causes high mortality in newly settled spat, for species such as dredge oysters and scallops. The extent of the impacts cannot be quantified at this time. Currently, research is underway to determine the benthic impacts of these fishing methods.
- 42 Some commercial harvesting of knobbed whelks by dredge is likely to occur in association with existing dredge oyster and scallop fisheries. Therefore, MFish considers a dredge knobbed whelk fishery within existing areas will not significantly increase the impacts on the benthic environment.
- 43 MFish acknowledges the introduction of knobbed whelk into the QMS may result in targeted dredging activities occurring in new fishing grounds that have not previously been impacted by this method. As MFish starts to assess the impacts of fishing methods on the benthic environment, the method of fishing and the associated

environmental effects may be assessed. This may result in method restrictions or area closures.

- 44 At this time, MFish is not proposing any restrictions on the areas that are commercially dredged for knobbed whelk. However, MFish encourages future development of the knobbed whelk fishery to focus on harvesting methods that have a benign effect on the benthic environment.

Amendments to regulations

- 45 The introduction of knobbed whelk into the QMS requires amending the Fisheries (Reporting) Regulations 2001 to prescribe reporting codes for knobbed whelk when commercial fishers are completing their statutory catch returns.
- 46 Details of the amendments to regulations are set out in Annex One. MFish proposes allowing knobbed whelk to be returned to the sea requiring knobbed whelk to be added to the Sixth Schedule of the Act.

Deemed Value and Overfishing Threshold

- 47 Separate sections of this document set out generic information on the setting of interim and annual deemed values.
- 48 Knobbed whelk falls within the ‘low knowledge’ fishstock category as there is relatively little information on the fishery status, and there are no sustainability concerns. Fishstocks in this category are to be reclassified into another category within five years or once MFish has more confidence in the TACC, whichever is the sooner.
- 49 Annual deemed values for species in this category will be set as follows:
- Initially, deemed values are to be set as a proportion of port price in the previous year.
 - To be adjusted, as required, to encourage fishers to cover catch with ACE, and to land any catch in excess of ACE.
- 50 The proposed annual deemed value for the 2006-07 fishing year will be set at 60% of the average port price. In adopting this approach, MFish proposes setting an interim deemed value of \$0.30 per kg (excluding GST) and an annual deemed value of \$0.60 per kg (excluding GST) for knobbed whelk for the 2006-07 fishing year. The proposed deemed values are set using an indicative port price of \$1.00 per kg based on the likely market value for knobbed whelk.
- 51 MFish does not propose applying differential annual deemed values for knobbed whelk. This is consistent with the policy framework for the ‘low knowledge’ fishstock category.
- 52 MFish does not propose setting an overfishing threshold for knobbed whelk stocks, unless monitoring of catches suggests that this is required in the future.

Statutory Considerations

53 The following statutory considerations have been taken into account in evaluating the management measures as proposed in this document.

- a) The purpose of the Act (s 8) is to provide for the utilisation of fisheries resources while ensuring sustainability. The management proposals seek to ensure sustainability of the stock by setting a TAC and other appropriate measures. Utilisation is provided for by way of setting allowances for commercial, recreational and customary fishers. Section 8 requires that social and economic effects be considered. This document proposes TACs to enable utilisation and future development of the knobbed whelk fishery.
- b) The Act prescribes three possible harvest strategies in setting a TAC. For the reasons outlined in this document, MFish considers it appropriate to manage knobbed whelk stocks under s13(2)(a). This requires the TAC to be set at, or above, a level that can produce the maximum sustainable yield (MSY) having regard to the interdependence of stocks. While there is currently no stock assessment information to indicate whether knobbed whelk stocks are at, above, or below a level that can produce MSY, the proposed TACs enable knobbed whelk stocks to be managed at this target level in the long-term.
- c) The proposed TACs also consider the interdependence of stocks (s13(2)). MFish has no information on how knobbed whelk and any other stocks are interdependent.
- d) Section 11(1)(c) requires that the natural variability of the stock concerned is taken into account when setting or varying a sustainability measure such as a TAC. MFish does not have information on the natural variability of knobbed whelk stocks.
- e) Section 9(a) requires that the Minister takes into account the following environmental principles.
 - i) Associated or dependent species should be maintained above a level that ensures their long-term viability s - 9 (a).
 - ii) Biological diversity in the aquatic environment should be maintained - s 9 (b).
 - iii) Habitat of particular significance for fisheries management should be maintained – s 9 (c)

Knobbed whelks are a sedentary species that occur from low water to about 600m along New Zealand's coastline. MFish is unaware of any associate or dependent species that will be affected by the harvesting of knobbed whelk. The proposed management measures for knobbed whelk (TACs and TACCs), and ongoing monitoring once the species enters the QMS, ensures the sustainability of the species. MFish considers harvesting of knobbed whelk by dredging will have an affect on the benthic environment. However, these effects are likely to be limited to existing dredge areas and the limit on the catch also limits the extent of this impact.

- f) There is a wide range of international obligations relating to fishing (including sustainability and utilisation of fishstocks and maintaining biodiversity). MFish considers the s5 considerations arising from New Zealand's

international obligations and the provisions of the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992 are adequately addressed by the management proposals for knobbed whelk stocks, particularly with the introduction of a TAC to ensure sustainable utilisation. MFish is not aware of any issues concerning international obligation and the provisions of the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992 that will result from the proposed TACs, TACCs.

- g) Section 11(1)(b) requires that existing controls be taken into account when setting or varying a sustainability measure such as a TAC. MFish notes the permit moratorium restricts commercial access to all knobbed whelk stocks to existing fishing permit holders (issued prior to the permit moratorium).
- h) Section 11(2) requires the consideration of various other matters relating mainly to planning documents. 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 management plan under the Conservation Act 1987 that are specifically relevant to setting TACs for knobbed whelk stocks. Similarly, in terms of section 11(2A) MFish is not aware of any fisheries or conservation services, relevant fisheries plans, or any decisions not to require conservation or fisheries services that are relevant to setting TACs for knobbed whelk stocks.
- i) As required under s 11(2)(c), MFish considers that the proposals for knobbed whelk meet the requirements of ss 7 and 8 of the Hauraki Gulf Marine Park Act 2000. Implementation of catch limits and associated measures for knobbed whelk stocks into the QMS will allow for the sustainable utilisation of the species.
- j) Sections 21(1)(a)-(b) and 21 (4)(i)-(ii) and 21(5) require the Minister to allow for non-commercial fishing interests (recreational and customary), and other mortality to the stock caused by fishing. The proposed TACs reflect limited information on customary and recreational fishing for knobbed whelk.
- k) Section 21(4) requires that when considering the proposed allowances for customary non-commercial interests, the Minister must take into account any mātaimai reserve or s 186A closure in the relevant QMA. The proposed allowances for customary non-commercial fishing reflect limited customary fishing for knobbed whelk. MFish does not consider the allowances proposed for customary harvest will detract from the intent of any mātaimai or s186A closures presently in place. MFish can review these allowances for customary interests if relevant information is forthcoming in the future.
- l) Section 21(5) requires that when considering the proposed allowances for recreational interests, the Minister must take into account any regulations that prohibit or restrict fishing under s311 (area closures). The proposed allowances for recreational fishing reflect very limited recreational fishing for knobbed whelk. MFish does not consider that the allowances proposed for recreational harvest will detract from the intent of any area closures presently in place. MFish can review these allowances for recreational interests if relevant information is forthcoming in the future.
- m) Section 10 sets out information principles that are to be taken into account when setting a sustainability or utilisation measure, such as TACs, TACCs and

the use of UBA for knobbed whelk. The principles are particularly important in relation to knobbed whelk stocks considered in this document as the status of these stocks remains unknown. MFish has adhered to these principles in considering the management options for these knobbed whelk stocks.

Preliminary Recommendations

54 MFish recommends that the Minister of Fisheries:

- a) **Agree** to set a TAC of 3 tonnes for KWH 1 and within that TAC set:
 - i) A customary allowance of 1 tonne;
 - ii) A recreational allowance of 1 tonne;
 - iii) An allowance for other fishing-related mortality of 0 tonnes; and
 - iv) A TACC of 1 tonne.
- b) **Agree** to set a TAC of 3 tonnes for KWH 2 and within that TAC set:
 - i) A customary allowance of 1 tonne;
 - ii) A recreational allowance of 1 tonne;
 - iii) An allowance for other fishing-related mortality of 0 tonnes; and
 - iv) A TACC of 1 tonne.
- c) **Agree** to set a TAC of 5 tonnes for KWH 3 and within that TAC set:
 - i) A customary allowance of 1 tonne;
 - ii) A recreational allowance of 1 tonne;
 - iii) An allowance for other fishing-related mortality of 0 tonnes; and
 - iv) A TACC of 3 tonnes.
- d) **Agree** to set a TAC of 8 tonnes for KWH 4 and within that TAC set:
 - i) A customary allowance of 1 tonne;
 - ii) A recreational allowance of 1 tonne;
 - iii) An allowance for other fishing-related mortality of 0 tonnes; and
 - iv) A TACC of 6 tonnes.
- e) **Agree** to set a TAC of 3 tonnes for KWH 5 and within that TAC set:
 - i) A customary allowance of 1 tonne;
 - ii) A recreational allowance of 1 tonne;
 - iii) An allowance for other fishing-related mortality of 0 tonnes; and
 - iv) A TACC of 1 tonne.
- f) **Agree** to set a TAC of 4 tonnes for KWH 6 and within that TAC set:
 - i) A customary allowance of 1 tonne;
 - ii) A recreational allowance of 1 tonne;
 - iii) An allowance for other fishing-related mortality of 0 tonnes; and
 - iv) A TACC of 2 tonnes.
- g) **Agree** to set a TAC of 53 tonnes for KWH 7A and within that TAC set:

- i) A customary allowance of 1 tonne;
 - ii) A recreational allowance of 1 tonne;
 - iii) An allowance for other fishing-related mortality of 1 tonne; and
 - iv) A TACC of 50 tonnes.
- h) **Agree** to set a TAC of 3 tonnes for KWH 7B and within that TAC set:
 - i) A customary allowance of 1 tonne;
 - ii) A recreational allowance of 1 tonne;
 - iii) An allowance for other fishing-related mortality of 0 tonnes; and
 - iv) A TACC of 1 tonne.
- i) **Agree** to set a TAC of 3 tonnes for KWH 8 and within that TAC set:
 - i) A customary allowance of 1 tonne;
 - ii) A recreational allowance of 1 tonne;
 - iii) An allowance for other fishing-related mortality of 0 tonnes; and
 - iv) A TACC of 1 tonne.
- j) **Agree** to set a TAC of 3 tonnes for PZL 9 and within that TAC set:
 - i) A customary allowance of 1 tonne;
 - ii) A recreational allowance of 1 tonne;
 - iii) An allowance for other fishing-related mortality of 0 tonnes; and
 - iv) A TACC of 1 tonne.
- k) **Agree** to include all knobbed whelk stocks on the Sixth Schedule of the Fisheries Act 1996.
- l) **Agree** to amend the Fisheries (Reporting) Regulations 2001 to outline the codes to be used by commercial knobbed whelk fishers when completing their statutory catch returns.
- m) **Agree** to set an annual deemed value of \$0.60 per kg (excluding GST) and an interim deemed value of \$0.30 per kg (excluding GST).

ANNEX ONE

Inclusion of knobbed whelk onto the Sixth Schedule

Background

55 Section 72 of the Fisheries Act 1996 (the Act) prohibits commercial fishers from dumping fish that are subject to the Quota Management System. This section states:

- (1) *No commercial fisher shall return to or abandon in the sea or any other waters any fish, aquatic life, or seaweed of legal size, or for which no legal size is set, that is subject to the quota management system.*
- (2) *Subsection (1) of this section does not apply if the stock is listed in the Sixth Schedule to this Act and the commercial fisher complies with the requirements set out in that Schedule.*
- (3) *Any commercial fisher who takes any fish, aquatic life, or seaweed subject to the quota management system that is not of legal size shall immediately return that fish, aquatic life, or seaweed, whether alive or dead, to the sea or waters from which the fish, aquatic life, or seaweed was taken.*
- (4) *Every person commits an offence and is liable to the penalty set out in section 252(3) of this Act who contravenes subsection (1) or subsection (3) of this section.*
- (5) *Without limiting the application of section 241 of this Act, it is a defence to any offence under subsection (4) of this section if—*
 - (a) *The return was a return of parts of fish, aquatic life, or seaweed lawfully processed on a vessel; or*
 - (b) *The fish, aquatic life, or seaweed was returned or abandoned to ensure the safety of the vessel or any crew member; or*
 - (c) *The following provisions were complied with, namely,—*
 - (i) *A fishery officer or observer was present when the fish, aquatic life, or seaweed was taken; and*
 - (ii) *The fishery officer or observer authorised the return or abandonment of the fish, aquatic life, or seaweed; and*
 - (iii) *The commercial fisher returned or abandoned the fish, aquatic life, or seaweed under the supervision of the fishery officer or observer, and complied with any directions of the fishery officer or observer; and*

- (iv) *The amount of fish, aquatic life, or seaweed was included in the returns for the appropriate period that is required to be made by the commercial fisher under this Act.*
- (6) *Any fish, aquatic life, or seaweed returned or abandoned in accordance with subsection (5)(c) of this section shall be included in the commercial fisher's reported catch for the purposes of section 76 of this Act.*
- (7) *The Governor-General may from time to time, by Order in Council made on the recommendation of the Minister, add or omit from the Sixth Schedule to this Act the name of any stock, or amend any provision in that Schedule or add new provisions to that Schedule.*

Problem definition

- 56 Knobbed whelks are caught as bycatch of dredge and bottom trawl fisheries, particularly within the dredge oyster and scallop fisheries.
- 57 Unless knobbed whelks are added to the Sixth Schedule, commercial fishers must land and report all catches of knobbed whelk. Fishers are required to pay deemed values for catches in excess of ACE.
- 58 Knobbed whelks are a hardy species, and are likely to survive harvesting and subsequent return to the sea. MFish considers it appropriate to add knobbed whelk to the Sixth Schedule with the following requirements:
 - a) Knobbed whelk are returned only if they are likely to survive
 - b) Knobbed whelk are returned to the same waters from which they were taken as soon as practicable

Preliminary consultation

- 59 No preliminary consultation has been undertaken. This paper invites comment from stakeholders on this proposed management option.

Options

Non-Regulatory Measures

- 60 There is no non-regulatory mechanism for returning species managed under the QMS to the water once they have been harvested.

Regulatory Measures

- 61 To implement this management measure it is necessary to add knobbed whelk stocks to the Sixth Schedule.

Costs and benefits of the proposal

- 62 Allowing knobbed whelk to be returned to the water if they are alive, is the least cost option to commercial fishers, who incidentally catch knobbed whelk as bycatch and who may not hold ACE for this species.

Administrative implications

- 63 There are no significant administrative implications associated with adding knobbed whelk to the Sixth Schedule.

ANNEX TWO

Species Information

Species Biology

- 64 The knobbed whelk (*Austrofuscus glans*) is a sedentary species with a relatively hard, robust shell.
- 65 The knobbed whelk occurs in the same habitat as scallops and oysters (from low water to about 600 m, on fine sand or silty mud substrates). As such the species is often taken as a bycatch in the scallop, dredge oyster and bottom trawl fisheries.
- 66 A wide variety of invertebrates including polychaetes, gastropods, and bivalves occur within the wide depth range of the knobbed whelk, but any specific relationships are undocumented. Whelks have a wide range of invertebrate and vertebrate predators, for instance bottom feeding fish such as snapper and tarakihi.

Fisheries Characteristics

Commercial Catch

- 67 The non-QMS moratorium on the issuing of fishing permits to new entrants has restricted commercial access to knobbed whelk since 1992. To coincide with the revocation of the 1992 permit moratorium in October 2004, knobbed whelk was listed on Schedule 4C to continue to prohibit the issue of fishing permits.
- 68 Despite the past and current restrictions on the commercial access to knobbed whelk, there are reported catches of this species taken under special permits as part of investigative research, or catch recorded when whelks have been caught as bycatch.
- 69 While each permit had specific catch limits, no information is available on the specific quantity of knobbed whelks taken under each permit. Some permit holders reported information about the quantity taken collectively for a number of whelk species, while other permit holders did not furnish any information.
- 70 The generic code for all species of whelk landed prior to 1 October 2004 is "WHE". All species of landed whelk, including the knobbed whelk, were recorded under this code. Table 1 is an accurate reflection of the landing of all whelks, but determining what proportion is knobbed whelk is difficult. MFish considers that a large proportion of the landings recorded in FMAs 1, 2, 7, and 8 will be knobbed whelk, but a smaller proportion of landings in FMAs 3, 4, 5 and 6 will be this species. The whelk *Struthiolaria papulosa* is believed to be more commonly taken in these areas.
- 71 Since 11 November 2004, the code "KWH" has been used on catch effort forms for when knobbed whelk has been landed, and "WHE" remains a valid code for other whelk species.

Table 1 Landings of whelks (WHE) for the period 1990 – 2005 - sourced from Fisheries Information System (FIS) (kilograms).

	FMA 1	FMA 2	FMA 3	FMA 4	FMA 5	FMA 6	FMA 7	FMA 8	FMA 9
1990-91	0	0	0	0	0	0	44 976	0	0
1991-92	0	0	0	0	0	0	26 935	0	0
1992-93	21	0	18	0	0	0	1 762	0	0
1993-94	0	135	0	0	0	0	49 278	0	0
1994-95	0	707	545	0	0	0	21 458	593	0
1995-96	0	89	178	0	0	0	27 596	0	0
1996-97	2	174	144	0	3	0	8 959	0	0
1997-98	0	0	102	150	0	0	884	0	0
1998-99	0	0	223	2 205	2 470	150	570	0	0
1999-00	0	0	2 286	7 953	3 250	790	80	0	0
2000-01	0	0	10 467	17 497	3 538	4 765	141	0	0
2001-02	0	0	1 474	3 995	515	1 755	2	0	0
2002-03	0	0	212	20	4	780	77	0	0
2003-04	35	0	491	0	0	335	4217	0	0
2004-05	8	0	21	0	0	335	228	0	47
TOTAL	66	1 105	16 161	31 820	9 777	8910	187163	593	47

Recreational and Customary Catch

72 MFish does not have specific and detailed information on the quantities of non-commercial knobbed whelk that are harvested, but believes the current non-commercial (i.e. recreational and customary) catch is likely to be small for knobbed whelk. No knobbed whelk were recorded as being taken during three national telephone/diary surveys of recreational fishers during 1996, 2000 and 2001. MFish notes that while no Maori customary fishing information is currently available, it is understood the knobbed whelk is an element of customary fishing practices, particularly in some parts of the North Island.

Regulatory framework

73 There are no existing regulations that specify catch limits or other sustainability measures for knobbed whelk. There is no minimum size limit for amateur or commercial fishers for this species. There is no species-specific bag limit restriction on knobbed whelk for amateur fishers.

Fishery Assessment

74 There are no estimates of current or reference biomass, or sustainable yield for knobbed whelk stocks.

Current and potential research

75 There have been no fisheries assessment reports on knobbed whelk. MFish expects if commercial fishers would like to have the TACC increased, this will be accompanied with more information on the biomass of the knobbed whelk stocks.

Social cultural and economic factors

- 76 MFish is not aware of any information on particular social, economic, or cultural matters that could influence the setting of TACs and TACCs for knobbed whelk stocks beyond those considered in the relevant section earlier.