

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

North Island Shortfin and Longfin Eels (SFE, LFE)

Final Advice Paper

25 June 2004

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NORTH ISLAND FRESHWATER EELS (SFE, LFE)

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INTRODUCTION

Purpose

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

New Stocks into the QMS

- 2 The Ministry of Fisheries (MFish) is introducing these stocks into the QMS on 1 October 2004 as part of its programme to introduce around 50 further species by 1 October 2004.
- 3 The respective quota management areas (QMAs), fishing years and units of measure for these stocks to be introduced into the QMS on 1 October 2004 were *Gazetted* on 16 October 2003 and outlined in Table 1.

Table 1: Quota Management Areas, Fishing Years and Units of Measure for North Island eel fishstocks to be introduced into the QMS on 1 October 2004

Species (code)	Quota Management Areas and relationship to ESA's		Fishing year	Unit of measure
Shortfin (SFE) and longfin eel (LFE) stocks	20	(1 & 2)	1 October to 30 September	greenweight
	21	(3, 4, 5 & 6)		
	22	(7, 10, 11 & 12)		
	23	(8 & 9)		

Note: Parentheses () denote the combination of noted eel statistical areas that contribute to the QMA.
ESA – eel statistical area

Initial Position Paper and Consultation

- 4 On 13 February 2004 an Initial Position Paper (IPP) was released that contains MFish's initial position on the proposed management measures for the above stocks to be introduced into the QMS on 1 October 2004. MFish provided copies of the IPP to iwi, sector groups, and individuals and organisations considered to have an interest in the stock being introduced into the QMS. MFish also provided a copy of the IPP to those who requested a copy, as well as distributing further copies at consultation hui or meetings.
- 5 Stakeholders and iwi were asked to provide written submissions on the proposals for the stock by 8 April 2004. This was extended to 14 April 2004.

Outline of Document

- 6 This paper provides you with MFish's **initial position** and **final advice and recommendations** on proposed TACs, TACCs, other allowances and management measures for the stocks to be introduced into the QMS on 1 October 2004.
- 7 This paper is structured so that the **Initial Position** section is followed immediately by the **Final Advice** section.
- 8 In addition, this paper includes a section from the IPP, titled Statutory Obligations and Policy Guidelines, that relate to the setting of TACs, TACCs and other allowances for these stocks.

Implementation of Decisions

- 9 Following your final decision on the management measures outlined in this document, you will forward formal notification to the Parliamentary Counsel Office for declaration in a *Gazette* Notice. MFish anticipates the *Gazette* Notice will occur on Thursday, 8 July, for the above stocks.
- 10 A meeting has been scheduled on Wednesday, 30 June to discuss the content of this document with you.
- 11 In addition, s 12(2) of the Fisheries Act 1996 (1996 Act) requires that after setting or varying any sustainability measure, you are to, as soon as practicable, write to sector groups advising them of the reasons for your final decisions. MFish proposes to compile a decision letter once decisions on TACs, TACCs and allowances, and relevant regulatory amendments have been made for the stocks being introduced into the QMS on 1 October 2004.

STATUTORY OBLIGATIONS AND POLICY GUIDELINES

Purpose of the Fisheries Act 1996

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

Setting a Total Allowable Catch

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

Maximum Sustainable Yield (s 13)

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

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

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

No Specified Target Stock Level (s 14)

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

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

Above Level of Long Term Viability (s 14B)

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

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

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

Other Statutory Obligations Applicable When Setting a TAC

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

Information Principles

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

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

Environmental Principles

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

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

International Obligations (s 5(a))

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

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

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

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

Additional Factors to be taken into Account (s 11)

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

Guidelines for Setting TACs for New Stocks

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

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

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

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

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

Development opportunity

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

53 MFish notes that a development opportunity within the TAC does not predetermine subsequent allocation decisions.

Use of information

54 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

55 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.

56 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).

- 57 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

- 58 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 that exercise. After setting the TAC the Minister makes separate decisions about allocations for recreational, Māori customary and commercial catches and all other sources of fishing-related mortality.
- 59 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.
- 60 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.
- 61 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

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

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

Allocation of Total Allowable Catches

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

Factors Determining Allocation

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

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

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

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

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

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

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

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

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

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

Allocation Models

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

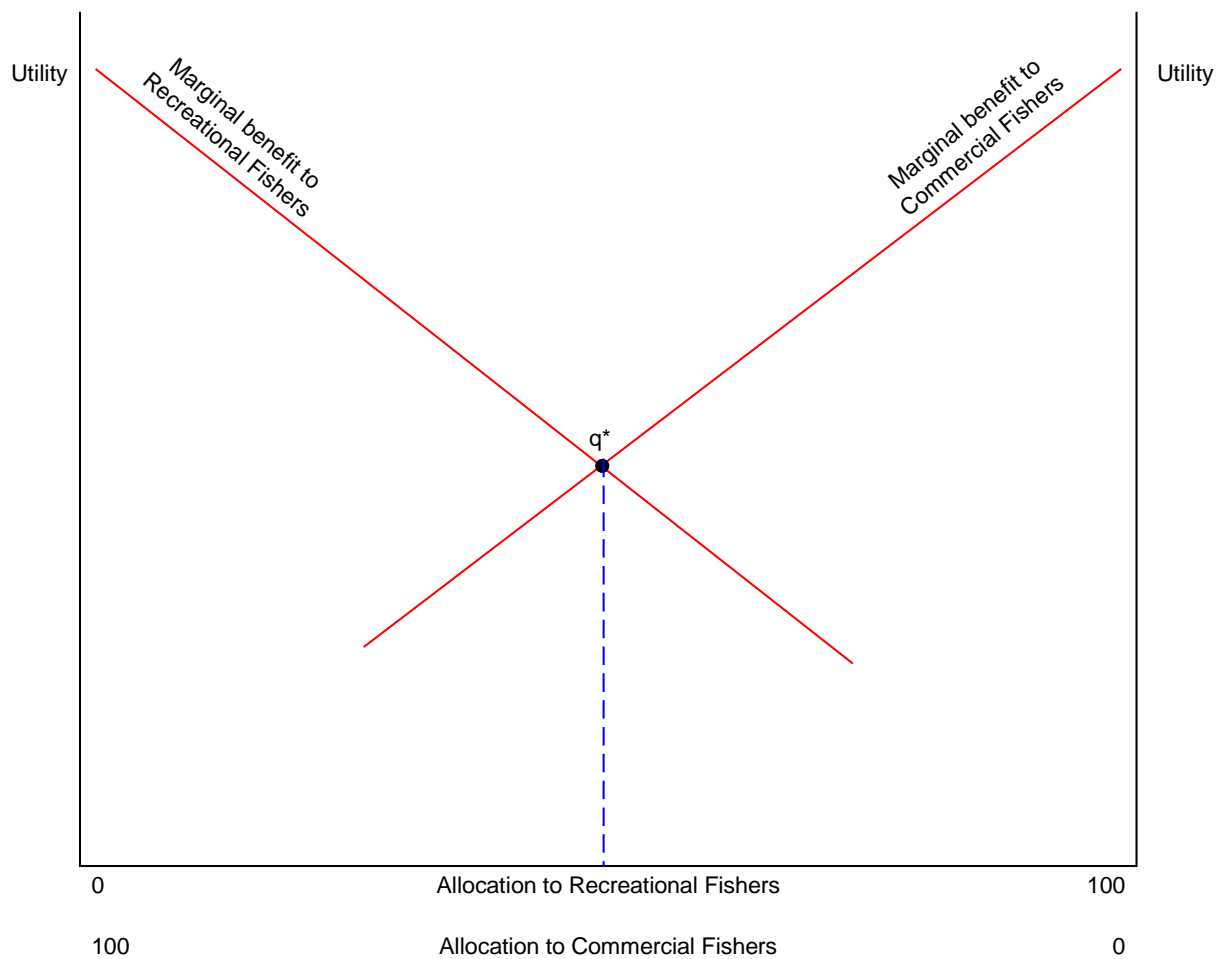
Claims based allocation

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

Utility based allocation

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

Figure 1: Determining the allocation between commercial and recreational fishers



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

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

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

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

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

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

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

Application of allocation models

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

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

Other Management Controls

- 109 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.
- 110 The species-specific sections set out those measures that currently apply, which are being retained as part of the management framework for the stock under the QMS. The general intent is for the species-specific sections not to undertake a wide-scale review of all existing measures or potential measures that could be adopted. The ideal opportunity to discuss such issues will arise when quota is allocated to fishers and potentially within the context of developing fisheries plans. However, where necessary, consideration of appropriate measures is outlined in each species-specific section.

Regulatory framework

- 111 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.

NORTH ISLAND FRESHWATER EELS (SFE, LFE) – INITIAL POSITION PAPER

Initial Position Paper

- 1 This section on setting sustainability measures for shortfin and longfin eel stocks has been developed for the purpose of consultation as required by s 12 of the 1996 Act.
- 2 This section should be read in conjunction with the Statutory Obligations and Policy Guidelines section, which sets out what the Minister of Fisheries is required to consider when making decisions in respect to the setting of sustainability measures under s 11 of the 1996 Act.

Overview

- 3 The Minister of Fisheries (the Minister) decided in September 2003 to introduce North Island eel stocks into the Quota Management System (QMS) from 1 October 2004. Introduction is to proceed on the basis of separate stocks for shortfin and longfin, each within four quota management areas (QMAs). The infrequently caught Australian longfin is included in the shortfin stock given closer biological characteristics with that species.
- 4 This paper sets out proposals for the sustainability measures and other management controls to be applied to the North Island eel fishery from the start of the 2004-05 fishing year commencing on 1 October 2004. The main proposals focus on the setting of total allowable catches (TACs), and the determination of how these catch limits are allocated for different harvesting purposes (ie, recreational, customary and commercial) at the time of introduction.
- 5 Each eel species forms a single biological stock in New Zealand waters, with spawning occurring outside the confines of the New Zealand Exclusive Economic Zone. However, for management purposes a number of stock units have been defined, with four of these for each species complex being in the North Island. The biological characteristics of eels means that the practicality of setting TACs based on the stock level that can produce the maximum sustainable yield is questionable. Accordingly, this paper sets out a case for listing the stock on the Third Schedule to the Fisheries Act, thereby enabling the TAC to be set at a level that better achieves the purpose of the Act than pursuing an MSY-based target. The proposed TACs are designed to arrest stock decline and provide a foundation for stock rebuilding to occur within the framework of the Quota Management System (QMS).
- 6 Proposed TACs are based on known or estimated levels of commercial, recreational, and customary catch, and all other sources of fishing related mortality using information from a 12 year period principally between 1990-91 and 2001-02. A range of information is assessed for each stock in determining the proposed TACs against the backdrop of the estimate of recent removals. This information was collated and assessed as part of the QMS introduction process. The eel fishery assessment

working group will meet on 25 February to review the information supporting TAC proposals.

- 7 The considerations incorporated into TAC recommendations include a range of biological, scientific and historical accounts that are interpreted by MFish as suggesting harvest levels for all stocks should be less than the estimate of recent average removals. Accordingly, MFish has proposed that TACs for North Island eel stocks should be between 5 and 25% less than the estimate of recent removals. Nevertheless, the proposed TACs allow for use of the fishery at levels similar to that experienced since 2000-01. Proposed TACs for longfin stocks incorporate higher reductions than those proposed for shortfin stocks, in recognition of the biological characteristics of this species, and its current fishery status.
- 8 Estimates of recreational catch have been made in the absence of quantitative data. They are low in relation to the sum of TACs. Estimates of customary catch are equivalent to recreational catch estimates. In setting allowances MFish propose that the existing customary catch should be provided for in full. Thereafter, the reductions required to fit all removals within the TAC have been prorated across the recreational and commercial sectors. The allowance proposed for other sources of fishing related mortality is also low in proportion to the overall use of each stock, and this means that proportional reductions would be meaningless.
- 9 The total allowable commercial catch (TACC) proposed for each stock is consequently less than the estimate of adjusted average commercial catch calculated using data from the period 1990-91 to 2001-02, and (depending on which option is recommended), between 5.1 and 9.2% less than the average commercial catch from the 2000-01 and 2001-02 fishing years. However the aggregate of the proposed TACCs is higher than the estimated commercial catch (510 tonnes) from the North Island in the most recent (2002-03) fishing year.
- 10 Other management measures proposed include a number of consequential amendments to regulations governing the commercial use of the fishery arising from the introduction of the North Island eel fishery into the QMS. An annual deemed value of \$8.00 is proposed, consistent with the Minister's policy for setting deemed values for high value fisheries.
- 11 As eels breed only once at the end of their long life, MFish acknowledges that it is essential that a sufficient number of mature eels escape to spawn. This is particularly the case for longfin females. To ensure that adequate escapement of mature eels occurs, MFish propose to prohibit fishing from selected catchments (Motu, Mohaka, and Wanganui) where eel populations are likely to contribute to that goal. MFish understands that commercial fishers generally support the promulgation of regulations for this purpose.
- 12 The impact of non-commercial fishing in the identified catchments is not considered to be at a level where the achievement of ensuring adequate escapement over the longer term would be compromised. On that basis it is not proposed to exclude non-commercial fishing from those areas.
- 13 MFish propose to extend the maximum size limit of 4 kg that applies to commercial fishers in the South Island to commercial fishing across all New Zealand fisheries

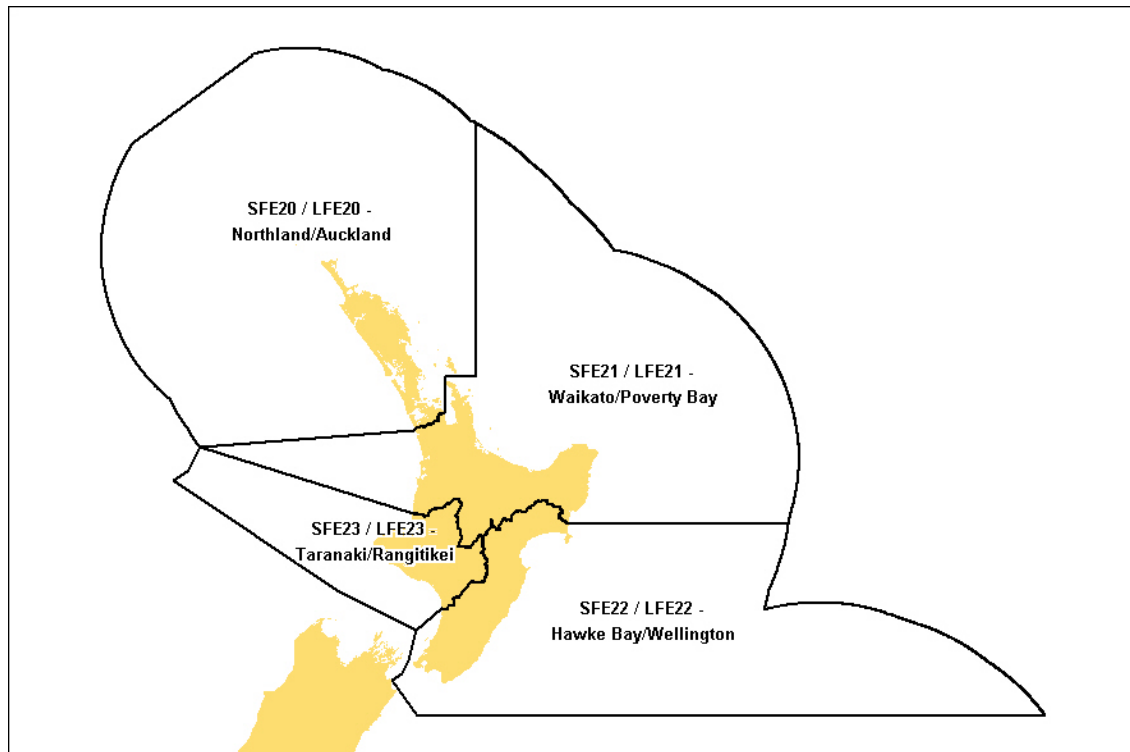
waters. Eels that reach this size will also assist with maintaining biological diversity given the changing diet of eels at a larger size.

- 14 In addition to the generic measures proposed, MFish proposes to recognise and provide for customary food gathering by Māori and recognise the special relationship between tangata whenua and places of importance for customary food gathering by prohibiting commercial fishing in the Taharoa Lakes (south of Kawhia), Whakaki Lagoon (east of Wairoa), Lake Poukawa (Te Hauke, inland from Hastings), and the Pencarrow lakes (Wellington). Again, MFish understands that commercial fishers generally support the promulgation of regulations for this purpose.
- 15 MFish propose to revoke the minimum net mesh size of 12 mm that may be used by commercial and non-commercial fishers to take eels. The minimum net mesh size is considered to devalue the catch through abrasions, and serve no obvious fisheries management purpose.

Introduction into the QMS

- 16 The North Island eel fishery accounts for approximately two-thirds of the national commercial catch and has been considered fully exploited since the 1970s. In general terms there have been no systematic or major changes in catch, effort, or management strategy over a reasonable length of time. In comparison, the phased introduction of the South and Chatham Islands eel fisheries into the QMS in 2000 and 2003 (respectively) has improved the management framework in those areas.
- 17 North Island stocks of shortfin eel and Australian longfin eel (*Anguilla australis* and *A. reinhardtii*; hereafter collectively referred to as shortfin eel), and longfin eel (*A. dieffenbachii*) have been gazetted for introduction into the QMS on 1 October 2004. The QMAs are outlined in Figure 1. The fishing year will be from 1 October through to 30 September in the following year, and total allowable commercial catches (TACCs) and annual catch entitlements (ACE) are to be expressed in kilograms greenweight.

Figure 1: Quota management areas for shortfin and longfin eel stocks



Key Issues to be Considered

- 18 The key matters for consideration for shortfin and longfin eel stocks in the North Island are:
- a) A life history based on breeding once at the end of their life following migration to breeding grounds in the South Pacific (or Coral Sea in respect of *A. reinhardtii*);
 - b) Each species is considered to form one biological stock throughout New Zealand, therefore observations in the more intensely studied South Island fishery are indicators of wider stock management issues;
 - c) The general decline in the state of the fishery and the need to correct this situation, particularly for the endemic longfin;
 - d) An inability to apply conventional stock assessment techniques as the basis for recommending appropriate catch limits for components of a single biological stock;
 - e) The important role that eels are considered to play in shaping food web relationships between species, particularly in the freshwater environment;
 - f) The significance of the fishery resource to Māori for recreational and traditional cultural purposes (ie, hui, tangi), and the integral part that the species plays in tikanga or customary practices and lore, and the Crown's obligations to recognise and provide for customary interests;
 - g) A lack of quantitative estimates of non-commercial catch or other sources of mortality caused by fishing; and

- h) Stock assessment information supporting TAC proposals will be reviewed during the consultation phase by the eel fishery assessment working group on 25 February 2004.

List of Management Options

- 19 MFish proposes TACs, non-commercial and other allowances, and TACCs (all in tonnes) for shortfin and longfin stocks in the North Island as outlined in Table 1.

Table 1: Estimated total annual recent removals and proposed TACs, TACCs, and allowances for shortfin and longfin in the North Island (tonnes).

Stock	Estimated total annual recent removals ¹	Option	TAC	Customary allowance	Recreational allowance	Other sources of mortality	TACC
SFE 20	248	i	236	30	25	4	177
		ii	223	30	23	4	166
LFE 20	86		73	10	7	2	54
SFE 21	236		212	24	20	4	164
LFE 21	141.5		106	16	10	2	78
SFE 22	118.7		101	14	10	2	75
LFE 22	56.8		45	6	4	2	33
SFE 23	27.3		25	5	4	2	14
LFE 23	58.4		50	14	9	2	25

- 20 Additional management controls proposed include:
- The addition of North Island eel stocks onto the Third Schedule to the Fisheries Act 1996;
 - Revoking regulation 51 of the Fisheries (Commercial Fishing) Regulations 2001 which states that commercial fishers may only take eels where they are specifically authorised to do so on their fishing permit;
 - The extension of the maximum commercial size limit of 4 kg across the whole country (presently South Island fisheries waters only, as provided by regulation 50 of the Fisheries (Commercial Fishing) Regulations 2001);
 - The prohibition of commercial fishing from particular catchments in order to facilitate spawning escapement;
 - The prohibition of commercial fishing from particular sites in order to provide for customary food gathering by Māori and to recognise the special relationship between tangata whenua and places of importance for customary food gathering;
 - Amending the Fisheries (Reporting) Regulations 2001;

¹ This estimate represents a summation of adjusted average commercial catch based on most or all of the 12 fishing years between 1990-91 and 2001-2002, plus estimates of non-commercial catch and other sources of fishing related mortality. It provides a reference for assessing the extent of catch reductions anticipated under the proposed TACs.

- g) Revoking that part of regulation 31(6) of the Fisheries (Commercial Fishing) Regulations 2001, and similarly that part of regulation 6 of the Fisheries (Amateur Fishing) Regulations 1986, which both state that fishers must not take eels using a net mesh size of less than 12 mm; and
- h) Setting the annual deemed values.

Total Allowable Catches

- 21 Most fisheries in New Zealand are managed in accordance with the primary management strategy provided under s 13 of the Fisheries Act 1996 (the Act). Eel stocks in the South Island and Chatham Islands are both managed under s 13, with provision for alternative TACs to be set under s 14. Section 13 requires TACs to be set either to maintain stocks at or above a level that can produce the maximum sustainable yield (MSY), having regard to the interdependence of stocks, or alternatively to allow the biomass for such stocks to move towards such a level.
- 22 Estimates of maximum constant yield (MCY) provide one way of viewing MSY, and MCY can be estimated for the entire New Zealand eel fishery from commercial catch data. MCY calculations can be further refined using information about commercial fishing effort and natural fishing mortality (Method 4, Annala *et al.* 2003). However MCY cannot be readily estimated for each eel stock to be managed under the QMS. This is in part due to a paucity of non-commercial catch data, and the inability to estimate non-fishery induced estimates of mortality arising from land management practices and the modification of waterways. But also because the eel stock is broken down into a number of management units.
- 23 Eels have a long lifespan and, when combined with their once only breeding strategy, this makes them vulnerable to the effects of over-fishing. The significant downward trend over the last 12 years in commercial catch-per-unit-effort (CPUE) for longfin eel stocks is a cause for concern and suggests that MCY estimates for this species calculated from commercial catch statistics need to be treated cautiously. Estimates of non-commercial catch need to be added to the MCY estimates to derive sustainable catch limits for each stock.
- 24 Section 14 of the Act provides an alternative means for setting a TAC where the Minister is satisfied that the purpose of the Act would be better achieved than by setting a TAC under s 13. The Act provides for s 14 to be employed as a management strategy under three specified scenarios; if it is not possible to estimate MSY because of the biological characteristics of the species, a catch limit for New Zealand has been determined as part of an international agreement, or the stock is managed on a rotational or enhanced basis.
- 25 The fit of the New Zealand eel fishery to the three criteria provided for under s 14 can be summarised as follows:
 - a) As noted, there are difficulties with estimating MSY for eel stocks because of the biological characteristics. Annala *et al.* (2003) provides a method for estimating an overall MCY, often an accepted biological reference point for the commercial element of a fishery;

- b) There is no international agreement setting a catch limit for New Zealand eel stocks; and
 - c) Eel fisheries are not currently managed on an enhanced or rotational fishing basis, however MFish acknowledges there is potential for this to occur.
- 26 As noted, MFish considers criterion (a) above is applicable to the eel fishery at this time, and there is potential for criterion (c) to apply at a later date. There are currently several enhancement projects underway. For example, commercial eel interests undertake fish passage mitigation and enhancement activities in the Waikato River hydro lakes, and non-commercial interests do so in the Rangitaiki River, eastern Bay of Plenty. Both of these initiatives involve only a small part of the same stock. Further, several groups have indicated a desire to develop a rotational fishing strategy for various eel fisheries, but proposals are insufficiently advanced to contemplate the need, if required, for regulatory support at this time.
- 27 Adopting an enhancement or rotational fishing approach would require intensive management and MFish currently has insufficient capacity to investigate, design and implement such a strategy. For example, ancillary actions that could be taken to assist the fishery (eg, improvements in fish passage, habitat restoration, enhancement) will require considerably more effort across a broader area for these measures to be of consequence at the level of the stock. Importantly, the Act provides fishery interests the ability to implement fine-scale management through fisheries plans approved by the Minister under s 11A.
- 28 MFish concludes that North Island eel stocks should be included on the Third Schedule to the Act and TACs set under s 14 in order to better meet the purpose of the Act than pursuing an MSY-based target at this time. The application of s 14 as a supporting mechanism for rotational or enhancement strategies is also acknowledged. The overriding objective behind the proposal to set TACs under s 14 for the North Island eel stocks is to improve the stock structure and abundance over the medium term, while bringing a halt to any decline in the fishery over the short term.
- 29 A component of the s 14 management strategy is to establish a small number of refuges within the North Island. The chosen areas are designed to have a low impact on the existing fishery, while ensuring that eels are able to spawn.
- 30 Under a s 13 management strategy, the legislation provides for a temporary increase to a stock's TAC during a fishing year where that stock is included on the Second Schedule. A comparable in-season increase in a TAC established under s 14 can also be made where a stock is listed on the Third Schedule. MFish does not consider that eels, being relatively long-lived, present a compelling case for in-season management at this time.

Rationale for Proposed Total Allowable Catches

- 31 There are no estimates of biomass for any eel stock, apart from those initially calculated for major river catchments and lakes in the South Island. Where biomass estimates for areas within the North Island exist, they relate to small waterways principally in the Wellington region (see Jellyman (1997) for some further site information). Consequently, there is no fishery independent measure at this time to

assess the status of the stocks. MFish considers that setting TACs against the broader management objective provided for under s 14 of the Act increases flexibility and will provide a better framework to enable the stock structure and abundance to improve over the medium term, while bringing a halt to any recent decline in the fishery over the short term.

- 32 In considering the proposed approach to TAC setting, it is pertinent to consider the changes in biomass that have been documented. The fishery was used historically in a principally non-commercial manner and a significant commercial fishery has only developed in recent decades (post 1960s). This is illustrated by reference to historical survey information collected in the late 1930s to 1950s, prior to the mid-1960s development of the commercial fishery.
- 33 High biomasses of up to 685 kg/km and at least 300 large female longfin/km were recorded from particular Southland streams or rivers, whereas the current mean biomass estimates for the Southland eel statistical areas (ESAs) are estimated at 29 kg/km. In the North Island, comparative biomass estimates made in the early 1950s for longfin averaged 166 kg/km in the Horokiwi Stream, 173 kg/km in the Wainuiomata Stream, and between 5-50 kg/km from a 1961 and 1962 survey of mostly longfin from the upper Wanganui system.
- 34 In considering what the biomass levels might have been when the fishery was less exploited than in recent decades, it is also of assistance to note the commercial catch taken in the early days of the commercial fishery's development. For example, in 1979, commercial fishers harvested 85 tonnes from Lake Waikare and 60 tonnes from Lake Whangape (Waikato). In earlier years, it is understood that about 200 tonnes were taken from Lake Waikare alone. Commercial catch from Lake Waikare is an order of magnitude less than that today, and fishing in Lake Whangape is no longer permitted.
- 35 There is no overall catch limit in place for North Island eel stocks. Annala *et al* (2003) notes that the previous national estimate of MCY for all species combined is no longer appropriate because of the shift to species-specific management of eels. However, updated stock-specific information has been extracted from the MFish catch and effort database and analysed in advance of QMS introduction. While data forming the basis for the MCY calculation has yet to be ratified by the eel fishery assessment working group (although the basic methodology for calculating MCY has previously been used and accepted), updated estimates of MCY for the commercial fishery have been derived based on adjusted average commercial catch estimates. In accordance with Method 4 of the Report from the MFish Stock Assessment Plenary ($MCY = c Y_{av}$ (where the natural variability factor 'c' is 1.0 (ie, very low natural mortality rate), and Y_{av} is the average catch over an appropriate period)), such estimates are equivalent to the adjusted average commercial catch estimates made by commercial fishers.
- 36 As noted, the new stock specific MCY estimates need to be treated with caution. There may not be data from a sufficient number of years available in proportion to the exploited life span of the species, particularly if catch in any particular year is unrepresentative of the typical harvest from the fishery. In addition, the MCY estimates relate only to the commercial use of the fishery. The CPUE indices derived from the commercial use of the fishery are declining for several stocks. For the

purposes of setting TACs, MFish has interpreted annual catch and CPUE information for the respective stocks from 1990-91 through to 2001-02, and the incomplete 2002-03 fishing year.

- 37 In the absence of more comprehensive information on the extent of the resource in each stock, the proposed TAC is based on known or estimated levels of commercial, recreational, and customary catch, and all other sources of fishing related mortality for the period since 1990-91. Where significant local factors are known to exist that are likely to influence the proposed basis for TACs for particular stocks (eg, extensive areas that have not been fished over the longer term), these have been taken into account in any adjustment to the proposal.
- 38 Estimates of commercial catch are based on the adjusted average commercial catch from as many fishing years as possible between 1990-91 and 2001-02. Averages are adjusted (increased) to account for an 18.8% difference between a commercial fisher's estimated catch (used here to attribute catch recorded by ESA to the new QMAs) and the processor's estimates of catch landed into their factories. Further details of the basis of the calculations for each stock are provided in Annex Two.
- 39 Quantitative estimates of recent recreational catch at the level of the stock are not available; although it is generally accepted that catch for these purposes is relatively low in comparison to the level of commercial catch for most stocks. Māori are the main recreational fishing participants (the interpretation of recreational fishing encompasses subsistence fishing), but there has been an increased interest in the resource by new immigrants, particularly in the Auckland metropolitan area over the 1990s. The distribution of the Māori population is also likely to influence the estimates of recent catch made for some stocks.
- 40 Quantitative estimates of recent customary catch at the level of the stock are not available. There may be two main reasons for this. Either kaitiaki do not provide copies of authorisations issued under regulation 27 of the Fisheries (Amateur Fishing) Regulations 1986 to MFish (no statutory obligation to do so), or there may be a general lack of authorisations issued. While fishing for customary purposes in freshwater throughout the North Island (and Chatham Islands) is confined to traditional hui and tangi only, MFish considers that estimates of catch taken for customary purposes should be at least similar to recreational estimates, reflecting the importance of this resource for such customary activities even today.
- 41 Quantitative estimates of other sources of fishing related mortality (illegal fishing, dumping of dead eels) are not available at the stock level, but probably occur on a relatively small scale. A nominal level is proposed in proportion to the likely size of the stock, the number of people who may utilise the stock, and the likely distribution of recipients of any illegal catch.
- 42 MFish notes that the eel fishery is subject to a number of other sources of mortality not related to fishing, which cannot be addressed under the Fisheries Act. For example, a high percentage of large migrating female eels are killed by the turbines of hydro-electric power stations. Similarly, an assessment made in 1983 on the historical activities associated with catchment flood control noted that in excess of 600,000 ha of flood plain areas throughout the country were 'freed from flooding'. Of that area, about 283,453 ha were subject to historical flood control works in the North

Island. Such historical land management practices and water resource use activities are likely to have had an impact on the size of the shortfin and longfin resource prior to the subsequent fishing-related impacts.

- 43 Having determined the likely level of recent removals from each stock, an assessment is made on a stock-by-stock basis about whether such harvest levels are sustainable, consistent with the desired management objective. Additional information relevant to the stock is considered and adjusted average estimated catch has been reduced to reach the proposed TACs. The proposed TACs are based on a qualitative percentage reduction factor of 5, 10, 15, 20 or 25% depending on the significance of the information considered to be important, before being rounded to the nearest whole tonne.
- 44 The percentage reduction factor adopted is based on both the number and significance of issues considered pertinent to the stock. For example, a significant decline in CPUE in one stock could lead to a larger reduction factor being applied, than a gradual decline in CPUE in related stocks for that species. Generally, the percentage reduction factor adopted is around 10% for shortfin stocks, and 20% for longfin stocks.
- 45 The reductions envisaged relate to the estimated total annual recent removals for the period 1990-91 to 2001-02 rather than current catch. The proposed TACs are likely to be a lot closer to current catch (with some exceptions) than the percentage reductions made to estimated total annual recent removals. This is because the commercial catch across the North Island was generally higher earlier in the 12-year period used.
- 46 The qualitative reduction factor used is drawn from assessing a combination of:
- a) changes in size frequency of eel populations such that large eels are found in significantly lower numbers than earlier times. This situation may be compounded by insufficient refuges or cover as a result of habitat modification in the North Island;
 - b) available habitat to support eel populations is much reduced from historical times, and habitat modification has continued to be a factor in altering the distribution and abundance of eel populations in more recent decades (some changes may have been positive, but many are likely to have been negative);
 - c) a life history characteristic where each eel species forms a single stock and only eels that escape fishing breed (at the end of their life). Female eels in particular are typically vulnerable to fishing activity for several decades before they are ready to migrate. The age of maturity is likely to gradually increase with increasing latitudes given the greater inactivity of eels in colder climates;
 - d) skewed sex ratios in favour of male eels in some heavily fished areas of the lower South Island (in contrast to historical information), and the potential that similar ratios may be found in heavily fished areas around the North Island;
 - e) changes in the species composition of landed commercial catch since the development of the commercial fishery; the proportion of longfin in the commercial catch has noticeably reduced;
 - f) a trend of mostly declining CPUE indices throughout the country, particularly for longfin;

- g) anecdotal observations of glass eel and elver recruitment suggesting a significant decline since the 1970s, whereas more recent quantitative assessments (1995 to 1999) are largely equivocal. Importantly, the total migration run of elvers is now able to be monitored in some rivers of the lower South Island;
- h) qualitative accounts of the historical use of the resource in comparison to recent times, and anecdotal observations made from a wide range of fishery interests over many years about the effort required to harvest a reasonable catch;
- i) eels generally change their diet to fish once they reach a size of about 45 cm so it is important that a reasonably balanced population structure is maintained. The average size of eel taken by commercial fishers in the North Island is typically between 45 and 70 cm; and
- j) other non-generic observations made while managing the fishery (eg, any effect of increased number of agents using fishing permits prior to implementation of further effort controls in early and mid-1990s).

47 Setting the TAC at levels lower than the estimated removals over the last decade should enable the stock to halt observed declines in abundance, as well as improve the stock structure. TACs set at such levels are more likely to be sustainable over the medium term than harvest levels experienced over the history of the fishery. The Department of Conservation (DoC) classifies longfin as being in ‘gradual decline’ (expected decline in abundance of 5-30% over the next ten years and into the future if the current threat continues). This view in part reflects the impact of non-fishing effects on habitat, but also adds weight to the case for reduction in recent catch. MFish understands that all stakeholders generally accept the case for a reduction at the time of QMS introduction. MFish invites comment in submissions on the percentage reductions chosen.

48 An overview of the approximate percentage difference between the estimated total annual recent removals and the proposed TACs is summarised in Table 2.

Table 2: Comparison of approximate percentage difference between estimated total annual recent removals (ie, 1990-91 to 2001-02) and proposed TACs for North Island eel stocks.

Stock	Estimated total annual recent removals	Option	Proposed TAC	Approximate percentage difference
SFE 20	248	(i)	236	5
		(ii)	223	10
LFE 20	86		73	15
SFE 21	236		212	10
LFE 21	141.5		106	25
SFE 22	118.7		101	15
LFE 22	56.8		45	20
SFE 23	27.3		25	10
LFE 23	58.4		50	15

49 Depending on the relationship between the TAC set, and the response from the stock to that level of harvest, there should be improvements in the availability of the stock for fishery interests, as well as efficiency gains. This is likely to be of particular

consequence to fishery interests who are not as mobile as others, or have a special relationship with a particular area for harvesting purposes. Post introduction, the QMS framework provides a means of addressing concerns through the development of stock strategies and/or fisheries plans. Once approved, these plans or strategies must be had regard to when making decisions under the Resource Management Act.

SFE 20

- 50 MFish proposes two options for setting a TAC for SFE 20; either (i) 236 tonnes or (ii) 223 tonnes.

Estimate of total annual recent removals

- 51 The adjusted average commercial catch taken from this stock for the period 1990-91 through to 2001-02 is 184 tonnes.
- 52 The greater Northland and Auckland areas are quite accessible for recreational fishing purposes, and such fishing occurs throughout the QMA. There is a significant Māori population in Northland (c. 300,000), and many rural communities harvest the eel resource. Some Māori note that they no longer go fishing as much as they have in the past. Others continue to undertake harvesting at particular times of the year, including the hekē or migrating season. At such times, a considerable number of eels may be harvested. Most commercial fishers avoid fishing areas of known importance to non-commercial harvesters in Northland.
- 53 The Asian community is more active in the southern part of the stock's range. Census statistics from 2001 indicate that 240,000 people in New Zealand are of Asian descent. A significant proportion of these people reside in the greater Auckland area. A fraction of that community participates in the eel fishery around the greater Auckland area. The level of recreational fishing undertaken by non-Māori or non-Asian ethnic groups is not considered to be significant for this stock.
- 54 Overall, MFish considers that the level of recent utilisation by Māori, Asian and other ethnic groups for recreational purposes is likely to be in the order of 40 tonnes per annum for both shortfin and longfin, with ~ 75% of the catch made up of shortfin.
- 55 The use of eels on a regular basis for customary purposes is more prevalent in parts of Northland (eg, between Kaihoke, Whangarei and Dargaville). MFish considers that the level of recent utilisation for both shortfin and longfin is likely to be in the order of 40 tonnes per annum. Based on the likely proportion of shortfin to longfin within this stock, MFish suggests that the customary harvest of shortfin may approximate 30 tonnes per annum.
- 56 In the absence of specific information on other sources of fishing related mortality to the stock, a quantity of 4 tonnes per annum is considered a reasonable estimate, reflecting a view that illegal activity and other sources of fishing related mortality is relatively low. Exceeding bag limits when fishing for recreational purposes, and taking eels beyond such levels approved for customary purposes are likely to be two contributors to other sources of fishing related mortality. Taking eels for the purpose of sale on the domestic market without authority may also be a feature in this QMA, although is not likely to be as significant. The tonnage ascribed to other sources of

fishing related mortality for the shortfin stock is likely to reflect the relative abundance of shortfin to longfin found in the stock, and not any particular bias toward one species over the other.

- 57 A summation of the likely annual removals from the stock based on the above estimates equates to 248 tonnes.

Assessment of risk

- 58 Adoption of a TAC at a level of 248 tonnes may not better meet the purpose of the Act than an MSY-based target yield. There is some risk that the obligations for stock management would not be met if the TAC was set at this level. This assessment is based on the additional information derived from:
- a) CPUE trends in the commercial fishery;
 - b) comparative size frequency information derived from market sampling of the commercial catch;
 - c) declining trends in interdependent shortfin fisheries; and
 - d) oral accounts of the nature and extent of the fishery in Northland/Auckland which suggest that there is a paucity of large sized eels in the fishery.
- 59 The standardised CPUE index for the commercial use of this stock indicates that CPUE has been maintained, or may have slightly improved, since 1990-91 (Figure 2, Annex Two). Unstandardised CPUE for the total eel catch taken from Northland and Auckland ESAs in the period from 1983-84 to 1988-89 was slightly higher (5.7-7.0 kg/net night) than the recent standardised CPUE index for total eel catch in the Northland/Auckland QMA (4-5 kg/lift).
- 60 The CPUE trend over the 1990s is slightly less than experienced in the 1980s. This suggests that the biomass may now be below the level that can produce MSY, despite relatively fast shortfin growth rates in estuarine and marine areas of this stock. This is because the slower growth rates in most areas where eels are harvested in Northland (ie, mid-catchments) are more typical of northern populations. Some consideration of the overall goal of rebuilding interdependent stocks, particularly shortfin in other areas of the country (eg, SFE 22) as well as other species, is also appropriate. Taking these matters into account, one option would be to propose a TAC of 236 tonnes, representing slightly less than a 5% reduction on the overall estimate of recent harvest.
- 61 Market sampling of commercial catch between 1995-98 indicated that shortfins generally took increasingly longer to reach a large size (above 500 g) the further from the sea they were caught, with the exception of the highlands of upper catchments where densities were likely to have been lower (age range between 9-22 years). Shortfin reached a large size at 10 years old in the sea, 15 years in estuaries, and in the lower river and tributaries through to the upper main stem in pasture, an age between 16-25 years. Non-commercial fishery interests in particular have a preference for eels of a larger size.
- 62 Accordingly, MFish proposes a second TAC option for the SFE 20 stock, at 223 tonnes. Option two would allow the stock, and potentially the greater shortfin

fishery across New Zealand, an opportunity to re-build within a shorter timeframe. This represents slightly less than a 10% reduction on the overall estimate of recent harvest.

- 63 The TAC, once established, can be further adjusted once fishery interests have better quantified what improvements in the quality and quantity of eels they might collectively seek and how that might be expressed (eg, a certain population size structure and/or CPUE target figure). Obtaining better estimates of the level of non-commercial removals from the stock would also assist with TAC determination.

LFE 20

- 64 MFish proposes a TAC for LFE 20 of 73 tonnes.

Estimate of total annual recent removals

- 65 The adjusted average commercial catch taken from this stock for the period 1990-91 through to 2001-02 is 64 tonnes.
- 66 Based on the likely proportion of shortfin to longfin within the LFE 20 QMA, MFish estimates that the recreational harvest of shortfin to be around 10 tonnes per annum of the recreational fishing for eels from this QMA (ie, 40 tonnes – see discussion in SFE 20 section).
- 67 Based on the likely proportion of shortfin to longfin within the LFE 20 QMA, MFish suggests that the customary harvest of longfin may approximate 10 tonnes per annum of the estimate of customary fishing for eels from this QMA (ie, 40 tonnes – see discussion in SFE 20 section).
- 68 The assessment of the other sources of fishing related mortality provided for the SFE 20 stock is equally likely to apply to the LFE 20 stock. The tonnage ascribed to other sources of fishing related mortality for this stock is likely to reflect the relative abundance of shortfin to longfin found in the stock. In the absence of specific information, a quantity of 2 tonnes per annum is considered a reasonable estimate, reflecting a view that illegal activity and other sources of fishing related mortality are relatively low.
- 69 Summation of the likely annual removals from the stock based on the above estimates equates to 86 tonnes.

Assessment of risk

- 70 Adoption of a TAC at a level of 86 tonnes may not better meet the purpose of the Act than an MSY-based target yield. There is some risk that the obligations for stock management would not be met if the TAC was set at this level. This assessment is based on the additional information derived from:
- a) CPUE trends in the commercial fishery;
 - b) comparative size frequency information derived from market sampling of the commercial catch;
 - c) declining trends in interdependent longfin fisheries; and

- d) oral accounts of the nature and extent of the fishery in Northland/Auckland which suggest that there is a paucity of large sized eels in the fishery.
- 71 The standardised CPUE index for the commercial use of this stock indicates that CPUE has been relatively stable, although the index shows a slight decline in the 2001-02 and incomplete 2002-03 fishing year (Figure 2, Annex Two). MFish notes that unstandardised CPUE for the total eel catch taken from Northland and Auckland ESAs in the period from 1983-84 to 1988-89 was slightly higher (5.7-7 kg/net night) than the recent standardised CPUE index for total eel catch in the Northland/Auckland QMA (4-5 kg/lift).
- 72 Market sampling of commercial catch conducted between 1995-98 indicated that longfin are less likely to be found in lowland areas such as estuarine areas and the lower main stems of rivers (eg, Wairoa River, where historically they were found in greater numbers), and that longfin grew more slowly in the upper part of catchments, with the mean age being between 17-19 years for a mean weight of 226-239 g (ie, a relatively small sized eel). Accordingly, MFish does not consider that this level of harvest is likely to be sustainable over the longer term, or would maintain the stock at or above a level that best meets the purpose of the Act. This goal would have a better chance of being achieved if the initial level of removals from the LFE 20 stock were set below the existing levels of harvest.
- 73 MFish proposes that a TAC for the LFE 20 stock set at 73 tonnes should allow the fishery an opportunity to re-build. This represents slightly more than a 15% reduction on the overall estimate of recent harvest.

SFE 21

- 74 MFish proposes a TAC for SFE 21 of 212 tonnes.

Estimate of total annual recent removals

- 75 The adjusted average commercial catch taken from this stock for the period 1990-91 through to 2001-02 (excluding 1994-95 and 1995-96 data) is 184 tonnes. The commercial fishery is predominantly based within the Hauraki and Waikato areas, and these areas are fished on a more frequent basis than in the Bay of Plenty/Poverty Bay areas. This is partly because the resource is not as accessible in these eastern zones, but also because few commercial fishers have historically operated there.
- 76 The resource within the QMA is reasonably accessible to non-commercial interests. Some Māori may not have had traditional access to the sea and may be more reliant on inland resources for customary fishing purposes.
- 77 The human population around the Waikato region is expected to grow faster than the national average. Similarly, projections based on census figures suggest that people with Māori descent could make up 23% of the total Waikato population by 2011. However, this growth may be more obvious in urban areas (eg, Hamilton City, Thames) rather than rural areas (eg, Waipa district). Similar population growth is evident in the western Bay of Plenty. Māori are a significant component of the community in the eastern Bay of Plenty around to Poverty Bay. The Asian

community, who reside principally in Auckland, also access the resource in the northern part of the QMA (north Waikato to Firth of Thames rivers).

- 78 The level of recreational fishing undertaken by non-Māori or non-Asian ethnic groups is not likely to be significant for this stock. MFish considers that the level of recent utilisation by Māori, Asian and other ethnic groups for recreational purposes is likely to be in the order of 40 tonnes per annum for both shortfin and longfin. Based on the likely proportion of shortfin to longfin within this stock, MFish suggests that the recreational harvest of shortfin may approximate 24 tonnes.
- 79 The use of eels on a regular basis for customary purposes is most prevalent in parts of the Waikato and eastern Bay of Plenty through to Poverty Bay. Nevertheless, the quantity used for this purpose is still likely to be of overall significance (for example see Ngati Maniapoto 1997 survey results as outlined in Annex Two). MFish considers that the level of recent utilisation for both shortfin and longfin is also in the order of 40 tonnes per annum. Based on the likely proportion of shortfin to longfin within this stock, MFish suggests that the customary harvest of shortfin may approximate 24 tonnes.
- 80 The assessment of the other sources of fishing related mortality provided for the SFE 20 stock is equally likely to apply to the SFE 21 stock. The tonnage ascribed to other sources of fishing related mortality for this stock is likely to reflect the relative abundance of shortfin to longfin found in the stock. There is not likely to be any selectivity associated with either of the eel stocks within the QMA as it relates to estimates of other sources of fishing related mortality. In the absence of specific information, a quantity of 4 tonnes is considered a reasonable estimate, reflecting a view that illegal activity and other sources of fishing related mortality are relatively low.
- 81 A summation of the likely removals from the stock based on the above estimates equates to 236 tonnes.

Assessment of risk

- 82 Adoption of a TAC at a level of 236 tonnes may not better meet the purpose of the Act than an MSY-based target yield. There is some risk that the obligations for stock management would not be met if the TAC was set at this level. This assessment is based on the additional information derived from:
- a) CPUE trends in the commercial fishery;
 - b) comparative size frequency information derived from market sampling of the commercial catch;
 - c) declining trends in interdependent shortfin fisheries;
 - d) oral accounts of the nature and extent of elver runs in the 1970s in comparison to current times; and
 - e) oral accounts of the nature and extent of the fishery in Waikato/Poverty Bay which suggest that there is a paucity of large sized eels in the fishery.
- 83 Commercial interests have intensively fished the Waikato area since the fishery commenced in the 1960s, and all fishery interests acknowledge that the population

structures and relative distribution and abundance of each species have changed considerably since that time.

- 84 The standardised CPUE index for the commercial use of this stock indicates that CPUE has undergone a slight decline over the period (Figure 4, Annex Two). Unstandardised CPUE for the total eel catch taken from Hauraki, Waikato, Bay of Plenty and Poverty Bay ESAs in the period from 1983-84 to 1988-89 was slightly higher (3.1-6.2 kg/net night) than the recent standardised CPUE index for total eel catch in the Waikato/Poverty Bay QMA (3-4 kg/lift).
- 85 Market sampling of commercial catch undertaken between 1995-98 indicated that shortfin exhibited poor growth in the tributaries of the lower stem of the Waikato River, with mean age being 14 years with a mean weight of 221 g. Commercial fishers acknowledge that in several of these lower Waikato waterways, eel populations (principally shortfin) may appear to be relatively numerous, but their growth is 'stunted' given the relatively high densities and resultant competition for food. Ensuring an increase in the proportion of large eels would assist this situation given their more prominent habit of feeding on fish at increasingly large sizes. The market condition of these populations is generally considered to be of low quality, and commercial fishers have partially avoided these areas because of this reason. Growth rates reduced further for shortfin populations in upper catchments, taking 18 years to reach a mean weight of 217 g.
- 86 However, there are some areas in the QMA that are likely to be more productive. Growth is much faster in the Firth of Thames and estuarine parts of adjacent rivers – at an age of 8 years, a mean weight of 473 g is reached, although the time to attain this weight increases to 13 years in the lower main stems of these rivers. Similarly, at the Waikato River estuary, shortfin can reach a mean weight of 757 g in approximately 16 years, or a similar mean weight in 12 years for the mid catchment. In some Waikato ponds, a relatively large mean weight of 848 g can be attained in just 7 years. Relatively fast growth rates were also observed in the enhanced (and previously low density) Waikato hydro lakes, taking about 6 years to reach a mean weight of 267 g.
- 87 MFish proposes a TAC for the SFE 21 stock to be set at 212 tonnes. This level should allow the stock an opportunity to re-build over the medium term. This represents slightly more than a 10% reduction on the overall estimate of recent harvest.

LFE 21

- 88 MFish proposes a TAC for LFE 21 of 106 tonnes.

Estimate of total annual recent removals

- 89 The adjusted average commercial catch taken from this stock for the period 1990-91 through to 2001-02 is 107.5 tonnes. The same demographic features regarding access to the fishery as noted for the SFE 21 stock similarly apply to the LFE 21 stock.
- 90 Based on the likely proportion of shortfin to longfin within the LFE 21 QMA, MFish estimates the recreational harvest of longfin to be around 16 tonnes per annum, being slightly more than one-third of the estimate of recreational fishing for eels from this QMA (ie, 40 tonnes – see discussion in SFE 21 section).

- 91 Similarly, MFish suggests that the customary harvest of longfin to be around 16 tonnes per annum, being slightly more than one-third of the estimate of customary fishing for eels from this QMA (ie, 40 tonnes – see discussion in SFE 21 section).
- 92 The assessment of the other sources of fishing related mortality provided for the SFE 20 stock is equally likely to apply to the LFE 21 stock. The tonnage ascribed to other sources of fishing related mortality for this stock is likely to reflect the relative abundance of shortfin to longfin found in the stock. There is not likely to be any selectivity associated with either of the eel stocks within the QMA as it relates to estimates of other sources of fishing related mortality. In the absence of specific information, a quantity of 2 tonnes per annum is considered a reasonable estimate, reflecting a view that illegal activity and other sources of fishing related mortality are relatively low.
- 93 A summation of the likely removals from the stock based on the above estimates equates to 141.5 tonnes.

Assessment of risk

- 94 Adoption of a TAC at a level of 141.5 tonnes may not better meet the purpose of the Act than an MSY-based target yield. There is some risk that the obligations for stock management would not be met if the TAC was set at this level. This assessment is based on the additional information derived from:
- a) CPUE trends in the commercial fishery;
 - b) comparative size frequency information derived from market sampling of the commercial catch;
 - c) simulations of the effects of commercial activity on the species composition of a Waikato pastoral stream;
 - d) declining trends in interdependent longfin fisheries;
 - e) oral accounts of the nature and extent of elver runs in the 1970s in comparison to current times; and
 - f) oral accounts of the nature and extent of the fishery in Waikato/Poverty Bay which suggest that there is a paucity of large sized eels in the fishery.
- 95 Commercial interests have intensively fished the Waikato area since the fishery commenced in the 1960s, and all fishery interests acknowledge that the population structures and relative distribution and abundance of each species have changed considerably since that time. In particular, longfin formed a significant proportion of the commercial fishery in many lowland areas in the Waikato in the 1960s and 1970s. Similar trends of historical changes in species composition are likely in the adjacent Hauraki area, and perhaps to a lesser extent the Bay of Plenty. As access to many of the waterways in the Waikato and Hauraki area is relatively easy, commercial eel fishing has probably had a significant impact on the proportion of longfin found in commercial catch from these areas.
- 96 The standardised CPUE index for the commercial use of this stock indicates that CPUE has been steadily declining (Figure 4, Annex Two). Unstandardised CPUE for the total eel catch taken from Hauraki, Waikato, Bay of Plenty and Poverty Bay ESAs

in the period from 1983-84 to 1988-89 was slightly higher (3.1-6.2 kg/net night) than the recent standardised CPUE index for total eel catch in the Waikato/Poverty Bay QMA (3-4 kg/lift).

- 97 Market sampling of commercial catch undertaken between 1995-98 indicated that growth rates for longfin were better in the estuary of the Waikato River (10 years to attain mean weight of 228 g) and upper Waikato catchments (11 years to attain a mean weight of 200 g), than the lower main stem of the Waikato River (13 years to attain a mean weight of 202 g). However, to reach a larger size in the mid catchment of Waikato waterways, longfin typically took 20 years to reach a mean weight of 673 g. An exception to the generally observed growth rate was the enhanced Waikato hydro lakes where a mean weight of 610 g was attained in about 9 years.
- 98 Longfin remain vulnerable to fishing activities until they migrate at an average age of 11-34 years for males and 49-56 years for females, although it can be less in productive waters within this QMA. The average age of longfin males sampled from the commercial fishery ranged from nine years (62 cm, 646 g) in the Waikato hydro lakes, to 23 years (59 cm, 529 g) in the lower main stem of the Waikato River tributaries. The average age of female longfin was only recorded from the Waikato River hydro lakes, but at these sites, downstream passage is not provided. As the size frequency distribution of eels sampled from the commercial catch in the Waikato shows little evidence of a bimodal distribution (reflecting differences in average size of each sex), it is likely that the number of female longfin reaching a size where migration occurs is much reduced in comparison to the 1960s and 1970s.
- 99 Recent survey information in a Waikato pastoral stream provides evidence that an original population of large longfin has been replaced by an abundant population of small shortfin as a result of simulated commercial harvest over a three year period. Longer term monitoring suggests that the composition of eel species found in the stream may not easily revert back to its original composition.
- 100 MFish considers that the purpose of the Act would be better achieved if the initial level of removals from this stock were set below the level of use experienced in the period 1990-91 to 2001-02. MFish proposes that a TAC for the LFE 21 stock set at 106 tonnes should allow the fishery an opportunity to re-build, and should allow for some improvement in stock structure, relationships with interdependent stocks, and availability to non-commercial users in particular. This represents just over a 25% reduction on the overall estimate of recent harvest.

SFE 22

- 101 MFish proposes a TAC for SFE 22 of 89 tonnes.

Estimate of total annual recent removals

- 102 The adjusted average commercial catch taken from this stock for the period 1990-91 through to 2001-02 (excluding 1992-93 and 1993-94 data) is 88.7 tonnes.
- 103 The resource within the QMA is reasonably accessible to non-commercial interests in all but some of the high country forming the main ranges. Much of the human population is centred on the greater Wellington region. Māori undertake much of the

non-commercial harvest. This is likely to be of greater consequence in rural areas, even though Māori in urban areas have particular associations with this resource (eg, Lower Hutt).

- 104 The level of recreational fishing undertaken by non-Māori or non-Asian ethnic groups is unlikely to be significant for this stock. The level of recent utilisation by Māori and other ethnic groups for the purposes of recreational purposes is estimated to be in the order of 20 tonnes per annum for both shortfin and longfin. Based on the likely proportion of shortfin to longfin within this stock, MFish suggests that the recreational harvest of shortfin may approximate 14 tonnes.
- 105 The use of eels for customary purposes in recent times is considered relatively light based on observations made by Māori interests in part of the QMA (eg, Ngati Kahungunu). MFish considers that the level of recent utilisation for both shortfin and longfin is likely to be in the order of 20 tonnes per annum, consistent with the amount considered taken for the purposes of recreational fishing. Based on the likely proportion of shortfin to longfin within this stock, MFish suggests that the customary harvest of shortfin may approximate 14 tonnes.
- 106 The assessment of the other sources of fishing related mortality provided for the SFE 20 stock is equally likely to apply to the SFE 22 stock. The tonnage ascribed to other sources of fishing related mortality for this stock is likely to reflect the relative abundance of shortfin to longfin found in the stock. There is not likely to be any selectivity associated with either of the eel stocks within the QMA as it relates to estimates of other sources of fishing related mortality. In the absence of specific information, a quantity of 2 tonnes is considered a reasonable estimate, reflecting a view that illegal activity and other sources of fishing related mortality are relatively low.
- 107 Summation of the likely removals from the stock based on the above estimates equates to 118.7 tonnes.

Assessment of risk

- 108 Adoption of a TAC at a level of 118.7 tonnes may not better meet the purpose of the Act than an MSY-based target yield. There is some risk that the obligations for stock management would not be met if the TAC was set at this level. This assessment is based on the additional information derived from:
- a) CPUE trends in the commercial fishery;
 - b) comparative size frequency information derived from market sampling of the commercial catch;
 - c) declining trends in interdependent shortfin fisheries; and
 - d) oral accounts of the nature and extent of the fishery in Hawke Bay/Wellington which suggest that there is a paucity of large sized eels in the fishery.
- 109 The standardised CPUE index for the commercial use of this stock indicates that CPUE has undergone a significant decline over the period (Figure 6, Annex Two). MFish notes that unstandardised CPUE for the total eel catch taken from Hawke Bay, Manawatu, Wairarapa and Wellington ESAs in the period from 1983-84 to 1988-89

was typically higher (7.1-13.1 kg/net night) than the recent standardised CPUE index for total eel catch in the Hawke Bay/Wellington QMA (5-13 kg/lift).

- 110 Market sampling of commercial catch undertaken mainly within the Manawatu region during 1999-00 indicated that the mean age of shortfins reaching minimum legal size was almost 16 years, although this varied between a minimum age of 6.1 years (Turakina Dam) and a maximum age of 30.8 years. The overall mean age at near maximum size was just below 50 years, with a range commencing at almost 17 years (Turakina Dam) through to a maximum of 87 years. These figures suggest that shortfin in principally the Manawatu region have slower growth rates than what might be experienced in a comparable range of environments in the upper North Island. Accordingly, MFish considers that there is a better chance that the stock will be maintained at or above a level that can meet the purpose of the Act if the initial level of removals from this stock were set below the recent level of use.
- 111 MFish proposes that a TAC for the SFE 22 stock set at 101 tonnes should allow the fishery an opportunity to re-build. This represents a 15% reduction on the overall estimate of recent harvest.

LFE 22

- 112 MFish proposes a TAC for LFE 22 of 45 tonnes.

Estimate of total annual recent removals

- 113 The adjusted average commercial catch taken from this stock for the period 1990-91 through to 2001-02 (excluding 1991-92, 1992-93 and 1993-94 data) is 42.8 tonnes. The same demographic features noted for the SFE 22 stock similarly apply to the LFE 22 stock. However, some of the longfin resource may not be easily accessible where populations exist in the hill country of the main ranges.
- 114 Based on the likely proportion of shortfin to longfin within the LFE 22 QMA, MFish suggests that the recreational harvest of longfin may approximate six tonnes per annum, being about one-third of the estimate of recreational fishing for eels from this QMA (ie, 20 tonnes – see discussion in SFE 22 section).
- 115 Based on the likely proportion of shortfin to longfin within the LFE 21 QMA, MFish estimates that the customary harvest of longfin to be six tonnes per annum, being slightly more than one-third of the estimate of customary fishing for eels from this QMA (ie, 20 tonnes – see discussion in SFE 22 section).
- 116 The assessment of the other sources of fishing related mortality provided for the SFE 20 stock is equally likely to apply to the LFE 22 stock. The tonnage ascribed to other sources of mortality for this stock is likely to reflect the relative abundance of shortfin to longfin found in the stock. There is not likely to be a significant difference in selectivity associated with either of the eel stocks within the QMA as it relates to estimates of other sources of mortality. In the absence of specific information, a quantity of 2 tonnes per annum is considered a reasonable estimate, reflecting a view that illegal activity and other sources of fishing related mortality are relatively low.

- 117 Summation of the likely removals from the stock based on the above estimates equates to 56.8 tonnes.

Assessment of risk

- 118 Adoption of a TAC at a level of 56.8 tonnes may not better meet the purpose of the Act than an MSY-based target yield. There is some risk that the obligations for stock management would not be met if the TAC was set at this level. This assessment is based on the additional information derived from:
- a) CPUE trends in the commercial fishery;
 - b) comparative size frequency information derived from market sampling of the commercial catch;
 - c) declining trends in interdependent longfin fisheries; and
 - d) oral accounts of the nature and extent of the fishery in Wellington/Hawke Bay which suggest that there is a paucity of large sized eels in the fishery.
- 119 The standardised CPUE index for the commercial use of this stock indicates that CPUE has declined over the period (Figure 6, Annex Two). MFish notes that unstandardised CPUE for the total eel catch taken from Hawke Bay, Manawatu, Wairarapa and Wellington ESAs in the period from 1983-84 to 1988-89 was typically higher (7.1-13.1 kg/net night) than the recent standardised CPUE index for total eel catch in the Hawke Bay/Wellington QMA (5-13 kg/lift).
- 120 Market sampling of commercial catch undertaken mainly in the Manawatu region during 1999-00 indicated that the mean age of longfin reaching minimum legal size for commercial fishers was almost 19 years, although this varied between a minimum age of 10.3 years and a maximum age of 26.5 years. The overall mean age at near maximum size was 36.2 years, with a range commencing at 13.6 years through to a maximum of 93.5 years (Lake Alice, near Marton). These figures suggest that longfin around the Manawatu region have slower growth rates than what might be experienced in a comparable range of environments in the upper North Island. MFish considers that the purpose of the Act would be better achieved if the initial level of removals from this stock were set below the level of use experienced in the 2000-01 and 2001-02 fishing years.
- 121 MFish proposes that a TAC for the LFE 22 stock set at 45 tonnes should allow the fishery an opportunity for the stock to re-build, should allow for some improvement in stock structure, relationships with interdependent stocks, and availability to non-commercial users in particular, such that social, cultural and economic outcomes are better achieved over the full extent of the QMA. The proposed TAC represents just over a 20% reduction on the overall estimate of recent harvest.

SFE 23

- 122 MFish proposes a TAC for SFE 23 of 25 tonnes.

Estimate of total annual recent removals

- 123 The adjusted average commercial catch taken from this stock for the period 1990-91 through to 2001-02 (excluding 1990-91, 1991-92, 1992-93, 1994-95, 2000-01 and 2001-02 data) is 15.3 tonnes.
- 124 The shortfin resource within the QMA is easily accessible to non-commercial interests, as the species is more likely to be found at lower altitude areas. Much of the lowland area is developed farmland. The QMA encompasses a rural area with many small communities. Māori undertake much of the non-commercial harvest. The area is known for its community eel fishing contests as part of outdoor pursuit programmes.
- 125 The level of recreational fishing may be of a similar scale to that undertaken for commercial fishing. This takes into account the likelihood that several rural communities in this area have some reliance on the resource for subsistence purposes. The level of recent utilisation by Māori and other ethnic groups for recreational purposes is likely to be in the order of 15 tonnes per annum for both shortfin and longfin. Based on the likely proportion of shortfin to longfin within this stock, MFish suggests that the recreational harvest of shortfin may approximate 5 tonnes per annum.
- 126 The quantity of shortfin used for customary fishing purposes is likely to be of overall significance (for example see Ngati Maniapoto 1997 survey results as outlined in Annex Two – those results include the population centres of Taumarunui / Ohura that occur within the QMA boundary for this stock, although these areas are predominantly longfin habitat). MFish considers that the level of recent utilisation for both shortfin and longfin is likely to be in the order of 15 tonnes per annum, consistent with the amount considered taken for the purposes of recreational fishing. Based on the likely proportion of shortfin to longfin within this stock, MFish suggests that the customary harvest of shortfin may be approximately 5 tonnes per annum.
- 127 The assessment of the other sources of fishing related mortality provided for the SFE 20 stock is equally likely to apply to the SFE 23 stock. The tonnage ascribed to other sources of fishing related mortality for this stock is likely to reflect the relative abundance of shortfin to longfin found in the stock. There is not likely to be any selectivity associated with either of the eel stocks within the QMA as it relates to estimates of other sources of fishing related mortality, even though the distribution of shortfin and longfin may not overlap at relatively higher altitudes. In the absence of specific information, a quantity of 2 tonnes is considered a reasonable estimate, reflecting a view that illegal activity and other sources of fishing related mortality are relatively low.
- 128 Summation of the likely removals from the stock based on the above estimates equates to 27.3 tonnes.

Assessment of risk

- 129 Adoption of a TAC at a level of 27.3 tonnes may not better meet the purpose of the Act than an MSY-based target yield. There is some risk that the obligations for stock

management would not be met if the TAC was set at this level. This assessment is based on the additional information derived from:

- a) CPUE trends in the commercial fishery;
- b) comparative size frequency information derived from market sampling of the commercial catch;
- c) declining trends in interdependent shortfin fisheries; and
- d) oral accounts of the nature and extent of the fishery in Taranaki/Rangitikei, which suggest that there is a paucity of large sized eels in the fishery.

130 The standardised CPUE index for the commercial use of this stock indicates that CPUE is quite variable over the period (Figure 8, Annex Two). Unstandardised CPUE for the total eel catch taken from Rangitikei-Wanganui and Taranaki ESAs in the period from 1983-84 to 1988-89 was typically higher (8.3-8.7 kg/net night) than the recent standardised CPUE index for total eel catch in the Taranaki/Rangitikei QMA (5-9 kg/lift).

131 The limited market sampling of commercial catch undertaken between 1995-98 indicated that the mean age of shortfins reaching a mean weight of 344 g and 946 g was 27.4 and 43 years respectively in the highland tributaries of the Wanganui River, suggesting slower growth than what might be experienced in both other parts of the QMA (some productive areas at lower altitudes are likely to exist), and comparable sites in other northern QMAs. MFish considers that the purpose of the Act would be better achieved if the initial level of removals from this stock were set below the existing level of use.

132 MFish proposes that a TAC for the SFE 23 stock set at 25 tonnes should allow the fishery an opportunity to re-build. This represents an almost 10% reduction on the overall estimate of recent harvest experienced in the period 1990-91 to 2001-02.

LFE 23

133 MFish proposes a TAC for LFE 23 of 50 tonnes.

Estimate of total annual recent removals

134 The adjusted average commercial catch taken from this stock for the period 1990-91 through to 2001-02 (excluding 1990-91, 1991-92, 1992-93, 1994-95, 2000-01 and 2001-02 data) is 28.4 tonnes. The same demographic features noted for the SFE 23 stock similarly apply to the LFE 23 stock. The longfin resource may not be easily accessible where populations exist in the hill country between Mt Taranaki and the Volcanic Plateau and southeast to the Kaweka Ranges.

135 Based on the likely proportion of shortfin to longfin within the LFE 23 QMA, MFish estimates the recreational harvest of longfin to be around 14 tonnes per annum, about two-thirds of the estimate of recreational fishing for eels from this QMA (ie, 20 tonnes – see discussion in SFE 23 section).

- 136 Similarly, MFish estimates that the customary harvest of longfin to be around 14 tonnes per annum, slightly more than two-thirds of the estimate of customary fishing for eels from this QMA (ie, 20 tonnes – see discussion in SFE 23 section).
- 137 The assessment of the other sources of fishing related mortality provided for the SFE 20 stock is equally likely to apply to the LFE 23 stock. The tonnage ascribed to other sources of fishing related mortality for this stock is likely to reflect the relative abundance of shortfin to longfin found in the stock. There is not likely to be any selectivity associated with either of the eel stocks within the QMA as it relates to estimates of other sources of fishing related mortality, even though the distribution of shortfin and longfin may not overlap at relatively higher altitudes. In the absence of specific information, a quantity of 2 tonnes is considered a reasonable estimate, reflecting a view that illegal activity and other sources of fishing related mortality are relatively low.
- 138 Summation of the likely removals from the stock based on the above estimates equates to 58.4 tonnes.

Assessment of risk

- 139 Adoption of a TAC at a level of 58.4 tonnes may not better meet the purpose of the Act than an MSY-based target yield. There is some risk that the obligations for stock management would not be met if the TAC was set at this level. This assessment is based on the additional information derived from:
- a) CPUE trends in the commercial fishery;
 - b) comparative size frequency information derived from market sampling of the commercial catch;
 - c) declining trends in interdependent longfin fisheries; and
 - d) oral accounts of the nature and extent of the fishery in Taranaki/Rangitikei which suggest that there is a paucity of large sized eels in the fishery.
- 140 The standardised CPUE index for the commercial use of this stock indicates that CPUE has steadily declined over the period (Figure 8, Annex Two). MFish notes that unstandardised CPUE for the total eel catch taken from Rangitikei-Wanganui and Taranaki ESAs in the period from 1983-84 to 1988-89 was typically higher (8.3-8.7 kg/net night) than the recent standardised CPUE index for total eel catch in the Taranaki/Rangitikei QMA (5-9 kg/lift).
- 141 The limited market sampling of commercial catch undertaken between 1995-98 indicated that longfin typically reach an age approaching 20 years in the lower Wanganui River before they are taken by the commercial fishery, yet longfin remain vulnerable to capture for potentially several decades beyond that until they are ready to undergo their downstream adult migration. MFish considers that the purpose of the Act would be better achieved if the initial level of removals from this stock were set below the existing level of use.
- 142 MFish proposes that a TAC for the LFE 23 stock set at 50 tonnes should allow the fishery an opportunity to re-build. This represents slightly less than a 15% reduction on the overall estimate of recent harvest.

Allocation of Total Allowable Catch

General observations

- 143 The Minister is required to make separate decisions on allowances for each stock. MFish notes that information about the recent or current catch in each stock can be used as a guide when considering decisions on allocation. However there are a number of factors relevant to the eel fishery that require special consideration in reaching an initial position on allocation.

Customary

- 144 The eel fishery is of particular significance to Māori. Māori have historically used the resource for a range of purposes. The most important element of this use is for customary purposes. Māori are also the predominant recreational user, but there is a wider range of ethnic groups who have shown interest in this resource in the last 15 years.
- 145 There is an ongoing obligation under the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992 (the Settlement Act) to give recognition to the use and management practices of Māori in the exercise of non-commercial fishing rights. In the lead up to QMS introduction several Māori communities have noted their concern that they have been deprived of fishing opportunities in more recent times because the quality and quantity of eels has diminished, particularly since commercial fishing commenced.
- 146 In view of the obligations under the Settlement Act, and in the light of the requirement to act consistently with that Act when making decisions under the Fisheries Act, MFish propose that existing customary harvest be provided for in full when allowing for customary fishing. As noted the intent underpinning the setting of the TAC is to enable eel stocks to rebuild. All interests will benefit from increased availability as the fisheries rebuild.
- 147 Beyond the consideration of an explicit quantitative allowance for non-commercial fishing activities, there may be a case for additional management measures to address the desired population structure of a stock in order that more eels grow through to a large size. For example, Māori would prefer to have large eels available for harvest. And larger eels are only going to be more abundant in a lightly fished stock. This type of fine-scale management can be achieved through a fisheries plan.
- 148 MFish acknowledges that the exercise of customary harvesting would be further facilitated if the Fisheries (Kaimoana Customary Fishing) Regulations 1998 were extended to freshwaters in the North Island (and Chatham Islands).

Commercial sector

- 149 The industry is expected to undergo a significant amount of rationalisation at the time of QMS introduction. Following introduction of the South Island eel fishery into the QMS, the number of participants in the commercial fishery reduced from approximately 80 prior to 1 October 2000 to about 20-25 over an eighteen month

period. The number of processors involved in the South Island fishery has also reduced.

- 150 Similarly, the eel fishery is experiencing difficult market conditions at the moment as a result of international market conditions. As a result, two of the four North Island processors had temporarily stopped receiving eels at various times in the 2003 calendar year. One has remained closed since the commencement of fishing following the winter of 2003. Commercial fishing activities are likely to be undertaken more efficiently in the future, probably with a collective harvesting strategy in mind for relevant QMAs.

Recreational Allowance

- 151 MFish considers that the recreational allowance should be set below the estimate of recent catch in order to ensure catches fit in with sustainable limits. The percentage reduction required will be the same as used in the TACC setting process. Calculations made are set out in Table 3.

Table 3: Determination of proposed recreational allowances for North Island eel stocks (tonnes)

Stock	Estimate of annual recent recreational catch (t)	Percentage reduction required to fit within TAC	Provisional proposed allowance (t) prior to rounding	Proposed allowance (t) following rounding up to nearest whole number
SFE 20	30	16.9 or 22.2	24.9 or 23.3	25 or 23
LFE 20	10	26.7	7.3	7
SFE 21	24	20.3	19.1	20
LFE 21	16	36.4	10.2	10
SFE 22	14	26.7	10.2	10
LFE 22	6	31.3	4.1	4
SFE 23	5	26.7	3.7	4
LFE 23	14	38.4	8.6	9

- 152 MFish recognises that Māori have taken the step of reducing their own recreational harvest in recent times for sustainability purposes. These actions are usually taken on a collective basis through decisions on a marae, or by one or more whānau. MFish would welcome information from fishery interests about the nature and extent of such actions, and any view about their effectiveness in terms of improvements in the status of the resource.

- 153 MFish considers that when these voluntary steps are considered alongside the declining trend in catch rates, the reduction in catch should be able to be achieved without adjusting the existing recreational daily limit of six per person.

Customary Māori Allowance

- 154 As noted MFish proposes customary fishing allowances to be set at the existing level of catch. The proposed allowances are set out in Table 1.

- 155 There is no quantified information available on the level of customary harvest for shortfin or longfin at the level of the stock. Much of the information available is

relevant to specific localities. There are reasonably extensive accounts of the historical importance of the eel fishery to Māori as a source of sustenance, and as more broadly used for customary purposes. Some of these accounts are provided in contemporary Waitangi Tribunal claims or Deed of Settlements with the Crown. An overview of the customary use of the eel fishery is provided in Annex Two. Eels continue to form an integral part of Māori customs and beliefs today.

- 156 The introduction of the North Island eel fishery into the QMS in itself provides a better framework under which fishery interests can make collective management decisions on the use of the resource and improvement in its status. Such benefits should flow through to customary Māori fishers. Similarly, improvements in customary fishing should become apparent over the medium term under the TACs proposed. Further, should the TAC for any stock be increased in the future, the Minister can increase the customary allowance.
- 157 MFish invites views from Māori about the quantities of shortfin and longfin harvested for customary purposes (ie, hui or tangi), both prior to the development of the commercial fishery in the late 1960s and more recently in order to evaluate the allowances proposed in this paper.
- 158 It would be helpful if submissions from Māori incorporate information on how much shortfin and longfin is taken for customary purposes from a defined area in any given year, and how representative that year's catch was in comparison to previous years.

Allowance for other sources of mortality

- 159 MFish does not consider that there are significant levels of other sources of fishing related mortality in any of the eight North Island eel stocks. For South Island eel stocks, introduced on 1 October 2000 under the legislative provisions of the Fisheries Act 1983, no allowances for other sources of fishing related mortality were required to be made. The fishing methods used in the eel fishery focus on taking catch in a live state.
- 160 There are two principal sources of fishing related mortality associated with the eel fishery – illegal fishing (commercial and non-commercial), and dumping of dead catch at the site of capture. Under the specifications of the Sixth Schedule of the Act, a commercial fisher is obliged to retain quota stocks caught, other than legal sized live eels that may be returned if likely to survive on its return and the return takes place as soon as practicable after the eel is taken. Undersized or oversized eels must be returned in all circumstances.
- 161 Some illegal fishing or poaching may occur in the eel fishery. The quantities and networks involved are probably limited, usually involving domestic sales, and are not considered to be of consequence. The amount of illegal fishing associated with the legitimate fishing industry is likely to have been more problematic prior to the 1990s when access to the fishery was not as constrained, and monitoring of permitting and reporting was lacking.
- 162 Once eel stocks are within the QMS monitoring environment, the opportunities for illegal activities from legitimate industry members will continue to reduce. This is partly as a result of the expected rationalisation in the number of participants in the

industry, and the incentive for the remaining industry members to look after their valuable harvesting rights through individual or collective actions. Moreover, the compliance structures in place to monitor the use of the resource by the commercial sector are more extensive than the non-QMS environment.

- 163 Non-commercial fishers are known to exceed their amateur bag limit of six eels per person per day in some areas (eg, Northland, King Country), but there is no information on the extent of this behaviour, or how significant it might be. It is possible that this source of fishing related mortality could be reduced in the future if the Fisheries (Kaimoana Customary Fishing) Regulations 1998 were amended to apply to freshwater areas in the North Island (and Chatham Islands), such that Māori could undertake customary food gathering for a wider range of purposes than traditional hui and tangi as provided by regulation 27 of the Fisheries (Amateur Fishing) Regulations 1986.
- 164 In the absence of specific information on other sources of fishing related mortality to eel stocks in the North Island, it is considered reasonable to reflect the view that it is likely to be relatively low. Differences between proposed allowances for the eight stocks are likely to reflect the size and availability of the stock to fishery interests, the relative number of people who might use the stock and their experience in undertaking successful fishing operations (eg, ability to check or remove net or pot after or during flood event), and the social incentives operating within the QMA that might encourage illegal activities.
- 165 MFish considers that the mortality associated with the dumping of dead eels is likely to relate more to the relative experience of commercial fishers than to the setting of fishing gear in particular areas where the amount of eels caught results in either asphyxiation or cannibalism (although this is partly a feature of fisher experience as well). Commercial fishers are likely to adopt different fishing practices in areas they know may have these problems (eg, shorter soak time, set less gear or increase size of escapement tubes, or avoid particular waterways during certain seasons or in certain weather conditions). In the event that there are fewer commercial fishers operating within the QMS environment, and these fishers are more committed to responsible fishing practices, then the risk of this source of fishing related mortality occurring should further reduce.
- 166 MFish considers that the mortality associated with the dumping of eels taken in a dead state by non-commercial fishers is likely to be minimal. This reflects the fact that non-commercial fishers are limited to the use of only one fyke net or hīnaki, so should be less likely to find themselves in a situation where their fishing gear is irretrievable or subject to loss. Other fishing methods used by non-commercial fishers focus on the taking of eels in a live state (eg, spear).

SFE 20

- 167 MFish proposes an allowance of 4 tonnes for other sources of fishing related mortality for this stock. Factors supporting this proposal include the large number of people having an interest in this stock who are resident within this QMA, the relative ease of access to the resource given the roading network and associated extensive subdivision of land, the considerable number of estuarine areas providing habitat beyond the land

boundary, the ability to fish the resource on a year round basis, the size of the proposed TAC for the stock, and the large number of people in the stock area.

LFE 20

168 MFish proposes an allowance of 2 tonnes for other sources of fishing related mortality for this stock. Factors supporting this proposal are generally the same as noted for the SFE 20 stock. The lower allowance proposed for the LFE 20 stock takes into account the relative abundance of this stock in comparison to the SFE 20 stock, as evident from commercial catch figures.

SFE 21

169 MFish proposes an allowance of 4 tonnes for other sources of fishing related mortality for this stock. Factors supporting this proposal include the large number of people having an interest in this stock, the relative ease of access to the resource given the roading network and associated extensive subdivision of land (other than in the main ranges adjoining eastern Bay of Plenty/ Poverty Bay area), the ability to fish the resource on a year round basis in most areas, the size of the proposed TAC for the stock, and the large number of people in the stock area.

LFE 21

170 MFish proposes an allowance of 2 tonnes for other sources of fishing related mortality for this stock. Factors supporting this proposal are generally the same as noted for the SFE 21 stock. The lower allowance proposed for the LFE 21 stock takes into account the relative abundance of this stock in comparison to the SFE 21 stock, as evident from commercial catch figures.

SFE 22

171 MFish proposes an allowance of 2 tonnes for other sources of fishing related mortality for this stock. Factors supporting this proposal include the relatively fewer number of people having an interest in this stock, the seasonal nature of the fishery, and the size of the proposed TAC for the stock.

LFE 22

172 MFish proposes an allowance of 2 tonnes for other sources of fishing related mortality for this stock. Factors supporting this proposal are generally the same as noted for the SFE 22 stock. The allowance proposed for the LFE 21 stock is the same as the SFE 22 stock.

SFE 23

173 MFish proposes an allowance of 2 tonnes for other sources of fishing related mortality for this stock. Factors supporting this proposal include the relatively fewer number of people having an interest in this stock (although having relatively stronger dependence on the resource in some areas), the seasonal nature of the fishery, and the size of the proposed TAC for the stock.

LFE 23

174 MFish proposes an allowance of 2 tonnes for other sources of fishing related mortality for this stock. Factors supporting this proposal are generally the same as noted for the SFE 23 stock. The allowance proposed for the LFE 23 stock is the same as the SFE 23 stock.

TACC

175 MFish proposes the TACCs as set out in Table 1. The TACCs proposed have been derived by applying the same proportional reduction to the estimate of commercial catch over the past decade as used to determine the recreational allowance in Table 3. A comparison of the TACCs proposed and the current commercial catch (based on an average of catch taken in the 2000-01 and 2001-02 fishing years) is provided in Table 4. Overall, the amount of eels made available for commercial fishing in the North Island is 5.1% or 9.2% less (depending on the option adopted in SFE 20) than recent commercial catch. The higher percentage differences between the proposed TACCs and most recent commercial catch in the SFE 22, LFE 22, SFE 23 and LFE 23 stocks reflect the seasonal and variable nature of the fishery and its participants, the use of new agents fishing under the authority of an existing permit holder, increased catch in the last few fishing years, and the smaller scale of the fishery in comparison to northern stocks.

Table 4: Comparison of average recent commercial catch, proposed TACC, average current commercial catch (tonnes), and the percentage difference between proposed TACC and average current commercial catch.

Stock	Average recent commercial catch (1990-91 to 2001-02) (t)	Proposed TACC (t)	Average current commercial catch (2000-01 to 2001-02) (t)	Percentage difference between proposed TACC and 2 yr average current commercial catch – brackets denote reduction
SFE 20 (option 1)	184	177	152.7	+15.9
SFE 20 (option 2)	184	166	152.7	+8.7
LFE 20	64	54	56.5	(4.6)
SFE 21	184	164	160.2	+1.0
LFE 21	107.5	78	67.5	+15.6
SFE 22	88.7	75	96.2	(20.0)
LFE 22	42.8	33	43.4	(24.0)
SFE 23	15.3	14	35.0	(40.0)
LFE 23	28.4	25	41.7	(40.0)
North Island total	714.7	620 or 609	653.2	(5.1 or 9.2)

176 As the status of the fishery improves, increases in CPUE will benefit commercial fishers. The TACCs proposed should provide a basis for a rationalised and a more

efficient industry to grow over the medium to longer term, with a consequential increase in value of quota and ACE.

- 177 The TACCs are unlikely to significantly impinge on the viability of commercial fishers wishing to stay in the fishery, although many are seeking to retire as part of the QMS introduction process. In addition, many of the existing fishers are only reliant on the eel fishery for part of their income. Some commercial fishers may need to buy quota or ACE from adjacent stocks where the TACCs are relatively small for stocks they have fished more recently (eg, SFE 23, LFE 23).
- 178 At an average port price of approximately \$4.00 per kg, a North Island wide commercial catch reduction of 5.1% or 9.2% would equate to about \$133,000 or \$240,000 respectively in lost revenue, when compared to average current commercial catch (ie, 2000-01 to 2001-02). However, during the 2002-03 fishing year, commercial catch was down much further than what the proposed TACCs provide. Industry advise this was due to unfavourable international market conditions. At the catch levels experienced in the 2002-03 fishing year (estimated at 510 tonnes for the North Island), economic impacts were more evident. Therefore the economic impact of commercial harvests being carried out to the potential provided by the proposed TACCs will be less than experienced in the 2002-03 fishing year.
- 179 The TACCs proposed may impact on processing capacity, although two of the four processing plants in the North Island temporarily stopped receiving eels in response to the difficult international trading conditions experienced in 2003. These are the two smaller plants that receive eels in the North Island. One of those plants operated on a seasonal basis, and employed seasonal workers, and the other processes products other than eel. Of the two remaining processing facilities, one has a degree of diversification into other product lines, while the plant at the other is reasonably dependent on the eel fishery. While processors advise that trading conditions remain difficult for most size grades of eels received, both of the main processing plants have remained viable even though the quantity of eels received has been reduced in recent times.
- 180 Providing market conditions improve in the next year or two, and fishing is undertaken in accordance with best market price (eg, based on an improved size of eel taken from the fishery), it is likely that the economic performance of the fishery will improve. It may be that processing plants for the eel fishery will continue to evolve from their present uses to cater for a broader range of value-added activity associated with the commercial use of the eel resource and other fisheries. The surety of the harvesting rights provided under the QMS should assist with industry's rationalisation process.
- 181 Fishing practices may also need to alter in response to the relative quantities of shortfin to longfin available for commercial harvest in most QMAs. The eel industry is likely to adopt harvesting strategies for each stock to enable the best value to be obtained from any fishing activity. The industry is generally aware of the likelihood of catching either longfin or shortfin in particular waterways, and can modify their behaviours to ensure that fishing time is best utilised, and unwanted by-catch (particularly longfin) is avoided.

Other Management Measures

Method Restriction

- 182 The fishing methods used to commercially harvest eel stocks in the North Island are presently specified on fishing permits. These conditions will be removed as a consequence of these stocks and method authorisations no longer needing to be separately listed on the fishing permit once introduced into the QMS. There is no need to restrict eel fishers to particular fishing methods – the methods employed in the future are very likely to remain the same (see also following section on consequential regulatory amendment relating to removal of express method specification on fishing permit). There are other generic regulatory controls that will remain in force that stipulate inappropriate methods (eg, Danish seine, trawl, box or teichi nets) for use in rivers, streams, lakes, lagoons or estuaries.
- 183 Permit holders in the eel fishery have also been limited in the number of people (other than the permit holder themselves) that may be employed under the authority of their fishing permit – many to zero. These limits were based on historical levels of fishing effort evident in the 1989-90 fishing year. This restriction is lifted automatically when eel stocks are introduced into the QMS. This effort control is no longer necessary when commercial catch is constrained through the TACC for a stock. In any case, the number of commercial fishers in the North Island eel fishery is likely to decrease – a similar trend was apparent when the South Island eel fishery was introduced into the QMS in 2000. This is because a reasonable proportion of participants left the industry. There is also a realisation within the commercial sector that some rationalisation is required to improve economic efficiency in the North Island eel fishery.
- 184 Further, in the upper North Island, conditions on fishing permits limit the number of fishing vessels that a commercial eel fisher can use to no more than that used prior to the 1992-93 fishing year. This effort control recognised that use of a fishing vessel would assist commercial fishers increase catch. Again, this effort control is no longer necessary when commercial catch is constrained through the TACC for a stock. It is proposed that this permit condition will be removed on QMS introduction of North Island eel stocks.

Consequential amendments to regulations

- 185 As a consequence of the introduction of North Island shortfin and longfin stocks into the QMS, MFish proposes to make a number of regulatory changes. These include:
- a) revocation of regulation 51 of the Fisheries (Commercial Fishing) Regulations 2001 specifying that commercial fishers may only take eels where they are specifically authorised to do so on their fishing permit;
 - b) revocation of that part of regulation 31(6) of the Fisheries (Commercial Fishing) Regulations 2001, and similarly that part of regulation 6 of the Fisheries (Amateur Fishing) Regulations 1986, which both states that fishers must not take eels using a minimum net mesh size of 12 mm;
 - c) a number of standard amendments to the Fisheries (Reporting) Regulations 2001 on introduction of stocks into the QMS to ensure the effective and efficient operation of the QMS;

- d) measures to facilitate the spawning escapement of adult eels including:
 - i) the prohibition of commercial fishing in particular catchments; and
 - ii) the extension of the prohibition on the taking of eels larger than 4 kg by commercial fishers from South Island fisheries waters to all New Zealand fisheries waters;
 - e) Measures to recognise and provide for the customary food gathering by Māori and the special relationship between tangata whenua and places of importance for customary food gathering, specifically to prohibit commercial fishing from the Taharoa lakes (south Kawhia), Whakaki Lagoon (Wairoa), Lake Poukawa (Te Hauke, Hastings), and the Pencarrow lakes (Wellington).
- 186 Details of the proposed amendments are attached as Annex One to this section. MFish understands that a range of fishery interests are generally aware of the background to the new measures proposed and the consultation process provides an opportunity for any issues to be addressed.

Deemed values

- 187 Annual deemed values are the main deterrent to commercial fishers not balancing their catch with Annual Catch Entitlement (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. In addition, MFish notes that eel stocks throughout New Zealand fisheries waters are included on the Sixth Schedule. Inclusion on the Sixth Schedule provides an authorisation to return live eels to the water in situations where those eels are likely to survive, and the release is undertaken as soon as practicable after the eels are taken.
- 188 The Minister has approved a policy framework for setting deemed values. The policy framework separates commercial fisheries into four categories, one of which is high value single species fisheries fishstocks (ie, those stocks that have relatively high port prices and ACE values and are taken with little, if any, bycatch, such as spiny rock lobster, packhorse rock lobster, paua, oysters, eels and scallops). Annual deemed values for these fishstocks are set as follows:
- a) initially, deemed values are set at 200% of the highest port price in the previous fishing year;
 - b) 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;
 - c) review to occur where the port price for a stock has changed significantly since deemed values were last set;
 - d) may be reduced if total catch does not exceed available ACE for several years; and
 - e) differential deemed values to be applied.
- 189 MFish proposes to include shortfin and longfin eel stocks within the high value single species fisheries fishstock category because there should be no overcatch of these stocks and it is not desirable that catch is landed in excess of ACE because of the high value placed on eels by other fishery interests. MFish notes that international market conditions have depressed port prices for all eel stocks over the last year or two,

although it is still considered appropriate to class eel stocks as a high value species for the purpose of consultation with fishery interests.

- 190 The average port price established as part of a recent (November/December 2003) MFish survey is near \$4.00 per kilogram. The port prices varies slightly from one licenced fish receiver to the next, but also by the size grade of eel taken; in general larger eels receive higher prices. There is no specific difference in price paid based on the species taken. MFish intends to recommend to the Minister that the proposed annual deemed value for all North Island eel stocks should be \$8.00, consistent with the policy framework for a high value target specific fishery.
- 191 The Act provides that the Minister 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 would only apply to the amount of catch above the threshold that triggers the differential annual deemed value. It is further proposed that differential deemed values are set to apply to different levels of catch in excess of annual catch entitlements for eel stocks (s 75(4)) of the Act as follows:

Table 5: 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

Over-fishing threshold

- 192 The Minister may recommend to the Governor-General the making of an Order in Council setting an over-fishing threshold for a stock, specified as a percentage in excess of the ACE held by a commercial fisher for the stock to which it relates. If a commercial fisher's catch exceeds the ACE for the stock and the excess is equal to or greater than the over-fishing threshold then it becomes a condition of the fisher's permit that the fisher may no longer fish in the area of that stock (a tolerance level may be set, and if set, exceeded for this to occur).
- 193 The policy framework has established a position on the use of overfishing thresholds and tolerances. At least initially, only high value target specific fisheries introduced into the QMS will be subject to overfishing thresholds.
- 194 MFish considers that the combination of the high value species deemed values proposed, the proportionally increasing deemed values for commercial fishers who exceed their ACE, and the overfishing threshold, should be an effective set of balancing provisions. Similarly, with the inclusion of eel stocks on the Sixth Schedule, enabling commercial fishers the ability to release live eels to the water as soon as practicable after their capture, it is conceivable that the use of these measures should be limited.

Eighth Schedule

- 195 Section 74 of the Act provides for the addition of stocks to the Eighth Schedule. The effect of this is that no commercial fisher may take any stock listed on the Eighth Schedule unless the fisher holds, at the time of the taking, the minimum amount of ACE that is specified in the Schedule. South Island eel stocks (ANG 11 – ANG 16) were included in the Eighth Schedule from 1 October 2000 at the time of their introduction into the QMS. A minimum quantity of 4 tonnes of ACE for each stock was specified. Chatham Island eel stocks (SFE 17 and LFE 17) were not included in the Schedule at the time of their introduction into the QMS on 1 October 2003. MFish queried the need for the inclusion of Chatham Island eel stocks in the Schedule, over and above the fact that the TACCs were too small to warrant use of this measure in any case. Other fisheries included on the Eighth Schedule are principally target specific fisheries such as rock lobster, paua, scallop, and oyster stocks.
- 196 MFish is aware that the eel fishing industry in the North Island is likely to undergo considerable rationalisation as existing fishers elect to retire from the fishery on its introduction into the QMS, irrespective of the decisions on TACs, allowances and TACCs. Similarly, the eel fishing industry is predicting that the number of participants will decrease, as occurred in the South Island after October 2000. Quota holdings for North Island eels stocks are likely to consolidate amongst a smaller number of people, and consequently harvesting activities are likely to become more economically efficient.
- 197 MFish does not believe that adding North Island eel stocks to the Eighth Schedule is necessary at this time. There may be a slight risk that without such a restriction, new entrants to this fishery may only wish to purchase small holdings of ACE, giving rise to the potential for some blackmarket activity if demand exceeds holdings. This might, for example, be a prospect should a small domestic market develop based around the restaurant trade, particularly given the current unfavourable international market conditions. However, the risk of illegal activity, even though it is very low, is unlikely to be tempered solely by a requirement to hold a minimum ACE holding. In any case, for some of the stocks (eg, LFE 23 and SFE 23), the TACCs are comparatively low, and establishing a minimum ACE holding would create unnecessary inflexibility in the use of the ACE held.

Statutory Considerations

- 198 In forming the management options the following statutory considerations under the Act have been taken into account.
- 199 **Section 8** – The proposed management options seek to ensure sustainability of respective eel stocks by setting a TAC that improves the population structure and abundance over the medium term, while bringing a halt to any decline in the fishery over the short term, such that the fishery:
- a) is sustainably managed;
 - b) its availability to non-commercial fishers in particular is improved; and
 - c) the relationship with interdependent stocks is also improved.

- 200 On balance, the initial management settings for all North Island eel stocks are likely to better enable people to provide for their social, cultural and economic aspirations, although the benefits to some stocks may take time to materialise given the longevity of some populations. Social, cultural and economic considerations are further outlined in Annex Two, although key observations of generic application follow:
- a) Enabling people to provide for their social and cultural aspirations are of particular importance for this fishery. The eel fishery is one of the most important for Māori on a cultural basis, as it forms a key element of their customs, and is considered a taonga or treasure. This value extends to social considerations, as the species is taken on a non-commercial basis as a source of food. Eel fishing is also a leisure activity enjoyed by outdoor enthusiasts. The level of use of the fishery by the commercial sector over the last ~ 35 years under a non-QMS framework is likely to have impacted on the ability of non-commercial interests to meet their social, cultural, and economic aspirations. The QMS will provide a better framework to address such concerns;
 - b) The eel fishery in the North Island also forms the basis of a moderately small sized commercial fishery that provides direct employment for approximately 70 commercial fishers prior to QMS introduction, many of which operate on a part-time or seasonal basis;
 - c) Economic impacts for the fishing industry in the short term will be mostly offset by at least half of the existing permit holders indicating they are likely to retire from the North Island eel fishery on entry to the QMS. Rationalisation will lead to increased economic efficiencies, something that is likely to be welcomed by the eel industry following introduction. Over time, improvements in CPUE will further reduce the relative costs associated with undertaking commercial fishing; and
 - d) Industry representatives are aware that processing capacity in its historical form may exceed current or future needs given the economics of running such a business. Some North Island processing plants may decide to close permanently or innovate, whereas introduction of the North Island eel fishery into the QMS may provide further opportunities for niche markets for other new ventures.
- 201 **Section 14** – Adoption of a management strategy under s 14 of the Act requires that the Minister must be satisfied that the purpose of the Act would be better achieved by setting a TAC otherwise than in accordance with s 13(2) of the Act. Formally, it is not known if recent catch levels are sustainable for either species, or are at levels that will allow the stocks to move towards a size that will support the MSY. However, based on a wide range of information available (eg, see TAC setting section, Annex Two and Selected background reading), including the views of fishery interests, MFish is of the view that the harvest levels experienced between the 1990-91 to 2001-02 period are probably not sustainable in the medium to longer term, having regard to the interdependence of stocks. This is particularly the case for longfin stocks where current harvest levels are unlikely to be regarded as sustainable, and are more likely than not to be below the biomass that can support MSY.
- 202 While MCY can be estimated as the proxy for MSY (Method 4, Annala *et al.* (2003)), it has a number of qualifications to its application. MCY estimates are based on catch

information from the commercial sector. Non-commercial catch is considered to have been relatively constant over the period for which MCY is determined using information from the commercial sector. While this may be a reasonable assumption for the period since 1990-91, MFish also notes that the CPUE for the commercial fishery has declined for many North Island eel stocks since that time. Consequently, it is possible that MCY estimates for the commercial fishery may be overestimated. A further issue is the desirability of basing MCY estimates on at least half the lifespan of the species. Given the longevity of females of both species, this may not be possible.

- 203 Importantly the relevance of an MSY-based target to a species with the biological characteristics of eels is questionable. Eels form one stock in New Zealand, although in the case of shortfin the stock may have a more extended range. For management purposes the single biological stocks are separated into management units. This means MSY, even if it can be approximated by estimates of MCY for the commercial fishery is of little consequence.
- 204 There is general agreement between MFish and fishery interests that the stock status needs to improve in the short to medium term. Given this agreement, MFish propose that a more practical approach to improving fishery performance is to identify the targets for the elements of the management strategy (eg, CPUE at a certain level, or an appropriate population size structure), and take actions in those directions. In essence this approach would achieve the intent of the MSY-based target set under s 13. The proposed TACCs should set up an environment where fishery interests can work towards elements of the management objective.
- 205 Interdependent stocks include both the associated species within the food web where eels are a key species, as well as other eel stocks, either within the same QMA, or in other QMAs. MFish is aware that the finfish species composition of some aquatic habitats in the northern North Island (eg, Waikato) has undergone significant change over at least the last 30 years, primarily as a result of fishing pressure. As a result of these changes:
- a) other introduced species may have become quite influential in moderating the ecological structure of the biological community; and
 - b) many areas the subject of historical commercial fishing activity have a reduced number of large eels (particularly longfin), and a proportionately increased number of shortfin, with relatively narrow population size structures, and potentially higher densities of smaller to moderately sized eels.
- 206 These outcomes are likely to further affect species assemblages, sex ratios, and productivity of eel fisheries, in addition to any more far-reaching impacts on the sustainable use of other longfin stocks (eg, relative success of spawning escapement and subsequent recruitment). Fishery interests will need to contribute to the further specification of these issues such that TACs can be adjusted to meet these matters over time.
- 207 In adopting a s 14 management strategy, and the specific elements of the management objective for the North Island eel fishery, fishery interests should recognise that the initial TAC settings may not curtail the need for the application of supporting measures in subsequent years. As new information becomes available on the sustainability of the fishery, the availability of the resource to the non-commercial

sector, or the interdependence of particular stocks, measures may be required to be adopted to meet the outcomes desired by all fishery interests.

- 208 **Section 11(1)(c)** – Eel fisheries are typically not subject to significant natural variability in their biomass to the extent that stocks become susceptible to overfishing on this basis alone. This is the case for all North Island eel stocks. The longevity and relatively slow growth rates experienced by eels in most waters, coupled with their reduced activity over winter months in southern North Island waters, plus the limiting factor of available habitat for larger eels, further reduces the scope for significant increases in biomass over the short term. The biological features of eel stocks are further outlined in Annex Two.
- 209 **Section 9(a) and (b)** – The nature and extent of bycatch of any associated or dependent species in this fishery is not considered significant – it is likely that most species can be released unharmed given the use of the fishing methods employed in this fishery. A reduction in overall harvesting pressure as provided by the TACs proposed is likely to assist in maintaining biodiversity. The extension of the maximum size limit across the country rather than just the South Island will also provide some universal protection to longfin females over the longer term as size structures of eel populations improve. The presence of large eels, as top predators in the food chain, is likely to be of particular significance.
- 210 **Section 9(c)** – No habitats of particular significance for fisheries management have been identified within the North Island that would be at risk as a result of eel fishing. It is considered unlikely that the fishing methods employed to take eels would have a demonstrable adverse effect on such habitats. Fishery interests will however need to ensure that they adopt practices that avoid the unintended transfer of aquatic life from one catchment to another. MFish also notes that a range of habitats of particular significance for fisheries management have been protected to varying degrees under other legislation for other purposes (eg, National Parks Act 1980, Reserves Act 1977), such that fishing is restricted in those areas.
- 211 **Section 11(1)(a)** – The effects of fishing on any stock and the aquatic environment are covered in the preceding paragraphs on section 9 considerations, but also more generally throughout the paper. MFish considers that the effects of fishing on all North Island eel stocks and interdependent stocks require some attention.
- 212 **Section 5(a)** – There is a wide range of international obligations relating to fishing (including sustainability and utilisation of fishstocks and maintaining biodiversity). MFish considers issues arising under international obligations are adequately addressed in the management options proposed for North Island eel stocks at their time of introduction into the QMS. MFish notes that the international scientific community (50 of the world’s leading eel researchers from at least 15 countries) are particularly concerned about the status of eel fisheries in the northern hemisphere, to the extent that they have issued a statement in August 2003 calling on immediate precautionary action by all parties involved to better protect and restore eel fisheries.
- 213 **Section 5(b)** – MFish considers that the management measures proposed are consistent with the provisions of the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992. MFish notes its on-going obligation to ensure that customary Māori interests are provided for in any subsequent review of management settings.

- 214 **Section 11(1)(b)** – The existing controls that apply to eel stocks in the North Island include limitations on access to the commercial fishery, closed areas, a minimum legal size and a requirement for escapement tubes in fyke nets for commercial fishers. Recreational / subsistence fishers are limited to a bag limit of six eels per day, and may not use more than one fyke net or hinaki per person. A list of specific controls is contained in Annex Two. MFish propose to change some of the existing controls as they relate to the commercial use of the resource, as noted in the section entitled ‘Other Management Measures’.
- 215 **Section 11(2A)(b)** – No fisheries plans under s11A of the Fisheries Act 1996 exist for any of the stocks. However, some fishery interests throughout the country have shown some desire to identify and implement management objectives. These have been most advanced in the South Island. In the North Island, it is likely that fishery interests, particularly the fishing industry and tangata whenua, will be in a better position to develop fisheries plans following QMS introduction.
- 216 **Section 11(2A)(a) and (c)** – For the North Island eel fishery, the catch limits proposed in each QMA, or the other management measures proposed, are not considered to warrant an immediate need to generate additional fisheries or conservation services. The draft medium term research plan for the national eel fishery outlines research directions already adopted by MFish. Some elaboration of these is outlined in Annex Two of this paper. No decision has been made not to require a service in this fishery. The level of conservation or fisheries services that might be required will depend on the range and level of risks associated with the use of any particular fishery.
- 217 Some stakeholder groups have noted the desirability of enhancing existing reporting systems to facilitate fine-scale catch reporting. This might enable future management measures to be applied with greater certainty for all interests at a range of smaller spatial scales. The Ministry has recently completed re-mapping of the North Island ESAs, as they will exist from 1 October 2004.
- 218 **Section 11(2)(a) and (b)** – There are no specific provisions applicable to the coastal marine area known to exist in any policy statement or plan under the Resource Management Act 1991, or any management strategy or plan under the Conservation Act 1987, that are relevant to the setting or varying of any sustainability measure for North Island eel stocks. Improved integration with these Acts is highly desirable, and the development of stock strategies by MFish and fisheries plans by stakeholder collectives will go a considerable way towards achieving this. The opportunity to integrate management is enhanced by management under the QMS.
- 219 **Section 12(2)(c)** – Before setting any sustainability measure relevant to the Hauraki Gulf (eg, a TAC for the SFE 20, LFE 20, SFE 21 or LFE 21 stocks), the Minister must have regard to s 7 and s 8 of the Hauraki Gulf Marine Park Act 2000 Act. The Hauraki Gulf is defined in that Act to include all coastal waters and offshore islands from near Te Arai Point (south of Mangawhai) offshore to the Moko Hinau Islands, and south to Homunga Point (north of Waihi Beach). This Act’s objectives are to protect and maintain the natural resources of the Hauraki Gulf as a matter of national importance. The setting of sustainability measures for the four eel stocks having part of their areas common to the Marine Park area will further the objectives set out in s 7 and s 8 of the Hauraki Gulf Marine Park Act 2000 Act, and ensure that the range of

values associated with the use of the eel resource are enhanced for the people and communities in the area.

- 220 **Section 21(1)(a and b) and (4)(i and ii) and (5)** – The nature of the fishery and the interests of the respective fishing sectors have been considered in setting the allowances for recreational and Māori customary interests and the TACC, and all other mortality to the stock caused by fishing. No mātaitai exists in any of the QMAs that would materially affect eel fishing. Areas closures or fishing method restrictions applied under s 186A of the Act for customary fishing purposes are limited to small coastal areas that are not the subject of eel fishing, or the restrictions apply to species other than eels. No restrictions on commercial fishing have been implemented in any area within any of the North Island eel stocks for recreational interests arising from s 311 of the Act.
- 221 **Section 10** – MFish has used a variety of information sources to contribute to the development of this paper. Some of these are written accounts drawn from a range of disciplines (see Selected background reading section at end of paper), including:
- a) reports provided for purposes other than strictly fisheries management;
 - b) a reasonably extensive range of research reports on the fishery conducted for either MFish or other agencies over the last decade; and
 - c) an array of oral accounts to MFish staff over many years that trace the historical or present uses and values of the resource. Such observations may have been made through attendance at hui, convening of workshops and seminars, personal interactions with a range of fishery interests, and first hand experience.
- 222 There is a reasonably extensive amount of information on the fishery and its uses sufficient to make the recommendations contained in this paper. However, there are some areas where information is uncertain or inadequate such that a cautious approach has been adopted.
- 223 On a scientific basis, comparative quantitative information on the status of the resource does not extend as far back as desirable, given the longevity of each species. Research findings, although not necessarily conclusive in all cases, or representative of all areas, are suggesting that trends in recruitment, population size structure, sex ratios, and spawning escapement are of concern and/or warrant particular consideration in forming recommendations for the future management of the fishery. This is particularly so for longfin stocks. Further, there is a lack of scientific information on the role of eel species in maintaining biological diversity, and quantitative information on their relationship with associated and dependent species.
- 224 There is reasonably good information about the use of the fishery by the commercial sector, but quantification of the non-commercial use of the resource has not been attempted at the level of a stock, or extensively at other scales. Oral accounts of the importance of the resource for non-commercial fishery interests are nonetheless included in considerations where available.

Conclusion

Overriding purpose

225 The eel fishery in the North Island will be introduced into the QMS on 1 October 2004. Four shortfin and four corresponding longfin stocks have been defined and gazetted (Northland/Auckland, Waikato/Poverty Bay, Hawke Bay/Wellington and Taranaki/Rangitikei). This Initial Position Paper outlines MFish's proposed recommendations for sustainability measures and other management controls applicable to these stocks from 1 October 2004. The proposals seek to address concerns about the sustainable utilisation of this national fishery, such that the purpose of the Act can be met.

Management strategy

226 MFish consider that the purpose of the Act would be better achieved by setting TACs under s 14 than s 13. The overriding objective in setting TACs under s 14 is to improve the stock structure and abundance over the medium term, while bringing a halt to any decline in the fishery over the short term, such that the fishery is sustainably managed, its availability to non-commercial fishers in particular is improved, and the relationship with interdependent stocks is also improved.

Calculation of TACs

227 The rationale for proposed TACs is based on known or estimated levels of commercial, recreational, and customary catch, and estimates of all other sources of fishing related mortality. Estimates of commercial catch are based on an adjusted average estimate of commercial catch within the stock area during the period 1990-91 and 2001-02, excluding any years that are not considered representative. Estimates of recreational catch at the level of the stock are not available, but are considered smaller than commercial catch in most of the QMAs. Estimates of customary catch are not known at the level of the stock, but MFish considers that estimates of catch taken for this purpose should at least be similar to recreational estimates. Quantitative estimates of other sources of fishing related mortality are not available at the level of the stock, but are known to occur on a relatively small scale.

228 MFish does not consider that recent harvest levels are likely to be sustainable for shortfin, and further, that recent harvest levels for longfin are probably not sustainable over the longer term. Observations of changes in size frequency, sex ratio, species composition and age of commercial catch, CPUE indices, trends in glass eel and elver recruitment, survey information, and qualitative accounts of the historical use of the resource, combine to indicate that recent levels of harvest are probably undesirable (to varying degrees dependent on the species in question), and are inconsistent with the purpose and principles of the Act. TACs are proposed (Table 1) to be set at levels between approximately 5 and 25% less than the estimated annual harvest levels for the 12-year period 1990-91 to 2001-02.

Provision for allowances and TACCs

229 MFish generally considers that customary Māori requirements, in terms of the allowance proposed, should be provided for in full. The allowances proposed are the

same as the estimated recent annual customary catch used for calculating TACs. Nominal allowances of between 2 and 4 tonnes are provided for other sources of fishing related mortality and these are also provided for in full in the allowance setting process.

- 230 MFish propose that the recreational allowances and the consequential TACCs each be subjected to the percentage reductions required to bring recent catches back to the level of the TAC. MFish acknowledges that recreational harvest may have been reduced in recent decades as a result of commercial fishing, and other factors such as self-imposed restraint amongst particular communities of interest (ie, Māori) in response to concerns about the status of the resource. MFish notes that the Minister can increase allowances for recreational interests as the stock recovers in recognition of these issues.
- 231 The TACCs proposed allow for on-going commercial use of the fishery, but below levels as experienced in recent decades. The North Island eel industry generally accept that the scale of its past use of the resource is not in the best interests of the fishery, or the longer term viability of their businesses. The industry has indicated an acceptance that decisions to ensure sustainability will have a bearing on their use of the resource following QMS introduction. Overall, the amount of eels made available for commercial fishing in the North Island is 5.1% or 9.2% less (depending on the option adopted in SFE 20) than current commercial catch (average of catch from 2000-01 and 2001-02 fishing years). The combined proposed TACCs (609 or 620 tonnes) for the North Island are higher than the commercial catch (estimated at 510 tonnes) taken in the 2002-03 fishing year.
- 232 The industry is expected to undergo considerable rationalisation as several long term participants elect to leave the fishery. The TACCs should allow an environment where some new investment and innovation can result in sustainable financial returns for those remaining, or those that enter the fishery. External factors such as demand on the international market, and exchange rates, are likely to influence profitability over the short to medium term.

Other proposed management controls

- 233 Additional sustainability measures proposed include the prohibition of commercial fishing in particular catchments (Motu, Mohaka, and Wanganui), and the extension of the prohibition on the taking of eels larger than 4 kg by commercial fishers from South Island fisheries waters to all New Zealand fisheries waters. These measures aim to facilitate the escapement of adult eels (ie, female longfin) in spawning condition. The latter measure is also likely to be beneficial addressing biodiversity obligations through the presence of a greater number of larger eels in food webs.
- 234 It is also proposed to recognise and provide for customary food gathering by Māori and the special relationship between tangata whenua and places of importance for customary food gathering, by prohibiting commercial fishing from the Taharoa Lakes (Kawhia), Whakaki Lagoon (Wairoa), Lake Poukawa (Te Hauke, Hastings), and the Pencarrow lakes (Wellington). Commercial fishers have not typically fished these areas in recent times, although Lake Poukawa was subject to considerable commercial fishing effort in the 1970s. These areas are not an exhaustive list of areas that may require special consideration. The areas serve to illustrate the historical significance

of these sites for Māori, and the need to further rationalise the selection by tangata whenua of any further areas, and the manner in which such areas can be recognised.

- 235 There are a number of consequential amendments to regulations to assist in the administration of the fishery in the QMS environment. It is proposed to revoke regulation 51 of the Fisheries (Commercial Fishing) Regulations 2001. This regulation specifies that commercial fishers may only take eels if authorised expressly on a fishing permit. This is not required when catch of either shortfin or longfin destined for sale, whether taken intentionally or not, has to be counted against ACE. Further, it is proposed to amend the Fisheries (Reporting) Regulations 2001 to update the codes that must be used for completing catch returns and the specific references to the new quota stocks.
- 236 MFish does not propose to recommend the addition of either shortfin or longfin stocks to the Eighth Schedule, such that commercial fishers will require a minimum holding of ACE for a particular stock. Eel stocks are already subject to the Sixth Schedule on a nationwide basis, providing a reasonable amount of flexibility for commercial fishers to return unwanted live catch without the need to count this catch against ACE. This provides benefits to the resource as well as the commercial fisher. MFish proposes to recommend to the Minister a deemed value of \$8.00/ kilogram for all North Island eel stocks, consistent with the operational policy applying to high value stocks.
- 237 It is also proposed that the chief executive of MFish revoke conditions on fishing permits that are redundant on introduction to the QMS. This includes the area and vessel restrictions. A further effort control that will automatically discontinue by law following introduction into the QMS is the restriction on the number of agents or employees that a permit holder can seek authorisation for eel fishing. Catch is more efficiently and directly restricted through catch limits applying to each stock.
- 238 After considering the nature of the statutory obligations contained in the Fisheries Act 1996, as outlined in the Statutory Consideration and Policy Guidelines section of this paper, and the available information about the stocks, MFish concludes that the proposals are consistent with the provisions of the Act.

Preliminary Recommendations

- 239 MFish recommends that the Minister:

EITHER

- a) **Agrees** to set a TAC of 236 tonnes for SFE 20 and within that TAC set:
- i) A customary allowance of 30 tonnes;
 - ii) A recreational allowance of 25 tonnes;
 - iii) An allowance for other fishing related mortality of 4 tonnes; and
 - iv) A TACC of 177 tonnes.

OR

- b) **Agrees** to set a TAC of 223 tonnes for SFE 20 and within that TAC set:
 - i) A customary allowance of 30 tonnes;
 - ii) A recreational allowance of 23 tonnes;
 - iii) An allowance for other fishing related mortality of 4 tonnes; and
 - iv) A TACC of 166 tonnes.

AND

- c) **Agrees** to set a TAC of 73 tonnes for LFE 20 and within that TAC set:
 - i) A customary allowance of 10 tonnes;
 - ii) A recreational allowance of 7 tonnes;
 - iii) An allowance for other fishing related mortality of 2 tonnes; and
 - iv) A TACC of 54 tonnes.
- d) **Agrees** to set a TAC of 212 tonnes for SFE 21 and within that TAC set:
 - i) A customary allowance of 24 tonnes;
 - ii) A recreational allowance of 20 tonnes;
 - iii) An allowance for other fishing related mortality of 4 tonnes; and
 - iv) A TACC of 164 tonnes.
- e) **Agrees** to set a TAC of 106 tonnes for LFE 21 and within that TAC set:
 - i) A customary allowance of 16 tonnes;
 - ii) A recreational allowance of 10 tonnes;
 - iii) An allowance for other fishing related mortality of 2 tonnes; and
 - iv) A TACC of 78 tonnes.
- f) **Agrees** to set a TAC of 101 tonnes for SFE 22 and within that TAC set:
 - i) A customary allowance of 14 tonnes;
 - ii) A recreational allowance of 10 tonnes;
 - iii) An allowance for other fishing related mortality of 2 tonnes; and
 - iv) A TACC of 75 tonnes.
- g) **Agrees** to set a TAC of 45 tonnes for LFE 22 and within that TAC set:
 - i) A customary allowance of 6 tonnes;
 - ii) A recreational allowance of 4 tonnes;
 - iii) An allowance for other fishing related mortality of 2 tonnes; and
 - iv) A TACC of 33 tonnes.

- h) **Agrees** to set a TAC of 25 tonnes for SFE 23 and within that TAC set:
 - i) A customary allowance of 5 tonnes;
 - ii) A recreational allowance of 4 tonnes;
 - iii) An allowance for other fishing related mortality of 2 tonnes; and
 - iv) A TACC of 14 tonnes.
- i) **Agrees** to set a TAC of 50 tonnes for LFE 23 and within that TAC set:
 - i) A customary allowance of 14 tonnes;
 - ii) A recreational allowance of 9 tonnes;
 - iii) An allowance for other fishing related mortality of 2 tonnes; and
 - iv) A TACC of 25 tonnes.
- j) **Agrees** to the addition of North Island eel stocks to the Third Schedule of the Fisheries Act 1996.
- k) **Agrees** to prohibit commercial fishing to recognise the special relationship between tangata whenua and places of importance for customary food gathering in:
 - i) the interconnected Lakes Taharoa, Numiti, Rotoroa, and Lake Harihari, south of Kawhia;
 - ii) Whakaki Lagoon, east of Wairoa;
 - iii) Lake Poukawa (Te Hauke), near Hastings; and
 - iv) Lake Kohangapiripiri and Lake Kohangatera (Pencarrow Lakes), Wellington.
- l) **Agrees** to prohibit commercial fishing for the purpose of facilitating escapement of adult eels in breeding condition in the:
 - i) Motu River catchment;
 - ii) Mohaka River catchment; and
 - iii) Wanganui River catchment.
- m) **Agrees** to revoke regulation 51 of the Fisheries (Commercial Fishing) Regulations 2001 that prohibit the taking or possession of eels except by fishing methods expressly authorised on a fishing permit.
- n) **Agrees** to amend regulation of the Fisheries (Commercial Fishing) Regulations 2001 to extend the maximum size limit for commercial fishers of 4 kg across the whole country (presently South Island fisheries waters only).
- o) **Agrees** to amend the Fisheries (Reporting) Regulations 2001 to outline the codes to be used by commercial fishers when completing their statutory catch returns.
- p) **Agrees** to revoke that part of regulation 31(6) of the Fisheries (Commercial Fishing) Regulations 2001, and similarly that part of regulation 6 of the Fisheries (Amateur Fishing) Regulations 1986 specifying that commercial and

non-commercial fishers must not use less than a 12 mm minimum net mesh size to take eels.

- q) **Agrees** that annual deemed values be set at \$8.00/kg for all North Island eel stocks.

ANNEX ONE: AMENDMENT TO REGULATIONS

Revocation of requirement to hold fishing permit expressly authorising taking

Proposal

240 It is proposed to revoke regulation 51 of the Fisheries (Commercial Fishing) Regulations 2001 that prohibits commercial fishers from taking or possessing eels except by fishing methods expressly authorised on a fishing permit.

Problem definition

241 Regulation 51 of the Fisheries (Commercial Fishing) Regulations 2001 states that “Commercial fishers must not take or possess eels unless holding a fishing permit that expressly authorises the taking of eels using a fyke net, hīnaki or set net.” This regulation effectively ensured that commercial use of the resource was constrained to identifiable permit holders and particular fishing methods, and as a result other commercial fishers were unable to take eels. This historical effort limitation on the use of the resource would have assisted with compliance of the industry.

242 With the introduction of most fisheries into the QMS, an express reference to the species and fishing method in a fishing permit authority becomes unnecessary. Continuing with this regulation serves no practical purpose. Under the QMS, the catch of eels by commercial fishers will need to be covered by ACE, or under the deemed value provisions where ACE is not able to be acquired, irrespective of whether it is caught as a target or bycatch species.

Preliminary consultation

243 No preliminary consultation has been undertaken on this measure, although commercial fishers are aware that the introduction of the North Island eel fishery into the QMS will result in changes to the existing regulatory framework such that certain effort controls are likely to be removed.

Options

Non-Regulatory Measures

244 There are no non-regulatory measures that are appropriate to address this issue. The proposal seeks to revoke an existing regulation.

Regulatory Measures

245 Revocation of the existing measure will require a regulatory amendment to the Fisheries (Commercial Fishing) Regulations 2001.

Costs and benefits of the proposal

- 246 Revoking the regulatory provision removes the need to enforce a measure that has little currency under the regulatory framework provided by the QMS. Commercial fishers will not commit an offence if they do not hold a fishing permit incorporating an authority to take eels with the specific method authorisations once the fishery is within the QMS and the regulatory changes have been made.
- 247 The only cost associated with revoking this regulatory provision relates to the government processes required to implement the changes sought. MFish does not consider that the potential to use a wider array of fishing methods will necessarily result in the use of particular fishing methods that may pose risks to the aquatic environment. In practice, there is few other alternative fishing methods available for the eel fishery. There are regulatory frameworks in place to address any risks that may arise.

Administrative implications

- 248 There are no administrative implications associated with the revocation of this regulatory provision other than those normally required of government processes when minor regulatory amendments are made. Systems controlling permitting will be updated such that fishing permits issued after 1 October 2004 will no longer mention North Island eel stocks in schedules listing non-QMS fisheries and the methods authorised.

Revocation of requirement to use not less than 12 mm minimum net mesh size

Proposals

- 249 It is proposed to revoke that part of regulation 31(6) of the Fisheries (Commercial Fishing) Regulations 2001, and similarly that part of regulation 6 of the Fisheries (Amateur Fishing) Regulations 1986 specifying that commercial and non-commercial fishers must not use less than a 12 mm minimum net mesh size to take eels.

Background

- 250 Fisheries regulations specifying the minimum net mesh size that commercial and non-commercial fishers may use for the purpose of eel fishing have been largely based on what has been traditionally used and available through fyke net manufacturers. Fyke net design is largely derived from Europe, and has not undergone any major change since the method was adopted in New Zealand.

Problem definition

- 251 During the 1990s eel processors identified that the use of the minimum 12 mm net mesh size can lead to an abrasion to both the ‘nose’ and tail of eels. In some instances the discoloured area can deteriorate into an infection. The extent of this issue is quite variable, depending on the size of the catch within a fyke net, the shape of the eel’s head as affected by growth rates, and the overall size and condition of an individual eel. Similarly, some commercial fishers may have more of a problem with this issue

than others, perhaps as a function of fishing practices employed and the specific areas fished. Processors indicate that eels with an abrasion are unlikely to meet the standard required for export in a whole state, such that eels are processed into other products of lesser value.

- 252 The purpose of setting a minimum net mesh size is generally to allow for the escapement of juvenile fish, as they will not be entangled. However, netting activities for eels focus on entrapping the catch, and in the case of the fyke net/hinaki methods, escapement of less than 220 g sized eels is assisted by the use of escapement tubes. Accordingly, a minimum net mesh size for the eel fishery serves little purpose. In addition, the difference in the composition in bycatch is unlikely to significantly change between a fisher using a 12 mm net mesh and one using a smaller sized net mesh (eg, 6 mm). It is possible that use of very fine mesh might reduce the chances of certain bird species (ie, cormorant) being caught that are attracted to fish movement.

Preliminary consultation

- 253 Several eel processors and fishers have indicated support for the proposal to revoke the minimum net mesh size for eels taking commercially. Non-commercial fishers have not made any observations about this issue, or whether they would support such a change.

Options

Non-Regulatory Measures

- 254 There are no non-regulatory measures that are appropriate to address this issue. The proposal seeks to revoke an existing regulation.

Regulatory Measures

- 255 Revocation of the existing measure will require a regulatory amendment to the Fisheries (Commercial Fishing) Regulations 2001, and the Fisheries (Amateur Fishing) Regulations 1986.

Costs and benefits of the proposal

- 256 Providing commercial fishers greater flexibility to take eels using fishing methods that reduce the risk of damage to the landed catch will assist in maximising the value obtained from the limited harvest levels proposed. Commercial fishers can choose to adopt a different net mesh size for use in fishing operations as they see fit (and as availability of finer mesh allows), and as existing fishing gear is due for replacement.
- 257 Revocation of a minimum net mesh size that has limited purpose will be one less regulatory measure to comply with, and one less regulation to enforce.
- 258 No costs are envisaged as a result of this proposal being implemented.

Administrative implications

259 Other than the processes required to revoke the affected parts of the regulations discussed, there are no administrative implications associated with the proposal.

Consequential amendments to the Fisheries (Reporting) Regulations 2001

Proposal

260 It is proposed to make consequential amendments to the Fisheries (Reporting) Regulations 2001 by amending:

- a) Table 11 of Part 1 of Schedule 3 of those regulations that specifies the codes to be used when completing catch returns which must be furnished to the Chief Executive. This amendment will incorporate codes which reflect the new QMAs for shortfin and longfin stocks;
- b) Table 2 of Part 1 of Schedule 3 of those regulations defining the specific QMAs defined by the Minister in his declaration of October 2003.

Background

261 The Fisheries (Reporting) Regulations 2001 provide the framework for the completion and furnishing of statutory catch returns by fishers to the Chief Executive. Information contained in these returns is used for research, stock assessment, enforcement and administrative reasons (including balancing catch against ACE). With the revised QMAs established by the Minister, it is appropriate to amend these regulations to ensure that they reflect the Minister's decisions on QMAs for shortfin and longfin eel stocks in the North Island.

Problem definition

262 The obligations for fishers to report their catch and the codes used to complete these returns should reflect the Minister's decisions on QMAs for each species to be introduced into the QMS on 1 October 2004.

Preliminary consultation

263 No direct consultation on the need to amend these regulations has been undertaken, as it is a consequential amendment flowing from the Minister's QMA decisions. However, many commercial fishers are aware that QMS introduction of North Island eel stocks will have implications for the reporting codes used in catch returns. This has previously been signalled when new reporting forms for the eel fishery were introduced in October 2001.

Options

264 As the reporting framework is contained in regulations, there is no other option than to amend these regulations.

Costs and benefits of the proposal

265 The proposed amendments clarify the obligations for commercial fishers when completing their statutory returns. Regulatory clarification means fishers are aware of their reporting obligations and complete their returns in the simplest fashion possible. The QMAs produced for recording the landing of eel stocks, together with new statistical area codes for reporting fishing effort from 1 October 2004, will significantly reduce problems with reporting evident in the 1990s.

Administrative implications

266 Minor amendments to forms and explanatory notes will be required consequential to this regulatory amendment.

Measures to facilitate spawning escapement of adult eels

Proposals

267 It is proposed to amend regulation 50 of the Fisheries (Commercial Fishing) Regulations 2001 to extend the maximum size limit for commercial fishers of 4 kg across the whole country (presently South Island fisheries waters only).

268 It is further proposed prohibit commercial fishing, for the purpose of facilitating escapement of adult eels in breeding condition, in the Motu River catchment, the Mohaka River catchment, and the Wanganui River catchment.

Background

269 Eels breed only once at the end of their life. Consequently, the fishery is based on immature adults (principally of undifferentiated sexed individuals and females), and there is an essential need to ensure that a sufficient number of mature eels escape to maintain a spawning population. The importance of this situation is even more evident when considering that eels are long-lived. Female eels (longfin in particular), take several decades to reach reproductive maturity, having reached the minimum legal size (for commercial fishers this is 220 g; there is no limit presently in place for non-commercial fishers). Until they reach maturity and migrate to sea, eels are vulnerable to fishing activities as well as mortality caused by non-fishing activities (eg, drainage clearance, pollution events).

270 The relationship between the fishable stock and the amount of recruits that may be generated from the spawning population is unknown. The available information on any change in recruitment of glass eels and elvers is inconclusive because long term data series are required to assess such trends. Nevertheless, there is some information indicating that the number of glass eels or elvers observed in recent years is less than the 1970s, and this may indicate a declining trend. There is considerable international concern about significant reductions in the abundance of juvenile eels for the European, American and Japanese eel species. Further, modelling work in New Zealand has indicated that even relatively low cropping rates are capable of considerably reducing the spawner biomass of longfin females, assuming that fishing occurs across the natural range of the species. On a broad geographic scale, this may be more of an issue for longfin given that its range is confined to New Zealand waters.

- 271 Some commercial fishers in the North Island have indicated that there are some discrete areas where commercial fishing does not occur, and that this would need to be factored into any assessment of the adequacy of longfin female escapement. However, while this might be the case, commercial fishers have yet to identify these areas and confirm that these areas have not been fished over the longer term (ie, several decades). Identification of areas that have not been subject to fishing activities would be particularly valuable from a scientific perspective in assessing natural population dynamics. In any case, commercial fishers have noted support for the concept of ensuring adequate escapement of adult eels in breeding condition through the closure of particular catchments to their fishing activities.
- 272 A further consideration is that the density of large eels in an area, principally females, is likely to be in proportion to the total amount of available daytime cover. There is no doubt that the habitat for eels has markedly changed over at least the last century as a result of land management practices, including flood protection works, drainage and river channelisation (a 1983 assessment indicated that 600,000 ha of land across the country had historically been 'freed from flooding'). These actions have reduced the area available to serve as refuges for large eels. A comparison of densities of large eels from studies conducted in the 1940s indicates that available cover may influence densities by a factor of ten. Furthermore, hydroelectric power station developments and flood control measures such as weirs impede the downstream migration of adult eels in breeding condition. Such developments compromise the benefit that might otherwise be realised by areas closed to fishing upstream (eg, National Parks), or more generally as it relates to a management strategy of ensuring adequate escapement of adult eels in spawning condition.
- 273 An assessment of the size and age structure of eel populations in the 1990s also emphasises that the number of large (>700 mm) female longfin eels has significantly reduced in comparison to assessments made prior to, or during, the 1970s. The length frequency distributions of eels caught by commercial fishers in recent years throughout the country are skewed to the left of frequency histograms, meaning that very few large eels are caught. In the South Island, where a 4 kg maximum legal size limit applies to the taking of eels by commercial fishers, the current population size structure from areas the subject of monitoring is such that relatively few eels reach a weight where commercial fishing is no longer a factor in their survival prior to undertaking their spawning run.
- 274 The reduced number of large eels in an eel population may not only have implications for spawning escapement, but may also be responsible for altering the sex ratio of the remaining eel population. This is because large female eels are cannibalistic and keep the density of other eels in check. Without this, a higher density of smaller eels can induce sexually immature juveniles to become male.
- 275 Because both species form a single biological stock throughout New Zealand, it is logical that an appropriate maximum legal size limit should apply throughout the country as one measure to facilitate spawning escapement of adult eels in breeding condition. However, the effectiveness of this measure alone is insufficient to improve spawning escapement given the present eel population structures. A lower maximum legal size (eg, 3 kg) may provide a marginal improvement in the biomass of the spawning population at exploitation rates within a range of 0.02 to 0.1, without necessarily impacting on yield-per-recruit.

- 276 Other than the establishment of conservative catch levels through TAC setting, and the application of a maximum legal size on a national basis, the most direct method to facilitate escapement of adults in spawning condition, with a view to making improvements in recruitment levels over the longer term, is to identify areas where fishing should be prohibited. This appears to have been first suggested in 1972 by Dr Castle, formerly of Victoria University of Wellington.
- 277 Such a prohibition need only apply to commercial fishing in most locations, as the non-commercial sector is unlikely to have had the same overall impact on the resource, or may not have the same incentive to venture into otherwise remote areas. Should non-commercial fishing increase in areas prohibited for commercial fishing, or modest levels of non-commercial fishing occur in prohibited areas holding eel populations with relatively slow growth rates (eg, 40 years or more for female longfin to reach maturity), then extension of the prohibition to the non-commercial sector should be considered, or alternative catchments nominated for long term closure.
- 278 In 1993, a preliminary assessment of the various areas (eg, Government Purpose Reserves, Scenic Reserves, Wildlife Refuges, National Parks) closed to commercial eel fishing was undertaken. This indicated that there were insufficient areas offering protection to eel populations. Relatively few lowland areas affording suitable habitat for shortfin eels were in reserves, particularly in the North Island. Because of the longevity of longfin eels, and the fact that many reserves in highland areas had impeded access, it was similarly concluded that the reserve areas were barely adequate for longfin.
- 279 With the advent of Geographical Information Systems (GIS), MFish has recently commissioned further research work to better assess the areas closed to fishing and the relative contribution that such areas might make to spawning escapement of longfin in particular. This work is not scheduled for completion until 30 September 2004. Output from this work will assist fishery interests from all eel stocks identify existing and any further closed areas to facilitate spawning escapement. The proposals discussed here represent some progress towards the goal of ensuring adequate escapement of adult eels in spawning condition. Fishery interests can explore further options following the receipt of research advice, with a view to ensuring that contributions from each QMA meet the overall national goal.

Problem definition

- 280 MFish considers that there are insufficient areas closed to fishing activity to facilitate escapement of spawning adult eels, despite the proposed implementation of what is considered to be conservative catch levels, and the potential application of a maximum legal size limit for commercial fishers across the entire country (presently applies to South Island alone). There are fewer areas closed to some or all fishing activities (for purposes other than being proposed for fisheries management reasons, but nonetheless potentially contributing to these outcomes) in the North Island than the South Island.

281 MFish considers that the following waterways would be suitable candidates to consider as areas to be set aside from commercial fishing for the purpose of facilitating escapement of adult eels, particularly longfin, in breeding condition:

- a) Motu River catchment (eastern Bay of Plenty) – the distribution and habitats of fish in this catchment were surveyed in 1980. Longfin eel were the most widely distributed and abundant species in the catchment, while shortfin were found only in four samples in the middle of the catchment. The report concluded that “eel stocks in wild rivers such as the Motu will gain increasing importance as sources of spawning adults and hence recruitment to the eel fishery throughout New Zealand”. Access to most parts of the catchment are quite limited, and likely to remain so in the future;
- b) Mohaka River catchment (50 km north of Napier) – the distribution and habitats of fish in this catchment were surveyed in 1983. The total catchment area is approximately 2400 km², and was ranked eleventh in size in the North Island. Longfin eel were the most widely distributed species in the catchment, while shortfin were mainly found in the lower reaches of the catchment beneath the Maungataniwha gorge. Access to most parts of the catchment are quite limited, and likely to remain so in the future; and
- c) Wanganui River catchment – longfin is the dominant eel species in this river. Access to many parts of the middle and upper catchment reaching inland some 300 kilometres from the sea is limited, and unlikely to be developed in the future. However, the main river and key tributaries are navigable, although there are several natural barriers in the upper catchment that have a bearing of the distribution of indigenous fish species and the movement of people on the river or its tributaries. Recruitment of eels into the fishery is considered low in the upper catchment (as evident from surveys conducted in the early 1960s), partly as a result of lower than experienced elver runs. The extent of future non-commercial fishing activity under a rebuilt fishery in this catchment is not considered to be problematic in terms of the overriding sustainability objective as some Māori representatives have indicated a willingness to adopt practices that would still ensure that this goal is met (eg, avoiding the capture of migrating adults). However, if there was a desire to have an ability to commercially fish this catchment in the future, then perhaps an alternative catchment in the Taranaki/Rangitikei QMA could be suggested (eg, Waitotara).

282 MFish would envisage that the rationale for selecting other candidate sites would include consideration of:

- a) the eel species present in the catchment;
- b) the quality of the habitat in the catchment such that it can support eels of a larger size (eg, sufficient cover);
- c) whether the area complements areas presently closed to fishing for other purposes (eg, a river adjoining another type of reserve such as Egmont National Park, or for example as an alternative to the Wanganui River, the Waitotara River given that its headwaters pass into the Whanganui National Park);
- d) the nature and extent of fishing activity in the catchment or site from all sectors; and

- e) whether scientific information on the status of the resource and catchment indicates its suitability for setting aside from some or all fishing activities.

283 MFish would envisage that such closed areas would be spread reasonably evenly across the country, but in proportion to the distribution and relative abundance of each species. While the above proposals focus on principally catchments suitable for longfin given their longevity, there is likely to be a need to assess catchments that might be suitable closed areas for shortfin. MFish would welcome suggestions from fishery interests that have been carefully assessed.

Preliminary consultation

284 The creation of refuge areas where adult eels can mature without being vulnerable to commercial fishing activity has been discussed in general with fishery interests, including commercial eel fishers. Fishery interests participating in these discussions accept the rationale that areas closures would provide an additional assurance that sufficient adult eels in breeding condition escape to contribute to the spawning biomass.

285 Further, fishery interests are aware that MFish is of the view that existing areas closed to fishing (for purposes other than fisheries management), are unlikely to be sufficient to address the spawning escapement issue. MFish has noted that in some catchments, closed areas do not necessarily cover the full catchment, meaning that migrating eels may be subject to capture in the parts of the catchment where fishing is permitted. This impact may be lessened as migrating eels do not feed, and will only be taken where fyke nets are set in a manner that would interrupt the most likely migratory route down a watercourse.

286 The importance of ensuring adequate escapement of adult eels in breeding condition was raised during the initial stage of consultation for the introduction of North Island eel stocks. One submitter suggested that fishing could cease during the time of migration. MFish notes that the fishery is predominantly based on feeding eels, and that at migration, adult eels in spawning condition do not feed. Eels in spawning condition may still be caught on an incidental basis where fishing gear is set in such a way to maximise catch. As a possible management measure itself, it is unlikely that ceasing fishing during the migratory season would provide for sufficient spawning escapement. The general issue of facilitating escapement has been discussed with industry representatives, and to a lesser extent other fishery interests, on a number of occasions in recent years. Despite this, few suggestions have been made on possible ways to address this issue.

Options

Non-regulatory measures

287 Fishery interests could agree to abide by a voluntary agreement to avoid fishing during the migratory season (autumn), or more specifically following flood events. Implementing this as a non-regulatory measure might provide for more flexibility in undertaking fishing activities prior to and after the actual migration event. This is because the timing of the migration event will be influenced by environmental factors

(ie, flood conditions), and the differences in rainfall patterns across different eel stocks.

- 288 MFish would welcome comment from fishery interests on whether such a measure would be effective in facilitating escapement of adult eels in breeding condition, and secondly, the manner in which such a restriction could be applied (voluntarily or by regulation, and whether some or all sectors would or could agree to such an approach). MFish observes that some non-commercial interests (ie, Māori) tend to target eels when they are migrating. Others may avoid fishing during the migratory run.
- 289 Commercial fishers could similarly agree on a voluntarily basis not to take eels above the maximum legal size of 4 kg specified in the South Island. However, as this is already regulated, and will probably be a longer term measure of national consequence (following improvements in the size structure of the population), it would seem logical to apply the existing regulation across the entire biological stock throughout New Zealand fisheries waters.
- 290 MFish would welcome views from fishery interests, particularly the non-commercial sector, about whether a maximum legal size limit should also apply to recreational fishing. If it did, there would still be the ability for kaitiaki to authorise the taking of eels above that size limit for the purposes of traditional hui or tangi only, in accordance with regulation 27 of the Fisheries (Amateur Fishing) Regulations 1986.
- 291 Commercial fishers could agree to abide by a voluntary agreement to avoid fishing particular catchments or areas on a permanent basis. In order to be effective, this approach would need to be applied across potentially several generations of fishers. This is unlikely to be successful as fishery interests present in the fishery in as little as say 20-30 years time may have a different perspective on the fishery's management than what might be envisaged as appropriate in the short to medium term. It is unlikely that any of the existing participants in the commercial fishery will have an involvement in the fishery in ten years time. Given the longevity of female eels in particular, it is possible that any benefits acquired over say a decade could be lost if commercial fishers failed to abide by an agreement in subsequent decades. Voluntary agreements are generally more suitable for short term management actions, and in this case, are not considered desirable to address an underlying sustainability measure.

Regulatory measures

- 292 Regulation 50 of the Fisheries (Commercial Fishing) Regulations 2001 would need minor amendment such that commercial fishers abided by the maximum size limit of 4 kg in all New Zealand fisheries waters, rather than just the South Island.
- 293 If it were considered appropriate to apply a maximum legal size to eel fishing for recreational purposes on a regulatory basis, then the Fisheries (Amateur Fishing) Regulations 1986 would require amendment. This regulatory series encompasses all of New Zealand.
- 294 In order to provide certainty over the longer term, a regulatory amendment closing particular catchments to commercial fishing would be the most transparent and effective means of ensuring compliance with the management objective. To minimise

the effect of the regulation on other commercial fishing activities, the regulatory measure could be applied only in waterways where these other fisheries are not typically used. This would not be difficult to accomplish. Alternatively, a regulatory measure might be specific to the use of particular fishing methods such as fyke netting and hinaki. There are almost no other commercial fisheries that use these fishing methods. However, commercial fishers might attempt to avoid the effect of the ban by adopting other fishing methods.

- 295 A complete ban on commercial fishing within the selected catchments would probably have little or no effect on existing users (other than perhaps at the mouth of the Wanganui River), but may prevent opportunities for commercial utilisation of other species in the future. This may or may not be acceptable to fishery interests, depending on the opportunities to commercially use other fishery resources in adjacent areas. The approach of prohibiting all commercial fishing from an area is the most effective and simplest to adopt from a compliance point of view. Regulatory measures providing for both of the proposed sustainability measures would be made in accordance with s 298(a) of the Act.

Costs and benefits of the proposal

- 296 Facilitating adequate escapement of adult eels in breeding condition is an essential component of the management strategy for the eel fishery. Other than considering the sustainable harvest levels for the various stocks, complementary controls provide some additional assurance that this goal will be achieved, particularly given the biology of the species.
- 297 The extension of the maximum size limit of 4 kilograms to the commercial sector in areas other than the South Island will be of most benefit to escapement of female longfin on a national basis. As the present size structure of the eel fishery is such that 4 kg eels are rarely caught, commercial fishers are unlikely to forego much in the way of potential catch. As the size structure of the eel fishery improves, the maximum size limit should become increasingly effective in providing a level of further female longfin escapement.
- 298 As both controls on maximum legal size and closed areas are intended to be implemented on a longer term basis, the costs of introducing the regulatory measures are insignificant.

Administrative implications

- 299 There are no significant administrative implications associated with the implementation of these proposed measures. Enforcement of these measures should be relatively straight-forward in this relatively small industry.

Conclusion

- 300 The extension of the prohibition for commercial fishers to take or possess eels of less than 4 kg to all New Zealand fisheries waters (currently South Island only), together with the closure of particular waterways to commercial fishing should facilitate the escapement of adult eels in breeding condition. MFish seeks input from stakeholders

on whether an equivalent maximum legal size limit of 4 kg should be applied to non-commercial fishers.

- 301 Further, MFish seeks comment from stakeholders about the choice of waterways it has suggested as areas that will provide a refuge or reserve area for eels, such that these populations are not vulnerable to commercial fishing activity, or significant non-commercial fishing activity, and will facilitate the migration of adult eels in breeding condition. MFish propose to prohibit all commercial fishing from these waters.

Measures to recognise and provide for customary food gathering by Māori

Proposals

- 302 It is proposed to prohibit commercial fishing to recognise the special relationship between tangata whenua and places of importance for customary food gathering in:
- a) the interconnected Lakes Taharoa, Numiti, Rotoroa, and Lake Harihari, south of Kawhia;
 - b) Whakaki Lagoon, east of Wairoa;
 - c) Lake Poukawa (Te Hauke), inland from Hastings; and
 - d) Lake Kohangapiripiri and Lake Kohangatera (Pencarrow Lakes), Wellington.

Background

- 303 The eel fishery was traditionally the most important fishery to Māori for subsistence and cultural purposes. The nature and extent of the use of the fishery has changed over the longer term in response to broad scale social and environmental influences (ie the development of the country as a whole). Nevertheless, Māori continue to hold the eel fishery in high regard as part of their customs, and continue to recognise particular sites as places of importance for customary food gathering.

Problem definition

- 304 The introduction of the North Island eel fishery into the QMS with an appropriate allocation of the TAC for non-commercial interests will go a considerable way to addressing the needs of the non-commercial sector, of which Māori are a significant participant. However, there may be places of importance for customary food gathering that require particular consideration in terms of the measures that can be implemented to recognise the special relationship between tangata whenua and places of importance for customary food gathering. Examples of such areas are discussed below, with a view to developing over the medium term criteria to identify such areas, and the possible options that could be used to better recognise sites of particular importance for customary food gathering. MFish would welcome input from tangata whenua on how such sites could be better recognised.

- 305 Taharoa lakes, Kawhia – consisting of three interconnected Māori owned dune lakes, Lakes Taharoa, Numiti and Rotorua (approximately 2.46 km² in area, and 3-4 m depth), in addition to the smaller nearby Lake Harihari, are important non-commercial fisheries for the Māori community of Taharoa. Shortfin comprise 90% of the eel population in the lakes. The installation of a small dam in 1971 is thought to have affected fish passage into the inter-connected lakes. A survey undertaken in the summer of 1994 indicated that a commercial fisher who had fished the lakes during 1993 was likely to have been responsible for further depleting the resource. This is despite recognition amongst the commercial eel industry that this area was traditionally a fishery of importance to tangata whenua, and should not be fished on a commercial basis. A researcher has estimated that longfin attain reproductive maturity in the Taharoa lakes at an age of 17 years for males and at least 22 years for females.
- 306 Whakaki Lagoon, Wairoa – Eels formed an important food source for tangata whenua prior to the bypass of the Rahui Channel (the historical outlet for flood waters through to the Patangata Lagoon and the sea when overtopping the sand bar). The brackish lagoons have also been the subject of adjacent land run-off, farmland development and loss of wetland habitat, and the reversal of the water flow regime, together with artificial dewatering events. As a result, the eel population in the Whakaki area is estimated to be 75% less than what it was in the early 1950s, according to one qualitative account made in 1992. Recruitment of young eel (mostly shortfin) into the lagoons has been raised as a potential issue. The Whakaki Lagoon Trustees, as owners of the majority of the lagoon bed and adjacent land, have noted their interest in improving the status of the eel fishery. Tangata whenua wish to see these areas continue to provide them with physical and spiritual sustenance in accordance with their traditional values. MFish suggests that the area encompassed by the proposal to prohibit commercial fishing include primarily the Whakaki Lagoon.
- 307 Lake Poukawa, Te Hauke, inland from Hastings – this is one of the few lakes in the Hawke Bay. It is a shallow lake, typically of only 2 m depth and minimum area of 150 ha. The lake margin increases in area on a seasonal basis with fluctuating rainfall (reported to have reached 730 ha when marginal lands become flooded prior to 1984), and the peat soils surrounding the lake contributed to a once productive environment for the predominantly shortfin fishery. The fishery is of particular importance to Māori who sited their marae adjoining the lakeshore. Eels are generally taken for ceremonial occasions in more recent times, but historically the lake was a major food source for the population adjacent to the lake. Intensive commercial fishing of the lake occurred in the late 1960s through to the mid-1970s. Further, drainage works on the lake outlet and agricultural practices around the lake margin have contributed to a reduction in habitat quality. A recommendation to recognise the lake's importance to Māori for subsistence and ceremonial purposes, and to prohibit commercial eel fishing, was recommended by MAF Fisheries Research Division in 1984.
- 308 Pencarrow Lakes – consisting of Lake Kohangapiripiri and Lake Kohangatera, located near the entrance to Wellington Harbour. The lakes in question have been used for non-commercial fishing purposes for several generations. There has been an instance in the last two years where a commercial fisher has fished the lakes, such that some concern has been expressed about the effect on the eel resource, and its availability for customary food gathering purposes. Recruitment to the lakes is probably intermittent

as there is a large shingle bank at the outlets into the sea. The tributaries leading into Lake Kohangatera (eg, Gollans Stream and Butterfly Creek) are understood to be within a Water Supply catchment area administered by the Wellington Regional Council.

Preliminary consultation

- 309 Eel industry representatives are aware that there are several sites in the North Island of particular significance to tangata whenua for customary food gathering purposes, and that these areas are unlikely to be available as commercial fishing grounds. The eel industry is well aware of the significance of the sites identified above, and have generally avoided fishing these waters in the past. This has been possible given the longer term use of the fishery by existing commercial fishers, and their understanding of the respective values associated with the resource. With the rationalisation of the fishery expected to occur with QMS introduction, this environment may not continue.
- 310 The eel fishing industry is aware that MFish has statutory obligations to recognise and provide for customary food gathering by Māori and the special relationship between tangata whenua and places of importance for customary food gathering. They are also aware that there is the opportunity for fishery interests, including tangata whenua, to work together to assist with the identification of such areas, in order that the harvesting strategies of commercial fishing interests take these areas into account, without the need for government intervention. However, the North Island eel fishing industry has not made a concerted effort to address these issues, partly because of the difficulties associated with engaging with tangata whenua, and partly because their resourcing and governance structures are limited.
- 311 Nevertheless, the eel fishing industry appreciates that some discrete areas will be considered as candidates for regulatory closure to commercial fishers. For example, this has been foreshadowed during discussions between Māori and fishing industry representatives of the Tainui Tuna Working Group during the late 1990s. MFish also notes that the above sites have previously been the subject of informal discussions with eel fishery representatives, as potential candidates. These sites are representative only, but are indicative of the type of areas that might be considered for particular recognition as customary food gathering areas.
- 312 For example, as part of the consultation process for determining QMAs, it was brought to MFish's attention by Te Kawanga o Kahungunu that a number of lakes and rivers in the northern Hawke Bay should be designated non-commercial areas. These areas included the catchments of the Mohaka, Waihua, Waiiau, Waikare, and Moeangiangi Rivers, as well as the relatively small lakes of Roto Ngaio, Lake Rotorua, and Rotonui-aha. Fishery interests in the area may wish to further articulate the customary importance and present use of such areas, as other fishery interests may be able to voluntarily stay away from these areas.
- 313 MFish would prefer to assess, in cooperation with fishery interests, the range of areas considered important customary food gathering areas, and the management measures that might apply in such circumstances. It may be that voluntary measures can address any perceived risks from localised harvest activity. More generally, the overall TACs set for each eel stock should allow the eel resource to rebuild in a

manner that customary fishing should improve over a broader geographic area, without the need for unnecessary regulatory intervention.

- 314 Over the last couple of years Māori representatives for the Taharoa lakes, Whakaki Lagoon, and Pencarrow Lakes have expressed a desire to see better controls on fishing activities within these specific areas. A representative of Te Ati Awa has indicated that while they do not rule out the prospect of limited commercial fishing activity in the Pencarrow lakes in the future, a prohibition on commercial fishing would be appropriate at this site over the medium term. No specific preliminary consultation has occurred with representatives of tangata whenua with an interest in Lake Poukawa. The Ministry would welcome any comments from such interests.

Options

Non-regulatory measures

- 315 Future participants in the eel industry could make voluntary agreements amongst themselves about areas of importance to tangata whenua for customary food gathering purposes. Such agreements could draw on the experience gained by several long term fishers who have an understanding of the areas used by tangata whenua. While this approach may provide for a sufficient level of flexibility for the fishing industry, it also carries with it some risk. The number of long term commercial fishers with local knowledge is likely to significantly decrease on introduction of North Island eel stocks into the QMS. Some relatively new agents or employees of permit holders have caused some concern amongst other permit holders who consider that the location of their fishing has given rise to local concerns by tangata whenua.

Regulatory measures

- 316 Commercial fishing undertaken in sites of particular significance to tangata whenua may reduce the availability of eels for customary purposes for a reasonable period, and give rise to concerns about how genuine the industry is in upholding any voluntary agreement. Similarly, some tangata whenua would prefer to see sites of particular significance to them given formal protection. Consequently, there is likely to be a need to adopt a mix of both voluntary and regulatory options to ensure that the values associated with the resource are adequately recognised.
- 317 MFish proposes to recognise the importance of the sites discussed above for customary food gathering purposes through a regulatory prohibition on commercial fishing in these areas. Alternatively, the regulatory prohibition at these sites could apply to just commercial eel fishing, although fyke netting or potting could be the main fishing method employed for other species found in these discrete areas.
- 318 Equivalent regulations prohibiting commercial eel fishing in South Island fisheries waters (Pelorus River, Lakes Forsyth and Ellesmere, and the Wainono Lagoon) were made under either s 89 of the Fisheries Act 1983 or s 297 of the Fisheries Act 1996 as part of the process accompanying the introduction of South Island eel stocks into the QMS.

Costs and benefits of the proposal

- 319 Tangata whenua will need to weigh up the importance of recognising these sites as customary food gathering areas only, and fore-going any commercial fishing activity that they may wish to commence themselves as a result of the 20% allocation of quota to Māori.
- 320 The areas identified are quite discrete, have limited access points, and the risk of poaching is likely to be quite limited without the knowledge of the local community. However, providing regulated recognition for these sites is likely to better maintain their status than the potential for a breach of a voluntary agreement.

Administrative implications

- 321 MFish does not envisage that it will need to re-direct compliance resources to enforce any regulated closure. Enforcement activity is unlikely to be that difficult with the cooperation of fishery interests in the respective areas.

Conclusion

- 322 In recognition of the importance of particular sites for customary food gathering purposes and the special relationship between tangata whenua and places of importance for customary food gathering, MFish propose to either prohibit commercial eel fishing or commercial fishing (proposed option) from the Taharoa lakes (south Kawhia), Whakaki Lagoon (Wairoa), Lake Poukawa (Te Hauke, Hastings), and the Pencarrow lakes (Wellington).

ANNEX TWO: SPECIES INFORMATION

Species Biology

- 323 Eels in New Zealand have relatively unique life history characteristics in comparison to other resident fish species. They breed only once at the end of their life, migrating from the area where they have spent much of their life to an oceanic spawning ground in the South Pacific (or the Coral Sea for *A. reinhardtii*). On average, a longfin female is reported to contain 8 million eggs when in breeding condition. Available evidence suggests that there is a single spawning stock for each species. The larval progeny undertake a long oceanic migration, arriving as glass eels in estuarine and freshwater environments between August and November. The subsequent upstream migration of elvers (pigmented juvenile eels) distributes eels throughout the estuarine and freshwater environment nationwide. Shortfins predominate in lowland lakes and muddy rivers, while longfin are found more generally distributed, having a preference for stony rivers and particular water velocity characteristics (eg, riffles). Longfin penetrate further inland to high country rivers and lakes. Eels occupy a home range, but may continue to exhibit seasonal upstream migratory behaviours in the first few years of their life. At larger sizes (eg, above 300 g), eels of both species are most commonly found in deeper and slower flowing pools and backwaters having adequate cover.
- 324 Once elvers have settled, growth rates are variable and dependent on food availability, water temperature, and the density of eels at a particular site. Growth rates (determined from commercial catch sampling programmes through 1995-96 and 1996-97) are highly variable within and between catchments. Shortfin and the Australian longfin often grow considerably faster than the longfin. In the upper North Island shortfin take, on average, nearly six years to reach 220 g (the minimum legal size for commercial fishers) and nine years in the case of longfin. Based on subsequent commercial catch sampling carried out in the 1997-98 fishing year, and the 1999-00 fishing year as it relates to the lower North Island, the average age to reach minimum legal size is likely to be greater than the initial estimates. Specific figures are noted in the TAC setting section for each stock where information is available. The 220 g minimum legal size provides a slight improvement in yield-per-recruit when tested for two distinct eel populations than the previously applied measure of 150 g.
- 325 The age when adult females undertake their spawning run is significantly greater for longfin than shortfin. The mean values for longfin range from 49-56 years, although may be less than 25 years in productive habitats, or as high as 93 years in sub-alpine lakes. In comparison, the mean values range from 9-41 years for shortfin. Further, the longevity of longfin (recorded maximum of 106 years) is significantly greater than shortfin (recorded maximum of 60 years).
- 326 The abundance of eel stocks is not highly variable from year to year (other than perhaps Lake Ellesmere in the South Island which is focused on the harvest of migratory shortfin males). The fishery is based on species that have a relatively long life span and there are many age classes within the fishery. Growth rates are generally

considered to be slow, although can be quite variable in more productive waters. Manipulation of stocks through enhancement activities or rotational fishing are unlikely to result in short term changes in overall abundance of fishable stocks.

Fisheries Characteristics

Commercial catch

Fishery Development

- 327 The commercial fishery commenced in the early 1960s (first exports in 1965), peaking in 1975 at 2434 tonnes (Fishing Industry Board export figures). Practically, the entire fishery is export driven (ie, predominant markets in Europe and increasingly Asia). At its peak in the 1970s, there were up to 35 factories processing eels. This had reduced to nine companies who processed more than 50 tonnes, and a further fourteen companies processing between 1 and 50 tonnes, during 1990 or 1991. In the North Island, seven companies processing reasonably significant quantities of eels in 1985, whereas today that number has dropped to four. Only one main South Island eel processing operation exists today. The total number of permits issued in 1985 was 285, of which approximately 163 were likely to have been able to be used in the North Island, mostly in the Waikato, Northland and Auckland.
- 328 The national catch has been relatively stable since the 1980s at about an average of 1370 tonnes, although the overall catch has not reached that level in more recent times, partly as a result of QMS introduction of South Island stocks from October 2000, some fishing years being affected by drought (eg, 1997/98), and difficult international market conditions, as experienced since the 2000/01 fishing year in particular. Two-thirds to three-quarters of the national commercial fishery, by tonnage landed, is taken from the North Island. The processors estimates of the tonnage of eels received from North Island waters between 1991-92 and 2001-02 are outlined in Table 1.

Table 1: Fishing year estimates of eel catch (t) compiled from data from individual processors during the fishing years 1991-1992 to 1999-00. Data for 2000-2001 and 2001-2002 fishing years (*) derived from Licenced Fish Receiver Returns (LFRR). Licenced Fish Receiver Returns (LFRR) totals for New Zealand provided for comparison.

Fishing Year	North Island eel landings (tonnes)	Processor total for NZ	Licenced Fish Receiver Return total for NZ
1991-92	989.2	1620.9	1585.2
1992-93	865.3	1462.3	1465.9
1993-94	744.1	1333.8	1255.0
1994-95	1004.4	1515.2	1438.3
1995-96	962.4	1480.9	1429.0
1996-97	830.3	1248.7	1342.1
1997-98	794.6	1153.1	1209.9
1998-99	804.2	1185.4	1218.9
1999-00	723.2	1119.2	1133.5
2000-01	767.5*	-	1070.9
2001-02	700.0*	-	1018.2

Historical and present management controls

- 329 The commercial eel fishery has been considered fully developed since at least the early to mid-1980s. By way of example, in the Wanganui area, approximately five full-time and 25 part-time commercial eelers were known to base their operations in the Wanganui River prior to 1982. Access to the commercial fishery through the issue of a fishing permit has been progressively restricted. Part-time fishers were excluded from the fishery in 1984, and a statutory moratorium on access to the fishery by new commercial fishers was introduced in late 1988 (s 65, Fisheries Act 1983). This was further strengthened by the broader statutory moratorium on access to fisheries not subject to the QMS, as passed in late 1992. There are approximately 85 parties eligible to hold fishing permits for eel stocks in the North Island, although several of these have not been active for many years. Some are deceased estates. About 70 permit holders use their fishing permit authorisations to varying degrees.
- 330 The use of agents or employees fishing under the authority of permit holders were clarified after 1991. The intent was to further restrict fishing effort to no more than that experienced during the late 1980s. The restriction on the number of agents or employees do not continue to apply to eel stocks once introduced into the QMS as catch is directly constrained.
- 331 Permit holders have also been restricted to areas of historical activity throughout the 1990s, as standardised through permit conditions specifying Eel Statistical Areas (ESAs) where fishing may be undertaken. This restriction will become redundant on entry of northern eel stocks into the QMS. This is because commercial catch within a QMA will be constrained through the TACC for the stock, and commercial fishers will have access to QMAs based on the quantity of harvesting rights held for the particular stock.
- 332 Further effort restrictions introduced in the early 1990s included a limitation on the use of additional fishing vessels within Fishery Management Areas 1 and 9 for shortfin and longfin stocks. There was a concern that the use of additional vessels in these areas would increase fishing effort in waterways not easily accessed by foot, in addition to the general risk that some permit holders might register further vessels to increase their catching potential. This restriction will be unnecessary after 1 October 2004, and is scheduled for removal on entry of northern eel stocks into the QMS.
- 333 The commercial fishery is seasonal south of, and including, the central North Island given the cooler water temperatures experienced during winter, and the inactivity of eels in such conditions. In the upper North Island, fishing occurs throughout the year, although fishing success is more likely to be more productive during the extended summer period. Commercial fishing has to a lesser or greater extent occurred in most parts of the North Island where eels are present. However, there are likely to be some areas that have been only fished intermittently given access constraints or remoteness. Commercial fishing activity in the Northland and Waikato areas contributes a significant proportion of the overall commercial catch from the fishery. Access to undertake a commercial activity is also restricted on a formal basis in areas managed as Government Purpose Reserves, Wildlife Refuges, or other stewardship areas, as typically administered by the Department of Conservation (eg, Reserves Act 1977).

- 334 Commercial fishing is prohibited in National Parks. In the North Island, this includes Egmont, Wanganui, Urewera, and Tongariro, although eels are likely to be absent from much of Tongariro National Park. The location of these Parks, largely in the upper catchment areas, is likely to provide a refuge for longfin in particular. MFish notes that the Whanganui National Park does not actually include the waters of the Wanganui River and some of the larger tributaries, but it does include some of the smaller tributaries. Further, DoC advises that part of the headwaters of the Waitotara River is within the Waitotara Conservation Area.

Trends in size frequency, age and species composition

- 335 In 1972 it was observed that the bulk of eels utilised commercially consisted of those larger than 340 g (56 cm). Evaluations of historical processor data on catch composition and size frequencies of eels landed at their factories also emphasises the change in the nature of the commercial fishery since the 1970s. The proportion of eels (not differentiated by species) under 454 g processed at Te Kauwhata (Waikato) has increased from 20% in 1975 to 60% in 1985. The species composition appears to have changed from about 75% by weight of shortfins processed in the mid 1970s to 90% in the mid 1980s.
- 336 Data from a further processor (Auckland) for the years 1985-90 show that the percentage of longfin in the smallest size grade (150-600 g) increased from 23% to 93% between 1985 and 1989-90, and the proportion of larger longfin processed has declined over time. There was a significant drop in the proportion of longfin processed to only 10% in 1989-90, but this data point may not be consistent with subsequent data points. Data from the Auckland processor also indicates that there was no trend in changing sizes of shortfins processed at the factory for the 1985 to 1989-90 period.
- 337 Trends in size frequency information from South Island eel processors also show some clear differences between data collected in the 1970s and more recent decades. There is generally a decrease in the percentage of longfin and shortfin eels processed in the larger size grades. This is of consequence in noting that each species has undergone changes in its population structure across much of its biological range, given the generally universal distribution of commercial fishing.
- 338 MFish has commissioned research providers to periodically undertake market sampling of North Island commercial eel catches. For example, in the 1997-98 fishing year, age was assessed for each market size category from principally the Northland, Waikato and Hauraki regions. The mean age of eels entering the commercial fishery (ie, at a size less than 240 g), although variable, was typically greater than or equal to 11 years for both species. In a few productive locations, this mean age was reduced, but this was uncommon. Market sampling was extended to the lower North Island, principally in the Manawatu region, in the 1999-00 fishing year. Mean age of eels entering the commercial fishery (ie, above 220 g) was almost 16 years for shortfin and almost 19 years for longfin.

Catch by region

- 339 Estimated commercial catch has been collated for each of the QMS stocks (Figures 1, 3, 5, and 7). Data is based on information supplied by commercial fishers using the

Catch, Effort and Landing Return (CELR) generic reporting form, as introduced from July 1989, and its replacement form specifically designed for the eel fishery since 1 October 2001, the Eel Catch Effort Return (ECER). Estimated catch figures drawn from the effort section of commercial catch returns are used because landed catch figures are not able to be associated to the areas that form the basis of the new stocks. Landed catch figures, as recorded by Licenced Fish Receivers (eel processors), are currently based on Fishery Management Areas. Commercial fishers enter their catch estimates in the fishing effort part of the commercial catch returns by Eel Statistical Areas (ESAs). In combination, catch estimates from particular ESAs form the basis of the new stock boundaries or QMAs, as gazetted to come into effect on 1 October 2004.

- 340 An analysis comparing the estimated total catch made by commercial fishers (Table 2), and the actual weights of catch reported by Licenced Fish Receivers (for the period 1991-92 to 2001-02, Table 1), indicates that, on average, fishers have underestimated their catch by 18.8%. This difference, assumed to be a feature of estimates made by all North Island commercial eel fishers, is taken into account in assessing proposals for TACs and other management controls. Adjusted average commercial catch is noted for each of the stocks discussed.
- 341 There is one further issue of interpretation with the estimated catch figures by commercial fishers. Following the introduction of the CELR reporting form, eel fishers in the North Island were provided some discretion as to the manner in which these returns were completed. This included use of the EEU 'eels unspecified' code. Commercial fishers in the upper North Island considered that it was at times difficult to estimate the quantity of shortfin (SFE) to longfin (LFE), and report on that basis. However, commercial fishers have understood the desirability of collecting catch statistics on a species by species basis, and have generally improved their species specific reporting in the latter 1990s, and the reporting discretion provided to commercial fishers was stopped. The implementation of a new ECER reporting form with pre-printed eel species codes from 1 October 2001 has ensured that the EEU code has not been used again. Records of EEU were prorated into either SFE or LFE catch estimates using the ratio of reported SFE to LFE in each of the ESAs, and for each fishing year.

Table 2: Estimated catch of LFE and SFE by fishing year for the period 1991 to 2003 that includes EEU prorated catch. The species ratio of LFE to SFE by ESA and fishing year have been used to prorate the catch of EEU into LFE and SFE. SFE, shortfin eel; LFE, longfin eel. 1991 represents 1990–91 fishing year. The figures for the 2003 fishing year represent catch up to August 2003, and are therefore not a complete fishing year.

Quota Management Areas with EEU prorated catch (kg)									
Fishing year	LFE 20	SFE 20	LFE 21	SFE 21	LFE 22	SFE 22	LFE 23	SFE 23	Total
1991	79 084	169 403	143 029	89 838	32 625	66 052	24 051	2 169	606 251
1992	66 655	164 168	154 972	123 139	26 127	145 229	25 000	0 223	705 513
1993	61 500	149 843	88 120	185 406	56 925	144 085	19 747	2 886	708 512
1994	39 573	87 771	75 354	134 271	69 435	117 471	15 995	11 769	551 639
1995	43 447	154 252	135 810	296 146	37 196	89 485	44 374	29 855	830 565
1996	37 026	165 622	89 269	282 064	29 968	50 360	21 159	6 831	682 299
1997	30 139	173 292	80 886	203 759	31 629	69 749	29 073	5 086	623 613
1998	42 927	147 912	50 009	201 303	38 437	57 781	25 969	18 220	582 558
1999	67 903	184 385	63 085	142 639	40 524	63 930	20 130	15 201	597 797
2000	64 396	158 077	69 117	146 943	37 223	82 493	31 299	20 422	609 970
2001	61 041	136 255	65 714	152 754	43 583	104 195	37 345	27 363	628 250
2002	51 987	169 238	69 300	167 607	43 261	88 137	45 964	42 685	678 179
2003	33 889	160 682	40 417	103 112	31 645	67 727	30 708	27 620	495 800
Totals	679 566	2 020 901	1 125 083	2 228 980	518 577	1 146 695	370 814	210 330	8 300 946

342 The following sections outline for the stocks in each of the four North Island QMAs the adjusted average commercial catch that will contribute to a determination of proposed TACs. An evaluation of CPUE indices for each of the stocks is also made.

Northland / Auckland

343 Expected catch rates for commercial fishers in this QMA typically range from 40 to 190 kg of eels per day.

344 The estimated overall catch of shortfin and longfin within the SFE 20 and LFE 20 stocks has been relatively stable between the 1990-91 and 2001-02 fishing years (Figure 1), although there is a reduced catch in the 1993-94 fishing year. There does not appear to be any marked decrease in the proportion of one species over the other, although the CPUE index (Figure 2) shows a slight reduction in longfin in more recent years. The adjusted average over the 12 year period 1990-91 and 2001-02 (ie, taking into account the 18.8% underestimation of estimated catch compared to landed catch) for the SFE 20 stock is 184 tonnes, whereas the adjusted average for the equivalent period for the LFE 20 stock is 64 tonnes.

Figure 1: Total catch of SFE, LFE, and unspecified eel catch (EEU) in ESAs 1 & 2 (SFE 20 & LFE 20) for the years 1990–91 to 2002–03.

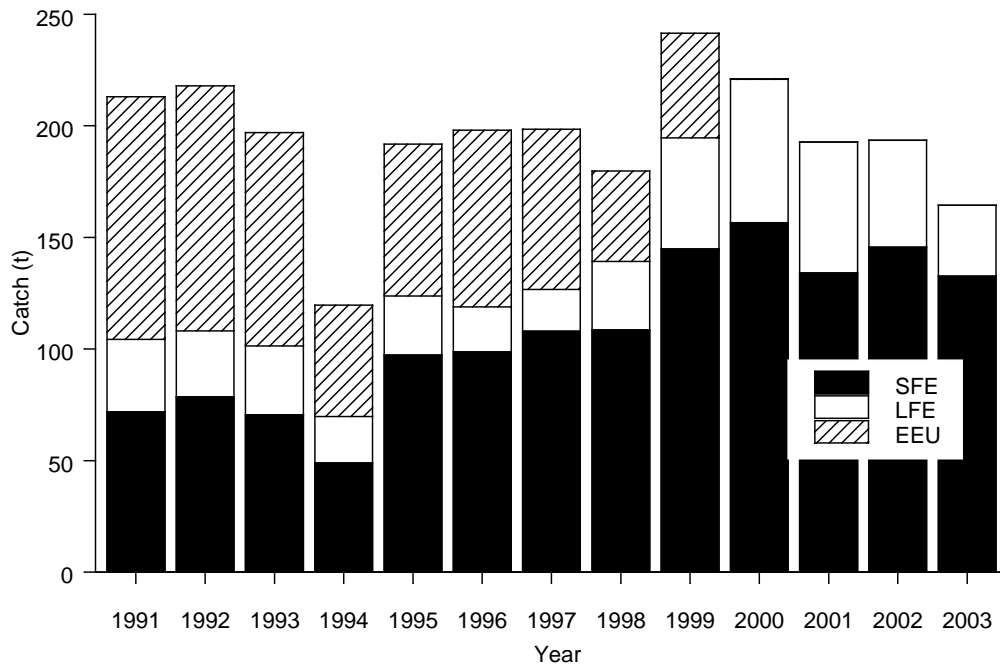
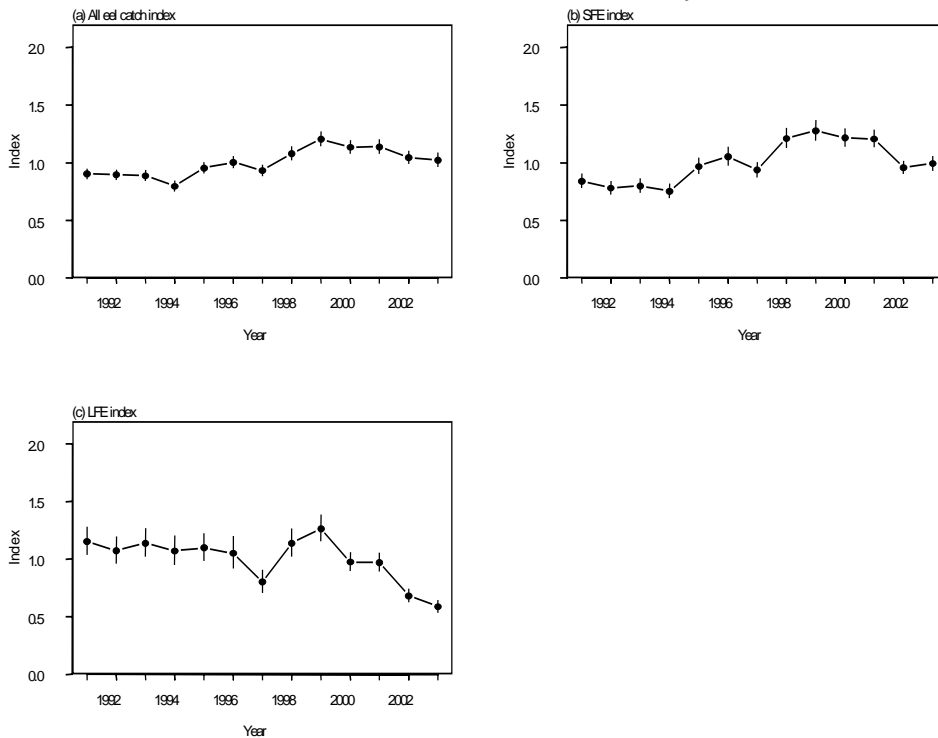


Figure 2: Standardised catch rate (catch per day) CPUE indices for (a) all eel catch, (b) SFE, and (c) LFE in ESAs 1 & 2 (SFE 20 & LFE 20) for the years 1990–91 to 2002–03.



Waikato / Poverty Bay

345 Expected catch rates for commercial fishers in this QMA typically range from 30 to 130 kg of eels per day, with highest catch rates expected in the Poverty Bay ESA.

- 346 The estimated overall catch of shortfin and longfin within the SFE 21 and LFE 21 stocks has been relatively stable between the 1990-91 and 2001-02 fishing years (Figure 3), with the notable exception of the 1994-95 and 1995-96 fishing years. Catch within these two years increased, particularly as it related to shortfin (see Table 1). The CPUE index (Figure 4) for all catch, and for shortfin, shows a slight and gradual reduction, with a more pronounced reduction in longfin CPUE over the entire period. The adjusted average over the 12 year period 1990-91 and 2001-02 (ie, taking into account the 18.8% underestimation of estimated catch compared to landed catch) for the SFE 21 stock is 210.5 tonnes, whereas the adjusted average for the equivalent period for the LFE 21 stock is 107.5 tonnes.
- 347 The adjusted average excluding the 1994-95 and 1995-96 fishing years when catch of shortfin was not within the typical range for the whole period is 184 tonnes. The quantity of longfin taken is reasonably consistent throughout the 12 year period, such that catch figures from the 1994-95 and 1995-96 fishing years have been retained for the provision of an average estimate of commercial longfin catch. However, for illustrative purposes, the equivalent adjusted average for the LFE 21 stock without these two fishing years is 102.1 tonnes (cf. 107.5 tonnes).

Figure 3: Total catch of SFE, LFE, and unspecified eel catch (EEU) in ESAs 3-6 (SFE 21 & LFE 21) for the years 1990-91 to 2002-03.

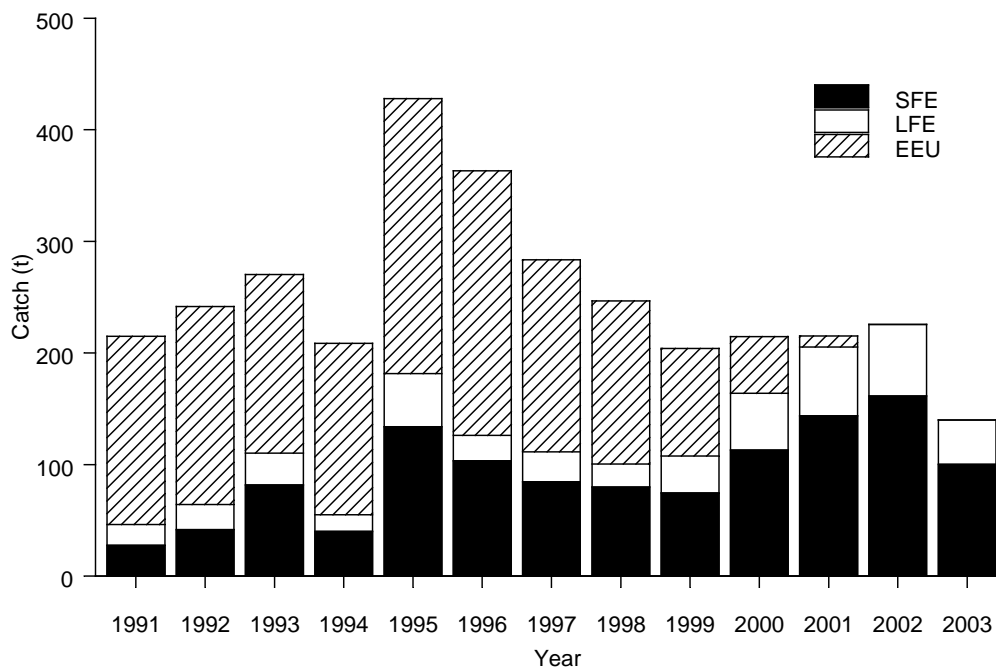
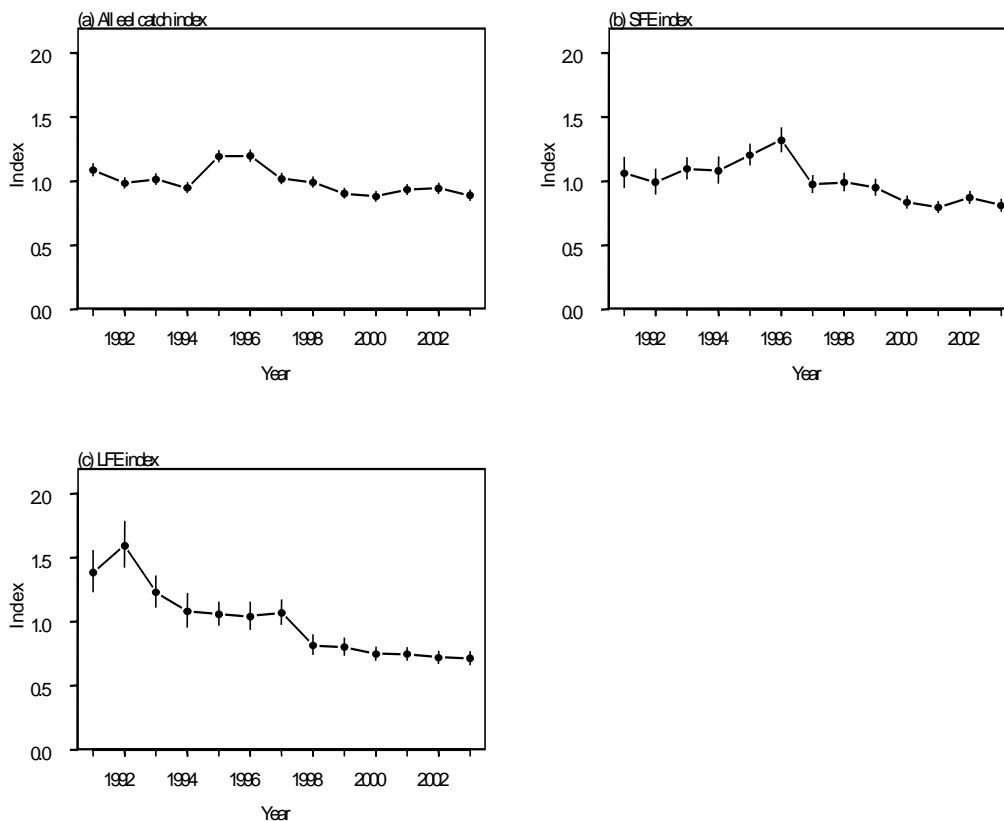


Figure 4: Standardised catch rate (catch per day) CPUE indices for (a) all eel catch, (b) SFE, and (c) LFE in ESAs 3–6 (SFE 21 & LFE 21) for the years 1990–91 to 2002–03.



Hawke Bay / Wellington

- 348 Expected catch rates for commercial fishers in this QMA typically range from 30 to 200 kg of eels per day.
- 349 The estimated overall catch of shortfin and longfin within the SFE 22 and LFE 22 stocks has been relatively variable, but within a reasonably stable range between the 1990-91 and 2001-02 fishing years (Figure 5), with the notable exception of the 1991-92, 1992-93 and 1993-94 fishing years. Overall catch within these three years increased. The CPUE index (Figure 6) for all catch, for shortfin, and for longfin, shows a significant and marked reduction over the entire twelve year period. Drought conditions were particularly evident in the 1997-98 summer, and may account for the slight reduction in catch and CPUE in that fishing year. Market sampling conducted in the 1997-98 fishing year indicated that longfin were in low abundance from Hawke Bay landings.
- 350 The adjusted average over the 12 year period 1990-91 and 2001-02 (ie, taking into account the 18.8% underestimation of estimated catch compared to landed catch) for the SFE 22 stock is 106.8 tonnes, whereas the adjusted average for the equivalent period for the LFE 22 stock is 48.2 tonnes.
- 351 The adjusted average catch for the SFE 22 stock excluding the 1991-92, 1992-93 and the 1993-94 fishing years, when catch of shortfin was not within the typical range for the whole period, is 88.7 tonnes (cf. 106.8 tonnes). The adjusted average catch for the LFE 22 stock excluding the 1992-93 and the 1993-94 fishing years, when catch of

longfin was not within the typical range for the whole period, is 42.8 tonnes (cf. 48.2 tonnes).

Figure 5: Total catch of SFE, LFE, and unspecified eel catch (EEU) in ESAs 7 & 10–12 (SFE 22 & LFE 22) for the years 1990–91 to 2002–03.

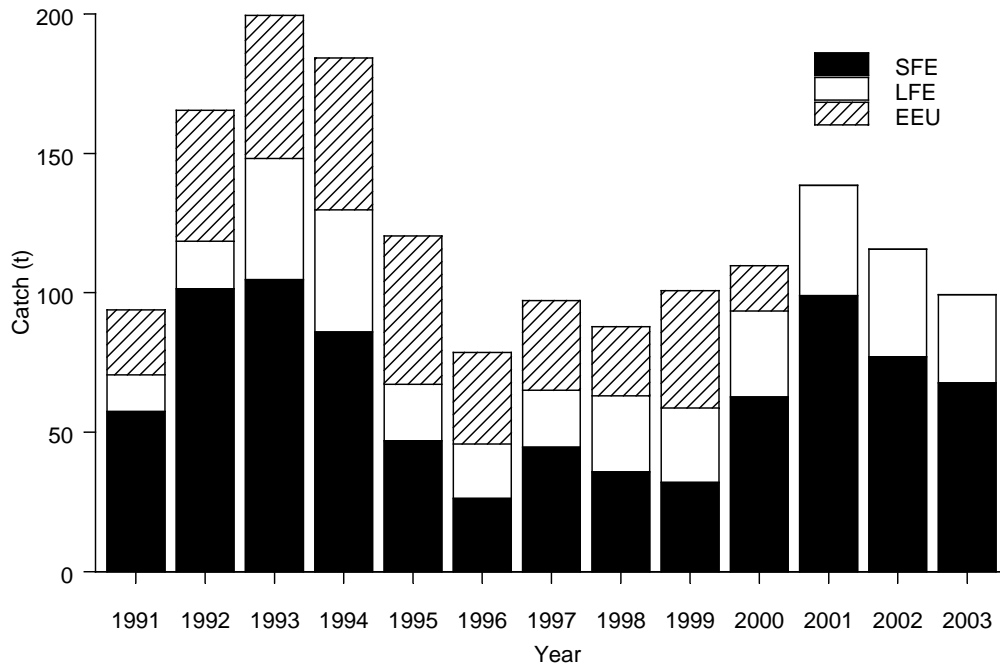
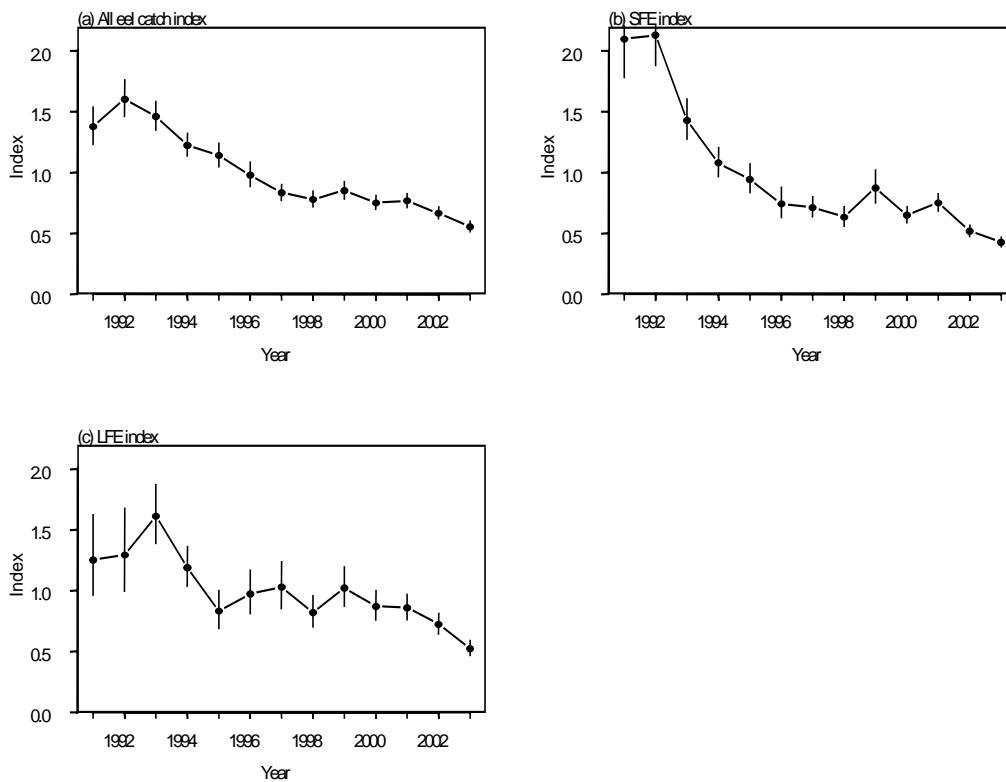


Figure 6: Standardised catch rate (catch per day) CPUE indices for (a) all eel catch, (b) SFE, and (c) LFE in ESAs 7 & 10–12 (SFE 22 & LFE 22) for the years 1990–91 to 2002–03.



Taranaki / Rangitikei

- 352 Expected catch rates for commercial fishers in this QMA typically range from 20 to 170 kg of eels per day.
- 353 The estimated overall catch of shortfin and longfin within the SFE 23 and LFE 23 stocks has been relatively variable. Catch has been reasonably consistent throughout the 1990s with the notable exception of the 1994-95 fishing year where catch significantly increased. Overall catch increased again from the 1999-00 fishing year for the last three years in the twelve complete fishing years of information presented, and a similar trend of increased catch is evident for the incomplete 2002-03 fishing year at the time of data extraction (Figure 7). This variability may be a reflection of the relatively few commercial fishers fishing this area, and the possibility that new authorised agents or employees are either considerably more or less successful than previously used agents or permit holders. The CPUE index (Figure 8) for all catch and for longfin, shows a gradual and consistent reduction over the entire twelve year period between 1990-91 and 2001-02, and into the 2002-03 fishing year (as not completed at the time of data extraction). The CPUE index for shortfin is variable, and not showing any particular trend since 1990-91.
- 354 The adjusted average over the 12 year period 1990-91 and 2001-02 (ie, taking into account the 18.8% underestimation of estimated catch compared to landed catch) for the SFE 23 stock is 18.1 tonnes, whereas the adjusted average for the equivalent period for the LFE 23 stock is 33.6 tonnes.
- 355 The adjusted average catch for the SFE 23 stock excluding the 1990-91, 1991-92, 1992-93, 1994-95, 2000-01 and 2001-02 fishing years is 15.3 tonnes (cf. 18.1 tonnes using data from all twelve years). The fishing years 1990-91 – 1992-93 were excluded given that the estimated ratio of LFE to SFE is considered unreliable, even though it is acknowledged that longfin are more prevalent in this stock than other QMAs (unless fishing activities were all undertaken at higher altitudes where shortfin are less frequently found). The estimated catch of longfin to shortfin in latter years is more in keeping with expected ratios for this stock. Similarly, the limited market sampling information available from the 1997-98 fishing year indicates that about 55-79% of the commercial catch in the Taranaki area consists of longfin. The 1994-95, 2000-01 and 2001-02 fishing years were excluded, as high catches of shortfin made in those years were not considered typical of what may be sustained on a longer term basis.
- 356 The adjusted average catch for the LFE 23 stock excluding the 1990-91, 1991-92, 1992-93, 1994-95, 2000-01 and 2001-02 fishing years is 28.4 tonnes (cf. 33.6 tonnes using data from all twelve years). The same six fishing years were excluded on the same basis as outlined for the SFE 23 stock.

Figure 7: Total catch of SFE, LFE, and unspecified eel catch (EEU) in ESA 8 & 9 (SFE 23 & LFE 23) for the years 1990–91 to 2002–03.

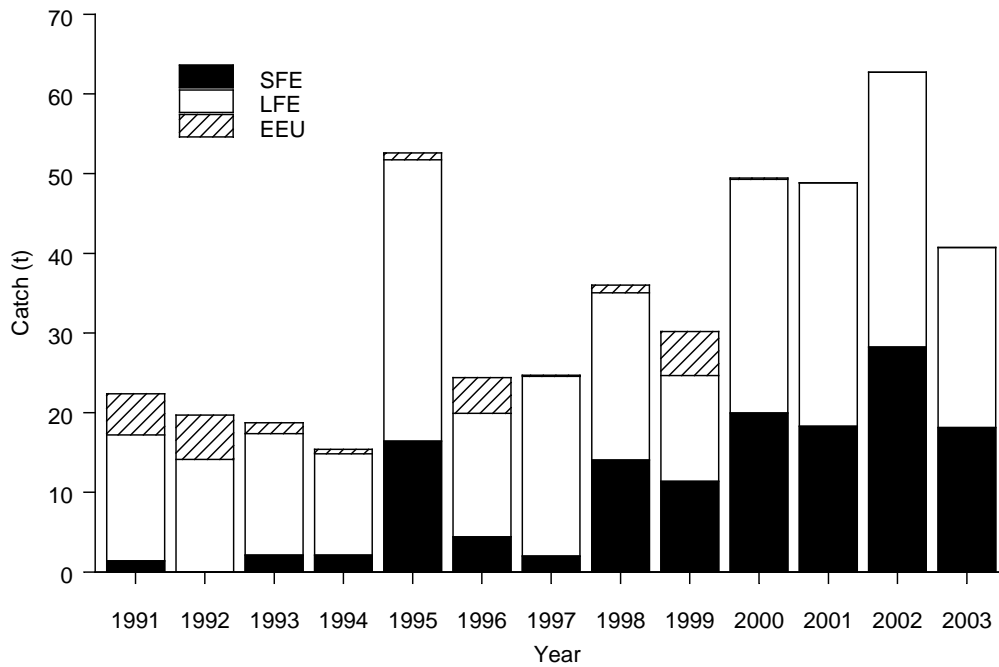
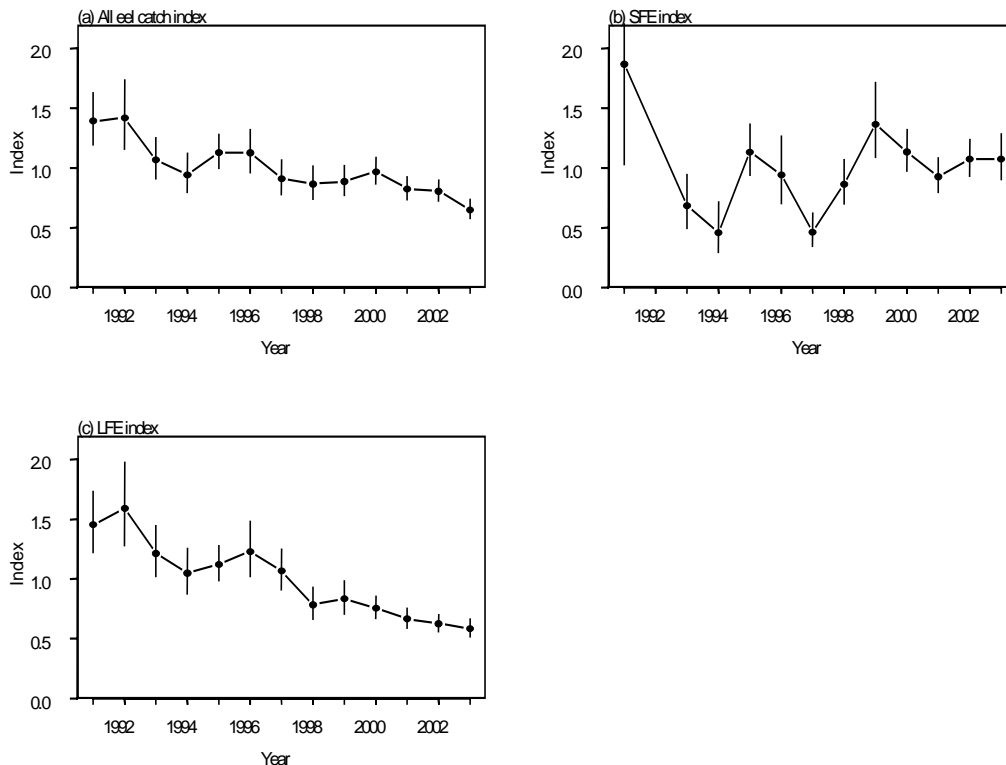


Figure 8: Standardised catch rate (catch per day) CPUE indices for (a) all eel catch, (b) SFE, and (c) LFE in ESA 8 & 9 (SFE 23 & LFE 23) for the years 1990–91 to 2002–03.



Catch by method

357 Commercial eel fishers in the North Island are almost entirely reliant on the use of fyke net or hīnaki (eel pots), although a few commercial fishers in the Firth of Thames have method authorisations permitting them to use set nets. The set net catch is

insignificant in the overall commercial use of the eel fishery (~2%). The commercial fishery will continue to be dominated by the fyke net method following QMS introduction, despite particular methods no longer being expressly specified on a fishing permit.

- 358 Non-commercial fishers use a wider variety of fishing methods including hand-gathering (including rama tuna, gaffing, rippie), lines, spear, hūnaki (eel pots), toke or bobbing, and eel weirs.

Targeted catch and bycatch

- 359 The eel fishery is quite distinct from other fisheries, and generally it does not form part of the catch for other fisheries. This is because the principal fishing methods used ~98% of the time to target eels in the commercial fishery (ie, fyke nets or eel pots) are specifically designed with this fishery in mind. Similarly, other freshwater fisheries use fishing methods that are unlikely to catch eels. There are fewer species that are associated with eels, in comparison to marine fisheries, given their habitat preferences and foraging behaviours.
- 360 However, shortfin do frequent estuarine and shallow coastal waters, particularly in the upper North Island. There are a few commercial fishers resident in the Firth of Thames area that are authorised to take eels by set net. These fishers await the downstream foraging movements of principally shortfin eels from adjacent estuarine areas at high tides during mainly winter months. Other commercial eel fishers use fyke nets in the harbour environments of the Waitemata and Kaipara Harbours. While it is possible that other commercial fishers have caught eels as a result of set-netting activity for say flatfish, this is not evident in catch statistics. In any case, in the non-QMS environment, regulation 51 of the Fisheries (Commercial Fishing) Regulations 2001 prohibits commercial fishers from taking or possessing freshwater eel species unless holding a fishing permit that expressly authorises the taking of that species.

Recreational catch

- 361 For many non-Māori, eel fishing principally forms a recreational activity in learning about the natural environment and self-sufficiency in the great outdoors. Eel fishing competitions are also held in particular areas. During the 1990s, new immigrants within the Auckland metropolitan area took a greater interest in the harvest of eels for food. This interest has continued through to the present day.
- 362 The taking of eels for food continues to be of importance for Māori, particularly in rural areas. There are a significant number of Māori in the North Island, many of who live or have associations with these rural areas. The taking of eels for general (non-commercial) use is classed under the recreational catch category for the purposes of the Minister's consideration of an allowance before setting a TACC for a stock. This harvest differs from that categorised in law as applying to the North Island (and Chatham Islands) for customary purposes (ie, traditional hui and tangi only).
- 363 Eel fishing by Māori was widespread in the North Island, other than areas like Lakes Taupo, Rotorua and the catchment areas around Ruatahuna (Urewera high country). The species did not naturally occur in these areas. Māori would carry out kaitiaki duties over waterways within their rohe for their sustenance and benefit. In several

localities, marae were sited adjacent to such fishing grounds (eg, Lake Waahi (Waikato), and Lake Poukawa (Te Hauke, Hastings)), or fishing parties would occupy a particular location on a seasonal basis. The use of sizable eel weirs was evident on several river systems (eg, Wanganui, Mohaka and Waikare (Hawke Bay)), although the use of such methods was almost entirely discontinued during the early 20th century. Fishing locations were highly prized and often linked to the occupation or use of adjacent land. The waterways and eels are said to be integral to the mana of local Māori in such areas (eg, the interest of Te Ika Whenua in the Rangitaiki, Wheao, and Whirinaki Rivers).

- 364 The quantity of eels taken by Māori subsided in the 1900s as lifestyles associated with the development of a modern society were gradually adopted. However, the traditional use of the eel resource would also have been affected by the major hydro-electric and land development practices of the early 20th century. These practices led to what is understood to be the loss of approximately 90% of wetland areas across New Zealand. The effects of these non-fishing related activities have been identified by Māori as contributing factors to the decline in the state of the eel fishery and its underlying aquatic environment (eg, Wanganui River, Waimiha River).
- 365 This is partly illustrated in the Hauraki Plains where river channelisation and drainage activities of the late 19th century and early 20th century were followed with intensive pastoral development, and mining activities (eg, Ohinemuri River catchment). Many wetland areas were lost and deforested, or affected by run-off. Despite this, representatives of Māori from the Hauraki rohe advise that eels were one of the main species taken in significant quantity for a broad range of purposes up until the Second World War. These representatives also indicate that eels were able to adapt to these modified environments until the advent of further drainage schemes (eg, Waihou catchment), and commercial fishing for these species, from the 1960s. Changing lifestyles, and the reduced availability of eels given the cumulative impacts of land development practices and overall fishing pressure, has meant that Hauraki Māori do not harvest eels as much as historical times.
- 366 There are nevertheless several areas where eel fishing continues to play a significant role in the subsistence of rural communities. There is also an awareness that some fishery interests do not fish as often as they would like, because they find it difficult to catch sufficient eels in the time available.
- 367 A survey of Māori within the Ngati Maniapoto rohe conducted in 1997 indicated that the quantity of eels taken for whānau, hapu and personal use purposes by survey participants was estimated at 9.0 tonnes per annum prior to 1965 (based on information provided by 54 fisher responses) compared to 5.3 tonnes per annum for the period following 1965 (based on information provided by 60 fisher responses). The average catch by a fisher when taking eel for this purpose was 167 kg in the period prior to 1965, and 88 kg for the period after 1965 through to the time of the survey. Responses at the hui held to collect this research information also indicate that these fishery interests are finding it difficult to catch eels for personal requirements.
- 368 A survey made available to the Waitangi Tribunal for the Mohaka River Report (1992) concluded that fishing from the river (principally eels and kahawai) was worth about \$62 000 per year, with families fishing on average 2.8 times per week, although

survey participants noted that they viewed the fishery resources as gifts from the river, rather than as commodities to be expressed in monetary terms.

Customary catch

- 369 Māori would often undertake eel fishing, for both recreational and traditional customary purposes, according to the lunar cycle. In such instances, fishing may be undertaken in only a few nights each month. Māori in several areas would also focus their collection activities around the hekē or migratory season, when adult eels in breeding condition made their way back to the sea. Traditionally, ceremonies were held following the first catch of the hekē. However, Māori representatives from the Hauraki whānui observe that, in the Waihou River catchment, there was no need to target eels during the hekē traditionally (prior to the 1940s), because they were always abundant and in good quality.
- 370 Specific estimates of catch for customary fishing purposes at the scale of the stocks are not known, but are of on-going significance in several areas in each stock. For example, a survey of Māori within the Ngati Maniapoto rohe conducted in 1997 indicated that:
- a) each customary fisher took an average of 215 kg per annum prior to 1965 for marae and hui use, whereas that average reduced to 115 kg in the period after 1965 to the present day (note that these annual figures have been extrapolated from monthly totals);
 - b) the average number of days fished per annum (for customary and recreational purposes) reduced from 37 for the pre-1965 period to 28 for the post-1965 period;
 - c) eels were provided for marae purposes on approximately 44% of all occasions fished, in comparison to 53.8% for hapu and whānau use (ie, recreational fishing);
 - d) On ~70% of occasions when fishing was undertaken (for customary and recreational purposes) prior to 1965, a customary fisher could expect a catch rate of 10 – 30 kg. Conversely, for the period between 1965 and 1997, a catch rate of 5-10 kg was experienced on ~87% of occasions. Customary fishers similarly report a reduction in the average size of eels taken between the two time periods;
 - e) At the time of the survey, very few marae serve eels at hui given what tangata whenua regard as the fishery being in a depleted state; and
 - f) The quantity of eels taken for customary (marae and hui) purposes by survey participants was estimated at 9.7 tonnes per annum prior to 1965 compared to 5.6 tonnes per annum for the period following 1965.
- 371 Information from recent survey work in the Waimiha area (upper Wanganui River) illustrates some differences between areas that are reportedly lightly fished by tangata whenua for customary purposes (principally marae functions), and those more accessible areas claimed by tangata whenua to have been fished by commercial fishers as well. The principal species found in these headwaters were expectedly longfin, ranging in age from an estimated 6-53 years, and most were over 24 years. The majority of eels (56%) in lightly fished sites were larger than 600 mm, or older than

24 years, while 61% of the eels from areas considered subject to an array of fishing were smaller than 600 mm and younger than 24 years age. This difference is not necessarily statistically significant.

- 372 There is little difference in the population structures or catch rates between surveys of the Waimiha region undertaken in December 1999 and December 2002. There were few juvenile eels present in both surveys, although low recruitment might be expected with a long-lived species, and large eels may predate smaller eels in this catchment given the lack of other prey. Both of these factors may account for the comparatively low density of eels found in the area in the early 1960s, prior to the commencement of commercial fishing. The overriding observation that can be drawn from these type of surveys is that only a small amount of historical fishing activity might be necessary before the quality (size) of eel is affected – it was further estimated that male eels in the Waimihia may take between 20-30 years to mature, and females more than 33 years. Consequently, the harvesting strategy employed in any area will need to consider the longer term implications on all users of the resource. In the case of the Waimiha area, customary fishers have noted that it is difficult to catch enough eels of suitable size to satisfy their cultural needs.
- 373 Eel were also an important feature of the spiritual beliefs of Māori. In several instances, particular rivers are the home to taniwha, some of which are said to be the ancestors, or tipuna, of the current generation. These taniwha may take the form of eels. Elements of the river, including particular aquatic life, are regarded as taonga, as they identify that person's association with a particular place. It is a customary practice for Māori to identify themselves with a local mountain, river, and a key ancestral line, such as a chief or hapu. Rivers were also used for conducting certain rituals, and were used in some areas as demarcation lines between adjacent hapu. Accordingly, there is a collective responsibility amongst tangata whenua to ensure that taonga, such as eels, are managed in such a way that particular customs are observed and respected. This includes the obligation to ensure that sufficient fishery resources are available for future generations.

Regulatory Framework

- 374 Fishing eels for commercial purposes is subject to the following controls:
- a) Minimum legal size – The minimum legal weight of eels that commercial fishers may take or possess is 220 g;
 - b) Escapement tubes in fyke nets – a complementary measure to the minimum legal size requirement for eels, although applied more generally to any use of the fyke net method, is the requirement for fyke nets to have two escapement tubes incorporated between the last trap or throat and the last part of each net that is capable of holding finfish while in the water. The escapement tubes must be not less than 25 mm in inside diameter (except that the inside diameter of both ends of the tube must be at least 29 mm), and not less than 35 mm in length, and placed so as to project inside the net not more than 10 mm. Slightly higher inside tube minima (31 and 32 mm respectively) are in place for South Island waters;
 - c) Maximum legal size – Commercial fishers must not take or possess eels weighing more than 4 kg taken from South Island fisheries waters. This

measure was introduced in December 1995 following discussions with fishery interests in the South Island in an effort to ensure escapement of adult eels in breeding condition. It is of consequence to North Island eel stocks given that recruitment of juvenile eels stems from a common pool of adult eels in breeding condition sourced from throughout their range. However, the number of eels reaching this size is small given the present population size structures found in a number of areas nationwide;

- d) Minimum net mesh size – The minimum net mesh size that a commercial fisher may use to take eels is 12 mm. The fine mesh acts to entrap, rather than entangle any eels caught;
- e) Fishing methods – There are a number of restrictions on how fyke nets may be set. Regulations also specifically provide that fyke nets may be set using poles or stakes, provided they are clearly visible at all stages of the tide and are removed when fishing stops. Further, commercial fishers may bait their fyke nets;
- f) Closed areas –
 - i) No commercial fisher shall take any eel from Lake Horowhenua or the Hokio Stream (as defined in section 18 of the Reserves and Other Lands Disposal Act 1956) unless that person does so in the exercise of the fishing rights referred to in that section; and
 - ii) No commercial fisher shall take any eel from the waters of any National Park within quota management area 2 or quota management area 8. The areas correspond to the lower North Island, and are probably most relevant for the Urewera and Egmont National Parks.
- g) Second Schedule – Eel stocks in the South Island are included on this schedule. The schedule lists stocks that are considered to have highly variable abundance, enabling the Minister to provide for an in-season increase in the Total Allowable Catch (TAC) under s 13 of the Act. MFish considers that placement of all South Island eel stocks on this Schedule was made in error as the characteristics of eel species do not meet the criteria of having a highly variable abundance, as normally associated with short-lived species. MFish is likely to consider removal of these stocks from the Second Schedule when time permits (other than perhaps Lake Ellesmere). Chatham Island eel stocks are not included on this Schedule;
- h) Third Schedule – TACs for eel stocks in the South Island are managed in accordance with s 13 of the Act. However, these stocks were listed on the Third Schedule to the Act at the time of their introduction into the QMS. This was done in the event that an alternative TAC established under s 14 of the Act was considered feasible in the future. TACs for Chatham Island eel stocks have been set in accordance with s 13 of the Act, and have not been listed on the Third Schedule;
- i) Sixth Schedule – A commercial fisher may return any freshwater eel of legal size to the waters from which it was taken if that eel is likely to survive on return and the return takes place as soon as practicable after the eel is taken. A commercial fisher is obliged by law to return any undersized (nationwide) or oversized (presently South Island fisheries waters only) eel; and

- j) Eighth Schedule – South Island eel stocks have specified minimum annual holdings of Annual Catch Entitlement (ACE) of 4 tonnes. Chatham Island eel stocks are not included on this Schedule.

375 Fishing for recreational / subsistence purposes is subject to the following controls:

- a) Minimum legal size – No size limit applies;
- b) Escapement tubes in fyke nets – No requirement for inclusion;
- c) Maximum legal size – No size limit applies;
- d) Quantity – The maximum number of eels that may be taken or possessed by a person on any day is six. This measure was introduced on 1 October 1994 for two main reasons. Firstly, it recognised the increased interest in the species by new immigrants in the greater Auckland area. Secondly, as a result of an incident in the Canterbury region, implementation of a bag limit assisted in legally distinguishing between blackmarket activity and genuine amateur take. The level of six eels was set having considered what was thought to reflect a reasonable day's catch; and
- e) Fishing method – There are a number of restrictions on how fyke nets may be set. Regulations also specifically provide that fyke nets may be set using poles or stakes, provided they are clearly visible at all stages of the tide and are removed when fishing stops. Further, fyke nets may be baited. No person shall set, use, or possess in or adjacent to New Zealand fisheries waters more than one fyke net or more than one hinaki trap at any one time.

376 Fishing for customary purposes is subject to the following constraints:

- a) The Fisheries (Kaimoana Customary Fishing) Regulations 1998 do not presently extend to fisheries resources managed under the Fisheries Act 1996 that are taken from freshwater in the North Island (and Chatham Islands). MFish and several tangata whenua support the extension of these regulations to encompass the full aquatic environment (like the Fisheries (South Island Customary Fishing) Regulations 1999). Inclusion of all fisheries waters within a customary fisheries regulatory package was the original intent, but some Māori representatives sought to clarify the inclusion of freshwater fisheries in the Fisheries Deed of Settlement and the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992. The Courts confirmed the inclusion of freshwater fisheries in the fisheries settlement. In the meantime, the Fisheries (Kaimoana Customary Fishing) Regulations 1998 can only be used to authorise the taking of eels and other species for customary food gathering purposes from estuarine and marine waters; and
- b) Regulation 27 of the Fisheries (Amateur Fishing) Regulations 1986 continues to be the only mechanism available to authorise the taking of eels from freshwater for the purposes of hui, tangi, or traditional non-commercial fishing use approved by the chief executive of MFish, where the way in which the eels are taken, or the number, exceed the controls applying to recreational / subsistence fishers. The chief executive has not approved any traditional non-commercial fishing uses, so this provision is restricted to authorisations for traditional hui and tangi.

Fisheries Assessment

377 There is no formal stock assessment available for freshwater eels. Estimates of current and reference biomass are not available except for small waterways. MSY can be interpreted in different ways, including use of MCY estimates based primarily on commercial catch. MCY estimates are used as a proxy for MSY in other fisheries in New Zealand. The biology of freshwater eel species makes it difficult to apply conventional stock assessment methods used for other fishstocks. MFish and several fishery interests believe that the most useful tools to assess the fishery include the use of CPUE indices and periodic catch sampling to monitor species composition and length or weight distributions of respective populations. In the medium term, deriving biomass estimates from the application of GIS modelling should also be of assistance.

Associated Fisheries

378 The principal fishing methods used to take eels are quite target specific, and are unlikely to give rise to significant levels of bycatch species. Methods such as gaff, hand, bobbing, and spear are very unlikely to result in any bycatch, while fyke net and pots / hīnaki are capable of taking a range of species including brown bullhead catfish, goldfish, koi, rudd, koura, bullies, galaxiids, trouts, flounders, mullets. The range of species taken as a bycatch will vary according to the area the subject of fishing activity. Some of the fish species taken are either more common (eg, koi in SFE 21 / LFE 21 stock areas) or absent in some areas. In estuarine and marine waters, there is an increased likelihood that flatfish and mullets may be caught, particularly if using a set net (eg, Firth of Thames).

379 There is some by-catch of birds such as ducks and cormorants (shags) in fyke nets known from the Waikato area. There is some evidence from a past South Island survey to suggest that fyke nets set partially above the surface of the water (eg, in shallow lake margins or drains) will increase the probability of catching birds. Accordingly, it is possible that a code of practice could be developed by the eel industry to further reduce such incidental catch, if the factors responsible for any unwanted captures in the North Island could be identified.

380 Freshwater eels have an important role to play in moderating the abundance of other fish species. At a certain size, the diet of eels shifts from aquatic insects and snails to a greater emphasis on fish species including small eels. The loss of a significant proportion of large eels from an area may therefore influence the abundance and inter-relationships between prey species. A significant displacement of large eels may also enable other introduced species to fulfil a similar role as a predator (eg, catfish), but the actions of these species may have less desirable impacts on the aquatic environment. As a result, the distribution and abundance of these other predatory fish may increase (eg, as suggested by fishery interests in the Whangamarino wetland, Waikato), to the broader detriment of the aquatic environment, including possible effects on biodiversity. These potential effects may be mitigated for when considering appropriate sustainability measures.

381 On a historical note, eels were considered a threat to the introduced trout fishery, and efforts were once made to cull eels or restrict their movement into waterways stocked with trout. Attempts were also made to impede their progress above hydro dams up

until the early 1970s. It is unlikely that these historical efforts had a significant impact on the current biomass of eels at the level of the stock. Further research has indicated that eels may not prey on juvenile trout as much as first thought. The predatory behaviour of large eels on trout may also ensure that the population structure of prey populations is enhanced from an angling perspective. Efforts have since been made to improve fish passage past manmade obstacles in recognition that eel species are part of the natural assemblage of indigenous species. However, the provision of adequate fish passage measures remains a significant problem in New Zealand.

Environmental Issues

- 382 Eel fishing is a reasonably benign activity, the fishing methods having little direct impact on the aquatic environment. The amount of fishing effort in the North Island commercial eel fishery is likely to decrease following QMS introduction, as fishers rationalise their harvesting strategies, irrespective of the commercial catch limitations imposed. This should have positive implications for managing any environmental issues associated with commercial eel fishing.
- 383 Fishery interests are concerned that certain introduced species of flora and fauna taken in fyke nets or hīnaki may be accidentally or deliberately transferred to locations where those species do not exist. This risk of deliberate release of introduced species may be more prevalent in the recreational sector than the commercial sector. There are laws in place that prohibit the transfer or release of live aquatic life into freshwater without an appropriate authority.
- 384 Nevertheless, there are avenues available to MFish to further reduce the risk that fish taken are disposed of in an inappropriate manner. By way of example, MFish has undertaken preliminary consultation with fishery interests during 2003 on the introduction of a regulation to require that brown bullhead catfish are killed on capture. This would ensure that live catfish are not made available to the market, and reduce the risk that purchasers do not dispose of any excess fish to the wild.
- 385 There are other avenues that identifiable fishery interests can take to similarly reduce the risk that early lifestages of various species are not released to the wild in a live state (eg, periodic salt bath of fishing gear, washing down trailers before being used in another major catchment area). These can be developed over time, as risks are better assessed and potential remedies further explored. MFish does not consider that QMS introduction of eel stocks in the North Island will lead to increased risks to the aquatic environment.
- 386 As a predator, eels are important to determining the trophic structure of the aquatic environment, and therefore have a role in maintaining biodiversity. However, the nature and extent of these relationships are not well documented, or known. Some fishery interests in the Waikato have suggested that the reduction in the number of large eels since the 1970s has resulted in significant increases in the number of koi and/or catfish in the Whangamarino wetland, Waikato. The foraging habits of these introduced species differ from eels, such that food web inter-relationships are subject to change. A further risk is that the foraging activities, of koi in particular, may impact on habitat values of particular significance for fisheries management. In areas

where these introduced species are not as prevalent, or absent, the change in the eel population structure will probably affect the numbers and inter-relationships of prey species. For example, the loss of large eels from the fishery in such areas would have potentially reduced the predation pressure on bully species.

Research

- 387 A considerable level of research has been undertaken on the eel fishery over the last decade. Research activity can be grouped into several main areas including, characterisation (species, sex, length, weight and age by catchment) and monitoring of the commercial eel fishery incorporating the development of CPUE analyses, studies to better evaluate age and growth, evaluation of transfer techniques for the purposes of enhancing the resource, eel population status surveys in local areas of importance to non-commercial interests, monitoring the recruitment of juvenile eels, assessing the adequacy of escapement of adult eels in spawning condition, and to estimate the non-fishing mortality of eels as a result of other water resource users (eg, drainage and drain clearance, fish passage restrictions, pollution, irrigation works etc).
- 388 Current research within the 2003-04 fishing year applicable to the North Island eel fishery includes:
- a) the undertaking of a periodic catch sampling programme to characterise the fishery since the last assessment in the 1998-99 fishing year;
 - b) completion of a CPUE analysis for the purposes of facilitating the setting of appropriate catch limits and other management controls for QMS introduction;
 - c) monitoring of elver recruitment at 2 or 3 selected sites;
 - d) a GIS mapping exercise to estimate the area of lakes, rivers and streams both inside and outside areas closed to fishing for the purposes of assessing adequacy of spawning escapement;
 - e) an assessment of the status of eel populations within the Whanau a Kai, Te Aitanga a Mahaki iwi rohe, including Lake Repongaere, near Gisborne; and
 - f) a desktop study to estimate the non-fishing mortality of eels caused by humans.
- 389 Research proposed for the 2004-05 fishing year applicable to the North Island eel fishery includes the continuation of the catch sampling programme to characterise the fishery, as well as on-going monitoring of elver recruitment. Consideration of a CPUE analysis incorporating the data from the most recent fishing years was deferred for consideration for the 2005-06 fishing year, along with a proposal to refine or ground-truth the current GIS mapping project to deliver better estimates of expected biomass in lakes, rivers and streams.
- 390 Some further assessment of the status of local eel populations of particular significance to tangata whenua is also likely on a regular basis. A further idea for possible future research is to evaluate the contribution that a minimum size limit makes to sustainability objectives, and whether this contribution is influenced by the implementation of other complementary management tools.

Social, Cultural, and Economic Factors

- 391 There are a number of social, cultural and economic factors that have been considered when proposing sustainability measures and other management controls.
- 392 Māori concerns about the quality and quantity of the eel resource have been the subject of claims to the Waitangi Tribunal and Government through Treaty Settlement processes, in addition to these concerns being aired directly to MFish. MFish is well aware of concerns being expressed about the impact of the depleted state of the fishery on the aspirations of Māori in accessing the resource for either recreational or customary purposes. This concern is widely held within the North Island even though reliance on the resource as a source of sustenance may not be as important as historical times. A broader issue is the connection that Māori have with eels as a taonga, as an element and integral part of particular waterways, and the spiritual beliefs associated with a holistic view of their people's relationship to the natural and physical resources within a rohe. This association is evident in colloquial references such as 'river people' and 'tuna town'.
- 393 Māori have indicated that habitat degradation and fishing pressure are key factors responsible for the current state of the resource. Māori increasingly understand that introduction of the North Island fishery into the QMS will help rebuild the national fishery, and in doing so, will address the primary concern to ensure that the fishery is sustained for the longer term for the benefit of all fishery interests.
- 394 A relatively recent dimension to the recreational use of the resource has come from new immigrants, particularly around the greater Auckland metropolitan area. This has in large part been due to the significant increase in the Asian community since the late 1980s. Many Asian people in New Zealand go fishing for both reasons of relaxation/enjoyment and for food. The percentage of Asian people in the population has steadily increased, and it is likely that the allowance provided for recreational fishing in several North Island stocks will need to reflect the likelihood that this form of use will continue to be an important social factor.
- 395 A further social dimension is an awareness that eel species are likely to play an important part in shaping the inter-relationships between a range of species found in the aquatic environment. By way of example, that awareness has evolved from one of trying to reduce eel populations (c. 1930s-1960s) given perceptions about negative impacts on introduced trout species, to one where the presence of eel species is seen as beneficial in moderating interactions between populations of associated and dependent species.
- 396 Similarly, decisions about the management of habitat are likely to increasingly consider the requirements of different species found within the environment, particularly those that are either vulnerable to habitat modification, or those whose presence is important in maintaining biological diversity. This approach is evident in regional policy statements such as the Operative Waikato Regional Policy Statement (October 2002). From a fisheries management perspective, the setting of sustainability measures can recognise these community values, consistent with the environmental principles set out in s 9 of the Act.

- 397 The commercial fishery started in earnest in 1965. Many of the permit holders have spent much of their working life involved in the fishery, and have either retired or have noted their intention to retire on entry of the North Island eel fishery into the QMS. Some commercial fishers who have been involved in the fishery for many years intend to continue commercial eel fishing. Accordingly, there is likely to be considerable rationalisation of the number of commercial participants in the North Island eel fishery irrespective of what level of harvest might be made available to this sector. A similar outcome was observed in the South Island when that fishery was introduced into the QMS in 2000.
- 398 The natural reduction in the number of people dependent on the fishery from a commercial perspective from 1 October 2004 does present an opportunity to improve the availability of the resource to non-commercial fishery interests. This is appropriate where such interests may have been unreasonably affected as a result of the commercial use of the resource over the last ~ 35 years, or other factors making it more difficult to access the resource in the localities where people live. Improvements can be made in a number of ways. With fewer commercial fishers, and greater cooperation about the harvesting strategy that should be employed, it is conceivable that the average size of eel will increase, and particular areas of particular significance to non-commercial interests will be avoided.
- 399 Processing capacity has been in decline from over 35 relatively small plants when the catch peaked in the 1970s. At the present time two of the four North Island processors are not receiving eels due to international market conditions. Managers for the remaining two have asked commercial fishers to reduce their fishing effort. One of the processing plants that have stopped receiving eels has traditionally employed seasonal labour, and any decision to discontinue eel processing at that site, either temporarily or permanently, would not have an effect on existing employment levels. Other processing plants may need to consider their staffing levels and ongoing viability at the TACCs proposed. Some rationalisation has been achieved in recent years in that a company with interests in the major South Island eel processing plant has bought into one of the North Island processing operations. While a number of possible economic effects have been noted, the precise extent of those effects has not been quantified.
- 400 Nevertheless, the introduction of the eel fishery into the QMS provides a better environment for future investment decisions. There may be alternative opportunities to generate income within the constraints of the TACCs provided, possibly by new entrants, using new technologies, modern infrastructure, additional capital, or as a result of an agreed harvest strategy being implemented to maximise the price received for landed catch. In addition, the prospect of aquaculture of eels may also complement any wild harvest, and in future reduce exposure of the industry to controls necessary to ensure sustainable utilisation of the wild fishery.

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NORTH ISLAND FRESHWATER EELS (SFE, LFE) – FINAL ADVICE

Executive Summary

- 1 The North Island eel fishery will be introduced into the quota management system (QMS) on 1 October 2004. The fishery comprises a stock for shortfin (*Anguilla australis* and *A. reinhardtii*) and longfin (*A. dieffenbachii*) in each of the four quota management areas (QMAs). Total allowable catches (TACs) are proposed to be set under s 14 of the Fisheries Act 1996 (the Act). The proposed management strategy for the fishery is to improve the stock structure and abundance over the medium term, while bringing to a halt any decline in the fishery over the short term. This is intended to have the effect of ensuring sustainability, improving the availability of appropriately sized eels to non-commercial interests, and improving the relationship with interdependent stocks.
- 2 Some submissions on the MFish Initial Position Paper (IPP) query the purpose of the QMS, while others support the intent that the QMS provides a means to ensure sustainability. Some submissions express a need for greater reductions in commercial catch at the time of introduction into the QMS, while others consider that the proposed catch limits and allowances are about right. There is recognition amongst most submitters that the QMS provides a better framework to address fisheries management issues than the present system.
- 3 Proposed TACs have been determined following re-estimation of total annual recent removals from a stock during the twelve year period between the 1990–91 and 2001–02 fishing year. The estimated total annual removals include commercial, recreational and customary use, and other sources of fishing related mortality. A qualitative reduction factor of between 5-35% is applied to the estimated total annual recent removals to derive a TAC for each stock. The reduction factor is higher for longfin stocks in comparison to shortfin stocks because of greater concerns about the status of the longfin resource. Total allowable commercial catches (TACCs) for shortfin and longfin stocks across the North Island are 8.25% and 17.8% (respectively) lower than the average commercial catch in the two most recent fishing years (2000-01 and 2001-02) where catch information is complete.
- 4 MFish has not reduced the allowance made for Maori customary non-commercial interests or the allowance for other sources of fishing related mortality below recent levels when recommending TACCs. The allowance for recreational interests has been reduced from recent levels by the same percentage as that applied to the commercial sector in recommending a TACC for each stock. MFish does not propose adjusting the daily limit of six eels per person per day at this time, as the current recreational harvest is considered likely to be close to the recommended allowances.
- 5 In addition to recommendations on catch limits, a number of other complementary measures are proposed. These include measures to facilitate spawning escapement of adult eels through the prohibition of commercial fishing in the Motu and Mohaka River catchments, and a significant proportion of the Wanganui River catchment. MFish has elected not to proceed with the proposal to extend the application of a

maximum commercial size limit from the South Island to all New Zealand fisheries waters at this time.

- 6 MFish recommends a prohibition on commercial fishing from a small number of discrete areas in order to recognise and provide for customary food gathering by Maori. These areas include the Taharoa lakes near Kawhia, the Whakaki Lagoon (near Wairoa), Lake Poukawa next to Te Hauke (Hastings), and the Pencarrow lakes and its two tributaries Wellington.
- 7 Additional measures associated with the transition to a QMS environment include revocation of the requirement for a commercial fisher to hold a fishing permit expressly authorising the taking or possession of eels, consequential amendments to the Fisheries (Reporting) Regulations 2001, and introduction of a deemed value for North Island eel stocks of \$8 per kilogram. MFish also recommends revoking the requirement not to use less than a 12 mm minimum net mesh size when taking eels as a commercial fisher. The minimum net size served no real purpose, and led to nose and tail damage, affecting the market value of eels. This provision will continue to apply to the non-commercial sector mainly because this sector is not presently required to include escapement tubes in fyke nets.
- 8 The introduction of the North Island eel fishery into the QMS and the measures implemented as a result of this change in management will provide a sound basis for further improvements in the state of the fishery. MFish acknowledge that QMS introduction will not solve all issues of consequence to the fishery. However, the framework provides a more robust platform for eel fishery interests to address remaining issues.

Background

- 9 The IPP proposed TACs, allowances for customary fishing interests, recreational interests, other sources of fishing-related mortality, and TACCs for North Island shortfin and longfin eel stocks being introduced into the QMS on 1 October 2004, as set out in Table 1.

Table 1: Estimated total annual recent removals and proposed TACs, TACCs, and allowances for shortfin and longfin in the North Island (tonnes).

Stock	Estimated total annual recent removals ¹	Option	TAC	Customary allowance	Recreational allowance	Other sources of mortality	TACC
SFE 20	248	i	236	30	25	4	177
		ii	223	30	23	4	166
LFE 20	86		73	10	7	2	54
SFE 21	236		212	24	20	4	164
LFE 21	141.5		106	16	10	2	78
SFE 22	118.7		101	14	10	2	75
LFE 22	56.8		45	6	4	2	33
SFE 23	27.3		25	5	4	2	14
LFE 23	58.4		50	14	9	2	25

- 10 The above proposals were part of a package of measures regarding the introduction of North Island shortfin and longfin eel stocks into the QMS. Other proposals for this fishery included:
- a) The addition of North Island eel stocks onto the Third Schedule to the Act;
 - b) Revoking regulation 51 of the Fisheries (Commercial Fishing) Regulations 2001 which states that commercial fishers may only take eels where they are specifically authorised to do so on their fishing permit;
 - c) The extension of the maximum commercial size limit of 4 kg across the whole country (presently South Island fisheries waters only, as provided by regulation 50 of the Fisheries (Commercial Fishing) Regulations 2001);
 - d) The prohibition of commercial fishing from particular catchments in order to facilitate spawning escapement;
 - e) The prohibition of commercial fishing from particular sites in order to provide for customary food gathering by Māori and to recognise the special relationship between tangata whenua and places of importance for customary food gathering;
 - f) Amending the Fisheries (Reporting) Regulations 2001;
 - g) Revoking that part of regulation 31(6) of the Fisheries (Commercial Fishing) Regulations 2001, and part of regulation 6 of the Fisheries (Amateur Fishing) Regulations 1986, stating that fishers must not take eels using a net mesh size of less than 12 mm; and
 - h) Setting the annual deemed values.
- 11 A number of hui / meetings were undertaken during the consultative period as follows:
- a) Hamilton Stock Assessment Working Group 25 February 2004

¹ This estimate represents a summation of adjusted average commercial catch based on most or all of the 12 fishing years between 1990-91 and 2001-2002, plus estimates of non-commercial catch and other sources of fishing related mortality. It provides a reference for assessing the extent of catch reductions anticipated under the proposed TACs, as stated in the IPP.

b)	Waitara	3 March 2004
c)	Stratford	3 March 2004
d)	Taumarunui	4 March 2004
e)	Pukekohe	9 March 2004
f)	Auckland (Tainui representative)	12 March 2004
g)	New Plymouth	15 March 2004
h)	Whangarei	19 March 2004
i)	Piopio	23 March 2004
j)	Wellington (Levin Maori)	23 March 2004
k)	Hamilton	25 March 2004
l)	Opape (Bay of Plenty Iwi Forum)	29 March 2004
m)	Wellington (Hinaki Eels Ltd)	30 March 2004
n)	Hamilton (Tainui Waka Iwi)	2 April 2004
o)	Wanganui	5 April 2004
p)	Auckland (Eel Enhancement Co. Ltd)	6 April 2004

Submissions

12 Submissions were received from the following parties:

- i) Murray Reed
- ii) Allan Thompson
- iii) Mataitai Mahinga o Ngati Hine Incorporated Society (Prime Paraha)
- iv) David Vitasovich
- v) Grant Williams
- vi) Mataitai Mahinga o Ngati Hine (Tohe Ashby)
- vii) Te Kawanga o Kahungunu / The Ngati Pahauwera Section 30 Co-operative / Moeangiangi 42 N Owners
- viii) Department of Conservation
- ix) Bay of Plenty Conservation Board
- x) Ngati Rahiri Trustees and Hapu
- xi) Pukerangiora Hapu Committee
- xii) Mokau ki Runga Regional Management Committee
- xiii) Paku & Sons Limited
- xiv) Whanganui River Maori Trust Board
- xv) Wellington Conservation Board
- xvi) Te Ati Awa / Taranaki Whanui o Ponēke

- xvii) Phillip Bristow as hapu representative for Ngati Manu and Te Roroa, and tangata kaitiaki/tiaki of Nga Hapu ki te Whare O Ngapuhi
- xviii) Harry Toi as hapu representative for Ngati Kopaki, Ngati Te Ara and the Ngati Kopaki, Ngati Te Ara Trust
- xix) Ngati Raukawa ki te Tonga
- xx) Te Runanga o Ngati Whatua
- xxi) Tainui Waka Iwi
- xxii) Puhipuhi Te Maruata Forest Claimant Group
- xxiii) Eel Enhancement Company Limited
- xxiv) Hinaki Eels Ltd
- xxv) Te Runanga A Iwi o Ngapuhi
- xxvi) Te Atiawa Iwi Authority Fisheries Subcommittee (Taranaki)
- xxvii) Te Runanga O Te Rarawa
- xxviii) Te Waiariki / Ngati Korora / Ngati Taka Hapu / Iwi
- xxix) Te Runanga O Whaingaroa
- xxx) Bill Hohaia
- xxxi) Sharon Kaipo
- xxxii) Hori Tuhiwai, Korokota Trustee
- xxxiii) Te Runanga o Ngati Tama
- xxxiv) Ngati Kikopiri hapu of Ngati Raukawa
- xxxv) Treaty of Waitangi Fisheries Commission (late)
- xxxvi) Te Aitanga a Mahaki Trust (late)
- xxxvii) Te Runanga o Ngati Apa Inc.

- 13 Issues raised in submissions are grouped under the relevant topic headings that follow the order of the section headings used in the IPP. Submissions raising more than one issue may therefore be mentioned more than once. Submissions raising issues that were not discussed in the IPP are discussed where they align with issues that were covered.

Consultation process

Submissions

- 14 The **Department of Conservation (DoC)** has concerns about the consultation process followed. DoC's concerns arise because of the errors and discrepancies in commercial catch data for QMAs 22 and 23. DoC notes that there has been a considerable delay in obtaining corrected data and analyses, which have compressed the time that stakeholders have had to consider the already complex document. DoC requests that MFish provide it with a summary of the consultation process and any changes to the initial position that arise from that.

- 15 The **Bay of Plenty Conservation Board** appreciates the opportunity to comment on the IPP, but is disappointed that other avenues of consultation were not offered as well. The Board notes that it only received short notice of hui that MFish were convening in Hamilton and Opotiki. Further, the Board notes that many tangata whenua are refusing to go to any hui because of their anger at past lack of management in the commercial fishery and inadequate consultative efforts early in this current process. The Board believes that introduction of the eel fishery into the QMS cannot be successful without substantial input from Maori at this stage and at further stages of refinement. The Board recommends that MFish enable iwi to have effective input to this consultative process, by continuing to seek the views of all affected iwi. The Board offers its assistance in identifying groups or individuals who have not yet been able to contribute.
- 16 The **Wellington Conservation Board** considers that it was not invited or informed of consultative meetings convened by MFish until the last moment. The Board notes that it would have preferred to discuss the issues in their submission in person.
- 17 Phillip Bristow is a tangata kaitiaki for **Nga Hapu ki te Whare o Ngapuhi**, as well as a trustee for the **Ngati-Manu Trust and the Rae Honetana Te Kero Trust (Te Roroa)**. Mr Bristow queries whether there is a hearing process or a disputes resolution process where objections to the introduction of the eel fishery can be heard. Mr Bristow wishes to determine when and where this took place prior to the step where the introduction decision was gazetted. Mr Bristow notes that the hapu or trust did not receive information concerning this matter. Mr Bristow considers that resolutions to issues of concern will only be found if consultation is carried out with all concerned. Halting the introduction process and carrying out further consultation would enable a just and honourable solution in conformity with the principles of the Treaty of Waitangi.
- 18 **Ngati Raukawa ki te Tonga** request that any regulation, policy or legislation making be developed in consultation with iwi Maori. Further consultation with the Treaty partner would be welcome.
- 19 **Te Awa O Mangakahia (Wai 990), Mangakahia Maori Committee, and Te Roopu Takiwa O Mangakahia** are tangata whenua and kaitiaki of the rohe of Mangakahia, extending from Nukutawhiti, Mangakahia, through to Maunu Road (Whangarei). These groups represent numerous whānau and hapu alongside the Mangakahia and its tributaries. Traditionally they were known as the ‘Tuna People’. As kaitiaki of the rohe of Mangakahia, full consultation is requested on a face-to-face basis with MFish and anyone else regarding the eel fishery. Representatives of these groups do not regard the consultation undertaken by MFish in Northland as sufficient. They expect all statistical information relevant to their rohe to be conveyed to them in order that they can make informed decisions.
- 20 **Korokota Marae Trustees** from within the rohe of the Mangahakia (west of Whangarei) strongly oppose the introduction process on the basis that the Treaty of Waitangi was signed on behalf of whānau and hapu, not iwi. The Trustees do not believe that sufficient time has been provided to digest the process of introduction as they state they are but simple people. However, if this process does go ahead, the Trustees accept that commercial and recreational fishing are to be introduced into the QMS, but strongly oppose a customary quota, which should not be limited to any

number. The Trustees requests a hui be held on one of the marae in Mangakahia if possible.

- 21 **Te Runanga o Ngati Apa Inc.** represents the interests of the various hapu of Nga Wairiki and Rangitikei that make up the iwi of Ngati Apa. Te Runanga believes that consultation has been insufficient. Ngati Apa wants the Government to take more time to ensure that Ngati Apa whānau and hapu, many of whom still use traditional eel fisheries, are informed of the proposed introduction of North Island eel fisheries into the QMS and are given the opportunity to have their say. Ngati Apa considers that their people are still in the dark on this matter, and to proceed at this stage, will be viewed as an act of bad faith on the part of the Crown.

MFish Discussion

- 22 MFish highlighted its availability to attend meetings or hui to discuss the IPP in its covering letter to fishery interests dated 13 February 2004. MFish further informed fishery interests about the consultation hui that MFish had convened in order to provide an opportunity to discuss issues contained in the IPP. Some of the submitters may have only become aware of consultation hui in the latter part of the consultation process as a result of MFish's continuing efforts to engage with all interests.
- 23 The consultation programme undertaken by MFish was developed in anticipation of demand and, in part, reflected the relationships MFish has formed with eel fishery interests over a longer period of time. In addition, consultation at the stage of setting sustainability measures and other management controls follows related consultation with eel fishery interests in 2003. Last years' consultation phase was a required step in determining whether North Island eel stocks should be introduced into the QMS. Several eel fishery interests were aware that the second phase of consultation would commence thereafter.
- 24 MFish welcomes further input from Maori into the on-going management of the fishery and further identification of those eel fishery interests so that MFish could further develop its relationship with these groups. MFish notes that its consultative hui at Opape (Eastern Bay of Plenty), using an iwi liaison forum that is being piloted as part of the MFish Treaty relationship implementation programme, was well attended.
- 25 In addition, MFish notes that it has attended numerous hui over more than the last decade in the North Island in anticipation of the need to bring the North Island eel fishery within an improved framework for ensuring sustainability. One of those initiatives included the convening of three fisheries management workshops in 2002 (Whangarei, Hamilton and Palmerston North), where the eel fishery was used as an example to illustrate to Maori how fisheries management tools could be applied to improve the status of the fishery. A specific decision taken by MFish at that time was to defer the introduction of the North Island eel fishery into the QMS in order to allow more time for Maori to consider whether the QMS provided the most appropriate framework to ensure sustainable use of the resource. Further delay of the introduction of North Island eel stocks into the QMS would not provide for the overall improvements in the fishery that many eel fishery interests seek.
- 26 The IPP was released on 13 February 2004. An omission in the commercial catch data for one eel statistical area (QMA 23 stocks) compiled via research contract was

communicated to the Hamilton meeting of the Stock Assessment Working Group for freshwater eels on 25 February 2004, and at a latter meeting in Hamilton of 25 March 2004. Further, discovery as to the source of the data omission was made and communicated to eel fishery interests during all consultative meetings held.

- 27 Re-analysis of the commercial catch data information was required to evaluate the source of discrepancies in the commercial catch made in the QMA 22 area. Nevertheless, eel fishery interests were informed at a meeting in Hamilton on 25 March 2004 that commercial catch information from an eel processor differed from data contained in the IPP, and that further MFish and industry analysis over the preceding weeks had not pinpointed the exact source of the discrepancy. Nevertheless, eel fishery interests were supplied with a copy of MFish's on-going analysis of the commercial catch data on 5 April 2004, having been presented for discussions at the Hamilton meeting of 25 March 2004. In order for eel fishery interests to further take this information into account, the deadline for submissions was extended to 14 April 2004.
- 28 MFish staff have facilitated the flow of information to eel fishery interests at all times during the consultative period. The general nature of the concerns in submissions does not suggest that submitters would have had any significantly different perspective on the TACs proposed for the QMA 22 area, irrespective of whether the data was based on the processors data or the MFish data. In the spirit of keeping eel fishery interests informed, following the close of the consultation period, a letter was sent principally to industry interests on 14 May 2004 noting that one key reason for the QMA 22 discrepancy had been identified. Revised figures for TACs, allowances, and TACCs for the affected stocks were supplied for reference purposes.
- 29 MFish notes that it has met with tangata whenua of the Mangakahia area west of Whangarei in previous years, and the representative for Korakota Marae Trustees did attend the consultative meeting in Whangarei on 19 March 2004. MFish considers that further consultative meetings with tangata whenua about the eel fishery would be useful, and would assist in communicating decisions taken as a result of the QMS introduction.

Legislative context of QMS introduction

Treaty of Waitangi (Fisheries Claims) Settlement Act 1992

Submissions

- 30 **Tohe Ashby, for Mataitai Mahinga o Ngati Hine (MMoNH)** states that Ngati Hine has not given up its rights to its fisheries, as reaffirmed under Article 2 of the Treaty of Waitangi. They oppose the introduction of freshwater fisheries into a QMS. MMoNH consider that New Zealand is too small and the resource not large enough for it to be commercialised, or to be put into a Quota Management System. MMoNH consider that they have harvested and protected the eel resource so that it is managed on a sustainable basis for future generations. MMoNH observe that eel is a taonga handed down to their people.
- 31 **Paku & Sons Ltd** query whether the Crown has specifically exempted eel from its ownership in a particular land purchase agreement (Deed No. 98, Whareama No. 2,

Wairarapa District) with representatives of Ngati Kahungunu of 1853. In this land purchase agreement, eel fishing was 'reserved to ourselves'.

- 32 **Whanganui River Maori Trust Board** observes that the Whanganui iwi in the past had a very rich and extensive freshwater fishery. Whanganui iwi share a relationship described as kaitiakitanga that enables them to sustain their well-being from its presence, to the tribe and its diverse collectives. The Board submits that the Whanganui iwi (Te Atihaunui A Paparangi) have never relinquished their customary right to the Whanganui River and its tributaries. The Whanganui iwi declares that the freshwater fisheries in the Whanganui rohe are customary non-commercial fisheries, and that they hold mana and rangatiratanga over their freshwater fisheries. The Whanganui iwi strongly oppose the inclusion of eels into the QMS, and submit that this proposal should cease until Whanganui iwi have completed their negotiations with the Crown over the Whanganui River claim (inclusive of freshwater fisheries).
- 33 The tribal territory of **Te Ati Awa / Taranaki Whanui o Poneke (Poneke)** is based around the Wellington Harbour and environs including the Orongorongo, Wainuiomata, south coast and Makara catchments. Poneke observe that the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992 (the Settlement Act) diluted their rights such that Maori will now receive 20% of the commercial harvesting rights associated with the introduction of any stock into the QMS. Poneke observe that the indigenous people of New Zealand have exercised kaitiakitanga over land and sea resources for ten centuries. The concept of kaitiakitanga is based on a relationship of reciprocity between the resource and resource user. Poneke contend that it has only been in the last century that their rights have been usurped by the Crown, and further, that it is their intention to assert the kaitiaki role as is their customary duty.
- 34 Harry Toi submits on behalf of the **hapu of Ngati Kopaki, Ngati TeAra, and the Ngati Kopaki, Ngati TeAra Trust**. The hapu and trusts note that MFish recognises international law. The hapu and trusts consider that international law recognises the rights of indigenous people, their common law rights, and that treaties in the native language have precedence. The hapu and trusts consider that if MFish is using international law to justify the process, then the hapu, under a similar format, need to have their rights inserted into the management framework.
- 35 **Ngati Raukawa ki te Tonga** consider that the regulations and laws administered by MFish are in full breach of Article 2 of the Treaty of Waitangi. Its representatives do not agree with the proposals to introduce eels, a toanga, into the QMS. Further, Ngati Raukawa ki te Tonga does not want commercial eel fishing to occur within its rohe – a position that is recorded in the minutes of the Horowhenua District Council over the last 20 years.
- 36 **Tainui Waka Iwi (Raukawa, Maniapoto, Hauraki and Waikato)** submits that its participation in this submission process does not and/or should not be seen to prejudice claims Tainui Waka Iwi may have before the Waitangi Tribunal or the Crown. Tainui Waka Iwi note that the Tainui Tuna Working Group was formed in 1996 and consisted of representatives from the four Tainui iwi, had two kaumātua, along with four eel fishing industry representatives. The Working Group's terms of reference was to develop advice to the Minister on the most appropriate management strategies to sustainably manage the eel fishery for all parties within the Tainui rohe, and to document this in an eel management plan.

- 37 **Te Atiawa Iwi Authority Fisheries Subcommittee (Te Atiawa ki Taranaki)** agrees with the inclusion of the shortfin and longfin resource into the QMS.
- 38 **Te Awa O Mangakahia (Wai 990), Mangakahia Maori Committee, and Te Roopu Takiwa O Mangakahia** submits that given the Treaty of Waitangi, they should have 50% of any commercial enterprise pertaining to the eel fishery and not 20% of the TAC as provided for under the Settlement Act.
- 39 **Te Runanga o Ngati Tama** is the governance entity of the Ngati Tama Iwi in Taranaki. The Runanga notes that at the signing of the Treaty of Waitangi, eels would have been one of the primary species that their tupuna would have sought to protect by way of the Second Article. Since 1840, whānau, hapu and iwi throughout the country have relied on the eel fishery more than any other fishery. The relationship between the fishery and Maori was recognised by the Crown as during the depression years, the Crown provided welfare funding for pākehā while at the same time Maori were not considered eligible but rather directed to provide for themselves by adopting their customary food harvesting practices.
- 40 The Runanga notes that while the Crown and more recently MFish have been aware of the importance of the eel fishery to Maori, it does not believe that either appreciate the level of significance. The runanga submits that the effect of commercial fishing on the eel fisheries has been no less than catastrophic on Maori and combined with land management practices has resulted in almost the exclusion of Maori from the eel industry as well as the disappearance of eel from their diet.
- 41 **Te Runanga o Ngati Apa Inc.** advises that Maori have somewhat accepted the Government framework for fisheries management for salt water fisheries. However, Ngati Apa considers that their whānau and hapu will resist efforts to implement the same framework for freshwater fisheries. Ngati Apa believes that it is unwise to create an environment that will bring non-Ngati Apa commercial fishers into competition and confrontation with Ngati Apa, where their ancestors fought to protect this fishery in the past.
- 42 Ngati Apa advises that shortfin and longfin eels have always been important for food and trade to the people of Ngati Apa. Ngati Apa considers that their ancestors were persuaded to agree to the 1849 Rangitikei Turakina Transaction on the basis that Donald McLean, the Crown agent, assured them that they would continue to have access to areas being “sold” so that “they might snare the birds in the forest ranges as long as they pleased and fish eels in the eel cuts, streams and lakes or lagoons”. Ngati Apa believes that the 1849 Rangitikei Turakina Transaction represents for Ngati Apa, and should represent for the Crown, a clarification of the Treaty of Waitangi and a basis for a mutually beneficial relationship. Ngati Apa further asserts that any attempt to quantify customary catch is contrary to the 1849 Rangitikei Turakina Transaction which appears to guarantee access to eel fisheries as long as Ngati Apa desires this.

MFish Discussion

- 43 In contrast to Maori commercial fishing rights, which were recognised and discharged by the Settlement Act (notwithstanding ongoing obligations on the Crown to maintain the integrity of the commercial settlement via the provisions of the QMS), customary non-commercial rights are specifically stated to continue to give rise to Treaty obligations on the Crown.

- 44 Maori customary non-commercial fishing rights are specifically provided for by the Fisheries (Kaimoana Customary Fishing) Regulations 1998 (the Kaimoana Regulations) and the Fisheries (South Island Customary Fishing) Regulations 1999. In addition, MFish notes that the Courts have held that it is no longer possible to support the proposition that customary fishing rights derive directly from Article 2 of the Treaty of Waitangi. However, the Crown continues to be subject to obligations relating to customary fishing as a result of the provisions of the Treaty, as specified by s 10 of the settlement legislation. MFish notes that s 10 d) of the Settlement Act acknowledges the rights or interests of Maori in non-commercial fishing giving rise to claims about the recognition and provision of customary food gathering by Maori, and the special relationship between tangata whenua and those places which are of customary food gathering importance. Such claims, whether founded on rights arising by or in common law (including customary law and aboriginal title), the Treaty of Waitangi, statute, or otherwise, shall have no legal effect, except to the extent that such rights or interests are provided for in regulations made under the Fisheries Act.
- 45 Similarly, the Courts have confirmed that the Settlement Act contains a complete code that preserves and makes allowance for Maori commercial fishing interests, and that there is no basis upon which it can now be argued that Maori commercial fishing can legally be conducted except in accordance with the QMS provided under the Fisheries Act. Furthermore, s 3 of the settlement legislation makes it clear that the intention of Parliament was that the settlement Act should be interpreted in a manner that best furthers the agreements expressed in the Deed of Settlement. In that respect, the High Court held in the *Te Arawa Maori Trust Board v Attorney-General*² that any commercial freshwater fisheries rights have been extinguished, and that future commercial access is to be given effect through the allocation of harvesting rights under the QMS. The settlement legislation provides that 20% of the commercial harvesting rights of further stocks introduced into the QMS will be transferred to Maori.
- 46 MFish notes that the QMS framework provides for the setting and adjustment of catch limits for respective stocks, and over the full continuum of both marine and freshwater environments. However, there is scope to apply further controls within the QMS framework that address any special needs in managing the eel fishery. MFish acknowledges that the use of the eel fishery by Maori is likely to recognise traditional eel fishing boundaries between whānau, hapu and iwi. MFish considers that commercial fishers (particularly Maori) will have an incentive to encompass customary Maori interests and their views within any harvesting strategy that might be developed for the stock in question.

Fisheries (Kaimoana Customary Fishing) Regulations 1998

Submissions

- 47 **Puhipuhi Te Maruata Forestry Claimant Group (PMFCG)** is the registered body of a number of hapu who have registered claims with the Waitangi Tribunal. The hapu involved are Ngati Hau, Ngati Kahu O Torongare, Te Parawhau, Te Uriroroi, Ngati Wai, Ngati Toki, Te Kumutu, Ngati Moe, Ngati Horahia, Te Kuihi, and Mangakahia Maori Committee. These hapu reside within 'Te Whare Tapu O Ngapuhi' and are all associated with the Wairua catchment of the northern Kaipara.

² 5 December 2000, High Court Auckland, Anderson J, Paterson J, CP448-CO/99

The hapu associated with PMFCG, as well as the descendants of Ngapuhi as represented by **Te Runanga A Iwi O Ngapuhi (TRAION)**, the iwi authority **Te Runanga O Te Rarawa (TROTR)**, and **Te Waiariki/Ngati Korora/ Ngati Taka Hapu / Iwi (TWNGNT, a hapu/iwi in the Whangarei takiwa)** have made almost identical submissions. **Te Runanga O Whaingaroa** of Kaero (Northland) fully supports the submission made by TRAION.

- 48 These groups note that their members actively exercise their customary rights and responsibilities of kaitiakitanga throughout their rohe, and traditional cultural practices closely tie the respective tribal groupings to their coastal shores and waters. Sustainable management of their fisheries is pivotal to the life force and rhythms of tangata whenua.
- 49 PMFCG, TRAION, TROTR and TWNGNT notes that MFish is required to act in a manner that is consistent with the provisions of the Settlement Act. The Settlement Act observes that traditional fisheries are of importance to Maori and that the Crown's Treaty duty is to 'help recognise use and management practices and provide protection for and scope for exercise of rangatiratanga in respect of traditional fisheries'. While the Kaimoana Regulations were made for this purpose (for fisheries waters other than those encompassed by the South Island), they do not presently extend to fisheries resources taken from freshwater. PMFCG, TRAION, TROTR and TWNGNT note that the only regulation available to Maori is regulation 27 of the Fisheries (Amateur Fishing) Regulations 1986. PMFCG, TRAION, TROTR and TWNGNT note that this regulation does not provide ability for Maori to manage the customary fishery, and does not provide scope for the exercise of rangatiratanga. Further, they state that regulation 27 is restrictive in that it does not presently provide for tikanga based non-commercial purposes.
- 50 PMFCG, TRAION, TROTR and TWNGNT further observe that if tangata kaitiaki are unable to be appointed because the Kaimoana Regulations do not apply to the freshwater environment, then this potentially limits the opportunities for input and participation into the review of sustainability measure processes. PMFCG, TRAION, TROTR and TWNGNT also notes that s 12 of the Act requires that the Minister shall provide for the input and participation of tangata whenua and have particular regard to kaitiakitanga in making decisions on sustainability issues.
- 51 PMFCG, TRAION, TROTR and TWNGNT submit that the Settlement Act promised a regulatory framework for the exercise of kaitiaki responsibilities, but this has not been fully delivered as it relates to freshwater fisheries (other than the South Island). PMFCG, TRAION, TROTR and TWNGNT consider that the customary non-commercial use of the eel fishery is clearly identified as the tuakana or elder, while the commercial fishery can be regarded as the teina or younger sibling. PMFCG, TRAION, TROTR and TWNGNT state that the development or progression of the younger sibling (ie, QMS introduction) at the expense of the elder (ie, lack of customary management tools) is contrary to the mana of Ngapuhi and the respective holistic view.
- 52 PMFCG, TRAION, TROTR and TWNGNT believes that bringing the North Island eel fishery into the QMS at this time does not protect Ngapuhi rangatiratanga in respect of the customary fishery. PMFCG, TRAION, TROTR and TWNGNT considers that introduction should be delayed until such a time that regulation 3(2) of the Kaimoana Regulations is reviewed, or that new customary fisheries regulations are

made that specifically address freshwater fisheries, as envisaged by the Settlement Act.

- 53 The **Wellington Conservation Board** would like to see details of how MFish plans to work with iwi over customary rights, customary take, and commercial catch.
- 54 Phillip Bristow is a tangata kaitiaki for **Nga Hapu ki te Whare o Ngapuhi**, as well as a trustee for the **Ngati-Manu Trust and the Rae Honetana Te Kero Trust (Te Roroa)**. Mr Bristow observes that the (Kaimoana) Regulations, as they relate to areas outside of the South Island, do not apply to the freshwater environment at this time. Mr Bristow appears to support the Kaimoana Regulations being amended so that the customary fishing provisions apply across both marine and freshwater. Mr Bristow would not wish to see any changes to the preamble to the regulations.
- 55 **Ngati Raukawa ki te Tonga** consider that MFish failed to consult properly with Maori in the development of the Kaimoana Regulations. Four prominent Maori resigned from Taumata Paepae and no further input was received from Maori in developing the regulations. Ngati Raukawa ki te Tonga conclude that the Crown's development of the Kaimoana Regulations administered by MFish are only a cover for modern day confiscation of Maori assets and resources.
- 56 Ngati Raukawa also considers that MFish has failed to recognise traditional Maori seasonal gathering practices and tikanga and to encompass these within the Kaimoana Regulations. They observe that the limited extent of customary collection activities permitted under regulation 27 of the Fisheries (Amateur Fishing) Regulations 1986 (ie, hui and tangi only) impairs their traditional and Treaty right to be able to harvest according to their customs and tikanga. Ngati Raukawa advises that the desire to harvest a sufficient number of eels during the hekē or migratory season for use over the year is of particular interest.
- 57 **Tainui Waka Iwi (Raukawa, Maniapoto, Hauraki and Waikato)** support the Tainui Tuna Working Group proposed recommendation that an amendment be made to the Kaimoana Regulations. This would make provision for customary use of fisheries resources found in the freshwater environment, as the equivalent regulations have provided in the South Island. Tainui Waka iwi further support an amendment to the regulations such that when a dispute resolution process has failed to resolve an objection, then a mediator can make a final decision on any issue requiring resolution.
- 58 **Hinaki Eels Ltd (Hinaki)** is the interim vehicle established to progress the interests of customary and commercial eel fishers in SFE 22/LFE 22 stocks. It is the successor to the group formerly known as the Kahungunu Rohe Eel Management Group (KREMG), and Hinaki continues to be convened by Ngati Kahungunu Iwi Incorporated. Hinaki note that **Ngati Kahungunu Iwi Incorporated** would call for consideration to be given to amending regulation 3(2) of the Kaimoana Regulations by deleting the words "other than those fisheries resources which are taken in fresh water" so that those regulations can be applied in respect of the eel fishery. Adopting the customary regulations would provide a better basis for collecting information on customary catch, as well as better managing other aspects of customary harvest. Ngati Kahungunu is also adamantly of the view that the regulations as a whole require significant revision in order to make them workable and urges MFish to undertake such a review, in consultation with customary rights-holders, as soon as possible.

- 59 **Te Runanga o Ngati Tama** recommends that both the Kaimoana Regulations and regulation 27 of the Fisheries (Amateur Fishing) Regulations 1986 be amended in order that whānau, hapu and iwi be able to harvest eel in such a way that best reflects the way Maori historically caught eel.
- 60 **The Treaty of Waitangi Fisheries Commission (TOKM)** submits that iwi should be engaged in consultation on the appropriateness of implementing a modification to the Kaimoana Regulations such that a more appropriate range of customary fishing activities and management practices can be undertaken in the freshwater environment. TOKM also considers that an assisted uptake programme should be implemented in partnership with iwi to ensure that the regulations are properly bedded down after they have been completed.

MFish Discussion

- 61 The Kaimoana Regulations took several years to develop following the Settlement Act of 1992. Much of that development occurred as a result of a working group of Crown officials and representatives from Maori (Taumata Paepae II). However, in late January 1998, the government directed officials from MFish to proceed with the finalisation of consultation on the draft customary fishing regulations for the North Island and Chatham Islands. MFish subsequently attended 45 hui at the invitation of iwi and hapu, and a further eighteen regional meetings with a broader range of fisheries stakeholders. MFish received over 500 written submissions by the consultation deadline of May 1998, of which about 50 were from iwi and hapu groups. Consequently, the consultation process did provide for the input and participation of tangata whenua and other interests.
- 62 The Kaimoana Regulations do not, despite the original intent of the Crown, extend to fisheries resources in the freshwater environment (other than the South Island). Te Arawa and others requested that the Kaimoana Regulations not apply to freshwater as they wished to challenge the view that freshwater fisheries resources were subject to the 1992 Deed of Settlement and the subsequent Settlement Act. They did not wish to prejudice their position through inclusion of the freshwater environ in the draft regulations applicable to the North Island and Chatham Islands. This led to the exclusion of the freshwater environ from the scope of the Kaimoana Regulations.
- 63 The High Court confirmed in *Te Arawa Maori Trust Board v Attorney-General*³ the Crown's view that freshwater fisheries were explicitly included in the fisheries settlement. Consequently, as the Kaimoana Regulations did not provide for customary fishing activities in the freshwater environ, persons wishing to do this have been limited to the restricted provisions of regulation 27 of the Fisheries (Amateur Fishing) Regulations 1986 (ie, collection for hui and tangi).
- 64 The limited scope of the Kaimoana Regulations has been highlighted for tangata whenua in order that they can consider the need to amend these regulations. An amendment to regulation 3(2) is required to provide for the broader range of customary fishing activities sought in the freshwater environ of the North Island and Chatham Islands, as originally envisaged, and as implemented in the Fisheries (South Island Customary Fishing) Regulations 1998. This approach is either generally or specifically supported by the Puhipuhi Te Maruata Forestry Claimant Group, in

³ *ibid*

association with Te Runanga A Iwi O Ngapuhi (TRAION), Te Runanga O Te Rarawa (TROTR), Te Waiariki/Ngati Korora/ Ngati Taka Hapu / Iwi (TWNGNT), and Te Runanga O Whaingaroa. This approach is further supported, either generally or specifically, by Phillip Bristow on behalf of Nga Hapu ki te Whare o Ngapuhi, the Ngati-Manu Trust and the Rae Honetana Te Kero Trust (Te Roroa), as well as Ngati Raukawa ki te Tonga, Tainui Waka Iwi, Ngati Kahungunu Iwi Incorporated, Te Runanga o Ngati Tama, and TOKM.

- 65 MFish notes the potential concern about regulation 14 of the Kaimoana Regulations. Regulation 14 provides that any tangata kaitiaki/tiaki may provide input to and participate in the process of setting or varying sustainability measures, or developing management measures concerning the whole or part of the rohe moana for which that person has been appointed. MFish observes that although a person may not be appointed a tangata kaitiaki/tiaki in the freshwater environs of the North Island and Chatham Islands in accordance with the Kaimoana Regulations, it does not follow that a person is unable to provide input and participation into consultative processes undertaken by MFish in accordance with s 12 of the Act. The receipt of submissions from tangata whenua to the current IPP is evidence of that. The Minister is able to have particular regard to kaitiakitanga given that consultation is being undertaken in accordance with s 12 of the Act.
- 66 Some Maori representatives suggest that the introduction of the eel fishery into the QMS should be delayed until such time that the Kaimoana Regulations have been amended to provide for a broader range of customary fishing activities in the freshwater environ of the North Island (and Chatham Islands). It is suggested that this approach will protect rangatiratanga in respect of the customary fishery. MFish observes that while making further progress with the Kaimoana Regulations would be desirable, applying catch limits to the commercial fishery can make a direct contribution to safeguarding the rangatiratanga of the customary fishery. Leaving the commercial fishery without a catch limit until such time that the Kaimoana Regulations were revised adds risk, and does not assist in improving the state of the resource through reductions in the amount of fishing.
- 67 The production and dissemination of this Final Advice Paper (FAP) to submitters will provide understanding of the approach taken at the time of introduction of eel stocks into the QMS.

Definition of customary and recreational catch

Submissions

- 68 **Prime Paraha** seeks to clarify what he considers is a misconception of MFish about the definition of cultural fishing. He states that the cultural fishing of tangata whenua within the rohe of Ngati Hine is occurring on a continuous basis, and not just for tangi or hui.
- 69 **The Mokau ki Runga Regional Management Committee (RMC) of the Maniapoto Maori Trust Board (MMTB)** submits that MFish interpretation of their customary right undermines and demeans their cultural heritage granted and endorsed to Maori under Article 2 of the Treaty of Waitangi. The RMC consider that the word 'customary' is not separated out into tangihanga, hui or gathering for the family table. The RMC contend that it should be recognised as a historical practice by tangata

whenua from time in memorial for sustenance and survival and should not be included or associated with recreational fishing.

- 70 **Tainui Waka Iwi (Raukawa, Maniapoto, Hauraki and Waikato)** support the Tainui Tuna Working Group's proposed recommendation that amended Kaimoana Regulations should encompass both personal and whānau use of fisheries resources found in freshwater.
- 71 **Treaty of Waitangi Fisheries Commission (TOKM)** submits that the 'recreational sector' contains a significant component of family subsistence needs undertaken by Maori as a traditional customary practice.

MFish Discussion

- 72 The distinction between customary and recreational catch is made on the basis of the law as it stands. In the North Island and Chatham Islands, the Kaimoana Regulations do not apply to freshwater at this time. The provisions that provide for customary catch in this area are contained within regulation 27 of the Fisheries (Amateur Fishing) Regulations 1986. Regulation 27 enables the collection of aquatic life for the customary purposes of hui and tangi only. Any other fishing activity that may have what is considered a 'customary' element is governed by the rules for recreational fishing. Should the Kaimoana Regulations be amended to apply to the freshwater environ of the North Island and Chatham Islands, then it will enable appointed tangata kaitiaki/tiaki to determine what is deemed to be a customary food gathering activity that he or she may authorise within the scope of the legislation.
- 73 A connection to the Treaty of Waitangi is drawn when discussing rights to 'customary' fishing activities. Section 10 (d) of the Settlement Act provides that the rights or interests of Maori in non-commercial fishing giving rise to claims by Maori in respect of non-commercial fishing, whether such claims are founded on rights arising by the Treaty of Waitangi or otherwise, shall have no legal effect, except to the extent that such rights or interests are provided for in regulations made under the Act.
- 74 Section 10(a) stipulates that the Crown has an on-going Treaty obligation to develop policies to help recognise the use and management practices of Maori in the exercise of non-commercial fishing rights. In that regard, MFish has brought to the attention of tangata whenua the current limitation in scope of the Kaimoana Regulations. There is scope to broaden the regulations to encompass the freshwater environ of the North and Chatham Islands, but a separate process is required to do that.

Desire to participate in management of eel fishery

Submissions

- 75 **Prime Paraha** contends that the group 'Mataitai Mahinga o Ngati Hine Incorporated Society' (MMoNH) should be the group that enters into a management plan jointly with MFish concerning the setting of the TAC for the eel stocks within the rohe of Ngati Hine, and that customary fishing research required for this management plan should be completed by MMoNH. He further considers that MMoNH should be the group that interfaces with all agencies in all matters concerning the fishing of eels within the rohe of Ngati Hine.

- 76 MMonNH note that there has been numerous meetings with MAF / MFish and other government departments who believe they have legislative responsibilities in freshwater fisheries management. MMonNH contend that they must determine a better process of resolving Treaty issues around freshwater fisheries that will bring a better sustainable management process. MMonNH note that they have previously formed a working party with the aim of co-ordinating the sustainable management of the Ngati Hine freshwater fisheries environment. MMonNH would like to discuss this model with other interests so that the outcome for all is a sustainable, robust resource that will continue to be a ‘taonga tuku iho’ for generations to come.
- 77 **Te Kawanga o Kahungunu** (TKoK) has made a joint submission on behalf of itself, the Ngati Pahauwera section 30 Co-operative Representatives and Moeangiangi 42 N owners. TKoK notes that it was founded in 1924, and that the main objective of the Trust order is to look after the interests of Ngati Kahungunu relating to a Maori reservation at one of the river mouths. The reservation status recognises the importance of the area as a breeding ground for many species of fish. TKoK also advise that a Maori fishing reserve was formed at the mouth of the Moeangiangi River in 1866 for the owners of the adjacent land.
- 78 TKoK propose that a joint management plan be developed with assistance from MFish to help manage the eel fishery within the Wairoa area, with a view that any blueprint could be applied to the rest of New Zealand.
- 79 The **Pukerangiora hapu Committee (Te Atiawa, Taranaki)** note their desire to submit an eel management plan. They indicate that they may be in a position to offer some further perspectives on management of the fishery within two years.
- 80 The **Whanganui River Maori Trust Board** observes that the Whanganui iwi has developed policy statements that underpin the use, management, protection and development of their freshwater fisheries.
- 81 **Te Ati Awa / Taranaki Whanui o Poneke (Poneke)** has undertaken voluntary surveys of the eel resource within the takiwä. Poneke see this contribution as part of their reciprocal relationship with the resource. Poneke believes that the fishing industry does not conduct the same stock assessment operations or exercise long periods of self-imposed restrictions, effectively making their relationship with the resource a ‘take’ relationship only.
- 82 Harry Toi submits on behalf of the Northland **hapu of Ngati Kopaki, Ngati TeAra, and the Ngati Kopaki, Ngati TeAra Trust**. Mr Toi notes that the hapu are a collective authority with rights and obligations to look after the eel resource, as handed down over ten generations. The process the hapu uses does not use isolation or tunnel vision as management tools, as it embraces the holistic interpretation in determining how to sustain the resource. The hapu recognise their customary gathering area as the Whare Kura O Ngapuhi.
- 83 **Ngati Raukawa ki te Tonga** believe that their principle responsibilities as kaitiaki are to preserve and protect for their whānau, their taonga, their culture, their history, their knowledge, and their many resources, to pass on to the next generation. Consequently, it is their view that only Ngati Raukawa with support from their wider communities can effectively manage these resources. Ngati Raukawa has aspirations to see more relevant research being done and playing a more active role in habitat

restoration and protection and doing anything that might help to enhance and stabilize the eel populations.

- 84 Ngati Raukawa ki te Tonga recommend that iwi Maori be able to manage these resources, to protect and enhance for the betterment of all iwi/hapu/whānau, using their own customs and tikanga, without the interference from MFish or any other Crown agency. However, Ngati Raukawa also recommend that MFish develop and pursue a policy with appropriate budget which allows iwi/tangata whenua to be actively involved in all aspects of protection and enhancement of these resources and their habitat/environment. The representatives of Ngati Raukawa wish to be involved in any policy or legislation making issues that may have an impact on eel resources in their rohe, inclusive of all coastal marine and freshwater issues.
- 85 **Te Runanga o Ngati Whatua** requests that MFish, along with the Department of Conservation, assign resources to assist tangata whenua and communities to develop and maintain catchment management plans. The Runanga also suggests that fishing permits for eels should continue to be conditioned to restrict commercial fishers to particular eel statistical areas (ESAs) until such time as catchment management plans can be notified and implemented.
- 86 **Tainui Waka Iwi (Raukawa, Maniapoto, Hauraki and Waikato)** support a proposed strategy recommended by the Tainui Tuna Working Group to establish a management forum with members who represent Maori, harvesters, the agencies responsible for habitat management and/or protection, power companies, Ministry of Fisheries, Department of Conservation, research providers, farmers etc with the purpose of discussing issues of broad application to the eel fishery across the area encompassed by the Tainui rohe. Tainui Waka Iwi also support a proposed recommendation of the Tainui Tuna Working Group that a harvesting strategy is defined for the commercial fishery within the Tainui region, and that the size and growth rates of the eel population is increased through the use of transfers and restocking in areas of low abundance.
- 87 **Puhipuhi Te Maruata Forest Claimant Group (PMFCG), Te Runanga A Iwi O Ngapuhi (TRAION), Te Runanga O Te Rarawa (TROTR) and Te Waiariki/Ngati Korora/ Ngati Taka Hapu / Iwi (TWNGNT)** considers that fisheries plans as a management option are unacceptable at this stage. The groups' representative states this is because fisheries plans have the ability to override management mechanisms that would otherwise be available to tangata whenua via the Kaimoana Regulations.
- 88 **Eel Enhancement Co. Ltd (EECo)** states that North Island eel fishers are suitably organised/coordinated, represented, and funded in order to participate, respond and fund North Island initiatives alongside others, as required, in a proactive and expeditious manner.
- 89 **Hinaki Eels Ltd (Hinaki)** notes that it is working on the development of a fisheries plan, and that QMS introduction at 1 October 2004 on the appropriate terms is an essential prerequisite to the implementation of the plan.
- 90 **Te Awa O Mangakahia (Wai 990), Mangakahia Maori Committee, and Te Roopu Takiwa O Mangakahia** wish to form a working partnership with MFish and become a full partner in terms of participating in eel fishery management within the

rohe of Mangakahia (west of Whangarei), from both a commercial and customary perspective.

- 91 **Te Aitanga a Mahaki Trust** was incorporated under the Charitable Trusts Act in 1995 and promotes education, social services and health services for the betterment of those of Aitanga a Mahaki descent and the people of Turanganui A Kiwa. The Trust represents 11 marae in the Gisborne area, and is one of only four iwi mandated organisations to have the representational and structural requirements for allocation of fisheries assets. The Trust observes that it is undertaking eel research programmes to better estimate the historical and present customary harvest of eels, while recording the techniques used and management practices of customary fishers. The Trust notes that awareness of fisheries regulations is poor, and considers that it is important that the community is informed about the QMS so they are aware of the sustainability and other management controls in place. The Trust invites TOKM and MFish to participate and assist in the development of a fisheries plan for eels to ensure that the resource is managed sustainably and remains a taonga for their mokopuna.
- 92 **Te Runanga o Ngati Apa Inc.** submits that the sustainability of eel fisheries should be left with hapu and iwi who are kaitiaki. Ngati Apa states that, at the very least, they would expect to be a major participant in processes to measure and monitor eel stocks within the Ngati Apa domain.

MFish Discussion

- 93 MFish welcomes the initiative shown by various submitters in noting their desire to contribute to the well-being of the fishery for the benefit of a range of users. MFish also welcomes the desire of various interests to develop joint strategies or plans for the management of the fishery.
- 94 The introduction of eel stocks in the North Island into the QMS from 1 October 2004 will enable many of the initiatives that eel fishery interests have identified to be progressed. Past problems and concerns with fishery management systems will diminish as people become familiar with the QMS environment, as well as the fact that commercial harvesting rights will be defined, and linked to particular QMAs.
- 95 Allocation of commercial harvesting rights will create an incentive for commercial interests within a QMA, or combination of QMAs, to work better together, as well as with other eel fishery interests to address common issues (eg, habitat modification and the impact on the fishery, or enhancement initiatives). In addition, initiatives at a local scale by eel fishery interests should complement any generic work that MFish undertakes to further enhance the foundation laid by introduction of the North Island eel stocks into the QMS. For example, the production of high resolution maps showing ESAs across the North Island may assist with management planning at the level of catchments or particular provinces, in addition to consideration of finer scale reporting of commercial catch, and ultimately non-commercial catch.
- 96 Consideration of catchment management plans (eg, Te Runanga O Ngati Whatua), harvesting strategies (eg, Eel Enhancement Co Ltd, Tainui Waka Iwi), and local area specific issues (eg, Te Awa O Mangakahia (Wai 990), Te Kawanga o Kahungunu, Ngati Raukawa ki te Tonga, and Te Ati Awa / Taranaki Whanui o Poneke) would all benefit from a cooperative approach from eel fishery interests within the context of the relevant QMA, especially the consideration of relevant issues at the level of the

biological stock. MFish may be able to provide technical advice and information to such discussions, in order that appropriate initiatives are facilitated. MFish is not resourced, nor is it its function, to fund groups wishing to advocate for particular outcomes. Nevertheless, MFish continues to provide a central point of contact for the dissemination of information and advice about the fishery and its management.

- 97 MFish is not legally able to place a condition on fishing permits that restricts commercial fishers to particular ESAs until such time that catchment management plans are put in place. However, the number of commercial fishers is likely to significantly reduce following QMS introduction of North Island eel stocks, and the TACCs to be implemented will constrain commercial effort and catch.
- 98 When setting a sustainability measure, the overriding objective for the Minister and MFish is to meet the purpose of the Act. However, MFish does acknowledge that the introduction of eel stocks into the QMS, will in itself, enable fishery interests to determine what strategies or objectives should be included in a fisheries plan, wherever this is proposed.
- 99 Some submitters are concerned that fisheries plans have the ability to override management mechanisms available to tangata whenua via the Kaimoana Regulations. In light of the Crown's on-going Treaty obligation to develop policies to help recognise the use and management practices of Maori in the exercise of non-commercial fishing rights, it would be important for the Minister to carefully consider any proposal in a fisheries plan that might conflict with this obligation prior to its approval. This underlies the need for proponents of fisheries plans, including tangata whenua, to ensure that they have considered the wishes of tangata kaitiaki/tiaki of a rohe moana or mātaitai, before forwarding any proposed plan to the Minister for approval.

Management strategy

Submissions

- 100 The **Department of Conservation (DoC)** is concerned about the depleted state of eel stocks nationally, particularly the endemic longfin eel that is classified in the department's threatened species classification system as being 'in gradual decline'. DoC also has concerns about the effect of the removal of eels, as top predators, on aquatic ecosystem structure and biodiversity in New Zealand and the risk of abrupt recruitment failure resulting from unsustainable levels of eel harvest. DoC considers that fishing pressure is one of the key factors responsible for the current condition of the eel fishery and urges MFish, when introducing the fishery into the QMS, to use all available management tools to promote its recovery.
- 101 DoC accepts the reasoning for applying a non-MSY target for the North Island eel fishery under section 14 of the Act, and encourages MFish to use the flexibility available under this section to achieve the management objective proposed.
- 102 The **Bay of Plenty Conservation Board** is generally supportive of more stringent management of these fisheries provided by the introduction of the fishery into the QMS. Maori members of the Board express considerable concern about the low number of eels available in the region for customary use compared to before the

- beginning of the commercial fishery. The Board observes that eels feature less commonly at hui in the Bay of Plenty and believes this is partly a reflection of the loss of large amounts of habitat. A noticeable decline in eel stocks is also reported within one generation of tangata whenua since commercial fishing began.
- 103 One of the Board members notes that iwi are particularly concerned about the loss of longfin eel in the Rangitaiki River and the effects of the dams on migratory cues for elvers and silver eels. At the commencement of elver transfer operations at the Matahina Dam, about 80% of the elvers were longfin, whereas now that proportion has reduced to 10%. Similarly, adult eels are trapped above the dams, unable to find their way out to the ocean to spawn, while sensory cues for other non-migratory movements within the river have been disrupted.
- 104 The **Pukerangiora Hapu Management Committee (Te Atiawa, Taranaki)** agree in principle to the inclusion of the species into the QMS.
- 105 The **Wellington Conservation Board** notes that the principles of the QMS, as applied to the North Island eel fishery, should be based on conservation, preservation, and sustainability. The Board feels that the QMS proposals for the North Island eel fishery has some good points, but adequate resources need to be made available to ensure that eel populations in the Wellington region are sustained. The Board suggests that a monitoring programme needs to be established to make sure that the present serious decline of eel populations is not ignored until such a time that the fishery has collapsed.
- 106 The Board supports the objective of ensuring that the population structure of a stock is improved such that eels grow through to a larger average size, particularly where Maori would prefer to have larger eels to harvest. The Board queries whether this objective is encompassed within a ten year strategy, and if so, will this start when the QMS is implemented from 1 October 2004.
- 107 Further, the Board suggests that MFish should consider implementation of a regional licensing system as this may reduce the amount of illegal catch and contribute to the sustainability of populations of the species at a regional and national level.
- 108 Harry Toi submits on behalf of the **hapu of Ngati Kopaki, Ngati TeAra, and the Ngati Kopaki, Ngati TeAra Trust**. The hapu and Trust understands that there is a need to formulate policies that ensure the sustainability of the resource, and that MFish promotes the ideals of sustainability. However, the hapu are concerned that a non-committal and passive approach to the management of the fisheries resource will lead to a management framework that only has two purposes. The hapu and Trust believes that one of these purposes is simply to provide an ability to implement rules and regulations for control, while the decisions on the level of allowances will have social and economic implications for tangata whenua. The hapu are concerned that there is no quantifiable evidence of the social and economic situation for tangata whenua arising from the decisions on the allowances. The hapu considers that, as there will be an impact upon tangata whenua, the present process is not conducive to the sustainability of the resource or tangata whenua.
- 109 **Ngati Raukawa ki te Tonga** submits that MFish has failed in numerous respects. Their representatives consider that MFish has not recognised the exceptional rights to this taonga and its future management under their tikanga. They consider that MFish

has failed to listen to iwi Maori concerns and has allowed the commercial pillaging of their taonga to continue, even though MFish was aware of its dwindling numbers. Representatives blame MFish's permitting system and the blatant over-fishing practices of commercial fishers. They also note that MFish fails to accept that commercialism has no place in their rohe, and that on introduction of North Island eel stocks into the QMS, the number of commercial fishers in the North Island is predicted to halve, rather than cease.

- 110 Ngati Raukawa ki te Tonga considers that MFish has failed to undertake any research on the impact of a commercial fishery on the customary needs of tangata whenua. Similarly, it believes that MFish has failed to protect these resources through sustainable and effective utilisation, or to show any strategies on how eel stocks could be replenished. Ngati Raukawa believe that more research should be undertaken on eel breeding and rejuvenation cycles, as well as migratory patterns. Further, Ngati Raukawa consider that MFish has failed to properly manage the resource, and are unable to sustain Maori customary needs ahead of filling commercial quotas. In addition, Ngati Raukawa believes that MFish has failed to recognise, support and actively participate in any positive initiatives by iwi/hapu/whānau or the general public to protect those natural habitats and environments that eels need to survive.
- 111 Ngati Raukawa ki te Tonga supports the Whanganui and Taranaki iwi stance to oppose all commercial eel fishing activity within their rohe. They also support any iwi/hapu/whānau or individuals whom seek to stand against continued commercial eel operations within their respective areas.
- 112 **Te Runanga o Ngati Whatua** opposes introduction of the eel fishery into the QMS for reasons it noted in the prior consultation process on whether the North Island eel fishery should be introduced on 1 October 2004, and the nature of the QMAs. Ngati Whatua believe that there is insufficient research on spawning grounds, habitat degradation and environmental conditions, and that introduction should be delayed until such time as all known mortality rates are documented so that strategies could be implemented to minimise the mortality rates. Further, the Runanga does not have any confidence that MFish is able to maintain long term relationships with regional and local councils which would be essential in the maintenance of the eel environment, and hence the recruitment of juveniles. The Runanga would like to see agreements between government agencies and local councils with MFish at central and local levels in order that environmental issues are addressed.
- 113 Ngati Whatua advocate for the management of the eel fishery on a smaller scale than the existing QMAs. The Runanga suggests that research and statistical areas be based around the natural catchment areas, or sub-catchment areas within each QMA. The Runanga suggests that the QMS introduction process be delayed so that these can be designated. In the event that the Minister continues with the introduction of eels into the QMS on 1 October 2004, the Runanga strongly advise that the issues raised in preceding paragraphs are part of the overall management strategy. **Te Runanga O Whaingaroa** of Kaeo (Northland) fully supports the submission made by Te Runanga o Ngati Whatua.
- 114 **Tainui Waka Iwi (Raukawa, Maniapoto, Hauraki and Waikato)** states that restoration and enhancement of the eel fishery is first priority, and the customary fishery takes priority over other fishery sectors when setting TACs. The tribes support introduction of the fishery into the QMS.

- 115 **Eel Enhancement Co. Limited (EECo)** represents the commercial eel fishery of the North Island. The company's shareholders comprise the majority of eel permit holders in the North Island. The company was formed in the late 1990s with the objective to promote the sustainable utilisation and enhancement of the North Island commercial eel fishery.
- 116 EECo notes that the QMS provides the ideal basis for sustainable development. EECo states that the QMS provides an environment where existing participants will rationalise their interest in the fishery, while allowing increased opportunity for Maori to participate in the commercial fishery.
- 117 EECo notes that calculating biomass is difficult/impossible to measure. The company suggests that biomass (unknown) and the growth parameters (known) of eel would have been the basis for calculating maximum sustainable yield (MSY), using MCY (ie, maximum constant yield) as a proxy. The company does not accept the use of 'Minimum Constant Yield' (sic) as in their view it is not supported by the Act. The company seeks that the fishery management goal be to move toward optimal yield. The company believes that catch-per-unit-effort (CPUE) will provide a reasonable basis to indicate the status of the stock. The company considers that an agreed quantity of catch per unit of effort can be achieved through fishery enhancement. The company observes that it has caught, transferred and released approximately 13 million elvers in the Waikato River system alone and considers that this has, or will, contribute to an improvement in the status of the resource.
- 118 The company submits that setting TACs under s 14 of the Act is the appropriate basis for managing North Island eel stocks. It considers that this approach will also better provide for future types of fishery enhancement. The company also supports the addition of North Island eel stocks to the Third Schedule of the Act.
- 119 **Hinaki Eels Ltd (Hinaki)** supports the recommendation that the fishery should be managed under s 14 of the Act on the basis that the biological characteristics of the stock is such that it is impossible to set appropriate catch limits by using classic MSY based methodologies. In the view of the existing fishers, current fishing practices effectively amounts to rotational fishing, although this has not been formalised or documented to date. Hinaki also strongly supports addition of North Island eel stocks onto the Third Schedule to the Act.
- 120 Hinaki notes that in its proposed fisheries plan there are five inter-related management objectives. These are to maximise the commercial value of the fishery (doubling it within five years), encourage customary activities and revitalise customary fishing, increase the size and abundance of eels in major rivers and closed areas, increase the number of eels that survive to spawn, and act in accordance with the spirit of the environmental principles of the Act.
- 121 **Te Awa O Mangakahia (Wai 990), Mangakahia Maori Committee, and Te Roopu Takiwa O Mangakahia** submit that the sustainability of the eel resource is very important for their people as they are still very dependent on this resource for their own sustainability. Traditionally, the 'tuna people' of the Mangakahia would supply eels at every hui within the Mangakahia, however this cannot be said for 2004.
- 122 **Te Runanga o Ngati Tama** agrees that the current mismanagement of the eel fishery needs to end and therefore they support the introduction of North Island eel stocks

into the QMS. The Runanga agrees that when setting the TAC that sustainability will be the primary consideration.

- 123 A staff member from the **Treaty of Waitangi Fisheries Commission (TOKM)** has attended recent Stock Assessment Working Group meetings for eels and has ‘observed multiple areas of uncertainty at just about every level’. Consequently, TOKM agrees with the need to use the alternative method (s 14) for establishing the TAC for the North Island eel fishery.
- 124 **Te Runanga o Ngati Apa Inc.** submits that if the Government will not take more time to consult with the Ngati Apa people, then the Minister should, with the discretion available to determine levels of customary, recreational and commercial use, deem the entire use of the fishery as customary.

MFish Discussion

Proposed management strategy

General appreciation of purpose of QMS and its role

- 125 The proposed management strategy for the setting of TACs under s 14 of the Act is to improve the stock structure and abundance over the medium term, while bringing a halt to any decline in the fishery over the short term. This is intended to have the effect of ensuring sustainability, improving the availability of appropriately sized eels to non-commercial interests, and improving the relationship with interdependent stocks.
- 126 A number of submitters (eg, DoC, Bay of Plenty Conservation Board, Pukerangiora Hapu Management Committee, Wellington Conservation Board, Tainui Waka Iwi, EECO, Te Runanga o Ngati Tama and TOKM) recognise that the QMS will provide a better basis for ensuring sustainable use of the eel fishery, and achieving other elements of the proposed management strategy than the present management system.
- 127 Over time, fishery interests in many areas have increasingly acknowledged that the QMS is the best system for the longer term management of the eel fishery. Nevertheless, there is still some misunderstanding and apprehension about the QMS in some quarters, particularly in parts of the North Island. MFish has undertaken initiatives to improve the eel fishery, through research, advocacy, implementation of interim fisheries management measures, and proposed a management strategy in the IPP for the replenishment of the fishery.
- 128 Some submitters have not commented directly on the proposed management objective, but have made comments that are consistent with its general direction. This includes observations that seek to ensure that the social and economic impacts on tangata whenua are positive.
- 129 Similarly, submitters wish to see considerable improvements in the state of the resource for the benefit of non-commercial users, and some (eg, representatives of Ngati Raukawa ki te Tonga) suggest that, to achieve that in their rohe, commercial fishing will need to cease. MFish does not agree that such a high level of initial intervention is necessary to achieve improvements in the non-commercial fishery, as envisaged by the proposed management strategy. Nevertheless, MFish accepts that

harvest strategies collectively developed by fishery interests should go some way to resolving local issues. Similarly, appropriately set TACs (and thereafter TACCs) will allow for improvements in the state of the resource, and the availability of the resource to non-commercial interests, at a stock level over the medium term.

- 130 MFish recommends that the proposed management strategy be ratified as the basis for TAC setting under s 14 of the Act.

Knowledge of breeding grounds

- 131 MFish notes that Te Runanga O Ngati Whatua has made a qualified objection to QMS introduction, and strongly advises the Minister to consider the issues it has raised in its submission. MFish notes that identification of the spawning grounds for the species in New Zealand is problematic. Although it would be desirable to know precisely where eels found in New Zealand breed, the fishery has been managed for several decades without this knowledge.

- 132 This situation is similar to other fisheries in New Zealand. Other indicators of the extent of breeding success can be used. This includes either monitoring the relative number of juveniles entering the fishery, or the relative number of adults migrating from New Zealand rivers in breeding condition. MFish notes that awaiting further information on these facets of the species biology would not be consistent with acting on the best available information. The Act provides that the absence of information should not be used as a reason for failing to take any measure to achieve the purpose of the Act. MFish notes that inclusion within the QMS also provides a commercial catch limit.

Non-fishing sources of mortality

- 133 Some submitters suggest that all sources of mortality should be known and quantified before introducing the fishery into the QMS. MFish notes that a TAC reflects what can be sustainably taken from a stock, having taken into account the likely stock size (where this is able to be estimated). Inherently, this quantity will be a function or reflection of the influence of both fishing and non-fishing impacts on the resource. While the effect or significance of non-fishing related mortality on the stock might be unknown, it is still possible to assess the relative extent of the stock as it stands in order to derive a sustainable harvest level. This level may be adjusted as more information on non-fishing mortalities becomes available.

- 134 MFish agrees that the scale of non-fishing related effects would be usefully quantified in order that they can be brought to the attention of the administrators of the Resource Management Act 1991 (RMA). As a starting point, MFish has contracted some initial research this year to estimate the range and significance of mortality arising from non-fishing activities. MFish would welcome the implementation of strategies under the RMA that looked to minimise sources of non-fishing related mortality to eel and other fishery stocks.

Definition of medium term for purpose of achieving proposed management strategy

- 135 The precise timeframe for improvements in size structures have not been specified as different stocks are likely to respond differently. Nevertheless, a ten year timeframe

from 1 October 2004 would be considered an appropriate point at which significant improvements should be noticed for all North Island eel stocks. Furthermore, MFish notes that the eel fishery is already the subject of a monitoring programme that is reviewed annually.

Other measures to support proposed management strategy

Regional licencing system

- 136 MFish considers that the level of illegal fishing in the eel fishery to be low, and that the use of permitting systems is an inefficient way to deliver on sustainability outcomes. The restriction of commercial fishers to localised areas will not contribute to a reduction in any illegal fishing activity that might exist. The QMAs are relatively small when considering the likely number of participants involved with each stock following QMS introduction (as observed in the South Island), and self-policing within the industry should be improved.
- 137 Further, it is likely that the industry will be interested in working collectively within every stock, to harvest the fishery in a cost effective manner. Any initiatives to improve the fishery (eg, enhancement) are likely to involve co-ordinated efforts by the industry. Consequently, the implementation of further access controls is not considered necessary at this time.

Fine scale reporting and local management

- 138 Te Runanga O Ngati Whatua also advocate for management at a scale smaller than the existing QMAs, particularly in terms of the reporting of catch to the level of a catchment. MFish notes that it has produced new ESA maps and reporting codes for use from 1 October 2004 and systems have been designed with sufficient flexibility to allow for finer scale reporting of commercial catch.

Use of s 14 of Act and Third Schedule

- 139 Submissions from the North Island eel industry and TOKM support use of s 14 of the Act, principally on the basis that the determination of specific yield targets is difficult or impossible to accomplish. The North Island eel industry also supports the addition of North Island eel stocks to the Third Schedule of the Act. There is some similarity in the views expressed over proposed management objectives to revitalise customary fishing activity.
- 140 MFish does not envisage that TACs will be the only action taken to improve the fishery, but nonetheless it is an important platform for ensuring sustainability, particularly at a time where considerable reform is taking place and a rebuild of the stock structure is desired over the medium term.

Calculation of Total Allowable Catches

General observations

Submissions

- 141 The **Department of Conservation (DoC)** is not satisfied that appropriate weight (via s 11 of the Fisheries Act 1996) has been given to the existing controls (in legislation and conservation management plans and strategies) upon eel fishing in areas that it administers. DoC submits that there is evidence that large quantities of eels have been harvested from some reserves that are not legally accessible for commercial harvest, and it is concerned that TACC calculations rely on historic harvest data that may include these areas. DoC suggests that unlawfully harvested eels should be excluded from catch histories.
- 142 DoC is concerned by what it views as the significant downward trend in CPUE indices for longfin eels in all of the proposed QMAs over the last 12 years, and for shortfin in QMAs 21 and 22. DoC considers that the trends in CPUE indices will only be reversed through further reductions to the proposed TACCs to levels well below those recently extracted from the fishery. DoC concerns are exacerbated by misgivings about the reliability of the raw (commercial catch) data.
- 143 DoC notes that there are considerable disparities (at the QMA level) amongst the databases that are being used to establish (and validate) historic commercial catch, particularly in the 1992-93 to 1996-97 fishing years. DoC considers that this is particularly concerning for QMA 22 where the estimated landings (even after scaling) do not correlate with the eligible catch data for the qualifying years (1990-91 and 1991-92), or with the landed weights supplied from a Levin eel processor that is significantly higher again. DoC considers that MFish should rely on more reliable and consistent commercial catch data covering the last few fishing years only (1996-97 to 2001-02), and apply a proportional reduction from these levels. DoC considers that this would be more conservative, and in keeping with the management objective, since it would not include the higher and much more variable catches recorded from the early to mid 1990s.
- 144 In comparing the proposed TACCs with the recent commercial catch levels (1996-97 to 2001/02), DoC notes that an overall (commercial) catch reduction of only 10% is achieved (11% reduction of shortfin and 8% reduction of longfin). DoC considers the proposed longfin TACCs to be entirely unacceptable in view of the proportional reduction being proposed for shortfin, the depleted state of the eel resource, vulnerability of eels to over-harvest, and disparities in commercial catch data. DoC believes that further substantial TACC reductions are essential to halt and reverse the decline in CPUE indices and improve eel abundance.
- 145 DoC considers, referring to a scientific paper authored by Hoyle and Jellyman (2002), that a greater reduction in exploitation rate throughout the fishery is required to obtain a meaningful increase in spawning female longfin eels. DoC also refers to a scientific paper by Jellyman *et al.* (2000), in which it is suggested that harvest rates for longfin are thought to be as high as 20% per year in some waters. DoC considers this quite high when it observes that the best yield per recruit is obtained at exploitation rates of between 5 and 8% (Hoyle and Jellyman 2002).

- 146 The **Bay of Plenty Conservation Board** recognises that there is a considerable lack of precision in the division of past commercial catch by species category. Because of the large confidence intervals that may have been placed around these estimates of past catch rates, and based on the slightly lower catch estimates for the last three years, the Board considers that the TACs proposed for both species of eels would essentially mean a maintenance of status quo. The Board does not consider that this adequately recognises the threatened status of longfin. The Board also considers that insufficient information is presented to prove that lower recent catches were solely the product of poor markets and not at least partly due to declining population size.
- 147 The Board refers to the scientific paper by Hoyle and Jellyman (2002) that estimates that an exploitation rate of just 10% per annum would reduce the spawning-per-recruit by 97% for female longfin. The Board notes an observation by Jellyman and Todd (1998) that the removal of larger females from the stocks has already resulted in a dominance of shortfin males within the current fishery. The Board also notes that Jellyman and colleagues have found that recruitment of longfin had significantly declined by 7% per annum in two of three study streams, and recruitment in 2000 averaged just 23% of that observed in 1980 (Jellyman *et al.* 2002).
- 148 The Board considers that the current DoC classification for longfin of being in ‘gradual decline’ does not adequately convey the potentially ‘critically threatened status’ of the species given characteristics of being relatively large, long-lived, slow-growing, with late sexual maturation and limited geographical range. The Board notes that the development of the commercial fishery has essentially taken place over a period of time equivalent to one generation of longfin females in the North Island (~35 years), and that longfin is limited in its distribution to New Zealand alone.
- 149 The Board believes that it is not unforeseeable that there could be a collapse in recruitment in the short to medium term having considered the uncertain location of the spawning grounds, and the possibility of climate change shifting current patterns in the South Pacific thereby affecting the ability of glass eels to find their way to New Zealand. The Board also cannot rule out the possibility that there are currently insufficient large female longfin left to maintain recruitment, as there is no nationwide plan to research existing population dynamics, including sex and age ratios, recruitment and migration rates.
- 150 Given the combination of the issues identified in the preceding paragraph, the Board recommends that the ‘commercial quota for the longfin fishery be set at zero’ until further research can show that a commercial fishery is sustainable. In addition, the Board recommends that recreational quota should be ‘halved to less than 6 tonnes across the QMAs’. As a result of these recommendations and the observation that the species distribution overlaps, the Board observes that longfin may become a by-catch species of the shortfin fishery. In this case, the Board suggests that the commercial bycatch quota should be no higher than that set for recreational catch.
- 151 The Board sees that many factors including, but not limited to, the commercial fishery, have impacted on longfin and shortfin population dynamics over the past century. The Board notes that while pastoral landscapes may be favoured by some lifestages of eel, and shortfin in particular, the massive loss of wetland habitat and effects of river channelisation on critical flood events associated with conversion of land to agriculture cannot be interpreted as having anything other than negative impacts on eel populations.

- 152 By way of example, the Board notes that almost 10% of the total area of North Island catchments is already affected by hydroelectric developments, with inherent problems for recruitment and escapement of longfin eels in particular. The Board feels that the rehabilitation of longfin stocks cannot progress well without some further research into the use of freshwater habitat and the removal of barriers to eel movement within freshwater ecosystems. The Board recommends that MFish pursue collaborative investigations with other relevant agencies, such as DoC, Ministry for the Environment, and hydro power companies, to identify and resolve where problems of river regulation and barriers may be feasibly counteracted.
- 153 The **Wellington Conservation Board** notes that MFish considers its research findings are of concern and/or warrant particular consideration in forming recommendations for the future management of the fishery. The Board hope that MFish has taken this into account, noting that in its view the sustainability of the fishery is under serious threat. The Board suggests that the TACs should be set to ensure the survival of the species and allow regional populations to recover. The Board observes that if this means initially a limit of zero, then it should be implemented until research can show that the further harvest of the species is sustainable. Alternatively, the Board suggests that MFish should seriously consider removing eel stocks from the QMS until such a time that there is enough scientific evidence that the species is no longer in decline.
- 154 **Te Ati Awa / Taranaki Whanui o Poneke (Poneke)** notes that it is imperative that they are able to retain their centuries old rights as local kaitiaki entitling them to be in the position of primary advisors to the Minister of Fisheries regarding the TAC and TACC limits in their tikiwa. Poneke note that the depletion of the eel resource over the last two decades, by either habitat degradation or overfishing or a combination of both has resulted in tangata whenua being reluctant to harvest a depleted resource in the majority of catchments. Tangata whenua have imposed rāhui in some of the catchments and have undertaken detailed surveys of the resource during 2002 given indications of the depleted state of the fishery. Poneke notes that there has been a decrease in the passing on of traditional harvesting practices, a decrease in obtaining free food for whānau, a previously unbroken custom, and a loss of mana due to the inability to supply eels for marae guests.
- 155 Mr Bristow states that the eel resource is affected by activities under the jurisdiction of the RMA (eg, waterway removals and farm pollutants). Mr Bristow suggests that if the stocks have a population boom, then the Crown with its Treaty partner, shall seek a just and honourable solution in conformity with the principles of the Treaty of Waitangi. Mr Bristow suggests that the best TAC and management measures are to have no commercial use of the resource, or restrict the issue of fishing permits to the QMAs gazetted for eel stocks.
- 156 **Ngati Raukawa ki te Tonga** consider that based on their assessment of estimated commercial catch of shortfin and longfin by QMA for the period 1990-91 to 2002-03, the commercial fishery has nearly halved in the last 12 years. They note that the impact on iwi Maori has been disastrous.
- 157 **Te Runanga o Ngati Whatua** states that the recommendations for the setting of TACs are fundamentally flawed as there is no identification of non-fishery related mortality. The non-fishery related mortality covers factors such as human intervention of the passage of the eel, human activities that inadvertently kill eels and

the modification and degradation of the eel habitat. The Runanga notes that without this mortality rate being identified these activities will continue and the impact on the use of this resource will be unheralded and unknown. **Te Runanga O Whaingaroa** of Kaeo (Northland) fully supports the submission made by Te Runanga o Ngati Whatua.

- 158 **Eel Enhancement Co. Ltd (EECo)** acknowledges that while there has clearly been a real and inevitable longfin eel biomass reduction from virgin levels as a consequence of both environmental modification and fishery exploitation, the scientific evidence is equivocal as to whether that pattern is continuing or whether longfin stock size has been reduced below a level that can support MSY. The company does not accept the dire predictions of a number of other interests as to the state of the longfin resource. However, the company does accept application of a moderate and reasonable approach to management measures.
- 159 EECo notes that a moderate approach is the most reasonable way forward because there is no crisis at present, there is a long steady history of catch, predictors are in place, annual review is available, and there is so much at stake commercially in terms of QMS driven changes in fishery economics, fishery income and commitment and in promoting efforts for enhancement. EECo considers that the fishery is stable and the question is more about how to maximise sustainable returns than address a dire situation.
- 160 EECo supports provision for non-commercial harvest by addition of non-commercial estimates to commercial catch records. The company acknowledges the huge amount of dedicated quality work that has been undertaken by MFish to prepare for QMS introduction, including assessing information for TAC and TACC setting. The company submits that MFish may seek to recalculate/rework figures after the submission period closes, having presented revised figures for TAC and TACC setting during the consultation period. The company submits that it must be further consulted on any further revisions to the proposed TACs and TACCs. One observation EECo makes is that the historical figures may represent an underestimate of what was actually harvested. For example, the estimate of average adjusted annual commercial catch for the period 1990-91 to 2001-02 is 815.7 tonnes for the North Island, whereas the estimate provided using the 'Report from the Fishery Assessment Plenary' data (based principally on processors figures) is about 30 tonnes more.
- 161 EECo also confirms that the market is currently very poor as reflected in lower port prices being paid, despite steady CPUE ratios, and believes that this has actually served to constrain catching in recent times thus effectively lowering the average. The company also considers it more reasonable to compare the proposed TACCs to the twelve year history rather than the two recently completed fishing years (2000-01 and 2001-02) given the likelihood that catch may have been affected by international market conditions. The company makes this comparison using licenced fish receiver data (Table 2).

Table 2: EECo comparison of average commercial North Island eel catch as landed to licenced fish receivers for (i) the 2 year period 2000-01 and 2001-02, and (ii) the 12 year period 1990-91 to 2001-02, in relation to proposed combined TACCs for North Island shortfin (SFE), North Island longfin (LFE) stocks, and all North Island eel stocks (SFE & LFE) combined.

	12 year average per annum tonnage landed to licenced fish receiver	Proposed TACC	% reduction on 2 years data derived from licenced fish receivers	% reduction on 12 years data derived from licenced fish receivers
North Island SFE	525.8	470 or 458	14.1 or 16.3	10.6 or 12.9
North Island LFE	289.9	222	13.7	23.4
North Island SFE & LFE	847.9 ⁴	692 or 680		18.4 or 19.8

162 EECo notes that the reductions obtained in table 2 are higher than the targeted Ministry reductions of generally 10% for shortfin and 20% for longfin.

163 **Hinaki Eels Ltd (Hinaki)** submits that the existing fishery is considered to be sustainable, in that recruitment is adequate. Hinaki regards the stock size largely irrelevant to sustainability. Hinaki believes that the level of recruitment is the most significant factor for ensuring sustainability. Further, Hinaki speculate that the impact of a stock level is not known, such that a lower level may lead to better growth rates and more escaping fecund eels. In Hinaki’s view, the best way to set the TACs (and allowances within that) is so the resulting TACCs are equivalent to the average take over the last 15 years. The allowances for customary take, recreational take and other fishing-related sources of mortality should then be added on.

164 **Grant Williams**, a commercial fisher in the Taranaki area, observes that there are several factors that influence the commercial catch information derived from reporting forms used by commercial fishers. These include the use of a standardised reporting form rather than a form specifically used for the eel fishery, requirement to specify a target species, confusion about the terms ESA and ‘fishstock’ code, use of the ‘EEU’ (‘Eels unspecified’) code, need to complete several CELR forms to capture a month’s fishing activity, and if landing on a daily basis, need to complete and submit forms as fishing trips are completed, giving rise to submission of numerous forms per month.

165 Mr Williams notes that forms were frequently returned to fishers, some of whom could barely read or write, for correction. Commercial fishers took ‘shortcuts’ when completing their forms, and data accuracy in numerous cases suffered badly. Mr Williams claims that during the early to mid 1990s there was little incentive to produce accurate data. He observes that this was an obvious mistake in hindsight, and he suggests that industry and MFish alike must share responsibility for this situation. He concludes that the real level of inaccuracy in the commercial catch data, even though remedied through assessment of the data, may be so high that it should be treated with the greatest caution. He observes that the Taranaki eel industry recommends the auditing of individual reporting forms for the period 1 October 1990 through to 30 September 2002 and that this information be compared with returns

⁴ EECo submits that this is an estimated figure presuming that 989.2 tonnes were taken from the North Island in the 1990-91 fishing year.

supplied by Licenced Fish Receivers in order to establish an accurate database. The Taranaki eel industry also recommends that MFish work closely with eel industry when developing data collection methods in the future.

- 166 The **Treaty of Waitangi Fisheries Commission (TOKM)** agrees with the approach of estimating the amount of eels taken by each of the sector groups and adding them up to assess the total historical take. However, TOKM considers that there is a better way to estimate non-commercial catch given the lack of information available. By way of example, TOKM considers that the descriptive account of the nature of recreational activity (by Maori, Asian and other ethnic groups) in the Northland and Auckland areas corroborates observations made in its submission, as reflected by people attending MFish consultative meetings. However, TOKM notes that observations about population demographics and arriving at a specific tonnage are not explained.
- 167 TOKM observes that in the South Island eel fishery, 20% of the TAC has been allocated for customary fishing in all QMAs, with 2% of the TAC for recreational and 78% for commercial. TOKM expects that such an allocation reflects the estimated level of take for different groupings. TOKM suggests that if these percentages were arrived at on the basis of population distribution then it would expect a much greater allocation to customary interests in the North Island. TOKM acknowledge that MFish staff have advised them that the percentages were as a result of a negotiated position, but query what the rationale for the compromise was, and why iwi in the North Island are not accorded at least the same level given their larger combined population in each QMA, or a direct opportunity to similarly negotiate what they consider to be appropriate to protect their customary interests.
- 168 TOKM considers that a more realistic starting point for estimating catch levels is to determine the population number of each iwi within each QMA established for freshwater species. This information is likely to be available through 2001 Census figures. TOKM then suggests that a generic consumption estimate per person is made and extrapolated to the demographic information for each QMA to derive an annual estimate for each stock. TOKM suggests that these estimates of consumption could be used in the initial decisions and then refined by follow-up surveys following QMS entry.
- 169 TOKM also notes that information is available on the whereabouts and number of marae within each QMA that would provide a basis for providing estimates of catch for marae based purposes. TOKM refers to the submission from Te Runanga o Ngati Tama as an example.
- 170 Further, TOKM recommends that an initial population based estimate within each QMA is made and compared later with more specific survey derived information. However, TOKM acknowledges that the Fishery Assessment Working Group members are of the view that there is minimal recreational fishing undertaken in the eel fishery other than by Maori. TOKM suggests that it may be more efficient to undertake the exercise for what it refers to as customary Maori harvest before going to the expense of assessing the broader population usage of the eel fishery, although specific estimates could be made for the growing Asian community if necessary.
- 171 TOKM supports the proposed method of estimating commercial catch as outlined in the IPP.

- 172 TOKM notes that while the IPP includes consideration of fishing-related mortality, it does not appear to take into account non-fishing related mortality as it relates to barriers to fish passage or loss of habitat. TOKM suggests that there is a greater population of eels than MFish estimates and that these sources of mortality require more investigation and management to improve overall sustainability of the fishery. TOKM also note that experienced eel fishers justify their ability to improve the biomass of the fishery with improvements targeted at these problem areas.
- 173 TOKM considers that applying qualitative percentage reductions (based on reducing CPUE trends) to the estimated total catch from a stock to derive TACs as too uniform an approach. TOKM also believes that the processes for estimating catch (including both types of customary needs), establishing the TAC using a reduction factor (including subsistence needs in the recreational category), and sharing it between sector groups is not clear cut but blended together by the application of the reduction factor and the allocative process. TOKM claims that the result is that Maori non-commercial needs are not fully provided for.
- 174 Further, TOKM believes that in applying a qualitative reduction factor, MFish is reducing the allowance made for recreational interests, and in particular, the amount available for family subsistence use undertaken by Maori. This puts ‘customary’ needs in jeopardy of being disregarded. Further, TOKM regards the approach as conservative as it disregards the varying involvement of fishers – both customary and commercial, in the different fisheries and the need to provide active incentives for their involvement consistent with sustainability outcomes.
- 175 TOKM suggests that the eel fishery is different from others and can justify a different approach. It notes that biologically there are only two stocks in New Zealand (ie, shortfin and longfin), and appropriately four QMAs for each of the two main species in the North Island. It considers that the number of QMAs in the North Island provides scope for applying more flexibility in TAC setting, provided the cumulative harvest across all four QMAs provides for sufficient recruitment to occur.
- 176 TOKM believes that the TACs should reflect the current readiness and aspirations of iwi and other commercial fishers in each QMA. TOKM believes that provision of a more generous TAC can provide incentives for positive habitat improvement and stock enhancement where commercial fishers can agree on and undertake a range of proactive practical measures that would enhance the fishery over three to five years. Conversely, it could also allow for lower levels of take to be set where there is a greater need for spawning escapement and where industry participants propose to take a more passive approach to the fishery over the next three to five years. TOKM states that should the proposed programmes not be undertaken or achieved, the TAC would immediately revert to lower levels. TOKM believes that this approach recognises that management of the fishery does not occur just by the passive setting of TACs or TACCs but also depends on a range of other active management measures.
- 177 **Te Aitanga a Mahaki Trust** notes that eels were the principal customary fishery of the iwi and hapu of Te Aitanga a Mahaki. Eel fisheries were extremely important and extended throughout the waterways within the region. Eel weirs were common within the Waipaoa and Mangatu catchments near Gisborne. The Trust notes that it is very concerned with MFish’s estimates and allowances for customary and recreational catch levels.

MFish Discussion

Consideration of conservation management plans and strategies

- 178 Section 11(2)(b) of the Act provides that the Minister shall have regard to any management strategy or management plan under the Conservation Act 1987 that applies to the coastal marine area and are considered by the Minister to be relevant.
- 179 In the case of the coastal marine area, MFish is not aware of anything within any conservation management plan or strategy that would materially impinge on the recommendations made for sustainable use of the eel fishery. Many of the general observations identified in such plans or strategies are essentially consistent with the obligations that MFish follow in the context of the purpose and principles of the Act (eg, the environmental principles). MFish agrees that it would be productive for eel fishery interests to discuss the values of particular areas and broader management objectives once eel fishery interests in a particular QMA are organised.

Inclusion of catch from prohibited fishing areas

- 180 DoC considers that a reasonable tonnage of commercial catch has been sourced from areas deemed reserves, typically under the Reserves Act 1977. MFish understands that this view relates principally to some of the Waikato wetlands near Huntly. The legality of fishing in some of these reserves has historically been an issue of dispute between commercial fishers and DoC, and details of the quantities involved are at best patchy.
- 181 Commercial fishing in the specific areas holding reserve classification has largely ceased in the last few years, and is understood to have been at low levels for several years before that. While lacking details at this time, MFish does not consider that the catch taken from such areas since 1990-91 is of material consequence to the overall calculation of an average commercial catch for the relevant stocks.

Data quality issues

- 182 MFish acknowledges that some of the catch information supplied by commercial fishers in the 1990s is subject to error. Nevertheless, having evaluated the data over a long period of time, MFish considers that it is still the best available information from which to construct an assessment of removals from each stock. Improvements in data quality have been obvious since the introduction of fishery-specific reporting forms on 1 October 2001. Consistent with the suggestion that the eel industry be involved in developing data collection methods, MFish used such an approach when the new reporting forms were designed and trailed.
- 183 MFish acknowledges that most errors found during the auditing of the 1990-91 and 1991-92 fishing years (for the purposes of notification of eligible catch and provisional catch history) could be corrected for the purposes of determining the history of commercial catches in the fishery. And there would be merit in the continuation of this strict manual audit for at least the fishing years 1992-93 through to the end of the 2000-01 fishing year when catch, effort and landing return (CELR) forms were replaced with the dedicated eel fishery returns (ECER and ECLR). However, such an audit is estimated to require nine months to a year to fully

complete. If such an initiative were to be undertaken at a later date, an assessment could be made as to whether the TACs need adjustment.

- 184 The discrepancy between an independently held processor's landings and MFish records of a commercial fisher's catch in the QMA 22 area is noted as large during the 1992-93 to 1996-97 fishing years. MFish has investigated this further and discovered that one commercial fisher has incorrectly associated catch from the southeastern part of the North Island with the ESA for Auckland (ie, ESA 2). Following this discovery, catch attributed to this fisher was re-associated with the correct eel stocks and estimates of total annual recent removals have been recalculated.

Method used to estimate total removals from stock

Estimates of commercial catch

- 185 MFish acknowledges that there is a range of ways to provide estimates of commercial catch for the purpose of estimating total removals from a stock. There are some discrepancies between catch information supplied by processors, either independently or through official reporting, and commercial fishers.
- 186 MFish provided updated commercial catch figures during the consultation period. These figures corrected a data omission in QMA 23, and corrected some relatively minor analytical errors in QMA 22. Further, MFish notes that it did provide EECO, other members of the eel fishing industry, TOKM and DoC recalculated estimates of removals, TACs, and allowances etc on 14 May 2004, having determined one key factor responsible for concerns expressed about the QMA 22 commercial catch information.
- 187 There is little advantage in using an estimate of commercial catch derived from more recent years (a period when records of catch were more accurate, and co-incidentally smaller). The fewer number of years that are used to estimate the average commercial use of the fishery, the more likely that the average catch will be influenced by particular events such as drought, booms or slumps in international market conditions, or changing patterns of fishing effort. If the drive behind such submissions is to obtain an outcome where the TAC is more conservative than proposed in the IPP, then this can be more transparently achieved by increasing the percentage used as the qualitative reduction factor.

Estimates of non-commercial catch

- 188 The South Island Eel Management Plan (p.18) produced by a Ministerial Advisory body sets out that neither the customary catch experienced in the 19th century or in 1995 (a year before the Plan was published) would be appropriate. The plan observes that many South Island Maori had moved into urban areas away from traditional eeling grounds by 1995, and catch experienced in the 19th century would be unsustainable in a modern context. Entry of the South Island eel fishery into the QMS was undertaken in accordance with the plan but was quite different to any other fishery, and the allowance made reflected the freely negotiated position. The North Island eel fishery, as had the Chatham Island eel fishery on 1 October 2003, is to be introduced into the QMS in accordance with the standard approach applied to many other fisheries.

- 189 TOKM suggests that an alternative way of estimating non-commercial catch is to use demographic information on the human population within each stock and the application of a generic consumption estimate per person. MFish considers that this approach if strictly applied would be likely to exaggerate the actual or expected use of the resource in the short to medium term by non-commercial fishers, particularly for purposes beyond collection for hui and tangi. This potential shortcoming is also acknowledged by TOKM.
- 190 MFish accepts that information on the number of marae within a QMA, and their relative use of each stock, could be useful for assessing customary use of the eel fishery. However, this information is not immediately available other than that provided with submissions (eg, Te Runanga o Ngati Tama).

Other sources of non-fishing related mortality

- 191 Knowledge of the scale of non-fishing related mortality is not required in order to make a recommendation on a TAC. This is because the standing stock is a consequent reflection of such impacts. Further, fishing success is likely to be a reflection of the state of the environment, as influenced by non-fishing related mortalities. Similarly, MFish notes that s 21(1)(b) of the Act does not extend to considering an allowance for non-fishing mortality such as those arising from barriers to fish passage or a loss of habitat. Any improvements in these areas will naturally flow through into an increased stock size and hence are desirable, albeit outside of the scope of this advice.
- 192 MFish agrees that collection of information on non-fishing related mortality would nonetheless be helpful in getting better outcomes from the use and management of habitat values, as administered under the RMA. MFish has let a contract for a desktop study of the likely sources and impact of non-fishing related mortality that is due to be received by the end of September 2004.
- 193 MFish notes that where possible, it has taken an active interest in the activities of various parties working on fish passage issues, particularly in conjunction with eel fishery interests and power companies in the Waikato and Bay of Plenty.

Application of qualitative percentage reduction

- 194 The IPP set the basis for the qualitative reduction factor applied to derive TACs. The reduction factor varied depending on the nature of the stock and the relevant issues prevalent in the corresponding QMA, while taking account of an overall need to rebuild the fishery across all stocks. The scale of rebuilding initiatives undertaken by the industry to date is unlikely to have had a significant impact on the status of a stock. MFish considers that introducing the North Island eel fishery into the QMS will in itself provide an improved foundation for further development of activities aimed at rebuilding the fishery for all users of the resource.
- 195 In formulating final advice on TACs, MFish recognises that representatives of the North Island eel industry do not support the implementation of a maximum size limit in order to facilitate escapement of adult eels (principally longfin) in spawning condition in the North Island (in addition to contributions to maintaining biodiversity). The industry considers that a more direct manner to achieve this objective at this time is to constrain the exploitation rate, and to set aside catchments

where significant fishing pressure is prohibited. In a latter section of this paper, MFish concludes that proceeding with the maximum commercial size limit in the North Island (and Chatham Islands) as a generic approach to coincide with QMS introduction is not essential. MFish does recommend proceeding with the proposal to prohibit commercial fishing from particular catchments. The outcome of these two proposals has a bearing on the TACs recommended for North Island longfin stocks in particular.

- 196 The IPP used a qualitative reduction factor to derive a TAC from the estimated total removals from a stock. The 'allocative process' where a TACC is determined having considered non-commercial interests and other sources of fishing-related mortality is a subsequent step which utilises the current definition of customary fishing as it applies to the North Island (ie, limited to hui and tangi). Consequently, where the approach taken by MFish at the subsequent stage of determining a TACC is to equally reduce commercial and recreational allowances (but not customary allowances) to fit within the constraints of the TAC, it follows that the allowance that encompasses subsistence activities undertaken by Maori or other ethnic groups is nominally reduced. However, the management objective for the fishery is geared towards improving the state of the resource in order that its availability is improved in the medium term.

Overall reduction achieved for North Island

Scientific papers by Hoyle and Jellyman 2002, and Jellyman *et al.* 2000

- 197 Submitters referring to the scientific paper by Hoyle and Jellyman (2002), and Jellyman *et al.* (2000), suggest that a considerable reduction in average exploitation rate of longfin is required to obtain a meaningful increase in the number of spawning female longfin. MFish notes that scrutiny of Hoyle and Jellyman (2002) suggest they have incorrectly assumed that the average exploitation rate is experienced by the entire stock, since slightly more than a quarter of the longfin stock is in unexploited areas or areas that are lightly fished. As a consequence, the real average exploitation rate for the entire stock is likely to be lower than that quoted. Nevertheless, MFish accepts that even relatively light or modest fishing pressure can over time remove large female longfin from a population. This may be evident by the changing proportion of eel species found in commercial catch over several decades. This will affect the number of longfin reaching reproductive maturity and undertaking their migratory run.
- 198 MFish is due to receive a research report by September 2004 that will quantify the amount of areas where fishing is restricted, and the implications for calculations of average exploitation rates, and longfin spawning escapement. The findings will also provide some preliminary estimates of biomass for both shortfin and longfin stocks. MFish has recently received a draft research progress report from the research provider contracted to provide this research report.
- 199 The progress report notes that from past studies in unfished areas, large female longfin comprise between 64 to 78% (average 74%) of the total biomass of the longfin population. In fished areas, the percentage can vary from 18% to 59%. Further, the progress report indicates that the current biomass of migrant females nationwide is about 30 to 40% of the potential production from present habitats. However, this does not take into account habitat reductions caused by hydro-electric development and land drainage and the high vulnerability of longfin to commercial fishing in lowland

lakes. If these habitat losses are deducted from the present habitat, biomass estimates of females could be less than 20% of historical values.

- 200 These research findings, once reviewed, can be taken into account for any review of longfin sustainability settings in subsequent years. Nevertheless, MFish notes that TAC proposals for longfin stocks upon QMS introduction are at levels below that experienced since the 1990-91 fishing year. The progress report lends weight to the greater emphasis MFish has placed on reviewing the qualitative reduction factor for most North Island longfin stocks in this advice paper.
- 201 In addition, MFish have proposed the closure of particular catchments to commercial fishing to further supplement spawning escapement, particularly for longfin. As discussed later, and as reinforced by the research progress report, the areas closed to commercial fishing activity are likely to be insufficient over the longer term (even under lower exploitation rates), and there may be a need for additional means of facilitating spawning escapement.

Classification of longfin

- 202 DoC took the characteristics of the species biology into account when assessing that longfin should be classified as being in 'gradual decline'. No additional information has been presented that supports expanding this classification to 'critically threatened' status. MFish notes that it has a national research plan in place to consider existing population dynamics, sex and age ratios, and recruitment and migration rates. Research activity is discussed annually. These meetings assess new scientific information, and if considered of consequence to management objectives, adjustments can be made to TACs and other measures to ensure that longfin catch is sustainable over the longer term, and that risks are minimised.

General perceptions of action required

- 203 The TACs proposed in the IPP were on balance lower in comparison to recent estimates of principally commercial catch, as well as the average catch experienced since 1990-91. MFish accepts that submissions identify that further consideration of the TACs (particularly for longfin stocks) may be desirable. This implies that the net reduction achieved in the IPP, as well as the revised figures supplied to consultative meetings, may be slightly less than desired. To address this imbalance there is a case for recalculating some TACs, and further assessment of additional information available to MFish.
- 204 The slump in the international market for eel exports from New Zealand in recent times is evident by the fact that one of the four eel processors in the North Island closed their plant at the end of the 2002-03 summer. In addition, a further North Island processing plant delayed its seasonal summer opening at the beginning of the 2003-04 summer. Northern North Island processing plants did not utilise all commercial fishers available to them, and in at least one case asked commercial fishers to reduce fishing effort.
- 205 MFish notes that sustainability may be achieved at a range of catch limits, and irrespective of which sector undertakes the harvesting, a level of utilisation of the resource is possible without compromising sustainability objectives. As the fishery improves, the Minister can consider future use of any expanded resource.

- 206 The option of restricting the issue of fishing permits to the QMAs gazetted is not too dissimilar to the existing situation under non-QMS management. However, controlling access will not necessarily constrain catch. The intent of the TAC is to constrain catch to sustainable catch levels, irrespective of the number of commercial fishers used to harvest any available TACC for the stock.
- 207 MFish acknowledges the concern over declining CPUE indices for longfin stocks, but these concerns are not necessarily escalated by any misgivings about the reliability of the raw data. Much of the concern relates to the initial failure to include all data in the summarised catch figures for QMA 23, and the disparities between catch data from commercial fishers and landing data from processors in QMA 22. These issues have now been addressed, both during the consultative period and in preparing this advice.
- 208 MFish is confident that the commercial catch data used for the purposes of estimating the contribution of average commercial catch to estimates of total removals for a stock has now been improved. This enables proposed TACs to be revisited in order that final recommendations are consistent with the management objective for the fishery. For example, this can include use of alternative qualitative reduction factors for particular stocks.
- 209 MFish considers that the history of the fishery and recent trends in catch levels does not support the proposition that TACs for longfin should be set at zero, or that the sustainability of the fishery is under serious threat. Similarly, the alternative suggestion of removing eel stocks from the QMS until such time that there is enough scientific evidence that the species is no longer in decline is counter-intuitive. A failure to introduce North Island eel stocks into the QMS could exacerbate the problems associated with the existing management framework in the North Island as it cannot place effective output controls on catch levels. If evidence suggests that either species is in gradual decline, then the appropriate course of action is to reduce the TAC of eel stocks within the context of the QMS.
- 210 The suggestion to halve the recreational allowances across the QMAs to less than six tonnes would have social and cultural impacts that have not been discussed with that broad sector. MFish accepts in principle that the longfin fishery may in part become a bycatch of the shortfin fishery with the reductions proposed for longfin stocks. However, reducing the level of commercial longfin catch to an amount equivalent to that of the recreational allowance would place an unreasonable burden on commercial fishers. That would require commercial fishers to separate out shortfin and longfin catch at the riverbank and return longfin to the water. This is likely to be impractical, and lead to injuries for eels returned to the water.
- 211 One claim in submissions was that estimated commercial catch had halved between 1990-91 and 2002-03. However, this claim may only have been based on a comparison of the 1990-91 fishing year to the 2002-03 fishing year. A comparison of these two fishing years by themselves is not particularly valid. The estimated commercial catch for the 2002-03 fishing year is not complete. Data for the complete fishing year was not available at the time that the data extract was undertaken. Secondly, the commercial catch made in the 2002-03 fishing year was affected by international market conditions. Thirdly, the eel fishing industry experienced a good catch in the 1990-91 fishing year.

- 212 MFish agrees with submitters (eg, EEC_o) that there has been a real and inevitable reduction in longfin biomass from virgin levels. MFish believes there is sufficient information available to consider that a measured response needs to be taken to address the potential risk that longfin stocks are in gradual decline, particularly given the proposed management objective for the fishery (when setting a TAC under s 14) to halt any such decline and rebuild the fishery.
- 213 Further, MFish considers that the crisis portrayed by some submitters does not exist, but nevertheless accepts that a moderate and reasonable approach can be applied when recommending sustainability measures and other management controls for shortfin stocks. In the case of longfin stocks, additional steps are considered appropriate for most stocks if the prospects for the fishery are to be improved in the medium term.
- 214 MFish considers that TACs (and TACCs thereafter) set at the level of the average take over the last 15 years would not meet the management strategy of improving the stock structure and abundance over the medium term, while halting the decline of a stock in the short term. This would have implications for the desire to increase the availability of eels over that timeframe.
- 215 Hinaki claims that the size of the biomass is largely irrelevant to sustainability. Hinaki considers that a reduced biomass may lead to better growth rates and more escapement of fecund eels. This approach poses high risks for the fishery as eels may not be able to grow through to sexual maturity at reduced biomass levels given exploitation rates, and growth rates are variable depending on a range of factors. There is no difference between eels and any other fish stock where the status of the current biomass to virgin biomass is a critical aspect of assessing the current status of the stock. A current research project has provided some initial indications that the biomass of migrant longfin females is about 30-40% of the total production from present habitats, although this does not take into account habitat reductions caused by hydroelectric development and land drainage, and the high vulnerability of longfin eels to commercial fishing in lowland lakes.
- 216 EEC_o takes some solace in the fact that the commercial fishery has existed and produced a relatively steady catch for almost 40 years. MFish notes that for the longer-lived longfin, a long steady history of catch is not necessarily a guarantee that the fishery will continue to produce at that level. In weighing up submissions, MFish believes there is a need to avoid relying solely on steady catch rates or unequivocal recruitment indices as indicators of abundance and robustness of an eel stock, particularly where these indices have been collected over a relatively short period of time (ie decades in terms of commercial catch information). Similarly, while predictors of the state of the fishery are in place, they are being, or are expected to be, refined so that future assessments more accurately reflect the relative state of stocks. Consequently, it may take some time before a majority of eel fishery interests feel more assured that the trends in the fishery are consistent with the management strategy.

Submissions specific to each stock

QMA 20

- 217 **Te Runanga o Ngati Whatua** believes that the proposed TACC of 177 tonnes for SFE 20 and 54 tonnes for LFE 20 appears to be excessive considering the apparent

decline in landings since 1999. The Runanga believes that the TACs should be set at 160 tonnes for SFE 20 (cf. IPP of 236 or 223 tonnes) and 45 tonnes for LFE 20 (cf. IPP of 73 tonnes), with a flow on effect being the reduction in the TACC for both stocks. These tonnages overall are less than the reported landings, but the Runanga believe that this will compensate in the short term for the uncertainty of the effect of the incorrect use of the EEU reporting code, and non-fishing mortality rates. The Runanga notes that in the longer term, should catch rates warrant it, in season increases should be provided for.

- 218 **Te Runanga O Whaingaroa** of Kaeo (Northland) fully supports the submission made by Te Runanga o Ngati Whatua.
- 219 **Eel Enhancement Company Ltd (EECo)** notes its support for a TACC being set in accordance with option 1, and by inference, would support the higher option 1 proposed TAC.

QMA 21

- 220 **The Mokau ki Runga Regional Management Committee (RMC) of the Maniapoto Maori Trust Board (MMTB)** submit that the rohe of Mokau ki Runga has been overfished by commercial fishers and is currently 'eel dead'. The RMC states that their rohe boundary extends from Tirua Point in the north to Waipingao Stream south of Mt Messenger. The RMC note that this situation is evident because it took a local marae committee nine months to gather enough eels from the Mokau River for the opening of their new whare. The RMC also consider that the Mokauiti, Huiteko, Mangaotaki, Awakino, Mangaorongo, Ohura and other rivers are also 'eel dead'. Accordingly, the RMC lodges a total objection to all commercial fishing in the rohe, and challenge MFish to deliver an in depth and accurate survey in QMA 21 before presenting any further proposals. The RMC considers that there has been no survey of the QMA 21 stock to ascertain the extent of the eel population in terms of both quality or quantity, or accurate assessment of the commercial, recreational and customary take.
- 221 **Bill Hohaia** of Marokopa is of the Ngati Toa tuu Pahua people. Mr Hohaia has links to the Marokopa Marae. Mr Hohaia advises that 20 years ago there were sufficient eel resources to supply all marae on the King Country west coast. Mr Hohaia notes that Maori customary catch today is too small to supply marae, and that it can take one year to get a good catch of eel.

QMA 22

- 222 **Paku & Sons Ltd** has commercially fished for principally shortfin in the Wairarapa/East Coast area. The company notes that the fishery for shortfin is based primarily around private land and access through that land is a matter of negotiation with land owners. The company notes that while the Crown may assert ownership or control in respect of the fish stock, it is effectively the land owners who determine whether or not the fishery will be able to be accessed. Given this situation, it is suggested that the imposition of the QMS on shortfin stock on private land may result in an economic environment where landowners that currently allow the use of their dams may in the future directly influence the catch available to the fisher.

- 223 Similarly, the company submits that the rationale for applying the QMS to shortfin stocks has not adequately considered the physical seeding of a large number of unstocked or understocked dams on private farmland. Consequently, it is suggested that a limit on shortfin catch based on historical catch figures may be impractical, artificial and inappropriate. The potential catch is considered to be far in excess of that historically taken. Further, the total catch available may well depend on the number of dams available on private land that may be stocked and selectively harvested ('farmed'), and will not impact at all on the sustainability of the species outside of the specific environment in which the eels are selectively harvested.
- 224 The company queries whether the introduction of a TACC could cause unnecessary wastage. It suggests that an effective prohibition on the taking of shortfin selectively harvested from waterways on private land may artificially influence the product available to the market. The submission notes that shortfin can be harvested sustainably and efficiently and promote the actual economic value of the business. There is a concern that an artificial TACC will adversely affect the economics of the industry without necessarily being of benefit to sustaining the fish stock. However, for the purposes of clarity, the submission acknowledges that some regulation and control of the industry is desirable to ensure the good health and sustainability of the species. The company's aim in its submission is to point out that consideration should be taken of the differences between the selective harvest of the shortfin stock on private land as distinct from the taking of eel and other wet fish species from the 'public domain'.
- 225 **Te Ati Awa / Taranaki Whanui o Poneke** notes that the average age of eels in the Makara catchment is 20 years. Poneke considers that this is of concern because it can take up to 80 years for female eels to reach reproductive maturity. Tangata whenua have noticed a marked difference in the average size of eels over the last two decades. Tangata whenua have witnessed the removal of tonnes of eels from the Wainuiomata River on one occasion, and land owners in the Makara catchment have also informed them that commercial fishers removed tonnes of eels from the Makara Stream. Commercial fishers are known to use 20-30 fyke nets in one catchment.
- 226 **Hinaki Eels Ltd (Hinaki)** believes that the catch data compiled by Levin Eel Trading Co. Ltd should be regarded as more reliable than that presented in the IPP, and accordingly, that it should be used as the basis of setting the TAC/TACC for stocks within QMA 22. The tonnages of catch compiled by Levin Eel Trading Co. Ltd are not separated by species (Table 3).

Table 3: Annual commercial eel catch (shortfin and longfin unspecified) attributed to quota management area 22 and landed to Levin Eel Trading Co. Ltd for the fishing years 1990–91 to 2002–03.

Fishing Year	Eel landings in QMA 22 (kilograms)
1990-91	285,899
1991-92	294,091
1992-93	301,065
1993-94	244,698
1994-95	224,193
1995-96	233,125
1996-97	182,738
1997-98	127,324
1998-99	167,207
1999-00	120,788
2000-01	141,506
2001-02	119,329
2002-03	93,384
Total	2,535,347
Mean Annual Commercial Catch	195,027

227 Hinaki notes that it has not been able to exhaustively identify the reasons for the differences between Levin’s figures and those used by MFish. One suggestion is that one of the main fishers landing eels into Levin may have incorrectly recorded an ESA number in the landing section of the CELR form instead of a fishstock code. If this were the case, all of those landings would have been eliminated from the data as being irrelevant, or added to other QMAs. Hinaki recommends that the TAC for QMA 22 should be set at 233 tonnes (apportioned appropriately between shortfin and longfin), with customary, recreational and other sources of fishing-related mortality as proposed subtracted to give a combined TACC of 195 tonnes.

QMA 23

228 **Murray Reed** submits that the TAC should not be set at the level proposed as the IPP has omitted to include commercial catch from ESA 8, making up half of the QMA. Mr Reed cannot accept any of the figures provided for QMA 23, but notes that he has brought this error to the attention of MFish staff during the consultative process. Mr Reed notes that his personal commercial catch from this area has remained the same over the period 1990 to 2003.

229 **Grant Williams** notes that the IPP document omitted to include commercial catch data from ESA 8, part of QMA 23, but that during the consultation period MFish supplied revised figures of commercial catch since 1990. Mr Williams believes that the revised figures for QMA 23 provide a more accurate record of overall landing of eels, but do not accurately reflect the trends in species composition. Mr Williams also notes that there were many instances where data quality would have been affected as a result of substandard reporting.

230 Mr Williams also notes that commercial catch has been affected by seasonal weather conditions, reduction in fishable waters because of habitat loss and restricted access (eg, DoC status change on lake reserves), modifications of shortfin to longfin ratio arising from fishing pressure, changes in fishing effort, more selective target fishing

as a result of market changes and port price differences, and marked changes in data accuracy over latter seasons given the introduction of the new reporting form specifically for the eel fishery, and fishers better understanding the need for good data. Mr Williams therefore considers that basing fisheries management decisions on the commercial catch information may not be the best option.

- 231 Mr Williams queries whether the proposed TACCs of 38 tonnes for shortfin and 53 tonnes for longfin in QMA 23 will achieve the common objective of providing for utilisation while maintaining sustainability. Other than further analysing the data derived from commercial fishers, Mr Williams considers that the most significant information tabled recently for QMA 22 and 23 is that from the licenced fish receivers Levin Eel Trading Co. Ltd from Levin, and E N Vanderdrift Ltd from Stratford. Mr Williams notes that very rarely have commercial fishers within QMA 23 fished outside the area over the 12 year period and for those occasions that they have, it is possible to isolate most of those eel landings. Mr Williams advises that a fairly accurate total of commercial eel catch from QMA 23, as landed to E N Vanderdrift Ltd for the period 1990-91 to 2001-02 is provided in Table 4.

Table 4: Annual commercial eel catch (shortfin and longfin unspecified) attributed to quota management area 23 and landed to E N Vanderdrift Ltd for the fishing years 1990-91 to 2001-02.

Fishing Year	Eel catch (kg)
1990-91	85,638
1991-92	77,374
1992-93	63,842
1993-94	55,471
1994-95	61,726
1995-96	67,122
1996-97	74,456
1997-98	63,770
1998-99	55,931
1999-00	58,046
2000-01	48,018
2001-02	61,437
Average	64,403

- 232 Mr Williams observes that during 1991 and part of 1992 one permit holder re-activated use of his fishing permit, before it then lapsed into non-use and was not renewed. During the time the permit holder was active, approximately 22 tonnes were taken in 1991 and approximately 12 tonnes in 1992. Since then, the number of fishers has declined from nine to five, and with this, there has been an inevitable decline in catch effort. Mr Williams notes that the licenced fish receiver catch figures are remarkably consistent throughout the 12 year period, having deducted the catch from the one fisher active in 1991 and part of 1992. He, along with another commercial fisher involved in the industry since 1977, Mr Murray Reed, and the manager of E N Vanderdrift Ltd, considers that the QMA 23 fishery shows all the signs of having found its own 'environmental baseline' by default. However, Mr Williams considers that there has been a significant change in the ratio of shortfin to longfin over the 12 year period. Mr Reed and E N Vanderdrift Ltd support this observation.
- 233 Mr Williams notes that the revised commercial catch figures supplied by MFish indicate that there has been a gradual decline in the catch of longfin in QMA 23. He

suggests that if this is so, then shortfin landings must have increased given the relatively stable overall eel landings to E N Vanderdrift Ltd. A rise of 3-4% in shortfin landings is evident since 2000 when much more accurate estimates of species composition have become available. Mr Williams observes that it is well known that longfin dominate over shortfin in certain habitats such as higher altitude lakes and most river habitats. He further observes that the removal of longfin allows shortfin to occupy the then vacant habitat. This is still happening.

- 234 Mr Williams submits that longfin and shortfin populations have undergone significant modification by commercial, customary and recreational fishers. The manager of E N Vanderdrift Ltd has observed that shortfin were less than 10% of the catch 15 years ago, but comprise 48% of the catch today, following the commencement of commercial fishing in QMA 23 in the early 1970s. Mr Williams notes that shortfin take less time to reach a harvestable size than longfin, such that the fishery for shortfin looks quite promising.
- 235 Looking at the revised figures for TACCs for QMA 23, Mr Williams does not consider that a 24% effective reduction in the current commercial shortfin catch, and a 1% reduction in the current commercial longfin catch will necessarily sustainably manage the two species. He suggests that the percentage reduction between average current commercial catch and the proposed TACC is too small and longfin catch should be reduced further. Mr Williams advises that the Taranaki eel industry suggest a longfin TAC for QMA 23 of 73 tonnes, and associated allowances (customary of 12 tonnes, recreational of 10 tonnes, and other sources of fishing related mortality of 2 tonnes), prior to setting a TACC of 49 tonnes. Further, he advises that the Taranaki eel industry suggest an increased shortfin TAC for QMA 23 of 63 tonnes, and associated allowances (customary of 5 tonnes, recreational of 5 tonnes, and other sources of fishing related mortality of 2 tonnes), prior to setting a TACC for QMA 23 of 51 tonnes.
- 236 **Te Runanga o Ngati Tama** considers that the volume of eels required to satisfy non-commercial ('customary' needs) is approximately 370 tonnes. The Runanga notes that this far exceeds the TAC limit proposed for QMA 23.
- 237 Apart from outlining its expectations for non-commercial fishing activities overall, the Runanga has also supplied an appraisal of the current use of the resource for customary purposes (ie, hui and tangi). The Runanga considers that each marae within the QMA 23 area would hold a hui once a month, and that 20 kilograms of eels would be consumed at each hui. Both the number of hui held and the quantity of eels consumed are considered conservative estimates. Consequently, the Runanga suggests that each marae would consume approximately 240 kilograms each year, and based on the number of marae within QMA 23, a more appropriate estimate of current customary catch may be nearer 20 tonnes (Table 5).

Table 5: The expected current consumption of eels (kilograms) based on the number of marae associated with identified iwi, and their respective population numbers, within quota management area 23.

Iwi within Area 23	Population within QMA 23 (figures in brackets denote total iwi population)	Number of Marae	Annual Volume (kilograms)
Ngati Tama	1,200	1	240
Ngati Mutunga	1,652	1	240
Ngati Maru	907	1	240
Te Atiawa	14,147	4	960
Taranaki	6,000	4	960
Ngaruahine	3,276	6	1,440
Ngati Ruanui	5,675	10	2,400
Ngarauru	3,285	12	2,880
Atihaunui a Paparangi	9,780	30+	7,200
Tuwharetoa	10,000 (34,226)	5+	1,200
Ngati Apa	2,461	5	1,200
Ngati Hauti	1,039	3	720
Rangitane	3,321		
Muaupoko	1,900		
Ngati Raukawa	10,000 (19,698)	1	240
	74,643		
Less 10% non- consumers	67,178		19,920

MFish Discussion

Recalculated estimates of total removals, TACs, and allowances

- 238 As noted, the opportunity was taken to distribute to eel fishery interests at all consultative meetings held any revised commercial catch figures following the inclusion of corrections arising from the IPP that were available at that time. These corrections related to a data omission in QMA 23 and an analytical error when collating two of the annual catch figures in QMA 22.
- 239 On-going investigations were undertaken into the commercial catch associated with QMA 22. Due to the misreporting of commercial catch by one commercial fisher against the wrong ESA, commercial catch initially assigned to QMA 20 has been subsequently re-associated with QMA 22. North Island eel industry participants, TOKM and DoC were provided a brief opportunity to make any observations on the recalculated estimates of total removals, TACs, and allowances on 14 May 2004. A copy of the tables included in that advice is provided in the relevant sections that follow. Table 6 shows the overall summary of revised figures ('Table 1' in letter of 14 May 2004), and similarly, Table 7 shows the estimates of total removals, TACs and the approximate percentage difference ('Table 2' in letter of 14 May 2004).

Table 6: Estimated total annual recent removals and proposed TACs, TACCs, and allowances for shortfin and longfin in the North Island (tonnes), having corrected for specified data errors in stocks in quota management areas 20, 22 and 23.

Stock	Estimated total annual recent removals ⁵	Option	TAC	Customary allowance	Recreational allowance	Other sources of mortality	TACC
SFE 20	222 ⁶	i	211	30	28	4	149
		ii	200	30	26	4	140
LFE 20	83.6		71	10	8	2	51
SFE 21	236		212	24	21	4	163
LFE 21	141.5		106	16	12	2	76
SFE 22	168.8		143	14	12	2	115
LFE 22	68.3		54	6	5	2	41
SFE 23	54.9		50	5	5	2	38
LFE 23	95.3		81	14	12	2	53

Table 7: Comparison of approximate percentage difference between estimated total annual recent removals (ie, 1990-91 to 2001-02) and proposed TACs for North Island eel stocks, having corrected for specified data errors for stocks in quota management areas 20, 22 and 23.

Stock	Estimated total annual recent removals	Option	Proposed TAC	Approximate percentage difference
SFE 20	222	(i)	211	5
		(ii)	200	10
LFE 20	83.6		71	15
SFE 21	236		212	10
LFE 21	141.5		106	25
SFE 22	168.8		143	15
LFE 22	68.3		54	20
SFE 23	54.9		50	10
LFE 23	95.3		81	15

240 Only one response to the MFish letter of 14 May 2004 was received. A director of EECo advised that he was agreeable to commercial catch being re-assigned to the appropriate stock where the commercial fisher had incorrectly coded it in the first place. He noted that the amount reassigned suggested that the residual catch taken in the ESA 2 area would then be under-representative of the actual catch. Nevertheless, he felt that a TACC option of between 149 (revised option 1, 14 May 2004 MFish letter) and 162 tonnes (option 2, IPP) would be appropriate for the SFE 20 stock. EECo later confirmed that view with a suggested TACC of 155 tonnes for SFE 20.

241 Since early May 2004, MFish has further revisited all figures. Some differences in the figures used for calculating average adjusted commercial catch by stock, as distributed in the letter of 14 May 2004, were discovered. The final set of commercial catch information contributing to the estimate of total annual recent removals is provided in the Annex to this advice paper. MFish has considered the revised estimate of total

⁵ This estimate represents a summation of adjusted average commercial catch based on all of the 12 fishing years between 1990-91 and 2001-2002, plus estimates of non-commercial catch and other sources of fishing related mortality. It provides a reference for assessing the extent of catch reductions anticipated under the proposed TACs.

⁶ The estimated total annual recent removal of SFE 20 stock was incorrectly stated as 248 tonnes in Table 6 (but not Table 2) of the 14 May 2004 letter to eel fishery interests. The correct figure of 222 tonnes is included there for completeness.

annual recent removals for the stock, considered the various insights from submissions, and reassessed the basis for the application of a particular qualitative reduction factor for the stock. The reassessment included the consideration of any new information relevant to the fishery. The TACs were recalculated for all stocks, either because the estimate of total annual recent removals had been revised, and/or a greater qualitative reduction factor was applied.

QMA 20

Table 8: Estimated total annual recent removals, qualitative reduction factor and total allowable catch (TAC) proposed in Initial Position Paper (IPP), and as recommended in Final Advice Paper (FAP), for eel stocks in quota management area 20.

Stock	Estimate of total annual recent removals - IPP	Qualitative reduction factor - IPP	Proposed TAC in IPP	Estimate of total annual recent removals - FAP	Qualitative reduction factor - FAP	Recommended TAC - FAP
SFE 20	248	5 or 10	236 or 223	222	5	211
LFE 20	86	15	73	83.6	20	67

Estimate of total annual recent removals

- 242 MFish received no additional information as a result of consultation that significantly affects the assessment of estimated total removals for these stocks.
- 243 MFish notes that the discrepancy in commercial catch between QMA 22 and QMA 20 was mainly attributed to shortfin catch records. As a result, and acknowledging that the catch attributed to one of the ESAs within the SFE 20 stock may now be under-represented, the TAC proposed should further serve to improve the overall state of the fishery in a shorter timeframe. As a result of receiving updated commercial catch information, the estimated total annual recent removals (ie, average catch for all sectors over the period 1990-91 to 2001-02) for SFE 20 is reduced from 248 tonnes (as stated in IPP) to 222 tonnes, whereas the equivalent removals for LFE 20 is reduced from 86 tonnes to 83.6 tonnes (Table 8).
- 244 In addition, MFish is aware of the potential risk that some of the re-associated commercial catch (from QMA 20 to QMA 22), predominantly recorded as shortfin, may have actually been longfin, as the commercial fisher concerned may not have attempted to better estimate the species composition of his catch. However, this risk is considered low as the commercial fishery within the QMA 22 area is mainly comprised of shortfin.

Calculation of TAC

- 245 The revised TAC options noted in Table 7 (as distributed at the Whangarei consultative meeting) for the SFE 20 stock are about 25-32% higher than that suggested by Te Runanga o Ngati Whatua. For the LFE 20 stock, the revised TAC option is about 57% higher than the Runanga's suggestion. However, the Runanga did not substantiate how it derived a suggested SFE 20 TAC of 160 tonnes, or a suggested LFE 20 TAC of 45 tonnes. It may have been based on an average derived from more recent fishing years.

- 246 MFish considers that the TAC for the SFE 20 stock should be set at 211 tonnes (being equivalent to option 1 of the revised figures in Table 7), in recognition that application of a 5% qualitative reduction factor for this stock is appropriate on introduction into the QMS. The SFE 20 stock appears to be the only stock where CPUE has remained relatively stable.
- 247 MFish considers that the TAC for LFE 20 requires some further adjustment. Instead of the application of a 15% qualitative reduction factor, MFish considers that a 20% qualification reduction factor should be applied. This adjustment is due to the overall concern about the need to rebuild the longfin stock, and recognition that the TAC for the inter-related SFE 20 stock has been considerably reduced following the re-association of commercial catch data with SFE 22. A reduction in longfin would provide some parity with the expected species ratio of eel catch made. Fishing industry representatives accept that MFish may recommend a reduced TAC for LFE 20 given the changes made to the SFE 20 TAC, and considering the overall New Zealand-wide status of longfin stocks.
- 248 Application of a (slightly less than) 20% qualitative reduction factor results in a TAC for the LFE 20 stock of 67 tonnes, instead of 71 tonnes using the revised figures in Table 2 (14 May 2004 letter), or 73 tonnes as proposed in the IPP.

QMA 21

Table 9: Estimated total annual recent removals, qualitative reduction factor and total allowable catch (TAC) proposed in Initial Position Paper (IPP), and as recommended in Final Advice Paper (FAP), for eel stocks in quota management area 21.

Stock	Estimate of total annual recent removals - IPP	Qualitative reduction factor - IPP	Proposed TAC in IPP	Estimate of total annual recent removals - FAP	Qualitative reduction factor - FAP	Recommended TAC - FAP
SFE 21	236	10	212	262.9	20	210
LFE 21	141.5	25	106	141.9	35	92

Estimate of total annual recent removals

- 249 MFish has received no additional information as a result of consultation that significantly affects the assessment of estimated total removals for these stocks. MFish acknowledges that historically the eel fishery was important for Maori, but the use of the resource by non-commercial interests has diminished in modern times. None of the submitters provide information on what they consider is the typical level of use of the fishery since 1990 or in other recent decades. MFish notes that it presently has a contract in place to better quantify the current status of the eel resource within the Te Aitanga a Mahaki rohe. This type of information can be factored into any reassessment of the allowances for the QMA 21 stocks in the future.
- 250 MFish notes that a survey of the customary use and management practices of the eel resource within the Ngati Maniapoto rohe was completed, and presented to MFish in 1998. The information in this report was considered in preparing the IPP. MFish acknowledges that non-commercial use of the eel resource in the Marokopa area (King Country) is considerably diminished in comparison to what may have been

experienced 20 years ago. Customary interests made similar comments to MFish at an eel hui in Piopio during the consultative period.

- 251 As a result of receiving updated commercial catch information, the estimated total annual recent removals for SFE 21 is increased from 236 tonnes (as stated in IPP) to 262.9 tonnes, whereas the equivalent removals for LFE 21 is slightly increased from 141.5 tonnes to 141.9 tonnes (Table 9).

Calculation of TAC

- 252 MFish considers that a large part of QMA 21 has experienced intensive commercial fishing pressure for almost 40 years. MFish is aware that the species composition of the eel population in the fished areas has changed considerably since the 1970s when commercial fishing was at its most intense. The occurrence of longfin populations consisting of larger females has reduced in number. Shortfin populations, with their relatively faster growth rates in northern waters, have proportionally increased in number in the absence of competition or predation from larger longfin.
- 253 In addition, continuing changes in habitat quality as a result of land development practices in QMA 21 have probably been more detrimental to longfin than shortfin populations. The full impact of historical manmade wetland, river or lake obstructions in QMA 21 is likely to become increasingly apparent in some areas as older eels able to clear obstacles when migrating downstream migrate, and there has been little or no recruitment into the same waterways for several decades because of upstream fish passage restrictions.
- 254 Following QMS introduction, MFish anticipates that eel fishery interests will consider harvesting strategies that take particular account of concerns raised by non-commercial interests in the Waikato and King Country areas, in addition to known issues in the Hauraki and Bay of Plenty districts. These concerns relate to both the abundance of eels, and the average size of eel encountered. MFish considers that setting the TACs for both stocks more conservatively than proposed in the IPP may be required to facilitate an improvement over the medium term. Such an improvement would clearly be welcome by customary interests in particular, and is consistent with the management strategy.
- 255 Accordingly, MFish does not consider that the qualitative reduction factor proposed for the LFE 21 stock in the IPP at 25% sufficiently recognises the current status of longfin within the stock area. Application of a qualitative reduction factor of 35% for the LFE 21 stock will set the TAC below the estimate of total annual recent removals for the stock. MFish cannot necessarily rely on relatively stable commercial catch trends, particularly for longfin, where that time period is less than the average age at migration.
- 256 A higher reduction factor will also take into account that longfin in lowland lakes are probably more vulnerable to commercial fishing in this QMA than any other, and that adverse changes in land management practices are likely to have been more intensive in this QMA than any other. In addition, habitat reduction resulting from hydro-electric developments is more of a factor in this QMA than other North Island QMAs. In recognition that some broad areas suitable for longfin within the stock may have a significantly diminished longfin population, MFish considers that the TAC of 92

tonnes (cf. 106 tonnes in IPP) will better enable the management strategy to be achieved within the medium term.

- 257 A higher qualitative reduction factor of 20% (cf. 10% proposed in IPP) for the SFE 21 stock is recommended. This recognises the stock's inter-relationship with the LFE 21 stock, and the desirability of keeping the ratios of shortfin to longfin TACs similar to what is expected to be taken. It also recognises that eel fishery interests have noted that the abundance of eels is low in areas where shortfin have previously been more plentiful. Given the increased estimate of total annual recent removals for the SFE 21 stock (some 27 tonnes more than noted in the IPP), application of a higher qualitative reduction factor provides a TAC similar to that proposed in the IPP.
- 258 MFish considers that the proposed TAC of 210 tonnes for SFE 21 should provide a reasonable basis from which the fishery can be improved in terms of the abundance and general availability of eels of a greater size. A TAC at this level is lower than recent levels of catch experienced by eel fishery interests.

QMA 22

Table 10: Estimated total annual recent removals, qualitative reduction factor and total allowable catch (TAC) proposed in Initial Position Paper (IPP), and as recommended in Final Advice Paper (FAP), for eel stocks in quota management area 22.

Stock	Estimate of total annual recent removals - IPP	Qualitative reduction factor - IPP	Proposed TAC in IPP	Estimate of total annual recent removals - FAP	Qualitative reduction factor - FAP	Recommended TAC - FAP
SFE 22	118.7	15	101	168.8	20	135
LFE 22	56.8	20	45	68.3	20	54

Estimate of total annual recent removals

- 259 MFish has followed up on the suggestion by Hinaki that one of Levin Eel Trading Co. Ltd's main fishers may have incorrectly recorded his catch on his returns, giving rise to an underestimate of commercial take from the stocks. An error has been confirmed, and it resulted in that commercial fisher's catch being incorrectly associated with ESA 2 (Auckland) for several years (as discussed in earlier section). While Hinaki advise that the combined average tonnage of shortfin and longfin landed on a commercial basis into Levin Eel Trading Co Ltd is 195 tonnes, MFish recalculated figures put it at 156 tonnes.
- 260 It is possible that other fishers may have made the same reporting mistake, but MFish cannot confirm this at this time. As the commercial fisher concerned is responsible for a significant portion of the landings made to Levin Eel Trading Co Ltd, it is unlikely that the same error being made by other commercial fishers would result in a similar level of affected tonnage.
- 261 Levin Eel Trading Co. Ltd accepts that the MFish figures for the qualifying years (1990-91 and 1991-92) are probably accurate. Commercial fisher returns in these fishing years have already been subject to considerable MFish and FishServe scrutiny. These figures are about midway between the estimates derived from the CELR database containing the returns of commercial fishers, and the independently held

information of Levin Eel Trading Co. Ltd. Hence the source of the differential between its figures and those compiled by MFish remains unclear. It is also unknown whether this outcome would similarly extend to records held for subsequent fishing years.

- 262 MFish believes that the revised figures are the best available information for contributing to estimated total annual recent removals from the SFE 22 and LFE 22 stocks at this time. At this stage, MFish cannot independently verify the information held by Levin Eel Trading Co. Ltd on landings received without expending considerable effort and time (eg, that the landings represent catch made in QMA 22). A possible way forward would be to initiate an audit of commercial eel catch information held for the whole North Island with a view to reassessing TACs if required in subsequent years. An audit of the commercial catch information would also have the benefit of improving the quality of future CPUE analyses.
- 263 As a result of receiving updated commercial catch information, the estimated total annual recent removals for SFE 22 is increased from 118.7 tonnes (as stated in IPP) to 168.8 tonnes, whereas the equivalent removals for LFE 22 is increased from 56.8 tonnes to 68.3 tonnes (Table 10).

Calculation of TAC

- 264 Paku & Sons Ltd are concerned that land-owners may impose royalties for access to their land even though the Crown asserts ownership or control over fisheries resources. It speculates that this situation may get worse within a QMS environment with the result that it might adversely affect the economics of the industry. MFish notes that s 26ZN of the Conservation Act 1987 provides that every person who sells or lets the right to fish in any freshwater (other than a licenced fish farm) commits an offence against that Act. Nevertheless, the intent of the QMS is to ensure that fisheries resources are utilised in a sustainable manner, and secondary issues about access arrangements to the stock are not central to that objective, nor are they under the ambit of either MFish or the Minister of Fisheries.
- 265 MFish is also aware that future shortfin catch could be increased as a result of the enhancement of a large number of unstocked or understocked dams on private farmland. This will take considerable planning if the success of such efforts are to be maximised, with due regard to all eel fishery interests, and in compliance with the relevant statutory obligations. MFish notes that a TAC can be reviewed from time to time where new information shows that the objective for the management of the fishery has or is being achieved, and further use of the stock can be accommodated. Further, such initiatives are ideally reflected in the context of a fisheries plan rather than through specification within an MFish stock strategy.
- 266 MFish notes that the management objective is most unlikely to be achieved at harvest levels that continue fishing activity at levels experienced since 1990-91. Apart from the potential for sustainability concerns for both stocks, non-commercial eel fishing interests within the stock wish to see a noticeable improvement in the fishery within the areas that they have traditionally fished. This is evident in submissions, and in oral accounts to MFish during the consultative phase. MFish considers that in more recent times, the shortfin resource is likely to be the predominant element of the fishery in generally the accessible lowland areas. All fishers are likely to most frequently use these areas.

- 267 As a guide to setting TACs, MFish indicated in the IPP that it sought to reduce total removals from the North Island eel fishery, in comparison to catch experienced in the 2000-01 and 2001-02 fishing years by approximately 10% for shortfin, and 20% for longfin. The estimate of total recent annual removals from the SFE 22 stock has increased significantly from the IPP, and also in relation to the estimate of total annual recent removals for the LFE 22 stock. Further, one submission queries whether all of the catch reassigned to principally the SFE 22 stock as a result of one commercial fisher's misreporting is in fact taken from that area. MFish acknowledges that there is the possibility that some of this catch may have been taken from QMA 23 (see discussion in next section), but is more certain that the catch was not taken from QMA 20. MFish believes that the catch of this one commercial fisher is now more correctly assigned, however there are implications for the initial assessment of the appropriate reduction factor applicable to the SFE 22 stock.
- 268 MFish notes that application of a qualitative reduction factor of 15% off the estimated total annual recent removals would not give rise to a contribution to a real reduction in North Island shortfin catch in comparison to the 2000-01 and 2001-02 fishing years. Application of a 15% qualitative reduction factor to the new estimate of total recent annual removal gives rise to an approximate 7% increase in available commercial catch when compared to the 2000-01 and 2001-02 fishing years. In comparison, application of a 20% qualitative reduction factor gives rise to a relatively neutral position, a 0.5% increase in available commercial catch for the SFE 22 stock.
- 269 MFish considers that application of a 20% qualitative reduction factor to the revised estimate of total annual recent removals is a reasonable starting point for establishing the TAC for the SFE 22 stock. This takes into account the CPUE index, which shows a marked decline in the SFE 22 stock since 1990-91 in comparison to other shortfin stocks, as well as the concerns expressed by customary interests about the availability of the eel resource within the QMA. Some customary interests observe that they no longer regularly fish eels given the difficulty experienced in locating and catching a reasonable quantity. Similarly, commercial fishers accept that the commercial catch data collected since 2000-01, and as used for comparative purposes, is reasonably accurate.
- 270 On the other hand, there is a prospect that commercial catch for the SFE 22 stock in the mid-1990s may be higher than the figures used to estimate the total annual recent removals for the stock, even though Levin Eel Trading Co. Ltd accepts that lower MFish figures for the 1990-91 and 1991-92 fishing years are probably accurate. Hence the source of the discrepancy is difficult to pinpoint.
- 271 Consequently, MFish has applied a qualitative reduction factor of around 20% instead of the 15% proposed in the IPP. In doing so, a proposed TAC of 135 tonnes for the SFE 22 stock provides a reasonable basis from which the fishery can be improved in terms of the abundance and general availability of a broader range of eels of greater size. The TAC for SFE 22 is thought to provide about the same level of catch experienced by a range of eel fishery interests (principally industry) in the recent two fishing years of 2000-01 and 2001-02. However, MFish acknowledges that Levin Eel Trading Co. Ltd may have been experiencing some difficulties selling its products more than other processors in the latter part of the 2001-02 fishing year, as evident in the downward trend in the landings received by the plant. Nevertheless, a TAC at this level should provide more certainty that the stock will improve in the medium term given probable declining trends in CPUE experienced over the 1990s.

- 272 Similarly, until an audit of the commercial catch information held by MFish is done for the years since and including 1992-93, there may be some slight doubt about whether the SFE 22 TAC represents a real reduction in current shortfin catch. This is countered by the fact that commercial fishing was much reduced in the 2002-03 fishing year because of international market conditions affecting the entire eel industry. Levin Eel Processing Co. Ltd did not open in that season. A positive outcome of the reduced commercial fishing activity within QMA 22 is that the size structure of the shortfin population may have improved slightly.
- 273 MFish has not adjusted the qualitative reduction factor applied to the LFE 22 stock. MFish notes that the revised estimate total annual recent removals has been increased by 11.5 tonnes in comparison to the figure quoted in the IPP. MFish considers that a proposed TAC of 54 tonnes for LFE 22 should provide a reasonable basis from which the longfin population can be improved in terms of the abundance and general availability of a broader range of longfin eels of greater size.
- 274 The improvement in the status of longfin within QMA 22 may be more a feature of how harvesting strategies are employed. MFish is aware that longfin populations in the hill country are likely to have been fished only lightly in comparison to the lowland areas mainly because of constraints on access. These populations are also likely to contribute proportionally more to spawning escapement given the vulnerability of lowland longfin populations to commercial fishing activity.

QMA 23

Table 11: Estimated total annual recent removals, qualitative reduction factor and total allowable catch (TAC) proposed in Initial Position Paper (IPP), and as recommended in Final Advice Paper (FAP), for eel stocks in quota management area 23.

Stock	Estimate of total annual recent removals - IPP	Qualitative reduction factor - IPP	Proposed TAC in IPP	Estimate of total annual recent removals - FAP	Qualitative reduction factor - FAP	Recommended TAC - FAP
SFE 23	27.3	10	25	56.1	10	50
LFE 23	58.4	15	50	93.9	30	66

Estimate of total annual recent removals

- 275 The concerns about the omission of data from the IPP relating to ESA 8 have been addressed during the consultation phase. Commercial fishers have been supplied with the corrected (commercial catch) figures that will form a significant basis of an assessment of estimated total annual recent removals.
- 276 MFish acknowledges that there have been many influences on the amount of commercial eel catch taken since 1990. MFish also appreciates that many of the commercial fishers within this stock do not typically travel to areas outside of their usual QMA, and that the processor within the area is probably able to accurately isolate landings that have been fished from the QMA. In this respect it would appear that the MFish estimate of commercial catch being taken from the QMA (ie, combining SFE 23 and LFE 23 stocks) at 106 tonnes is significantly higher than the average of 64.4 tonnes landed to the Stratford processor. However, MFish is aware that another processor has taken on average slightly over 11 tonnes from this QMA

since the 1996/97 fishing year. Another factor contributing to the differential between estimates is that the commercial fisher misreporting his catch in QMA 22 may have taken some of the catch from the QMA 23 stock, and still assumed that the entire lower North Island had a corresponding fishstock code of '2'.

- 277 One submitter contends that commercial, recreational and customary fishers have modified eel stocks. This is undoubtedly true, with commercial fishing being the major contribution to change, assuming that they have indeed had the highest catch levels.
- 278 MFish considers it unlikely that the non-commercial needs of Maori within QMA 23 would amount to 370 tonnes. This figure is derived from an assumption that 90% of the Maori population would each consume 100 grams of eel a week for general sustenance. However, such a view is untested. Further, it is unlikely that Maori would have traditionally approached this level of harvest historically, as such a harvest is most unlikely to be sustainable in terms of the extent of the resource within the QMA 23 area. Maori are already concerned about the sustainability of the resource at more recent levels of total annual harvest (from all interests). MFish assessed this in the IPP to be around 150 tonnes from the QMA 23 area.
- 279 The information provided on actual customary use of the eel resource at marae within QMA 23 equates to the 20 tonne combined estimate made in the IPP (see LFE 23 section). MFish notes that there is a slight inconsistency in the IPP between the description of the estimated customary catch of shortfin and longfin in each of the respective SFE 23 and LFE 23 sections. The SFE 23 section incorrectly suggests that the customary catch is about 15 tonnes combined in total, whereas the LFE 23 section suggests that it is 20 tonnes combined in total. The error has no material impact on the subsequent calculation of allowances used in the IPP. Nevertheless, for completeness, the calculations for both stocks have been redone and re-checked. This minor error only affects the SFE 23 stock.
- 280 The adjusted average commercial catch from the SFE 23 stock (using all twelve years with the data omission included, as commercial catch is relatively stable over the full period) is 42.1 tonnes. The estimated recreational harvest is 6 tonnes. The estimated customary harvest is 6 tonnes. The tonnage ascribed to other sources of fishing related mortality is 2 tonnes. Summation of the likely removals from the stock based on the above estimates equates to 56.1 tonnes.
- 281 Similarly, the adjusted average commercial catch for the LFE 23 stock (using all twelve years with the data omission included, as commercial catch is relatively stable over the full period), is 63.9 tonnes. The estimated recreational harvest is 14 tonnes. The estimated customary harvest is 14 tonnes. The tonnage ascribed to other sources of fishing related mortality is 2 tonnes. Summation of the likely removals from the stock based on the above estimates equates to 93.9 tonnes.
- 282 As a result of receiving updated commercial catch information, the estimated total annual recent removals for SFE 23 is increased from 27.3 tonnes (as stated in IPP) to 56.1 tonnes, whereas the equivalent removals for LFE 23 is increased from 58.4 tonnes to 93.9 tonnes (Table 11).

Calculation of TAC

- 283 In terms of the TAC for QMA 23 stocks, MFish agrees with the Taranaki eel industry that there has probably been a shift in the composition of the commercial catch to less longfin and more shortfin. The change in the proportion of shortfin in the commercial catch is from less than 10% to 48% within the last 15 years. This is quite a recent and significant change. The observation is consistent with the research finding of Chisnall, Martin and Hicks (2003) that large longfin eels regulate the density and structure of a resident population of eels.
- 284 There is a case for a greater reduction factor for the LFE 23 stock than that proposed in the IPP. MFish considers that a 30% (up from 15%) qualitative reduction factor should be applied given the overall concern about the need to rebuild the longfin stock, and the observations of the Taranaki eel industry. The recalculated TAC using a 30% qualitative reduction factor is therefore 66 tonnes. This recommended TAC compares to the 73 tonnes suggested by the Taranaki eel industry.
- 285 MFish does not consider that the TAC for SFE 23 should be increased to partly compensate for the recommended TAC for LFE 23. Such an increase in the SFE 23 TAC at this time may not be consistent with achievement of the management strategy for the stock, and the need to ensure that the fishery is improved for all eel fishery interests. Accordingly, MFish recommends that the qualitative reduction factor for the SFE 23 stock remain at 10%. The recommended TAC is 50 tonnes.

Final TAC Recommendations

- 286 The estimated total annual recent removals, the recommended qualitative reduction factors, and the consequential recommended TACs for North Island eel stocks are set out in Table 12.

Table 12: Comparison of estimated total annual recent removals (ie, 1990-91 to 2001-02) and recommended TACs for North Island eel stocks.

Stock	Estimated total annual recent removals	Approximate percentage reduction factor	Recommended TAC
SFE 20	222	5	211
LFE 20	83.6	20	67
SFE 21	262.9	20	210
LFE 21	141.9	35	92
SFE 22	168.8	20	135
LFE 22	68.3	20	54
SFE 23	56.1	10	50
LFE 23	93.9	30	66

Customary catch allowance

Submissions

QMA 20

- 287 **Prime Paraha** notes that tangata whenua within the rohe of Ngati Hine fish exclusively for longfin, and shortfin are returned to the water. Longfin taken for both

cultural fishing aspects and daily living requirements are held in a confined space until required.

- 288 Phillip Bristow is a tangata kaitiaki for **Nga Hapu ki te Whare o Ngapuhi**, as well as a trustee for the **Ngati-Manu Trust and the Rae Honetana Te Kero Trust (Te Roroa)**. Mr Bristow notes the Crown position, as stated in paragraph 70, of the section entitled ‘Statutory obligations and policy guidelines’, that the customary fishing regulations do not allow the Crown to place limitations on customary fishing, apart from ensuring sustainability of the stock. Mr Bristow suggests that there must be a record showing that the stock is showing sustainability problems before the Crown plans to implement limitations on customary fishing. He further observes that the hapu has not been informed that this has been done.
- 289 Mr Bristow further notes, in response to observations of how customary fishing practises are fulfilled (section entitled ‘Customary Catch’; Annex 2 of IPP), that it shall be a collective decision to look after the ‘food cupboard’.
- 290 **David Vitasovich** advises that while customary catch always existed, there is no documented means to gauge the true tonnage.

QMA 21

- 291 **Tainui Waka Iwi (Raukawa, Maniapoto, Hauraki and Waikato)** states that the allowance provided for the customary fishery should never be reduced. Tainui Waka Iwi submit that customary catch is different to customary need, noting that there are more Maori in the North Island and therefore the customary allowance needs to be set higher. Tainui Waka Iwi support the proposed objective of the Tainui Tuna Working Group that customary fishers have a reasonable availability of eels at desired sizes, and specifically, that more information on customary use should be obtained.

QMA 22

- 292 **Te Ati Awa / Taranaki Whanui o Poneke (Poneke)** notes that since 1990 commercial fishers have harvested about 10 tonnes, or roughly 1% of the national commercial eel catch, from ESA 12. Poneke advise that this may be considered insignificant within the context of the whole fishery, but is extremely significant for such a small area such as their takiwā, especially when the area has three cities and a Maori population of 30 000 people and therefore a high customary and recreational sector. Poneke strongly urges MFish to take account of the customary and recreational sectors as a priority over and above the commercial sector. Further, it is the advice of Poneke to the Minister that their takiwā area is recognised, and within that area, the TACC should be set at zero until such time that their assessments show positive signs of regeneration.
- 293 The rohe of **Ngati Raukawa ki te Tonga** falls within the QMA 22 boundary. Ngati Raukawa representatives note that there are 24 hapu/iwi within its rohe, and 20 000 Ngati Raukawa people. The representatives suggest that if each hapu were to use one tonne of eels per year, then this would equate to about 19.2 kilograms of eels per week. This would sustain their marae needs without considering the quantity required for day to day use in their homes. Ngati Raukawa observe that the customary allowance proposed for the whole of QMA 22 is only 20 tonnes, whereas the customary needs of Ngati Raukawa alone would be near 24 tonnes.

- 294 Ngati Raukawa ki te Tonga note that the quantity of eels proposed to be made available for commercial use across the North Island is 790 tonnes, and that the number of commercial fishers accessing this quantity may only number 35. In contrast, approximately 500 000 Maori can access only 149 tonnes across the North Island for customary purposes. Ngati Raukawa is concerned that much of the commercial catch will be exported, whereas all of the catch taken for customary purposes will be eaten as it is a true source of food for Maori.
- 295 **Hinaki Eels Ltd (Hinaki)** support the proposed allowances for customary take for QMA 22, provided these are added on top of past commercial harvest in order to set the TAC, not be subtracted from it. Hinaki considers that there is no logic to adopting the past commercial take as the TAC, then subtracting non-commercial allowances from that.

QMA 23

- 296 **The Trustees of the Ngati Rahiri hapu of Taranaki** consider that the proposed combined customary allowance of 19 tonnes for SFE 23 and LFE 23 stocks is inadequate. The Trustees note that other than the waterways encompassed by the rohe, eels are also taken for marae purposes in four major adjacent river systems (ie, Patea, Mangamaio, Onaero and the Mangahia Rivers). **Te Atiawa Iwi Authority Fisheries Subcommittee (Taranaki)** notes that the Mangamaio and Mangahia Rivers are used to supply marae needs, even though they are outside of its rohe boundary. Based on the number of marae and the iwi population in the rohe of Te Atiawa, the Trustees of Ngati Rahiri calculate that their customary take is 30 tonnes annually. The trustees view the proposed TACC of 37 tonnes as excessive when compared to their calculations.
- 297 **The Pukerangiora Hapu Management Committee (Te Atiawa, Taranaki)** and **Te Atiawa Iwi Authority Fisheries Subcommittee (Taranaki)** strongly disagree with the proposed (combined) customary allowance of 19 tonnes for SFE 23 and LFE 23. Based on the number of marae and the iwi population in the rohe of Te Atiawa, the Trustees calculate that an allowance of 30 tonnes annually would be more in line with their expectations. The Committee considers that the proposed combined TACCs for SFE 23 and LFE 23 of 37 tonnes is excessive in comparison.
- 298 **Te Runanga O Ngati Tama** contends that the non-commercial (customary) interest will need to take priority when making decisions on allowances within the TAC. Further, the Runanga contends that the methodology used to assess the current non-commercial (customary) interest is inadequate.

General observations

- 299 **The Treaty of Waitangi Fisheries Commission (TOKM)** notes that the 'recreational sector' contains a significant component of family subsistence needs undertaken by Maori as a traditional customary practice. This is effectively reduced despite the IPP stating that existing customary harvest will be provided for in full when allowing for customary fishing. TOKM proposes that the family subsistence fishing undertaken predominantly by Maori must be fully protected from any proposed reduction to the recreational allowance by transferring it to consideration as part of the customary allowance. It is further suggested that the customary allowance could be increased to

meet the broader range of customary needs by a reduction in the commercial allocation.

- 300 TOKM submits that the initial allowances for customary harvest should be based on a nominal amount of 25% of the TAC for all QMAs, based on the higher Maori population numbers in the North Island. Once QMS entry has been completed, TOKM suggests that a negotiation process with North Island iwi is undertaken, similar to the process which took place in the South Island, to determine the extent to which the iwi wish to prioritise their customary needs above their commercial interests for the purposes of making an allowance for such activities.
- 301 TOKM suggests that regulation 27 of the Fisheries (Amateur Fishing) Regulations 1986 should be extended such that kaitiaki may issue authorisations to allow the taking of eels in the North Island for 'family subsistence harvest' purposes. Regulation 27 authorisations may only be issued for hui and tangi purposes in North Island freshwaters at present. In the longer term there is a need to better define and establish regulations that recognise and provide for the use and management practices of tangata whenua.

MFish Discussion

General comments

- 302 The current regulatory definition of customary fishing applicable in the North Island freshwater environ only encompasses the collection of aquatic life for the purposes of hui and tangi. The existing framework does not provide for the 'family subsistence harvest' of Maori to be transferred into the customary allowance. Encompassing a wider range of customary fishing activities within the customary allowance can be considered in the future should the Kaimoana Regulations be amended. MFish considers that it would be beneficial to enhance those regulations as they relate to the freshwater environ in a similar way to the provisions within the Fisheries (South Island Customary Fishing) Regulations 1999. MFish does not support extending the definition of 'traditional non-commercial fishing use' contained in regulation 27 of the Fisheries (Amateur Fishing) Regulations 1986 as part of the QMS introduction process as an interim step. The Kaimoana Regulations offer more potential in terms of managing customary fishing activities.
- 303 MFish has taken the approach of basing its customary allowance on estimates of recent customary catch, rather than what might be considered customary catch needs. An assessment of customary needs based on assumptions of expected consumption and extrapolating this to the population statistics of Maori practicing customary fishing within a QMA is untested. This approach requires more consideration and discussion.
- 304 MFish notes that the intent of making the allowance is to ensure that any subsequent decision on a TACC does not give rise to a situation where the total catch from the stock markedly exceeds the TAC.

QMA 20

- 305 Some customary interests may prefer to collect more of one species than the other. At this stage, MFish has based the customary allowance in proportion to the general ratio

of shortfin to longfin found in the QMA. While the Ngati Hine rohe is an important area for customary eel fishing activities within the QMA, other tribal areas within QMA 20 may not show a similar preference for longfin. Customary allowances for each stock can be reviewed once more information is received about the nature and extent of customary eel fishing in the QMA.

- 306 The ability to limit customary fishing activities mentioned in the IPP (paragraph 70, section entitled ‘Statutory obligations and policy guidelines’) was in the context of the exercise of those rights under the Kaimoana Regulations. Provided that the kaitiaki is acting consistently with the overall objective of ensuring sustainability, then the Minister of Fisheries is unlikely to need to intervene. Similarly, the Minister’s ability to make a quantitative allowance for customary fishing interests in a stock before determining a TACC does not necessarily imply that customary fishing interests are restricted to that amount of fish. MFish will however need to monitor and adjust TACs and/or allowances (including TACCs) so that the actual amount of fish taken by customary (or recreational) interests does not significantly exceed sustainability settings to the detriment of the stock.
- 307 MFish confirms that the customary allowance recommended for SFE 20 and LFE 20 stocks should be 30 tonnes and 10 tonnes respectively.

QMA 21

- 308 MFish notes that it received a commissioned research report on the use of the eel resource within the Ngati Maniapoto rohe in 1998. Some of the findings of that report were summarised in the IPP. MFish would appreciate the collection of more information on the customary use of the resource in order that it can better fulfil its obligations towards providing for the use and management practices of tangata whenua in undertaking customary fishing.
- 309 MFish confirms that the customary allowance recommended for SFE 21 and LFE 21 stocks should be 24 tonnes and 16 tonnes respectively.

QMA 22

- 310 MFish restates that the TAC has been constructed having considered the sum of estimated catch from all sources, before considering where the TAC should sit against that background. The approach taken has not been based on a methodology where only the commercial sector’s catch contributes to an assessment of estimated removals followed by a TAC calculation, and then subtracting an amount for a customary allowance.
- 311 MFish acknowledge submissions from Maori within QMA 22 that suggests that their customary needs may exceed the allowance proposed in the IPP. MFish would welcome further information from these interests over time that clarifies the actual quantity of eels taken for customary purposes in recent times. MFish notes that customary fishing in the greater Wellington area would be improved should commercial fishers refrain from fishing in that area, and similarly take note of views of submitters from the Horowhenua area about the impact of commercial fishing on customary fishing interests. However, these matters are unable to be resolved by regulatory means in advance of QMS introduction.

312 MFish confirms that the customary allowance recommended for SFE 22 and LFE 22 stocks should be 14 tonnes and 6 tonnes respectively.

QMA 23

313 MFish acknowledge submissions from Maori within QMA 23 that suggests that their customary needs may exceed the allowance proposed in the IPP. MFish would welcome further information from these interests in order to clarify the actual quantity of eels taken for customary purposes in recent times. MFish notes that the sum of the allowances proposed for SFE 23 (6 tonnes) and for LFE 23 (14 tonnes) is similar to combined figures supplied by submitters (~20 tonnes).

314 MFish confirms that the customary allowance recommended for SFE 23 and LFE 23 stocks should be 6 tonnes and 14 tonnes respectively.

Recreational catch allowance

Submissions

QMA 20

315 **Prime Paraha** advises that ‘cultural fishing’, which is defined as recreational by MFish, occurs twenty-four hours a day, seven days a week, and fifty-two weeks a year within the rohe of Ngati Hine. Mr Paraha submits that tangata whenua fish exclusively for longfin, and any by-catch of shortfin is returned to the river. Eels taken are held in a confined space until they are required. Mr Paraha also observes that any shortfin taken that are not eaten or processed within 2 or 3 days of capture will die, making them useless for live storage. Mr Paraha notes that it is not uncommon for shortfin to quite easily surpass a weight of 4 kilograms, but longfin seldom reach 2.5 kilograms, with the majority of them being around the minimum weight allowable for commercial fishers.

316 Mr Paraha notes that as this non-commercial fishing activity is occurring throughout the year, it is possible to quantify good fishing times of the year. Mr Paraha suggests that through consultation with tangata whenua and MFish, unwanted shortfin ‘cultural catch’ taken by tangata whenua could be provided to commercial fishers, such that commercial fishers need not set their nets within the Ngati Hine rohe.

317 **David Vitasovich** advises that while recreational catch always existed, there is no documented means to gauge the true tonnage.

QMA 21

318 **Tainui Waka Iwi (Raukawa, Maniapoto, Hauraki and Waikato)** supports a proposed objective of the Tainui Tuna Working Group to better provide for recreational interests in the eel fishery. Tainui Waka Iwi similarly supports the making of allowances for recreational use before determining TACCs. Tainui Waka Iwi also supports the continuation of the daily bag limit of six eels, unless new information on recreational harvesting shows a need for revised limits.

QMA 22

- 319 The **Wellington Conservation Board** feels that MFish will need to have a formal process for Maori to have input into assessing the status of the resource, as a result of their own actions (eg, rāhui) to sustain local resources. The Board questions whether the relationship between MFish will be on-going and how this relationship will be set up.
- 320 **Te Ati Awa / Taranaki Whanui o Poneke (Poneke)** notes that the number of non-Maori harvesters is hard to establish, but are thought by Poneke to be few and far between. Poneke advises that the commercial fishing activity within the area, limited to only a few individuals, has denied a 30 000 strong Maori population sufficient access to the resource. The resource was once a major part of their traditional diet and it was not uncommon for some Maori to take eels to school for lunch as recently as the 1980s. Poneke observes that it is their custom not to resume frequent harvest because the resource is depleted.
- 321 Poneke also notes that within the takiwā, the local resource is also shared with Maori from other tribes. This is particularly the case for the significant population of Tuhoe who live in Upper Hutt and Wainuiomata. Poneke observes that harvesting natural living resources is a natural component to Maori who move from rural areas to the city. This ‘free food’ provides a supplement to tangata whenua rather than relying on food from the supermarket. Poneke resents the fact that the eel resource is being sold to people in overseas countries to the benefit of a few commercial fishers. Poneke take offence to the fact that the income derived by commercial fishers from eel fishing is supplementary to other employment opportunities.
- 322 **Hinaki Eels Ltd (Hinaki)** considers that MFish’s estimate of recreational take seems very high, but it does not object to the proposed recreational allowances for QMA 22, provided these are added on top of past commercial harvest in order to set the TAC, and are not subtracted from estimates of past commercial catch. Hinaki considers that there is no logic to adopting the past commercial take as the TAC, then subtracting non-commercial allowances from that.

QMA 23

- 323 The **Trustee’s of the Ngati Rahiri hapu of Taranaki, the Pukerangiora Hapu Management Committee (Te Atiawa, Taranaki), and Te Atiawa Iwi Authority Fisheries Subcommittee (Taranaki)** considers that the proposed recreational allowance of 13 tonnes for SFE 23 and LFE 23 seems questionable when catch information is not available.
- 324 **Te Runanga O Ngati Tama** notes that whānau dependence on the eel fishery literally meant the difference between eating and going hungry, and historically, it was at the whānau level where the greatest reliance and consumption of eel was exercised. Based on iwi population figures derived from the 2001 census (74 000), as they relate to the QMA 23 area, and assuming that 10% of the Maori population no longer consume eel, while the rest (~67 000) would consume 100 grams per week, the Runanga has estimated that 6.7 tonnes would be used by Maori for sustenance purposes on a weekly basis, or ~350 tonnes on an annual basis.

MFish Discussion

325 MFish notes that there is no substantive information contained in the submissions that materially alters the proposed allowances made in the IPP. However, the recommended allowances (Table 13) are adjusted to take into account corrected information giving rise to the estimated total annual recent removals, and thereafter any change to the percentage reduction required for both the recreational allowances and the TACCs to fit within the TACs.

326 As noted in the IPP, the same percentage reduction has been made to both the calculation of the recreational allowances as well as the TACCs. The recommended allowances are effectively reduced from the estimate of recreational catch by a maximum of six tonnes each for stocks within QMA 21, but typically are no more than two or three tonnes less.

Table 13: Determination of proposed recreational allowances for North Island eel stocks (tonnes)

Stock	Estimate of annual recent recreational catch (t)	Percentage reduction required to fit within TAC	Provisional recommended recreational allowance (t) prior to rounding	Recommended recreational allowance (t) following rounding up to nearest whole number
SFE 20	30	5.8	28.2	28
LFE 20	10	23.2	7.7	8
SFE 21	24	22.4	18.6	19
LFE 21	16	40.3	9.6	10
SFE 22	14	22.1	10.9	11
LFE 22	6	23.7	4.6	5
SFE 23	6	12.7	5.2	5
LFE 23	14	35.8	8.9	9

327 MFish queries one submitter's observation that shortfin quite easily surpass a weight of 4 kilograms, whereas longfin seldom reach 2.5 kilograms. It is possible that references to each species in the submission were accidentally confused. Typically, longfin grow larger than shortfin.

328 MFish also notes that a non-commercial fisher is not able to supply commercial fishers with surplus recreational fish destined for sale. Any concerns about how or whether commercial eel fishing should occur in a particular area are best addressed through all eel fishery interests discussing a harvest strategy or developing ideas about the distribution of commercial fishing effort and documenting this in a fisheries plan.

329 MFish notes that it presently has a long-standing process for input and participation of tangata whenua into assessments of the eel resource. However, MFish believes that this could be enhanced through more active collaboration with all eel fishery interests. MFish encourage tangata whenua to better assess and document the use of fisheries resources for either customary or recreational purposes in order that this information can be taken into account when considering fisheries management decisions. In addition, MFish welcomes further input and participation from tangata whenua in its fisheries management or research forums.

330 While one submitter might consider that the recreational allowances proposed in QMA 22 are too high, other submitters consider that the allowances are

disproportionate to the TACCs proposed, or insufficient to meet the needs of Maori for sustenance purposes. MFish considers that further evaluation of the recreational use of the eel resource is required before considering further adjustments to the allowances as now recommended.

- 331 MFish notes that the combined allowances for recreational eel fishing in QMA 23 are now recommended at 14 tonnes. MFish acknowledges that this tonnage is lower than what the hapu representatives from Taranaki consider appropriate for current and future use.
- 332 MFish acknowledges that recreational harvest is likely to have been reduced in recent years following a period of higher catches historically. This has led to self-imposed constraints amongst particular communities of interest (ie, Maori) in response to concerns over the state of the resource. Accordingly, MFish does not consider necessary to reduce the daily limit of six eels per person per day at this time.

Allowance for other sources of fishing-related mortality

Submissions

- 333 The **Wellington Conservation Board** feels that poachers should have a fine/punishment that fits the crime. The Board is of the view that poaching is not going to decrease unless the sellers, buyers and companies running the ‘black market’ are all punished equally. The Board suggests that there should be no ‘special treatment’ between iwi, business companies, and individuals.
- 334 **Hinaki Eels Ltd (Hinaki)** supports the proposed allowances for other sources of fishing-related mortality, provided these are added on top of past commercial harvest in order to set the TAC, not be subtracted from it.
- 335 Hinaki also recommends that further consideration be given to the treatment of eels that are caught dead (see latter section entitled Sixth Schedule).

MFish Discussion

- 336 MFish and the eel fishing industry consider that the level of poaching in the eel fishery is minor. MFish notes that the Courts determine the exact penalties imposed on anyone convicted of an offence under the Act, as guided by the penalties section of the Act. Blackmarket activities are considered a serious offence under the Act, and as such, attract more significant penalties.
- 337 The process for establishing the TAC includes an assessment of removals from a stock related to other sources of fishing-related mortality. This estimate is then in essence subtracted from the TAC, although if additional information suggests current mortalities are higher or lower, the allowance recommended can reflect that. In this instance, the two estimates are equivalent.
- 338 MFish confirms that the allowances for other sources of fishing-related mortality proposed in the IPP are the same as recommended in the FAP.

Setting of Total Allowable Commercial Catch

Submissions

- 339 **David Vitasovich** suggests that the 20% allocation of TACC within a stock that is allocated to Maori should be purchased on a willing seller, willing buyer basis as used in 1986. He suggests that this approach would seem very fair and democratic in today's political climate.
- 340 The **Wellington Conservation Board** suggests that the allocation of harvesting rights to commercial fishers should be based on records from the past 10 years, and not three years.
- 341 **Eel Enhancement Co. Ltd (EECo)** supports recognition of existing commercial fishery data as the basis for the setting of the TACC. EECo would oppose allocation of the fishery away from commercial access to other sectors. EECo submits that the TACCs for each shortfin and longfin stock should be based around the average recent commercial catch of 815.7 tonnes for the North Island. EECo supports the higher proposed TACC (option 1) for SFE 20.
- 342 The **Treaty of Waitangi Fisheries Commission (TOKM)** submits that a TACC for each stock can be set at either a lower or higher level depending on the approach taken by fishery interests for each stock. TOKM advise that TACCs set at a higher level use an estimated commercial catch without application of the qualitative reduction factor. The suggested TACCs take into account active stakeholder involvement towards improving eel stocks that are consistent with a TACC set at this level and together provide the basis for improved sustainability.
- 343 Conversely, TOKM advise that TACCs set at a lower level use the MFish IPP proposed TAC/TACCs (as corrected), including the qualitative reduction factor, but ensuring suitable provision is made to protect customary fishing as outlined earlier. TOKM notes that TACCs set at this level take into account passive involvement of stakeholder involvement towards improving the stock that are consistent with a TACC set at this level and together provide the basis for improved sustainability. The rationale for the particular TACC suggested by TOKM is discussed following the table summarising its suggestions (Table 14).

Table 14: Suggested TACCs submitted by TOKM based on an assessment of whether eel fishery interests are actively taking steps to improve eel stocks (High TACC option), or whether eel fishery interests are only passively involved in improving eel stocks (Low TACC option). Figures in bold indicate TOKM’s assessment of preferred option for each stock. TOKM define the ‘High TACC’ as the MFish scaled CELR estimated landings (letter dated 5 April 2004), and the ‘Low TACC’ is defined as the MFish IPP proposed TACC inclusive of the reduction factor. The ‘Difference’ column shows the difference between high and low TACC options.

	High TACC	Low TACC	Difference between ‘High’ and ‘Low’ TACC options (tonnes)
	Estimated Average Catch	IPP Proposed TACCs	
Northland/Auckland			
SFE20 (1)	184	174	(10)
SFE20 (2)	184	162	(22)
LFE20	64	52	(12)
Waikato/Poverty Bay			
SFE21	184	163	(21)
LFE21	108	76	(32)
Hawke Bay/Wellington			
SFE22	115	95	(20)
LFE22	53	40	(13)
Taranaki/Rangitikei			
SFE23	43	38	(5)
LFE23	65	53	(12)
SFE NI	526	458	(68)
LFE NI	290	257 ⁷	(33)
Total NI	816	715	(100)

- 344 TOKM proposes a moderate to low TACC for QMA 20 and QMA 21 stocks on the basis of passive management and the mix of other management controls proposed for these stocks. TOKM notes that it is not aware of any specific collectives that are ready, or getting ready, to implement any specific proposals. Accordingly, TOKM recommends a TACC for SFE 20 of 168 tonnes (being the mean of option 1 and 2 in the IPP), and a TACC for LFE 20 of 58 tonnes. Similarly, for QMA 21 stocks, TOKM recommends a TACC for SFE 21 of 173 tonnes (being the mean between high and low values in Table 14), and a TACC for LFE 21 of 92 tonnes (being the mean between high and low values in Table 14).
- 345 TOKM proposes a high TACC for QMA 22 stocks on the basis of active stakeholder management and the mix of other management controls proposed for these stocks. TOKM recommends a TACC for SFE 22 of 115 tonnes and a TACC for LFE 22 of 53 tonnes. This recommendation is made on the basis that TOKM anticipates that 75% of quota holders agree to a work programme to be presented to MFish no later than 1 September 2004 for an initial period of three to five years. The work programme will include suitable annual monitoring and reporting requirements to demonstrate

⁷ MFish considers that summation of longfin TACCs under TOKM’s ‘Low TACC’ column should add up to 221 tonnes, and not 257 tonnes as stated. Accordingly, the difference between the High TACC and Low TACC columns should be 69 tonnes, and not 33 tonnes as stated. Based on that amendment, the difference between ‘high’ and ‘low’ TACC options (tonnes) for the total North Island would be 137 tonnes.

improvement in the fishery as a consequence of the work undertaken. TOKM suggests that monitoring may include elver recruitment levels, pre-recruit assessments (ie, eels just beneath minimum commercial size), transfer efforts, growth and biomass achieved in new sites, CPUE trends, and other indicators. If improvement in the fishery cannot be demonstrated within the three to five year period, TOKM submits that the TACC will need to default back to the low level proposed in the IPP.

- 346 TOKM wishes to make it clear that its recommended approach for QMA 22 stocks is not meant to act as a substitute for, or to frustrate the ongoing work to develop a fisheries plan for this fishery. TOKM regard it as an interim step to provide some recognition of the positive steps being taken. TOKM would expect the plan to provide more detail on the approach proponents wish to take, with clear division of responsibilities and a satisfactory system of governance.
- 347 TOKM proposes a low TACC for QMA 23 stocks on the basis of passive management and the mix of other management controls proposed for these stocks. TOKM notes that it is not aware of any specific collectives that are ready, or getting ready, to implement any specific proposals. In addition, it notes that a significant closure is proposed in this area to protect spawning escapement, although it is not aware of any research proposal by MFish to survey or monitor the effectiveness of this measure. TOKM believes that the closure will reduce the available fishing space to commercial fishers without a commensurate reduction in the TACC. Accordingly, TOKM recommends a TACC for SFE 23 of 35 tonnes and a TACC for LFE 23 of 50 tonnes. This represents a further reduction of 5-6% to the 'low' TACC proposed in the IPP.
- 348 **Te Aitanga a Mahaki Trust** supports the TACC suggestions of TOKM in the absence of any local commercial catch data.

MFish Discussion

Allocation of commercial harvesting rights and proportional nature of provisional catch history

- 349 The Act specifies the process to be followed to allow for the transfer of 20% of the commercial harvesting rights for a stock to Maori, as secured by way of the Settlement Act. This is a separate statutory process from the Minister's decision on a TACC for a stock.
- 350 Further, MFish notes that the determination of a commercial fisher's provisional catch history was based on the best twelve consecutive months within a 24 month period from 1 October 1990 to 30 September 1992 (as provided by the Act). A commercial fisher's quota allocation is pro-rated down to meet the independently made TACC decision. This means that historical commercial catch will not necessarily translate into an equivalent amount of harvesting rights when a TACC decision is made.

Relationship between commercial catch information and TACC setting

- 351 Commercial catch data is used to make an assessment of estimated total annual removals, which are then assessed in terms of calculating a TAC. The TACC decision is a separate and subsequent step. The recommended TACCs have been derived by applying the same proportional reduction to the estimate of average commercial catch

for the period 1990-91 to 2001-02 (for all stocks), as used to determine the recreational allowances (as revised, see Table 13). This is the same approach as used in the IPP. The main difference is the effect of applying a different qualitative reduction factor to determine a TAC for some stocks, and the subsequent step of applying a slightly higher percentage reduction to ensure that the recreational allowance and the TACC fit within the TAC.

TACC for SFE 20

- 352 MFish has elected to apply a 5% qualitative reduction factor in order to set a TAC for the SFE 20 stock. Estimated customary catch is to be allowed for in full, and the allowance for other sources of fishing related mortality remains the same as the estimate used for calculating the estimated total annual recent removals from the stock. Consequently, a slightly higher percentage reduction has been applied to determine the TACC (and recreational allowances) for SFE 20, using revised figures. Following further MFish advice of 14 May 2004 that some of the commercial catch attributed to QMA 20 needed to be re-associated with QMA 22, EEC0 suggested that a TACC of 155 tonnes should be considered, as a compromise between various options presented. MFish notes that this tonnage is comparable to the recommended TACC of 149 tonnes.

Alternative means to determine TACC

- 353 The basis for the approach that MFish has taken is derived from an assessment of the status of a stock against the management strategy. The management strategy seeks to ensure sustainability, halt any declines in the fishery, and improve the abundance and size structure of existing populations.
- 354 MFish does not consider that eel fishery interests in any QMA are sufficiently advanced in collectively taking active management steps for the fishery. While there has been some initial work undertaken by some interests in several of the QMAs, this has yet to be formalised. The QMS framework establishes incentives for eel fishery interests to collaborate on ways in which the fishery can be improved. MFish considers that introduction of the North Island eel fishery into the QMS will facilitate these outcomes, particularly where eel fishery interests begin to appreciate that commercial catch is constrained by a TACC for a particular stock, and that the management strategy for setting TACs focuses on improving the fishery.
- 355 The allocation of commercial harvesting rights within a TACC from October 2004 will enable commercial eel fishery interests to better rationalise and plan for their future interests. Providing higher TACCs based on the activities to date is considered premature given the changes expected once QMS introduction occurs, and would not enable the management strategy for TAC setting to be achieved. MFish expects that the eel industry in the North Island will take a period of time to resettle following QMS introduction.
- 356 One submitter suggests that the TACC for QMA 23 stocks should be lowered to take account of the proposal to close the Wanganui River to commercial fishing. The TACCs now recommended by MFish in this paper are in line with the tonnages suggested by this submitter. This is because MFish has elected to apply a higher qualitative reduction factor for the LFE 23 stock, rather than any specific recognition

of the impact of the Wanganui closure on commercial fishing activities within QMA 23.

357 In addition, MFish notes that commercial fishing is not universally spread throughout QMA 23. MFish observes that it is not recommending complete closure of the Wanganui catchment as initially proposed (see latter section of FAP). The impact on commercial fishers as a result of the modified proposal is of little consequence. Consequently, MFish is confident with the revised TACCs for the QMA 23 area.

Final TACC recommendations

358 The revised TACCs are summarised in Table 15. A comparison of the recommended TACCs with the average current commercial catch (2000-01 and 2001-02 fishing years) indicates that the North Island shortfin commercial fishery is being reduced by around 8.25%, and the North Island longfin commercial fishery by around 17.8%. MFish considers this is a reasonable starting point from which the management strategy can be addressed, while further review of commercial and non-commercial catch information and new scientific information can contribute to any necessary refinements in future years.

Table 15: Comparison of average recent commercial catch, recommended TACC, average current commercial catch (tonnes), the percentage difference between recommended TACC and average current commercial catch, and the percentage difference between recommended TACC and average recent commercial catch (1990-91 to 2001-02) for North Island eel stocks.

Stock	Average recent commercial catch (1990-91 to 2001-02) (t)	Recommended TACC (t)	Average current commercial catch (2000-01 to 2001-02) (t)	Percentage difference between recommended TACC and 2 yr average current commercial catch – brackets denote reduction
SFE 20 (option 1)	158	149	168	(11.3)
LFE 20	61.6	47	62.6	(24.9)
SFE 21	184	163	177.1	(11.9)
LFE 21	107.9	64	74.8	(14.4)
SFE 22	138.8	108	107.5	+0.5
LFE 22	54.3	41	48.7	(15.8)
SFE 23	42.1	37	45.5	(18.6)
LFE 23	63.9	41	48.8	(15.9)
North Island SFE total	522.9	457	498.1	(8.25)
North Island LFE total	287.7	193	234.9	(17.8)

Measures to recognise and provide for customary food gathering by Maori and special relationship between tangata whenua and places of importance for customary food gathering

Submissions

- 359 **Te Kawanga o Kahungunu (TKoK)** states that a number of areas near Wairoa have special spiritual, cultural and historical significance to Ngati Pahauwera, TKoK and Moeangiangi 42N owners. TKoK advises that one of the sub-tribes of Ngati Pahauwera is known as the eel tribe. They claim descent from the eel, and worshipped the eel as a god. A ‘temple of the eel’ in a special ‘valley of the eel’ was a key worshipping site. TKoK state that the sub-tribe would have human sacrifices to ensure the purity and blessing of the eel god and his goddesses.
- 360 TKoK suggest that commercial fishing for eels should be prohibited in Lake Rotonui-A-Ha (joining a tributary of the Waiau River) and the Wairoa River. In addition, TKoK mentions other sites, as noted in the section on the closing of catchments for spawning escapement purposes, which also have special significance to Ngati Pahauwera, TKoK and Moeangiangi 42N owners.
- 361 The **Department of Conservation (DoC)** supports the proposal to prohibit commercial fishing from the Taharoa lakes, Whakaki Lagoon, Lake Poukawa, and the Pencarrow lakes to provide eels for traditional cultural purposes. DoC notes that many existing reserves that the department administers are subject to management plans that provide for a controlled customary take, which may have the same effect of securing fisheries from the effects of commercial fishing.
- 362 The **Pukerangiora hapu Committee (Te Atiawa, Taranaki)** note that many old rituals are still being performed on whānau fishing grounds today, even though the fishing grounds have been abused. The Committee seek to prohibit commercial fishing in the Waitara River catchment, from the Waitara River mouth to the Manganui River tributary as it heads to the slopes of Mt Taranaki. The Committee suggests that the Waitara catchment be set aside for customary purposes only. In this area, tangata whenua would exercise aboriginal rights upon their traditional fishing grounds that include the tributary streams that run into the Waitara and Manganui Rivers. These streams include the Kurapeti, Waiongana iti, Maketawa, Ngatoro, Mangarewa, Puketotara, Mangapotoa, Manga o naia, and the Waitara Iti.
- 363 The **Wellington Conservation Board** considers it is a good idea to recognise and provide for customary food gathering by Maori and the importance of particular places by prohibiting commercial fishing. The Board would like to see Lake Wairarapa added to the list of sites where commercial fishing is prohibited on the basis that the area has a long history of customary use.
- 364 **Te Ati Awa / Taranaki Whanui o Poneke (Poneke)** notes that freshwaters within the tikiwa are all considered to be of extreme cultural significance. Poneke observes that the Pencarrow lakes are uniquely special because they serve as natural holding ponds and are also adjacent to traditional fishing grounds and villages on the remote south coast. Poneke commends MFish’s proposal to prohibit commercial fishing in the Pencarrow Lakes. Poneke notes that they have traditionally fished the mid section of the catchment as well as the lakes and their holistic view asserts the imperative

need to keep the integrity of the lakes catchment, which are only a mere 12 kilometres long, intact.

- 365 Poneke further observes that the headwaters of the Pencarrow lakes are entirely covered in untouched indigenous forest. The headwaters form the northern section of the East Harbour Regional Park. Poneke notes that the mid section of the catchment is within the privately owned Gollans Valley farm and the lakes themselves make up the southern section of the East Harbour Regional Park. Poneke strongly urge MFish to prohibit commercial fishing in the entire lakes catchment for the additional purpose of facilitating escapement of adult eels in breeding condition that reside in the upper and mid sections of the catchment.
- 366 Poneke concedes the continuation of commercial fishing throughout the catchments of Makara, Hutt Valley (including the upper reaches of the Mangaroa, Akatarawa, and Whakatiki) and Wainuiomata, noting that 20% of the commercial harvesting rights for the relevant stocks will be available to tangata whenua.
- 367 Phillip Bristow is a tangata kaitiaki for **Nga Hapu ki te Whare o Ngapuhi**, as well as a trustee for the **Ngati-Manu Trust and the Rae Honetana Te Kero Trust (Te Roroa)**. Mr Bristow makes a general observation about the costs and benefits of any proposal for the purpose of recognising and providing for customary food gathering etc. He considers that the cost to tangata whenua is the loss to determine the future for their people, whereas the benefits are always to collectively maintain their future.
- 368 **Ngati Raukawa ki te Tonga** understand that the Muaupoko iwi has exclusive rights to Lake Horowhenua and the Hokio Stream pursuant to s 18 of the Reserves and Other Lands Disposal Act 1956. Ngati Raukawa advises that their customary rights are also included in these areas through the Horowhenua Block Act 1896.
- 369 **Te Runanga o Ngati Whatua** suggests that, if the Minister intends to still proceed with QMS introduction for 1 October 2004, then a ban on commercial fishing should be implemented in all lakes in QMA 20 area and particularly the Ngati Whatua rohe. The Runanga notes that the rohe for Ngati Whatua in generalised terms starts from the Tamaki River, moving north to the Whangarei Harbour, moving inland to Tutamoe, on to the Wairau River, down to the Manukau Harbour, and then to the Tamaki River at the point of commencement.
- 370 **Te Runanga O Whaingaroa** of Kaeo (Northland) fully supports the submission made by Te Runanga o Ngati Whatua.
- 371 **Tainui Waka Iwi (Raukawa, Maniapoto, Hauraki and Waikato)** wish to be consulted first and foremost before further areas are closed to commercial fishing. Tainui Waka Iwi may at a later date identify areas to be closed to commercial fishers for customary and/or preservation reasons. The tribes request that MFish work with Tainui Waka Iwi to allow this to happen.
- 372 **Eel Enhancement Co. Ltd (EECo)** accept the four area closures proposed, but do not concede that spatial closures are generally appropriate concessions from the commercial sector. EECo considers that non-commercial fishers already have satisfactory advantages of time and flexibility and typically better local specialised access, and generally have the advantage for catching a more than reasonable quantity of eel, with a good CPUE, for non-commercial purposes.

- 373 **Hinaki Eels Ltd (Hinaki)** notes that customary fishers will be on the Hinaki Board and will be able to influence the closure of areas to commercial fishing for customary reasons.
- 374 **Ngati Kikopiri** is a hapu of the Ngati Raukawa people of the Rangitikei, Manawatu, Horowhenua and Kapiti districts. The geographical area of traditional interest to the Ngati Kikopiri people is described as the Muhunoa-Ohau district to the south of Levin. Ngati Kikopiri observes that, as a general principle, tangata whenua regard the fertility and fecundity of the natural environment in which a people dwell as a statement about their mana of those people and vice versa. In the Horowhenua district this principle was traditionally expressed through its natural resources – one being eels. Eels are encompassed within traditional whakapapa (genealogies) and korero (narratives, stories) as part of Maori culture, over and above practices related to harvest.
- 375 Ngati Kikopiri has a particular association with Lake Papaitonga (Waiwiri) and its stream leading to the coast. The hapu notes that the lake is in a very bad state at present as a result of water table adjustments, the amount of run-off from adjacent farmland, lakebed sedimentation, and destruction of shallow water ecosystems. The hapu also note that commercial fishers have periodically fished the lake on an occasional basis. The hapu feel that a ban on commercial harvest is important to restore eels back to traditional levels while allowing for on-going customary harvest managed according to tikanga for special cultural activities such as support for their poukai in Shannon and uhunga at their marae and related marae.
- 376 The **Treaty of Waitangi Fisheries Commission (TOKM)** agrees with the need to provide for closures to address the purpose of recognising and providing for customary fishing activities etc. TOKM notes the insistence at Ministry consultation hui that iwi/Maori wish to be consulted prior to the implementation of any closed areas for commercial fishing within their rohe. Equally, TOKM noted that a number of areas were nominated for future closure, and that this will be a matter that requires some planning work.
- 377 **Te Runanga o Ngati Apa Inc.** submits that particular Ngati Apa whānau have exclusive rights to fish for eels in the Pukepuke Lagoon (south of the Rangitikei River mouth). Ngati Apa submits that these rights must not be interfered with.

MFish Discussion

Response to specific proposals

- 378 There were no objections to the proposals to prohibit commercial fishing from the four general areas identified in the IPP for the purpose of recognising and providing for customary harvest by Maori.
- 379 Some useful information was received from Poneke that will enhance the closure proposal for the Pencarrow Lakes. MFish noted in the IPP that it understood that the tributaries leading into Lakes Kohangapiripiri and Kohangatera were within a water supply catchment area administered by the Wellington Regional Council. Poneke have clarified that the top and bottom third of the relatively small Gollans Stream catchment are within the East Harbour Regional Park, but the middle third is on private land. MFish agree that prohibition of commercial fishing in the tributaries

leading into these lakes would ensure that the recognition provided for the lakes is not undermined by commercial harvest within the middle third of the Gollans Stream tributary. Commercial harvest is not understood to have occurred in the tributaries for some time. There would also be a secondary benefit to facilitating spawning escapement where the entire catchment was included, assuming the customary fishery removes a relatively low proportion of the stock.

Other areas identified as being of customary importance

- 380 Other submitters identify a range of other areas considered important for customary harvest. Submitters request that commercial fishing should be prohibited from these areas. Improvements in customary harvest at some of these areas, particularly large areas (eg, as identified by Maori submitters in Taranaki, or Ngati Whatua in Northland), may be better addressed as a result of consideration of the TAC for a stock, and whether harvesting strategies for stocks consider the outcomes of all eel fishery interests, particularly at a local level.
- 381 MFish notes commercial fishers are able to consider their impacts on any special areas that have been identified in submissions. For example, MFish considers that it would be possible for commercial fishers to avoid fishing in most or all of the areas near Wairoa identified by TKoK as being of particular spiritual significance, and Lake Papaitonga (Waiwiri) south of Levin, as identified as being of importance to the people of the Ngati Kikopiri hapu. This type of sensitivity is evident in the submission from Hinaki.
- 382 MFish notes that fisheries legislation does not provide any exclusive rights for Ngati Apa whānau to fish for eels in the Pukepuke Lagoon. Nevertheless, MFish observes that other eel fishery interests can take note of the special interest in the area, and incorporate that consideration in any harvesting strategy. MFish acknowledges that involvement of Ngati Apa in such discussions will be beneficial.

Response to general comments

- 383 MFish does not consider that ‘non-commercial’ fishers already have satisfactory advantages of time and flexibility and typically better local specialised access to fishing grounds. The North Island eel industry is well aware that customary interests are aggrieved at the present status of the fishery, but more particularly that eels are not as readily available to them as before. These observations are restated to MFish at almost every consultative eel hui, in addition to accounts stated in submissions. The management strategy for TAC setting specifically recognises the need to improve the overall status of the fishery in order that non-commercial interests are better provided for. In addition, proposals to recognise and provide for customary food gathering by Maori through the prohibition of commercial fishing in discrete areas of particular significance further enhances the ability of Maori to exercise their customary fishing rights.
- 384 MFish notes that it only recalls representatives from Tainui (Hauraki) making the comment that they wished to be consulted about any further proposals to prohibit commercial fishing before they were formally proposed. Nevertheless, MFish agrees that further proposals would usefully be tabled in the context of broader strategies for the management of the stock, and their integration with existing measures.

Lake Horowhenua and Hokio Stream

- 385 Ngati Raukawa ki te Tonga understands that both the Muaupoko iwi and Ngati Raukawa ki te Tonga have a particular interest in Lake Horowhenua and the Hokio Stream provided by legislation. MFish notes that while Muaupoko Tribal Authority Inc. did not make a submission, a representative from this group did enquire during the consultative period about the status of this area, and whether the IPP had taken into account the prospect that Muaupoko could continue to commercially fish the area.
- 386 The IPP noted that there was an existing regulation in place for this area related to its customary significance. At the time, it was not necessary to elaborate on the status of the area in the context of considering the four areas the subject of a proposal to prohibit commercial fishing. Specifically, regulation 15 of the Fisheries (Central Area Commercial Fishing) Regulations 1986 provides that no commercial fisher can take eels from Lake Horowhenua or the Hokio Stream unless that person does so in accordance with fishing rights specified by s 18 of the Reserves and Other Lands Disposal Act 1956. That section preserved the fishing rights noted by s 9 of the Horowhenua Block Act 1896 (as repealed by s 118 of the Maori Purposes Act 1931). These fishing rights are not exclusive, but recognised the association of local Maori with the area. The former Fisheries (Maori Eel Fisheries) Notice 1983 set aside the area as a 'Maori eel fishery'.
- 387 MFish has since clarified that regulation 15 has no on-going currency or effect on the exercise of commercial fishing rights under the QMS. This is because, regardless of whether claims to such rights were based on statute or other forms of title, s 9 of the Settlement Act extinguished any commercial rights in existence. Through the 1992 Deed of Settlement, and the Settlement Act, Maori were instead provided with access to 20% of the commercial harvesting rights for any new stock introduced into the QMS. Accordingly, commercial fishing may occur in these waters by anyone holding the appropriate harvesting right provided by the QMS.
- 388 However, MFish is also aware that access across the land to Lake Horowhenua and the Hokio Stream may not be readily available, and that Muaupoko and Ngati Raukawa ki te Tonga may still have an influence on who undertakes commercial fishing in this otherwise important customary fishing area. In addition, given the history associated with these sites, it would be appropriate for all eel fishing interests to take this into account when considering harvesting strategies for the broader stock.

Recommendations

- 389 MFish recommends that commercial fishing be prohibited (by regulations made pursuant to s 297 of the Act) in order to recognise and provide for customary food gathering by Maori and to recognise the special relationship between Maori and places of importance for customary food gathering in:
- a) The inter-connected Lakes Taharoa, Numiti, Rotoroa, and Lake Harihari, south of Kawhia;
 - b) Whakaki Lagoon, east of Wairoa;
 - c) Lake Poukawa, Te Hauke, inland from Hastings; and

- d) Lake Kohangapiripiri and Lake Kohangatera (Pencarrow Lakes) and their respective tributaries, Wellington.

Measures to facilitate spawning escapement of adult eels

Maximum size limit

Submissions

- 390 **Murray Reed** considers that there is no scientific proof to say that letting 4 kilogram eels go will result in them going to sea to breed. Mr Reed considers that they will stay in the waters and consume as many juvenile eels as they can for as long as they live. Mr Reed suggests that as a result there will be lots of huge eels and no commercial eel industry in the future.
- 391 **Grant Williams** notes that there are arguments both for and against the proposal to introduce a 4 kilogram maximum size limit for the eel fishery. He observes that fecundity in large eels is enormous with the ability to produce literally millions of eggs. Most longfin females are above 1.5 kilograms in weight at migration, yet there does not appear to be any average weight at which migration occurs. A 4 kilogram maximum size may just be as effective as a 6 or 8.5 kilogram maximum size. Mr Williams also observes that the customary take of large eels for hui is also of importance, and queries whether the release of large eels by one sector would be nullified by the taking of those same eels by tangata whenua for customary use. Mr Williams recognises the argument that adoption of the present proposal would provide a consistent national standard, and enable easier policing. He also observes that there are some people from a number of races who have an emotional attachment to the preservation of large eels, and their taming.
- 392 Mr Williams believes that the reasons against the proposal stem largely from the comments advanced in support of the proposal. He queries what scientific justification is available that would support the view that releasing 4 kilogram eels will help attain the common goal of utilisation of the resource while ensuring sustainability. Mr Williams considers that selection of a 4 kilogram figure is random, and will further modify a fishery that is already modified, and this is a risk that requires further investigation. Mr Williams believes that the rotational fishing activity that has occurred for several decades means that there are very few large longfin that would be protected with this measure. Furthermore, he observes that 15% of New Zealand eel habitat is above hydro dams, almost all of which present a 100% kill situation for downstream travelling migratory eels. He sees little point in conserving or protecting eels above dams until fish passage issues are addressed. To the contrary, intensive fishing of eel populations above hydro dams may relieve fishing pressure on areas where escapement is possible.
- 393 From a biological point of view, Mr Williams considers that all parties should adhere to a well substantiated maximum weight. Should it be found necessary in the future to limit the take of longfin female eels, then tangata whenua will need to act in the fishery's best interest and change their eating habits from large longfin to either large shortfin or smaller eels altogether.
- 394 Mr Williams observes that there is some logic in having a maximum size limit applied across New Zealand, but suggests that the effects of the 4 kilogram maximum weight

limit in the South Island should be studied. Mr Williams further observes that there are and always have been waters set aside by numerous land owners for the purpose of protecting large eels, and predicts that this practice will continue as will many conservation practices carried out by individuals within industry, Maori and the general public alike. Mr Williams concludes that the Taranaki eel industry recommends that the 4 kilogram maximum weight limit not be implemented until further investigation of the effects of such a limit on instream fauna is carried out.

- 395 The **Department of Conservation (DoC)** supports the proposal to apply a maximum size limit in the North Island commercial fishery so that existing large eels are retained to fulfil their natural role as top predators in aquatic ecosystems, and so that they may also migrate to sea thereby contributing to recruitment in the short to medium term. The application of the maximum size limit would also be required to make it consistent with the South Island. DoC understands that there is scientific evidence available to suggest that a lower maximum legal size (eg, 3 kg) may improve biomass of the spawning population without necessarily impacting on yield-per-recruit.
- 396 To further improve the spawning longfin population and encourage all participants in the fishery to contribute to the future fishery, DoC seeks to have a lower maximum size limit imposed on the recreational sector. DoC believes it is essential for the maximum size limit to be applied in conjunction with other fishery management tools to reduce fishing pressure on eels of a harvestable size and therefore increase the number of eels that are surviving to reach the maximum size.
- 397 The **Bay of Plenty Conservation Board** recognises that there is considerable debate about the effectiveness of the 4 kilogram maximum size limit. The Board would support a maximum size limit being applied to the recreational fishery in the long term, as well as the bycatch (ie, longfin) of a predominantly shortfin commercial fishery. The Board does not think the maximum size limit should be forgone just because there is an indication in the South Island that few females reach the four kilogram size, and that it takes 21 years for female longfin to reach that size in the South Island. The Board suggests that a smaller maximum legal size of 2.5 to 3 kilograms could be implemented without necessarily affecting the preferred size of eel found in European markets sourced from New Zealand. The Board also advocates that the customary fishery should voluntarily restrict itself to longfin eels of less than 3 or 4 kilograms.
- 398 **Te Ati Awa / Taranaki Whanui o Poneke (Poneke)** commends MFish for proposing the prohibition on the taking of eels of greater than 4 kilograms. However, their expectation is that in their takiwā area the maximum size threshold to be 2 kilograms. Poneke submits this is in recognition of the fact that it is reported to take 21 years for female eels to reach the 4 kg weight, which they consider is far too long a period to be vulnerable to capture. Poneke also notes that eels will be vulnerable to fishing for 5 years after they reach the minimum legal size of 220 grams in the commercial fishery if a maximum weight of 1 kilogram was applied.
- 399 **Tainui Waka Iwi (Raukawa, Maniapoto, Hauraki and Waikato)** supports the implementation of a maximum size limit of 4 kilograms in order to allow for the escapement of migratory females and for customary fishers to catch large eels in future. Tainui Waka Iwi notes that they do not support application of the proposed maximum size limit to customary fishers. Tainui Waka Iwi note that implementation

of this measure would make it consistent with the measure currently in place in the South Island eel fishery.

- 400 Tainui Waka Iwi also support a Tainui Tuna Working Group proposed recommendation that a minimum size limit for recreational fishers be applied that is consistent with the size limits applying to other participants in the fishery. Similarly, the Tainui Waka Iwi support a requirement for recreational fishers to use 25 mm diameter escapement tubes consistent with other participants in the fishery.
- 401 **Eel Enhancement Co. Ltd (EECo)** strongly rejects the proposed four kilogram maximum size limit, although accept the intent to increase the contribution to escapement from the fishery of breeding females. EECo is concerned that this measure will lead to the reservation of large parts of the stock and dramatically reduce fishery yield below an MSY target (or better following enhancement) for both shortfin and longfin. However, EECo also notes that the measure will have little practical effect in the short term. EECo believes that the size structure of the fishery remains reasonable, and will only improve with the implementation of other proposed new controls. Nevertheless, the company submits that a drop in the proportion of large fish may be more simply solved by reducing the exploitation rate.
- 402 Introduction of the proposed maximum size limit would be wasteful in the case of those waterways where escapement is impossible (eg, above hydro dams in the Waikato River). Further, the company suggests that if such waters constituted a large part of the fishery, then there would be a net lowering of escapement from a stock as fishers target eels of less than 4 kg in areas where escapement is possible.
- 403 EECo does not accept that “naturalness” or biodiversity goals are appropriate arguments throughout all of the North Island, and submits that any fishstock subject to fishing pressure will have a size distribution different from an unfished population. EECo believes that a maximum size limit may not overly assist with obtaining biodiversity goals as eels larger than 0.5-1.0 kg already eat a lot of smaller fish. Similarly, EECo notes that there is no scientific analysis or reference provided to support the view that eels reaching the 4 kg size will assist in maintaining biological diversity. Consequently, EECo concludes that it would be reasonable to delay consideration of implementation of a maximum size limit until the effects of other measures being implemented for 1 October 2004 are monitored and assessed.
- 404 **Hinaki Eels Ltd (Hinaki)** opposes the maximum size limit proposal on the basis that evidence from the South Island suggests that this measure has a negligible benefit in terms of increasing the number of mature eels that escape to spawn, with a comparatively large cost in terms of both fishing practices and trauma to eels that are caught, handled and released. In addition, there are possible detrimental impacts on eel populations due to the propensity of very large eels to cannibalise smaller eels.
- 405 The **Treaty of Waitangi Fisheries Commission (TOKM)** agrees with the general approach to protect spawning escapement of migrating females and in particular longfin females. TOKM agrees with the implementation of a nominal 4 kg maximum with the ability to remove this restriction if future fisheries plans can address the same concern in better or more efficient ways. In this regard, TOKM notes the recommendations of EECo to implement a Code of Practice to better manage this outcome. Further, within each QMA the application of this measure may be applied

differently dependent upon the combination of measures and stakeholder initiatives that have been adopted.

- 406 **Te Aitanga a Mahaki Trust** agrees with the implementation of a maximum size limit provided that there is an ability to modify this restriction if future fisheries plans can address the issue of facilitating the migration of adults in better or more efficient ways. In addition, the Trust considers that the current minimum legal size of 220 grams should be increased to 250 grams for sustainability reasons. The Trust notes that eels of 220 grams are returned to the water by customary fishers who prefer eels over one kilogram in size.

MFish Discussion

Overall objective and finding

- 407 MFish proposed the implementation of a 4 kilogram maximum size limit for the rest of New Zealand as a contribution to spawning escapement. The measure has particular relevance for longfin stocks. In proposing the measure as one means to facilitate the escapement of adult eels in breeding condition, MFish noted that present eel population structures were such that this measure's effectiveness may be limited. The effectiveness of the measure would be expected to improve in the medium to longer term as more eels grew through to a larger average size. A further benefit of a maximum size limit relates to the role that large longfin females play in controlling the population structure of eel populations, including species composition and sex ratios.
- 408 MFish has considered submissions and determined that the issue of adequate spawning escapement needs further consideration before the implementation of a maximum size limit in the North Island and Chatham Islands. This is likely to also include assessment of new information beyond what has been considered at the time leading up to QMS introduction. During the consultation phase (and as noted by some submitters), it was established that a more direct approach to ensure adequate spawning escapement was to reduce the exploitation rate. This improves the chance that eels grow to a larger size, and increases their chance of undergoing migration before being fished. MFish has taken this observation into account in reassessing the TACs for longfin stocks in particular.
- 409 In addition, MFish will receive a research report in September 2004 on the nature and extent of areas throughout New Zealand that are presently off-limits to fishing activity. These areas act as refuges for eels until they are ready to undergo their spawning migration. The extent of these closures needs to be determined before complementary catchment closures or equivalent measures are considered. MFish is aware that some commercial eel fishery interests may proactively set aside areas from (commercial) fishing for the purpose of ensuring adequate escapement. All measures in effect need to be considered as part of an overall stock strategy, a stakeholder produced fisheries plan, or through MFish convened forums to discuss these management approaches.

Influence on size structure and fishery yield

- 410 TACs are being set to ensure that the stated management strategy is met, as provided for under s 14 of the Act. However, should the TACs have been set under s 13 of the

Act, they would be aiming for a stock level that would maintain the stock above a level that can produce the maximum sustainable yield, having regard to the interdependence of stocks.

- 411 Large eels can predate smaller eels in a waterway. This may actually be positive for a population structure because a higher density of smaller eels may induce sexually immature juveniles to become males. There is evidence from one Southland catchment that the removal of larger longfin eels has resulted in a skewed sex ratio of 68 males to every one female, compared to a normal 50:50 sex ratio. Similarly, the industry has noted that populations of similarly sized eels in waterways such as Lake Waahi (lower Waikato River) are stunted, in terms of their growth. Introduction of large eels into this environment might reduce population numbers and allow for better growth of the remaining population. Consequently, MFish does not accept the view that the prevalence of large eels in a waterway would have significant negative implications for the industry.
- 412 Further, MFish notes that eel fishery interests have not collectively stated what their preferred population size structure would be. Observations from one submitter that the present size structure of eel stocks is reasonable may be premature. Similarly, harvesting strategies that take into account the existing characteristics of the various eel populations within a stock, and its inter-relationship with other stocks have not been developed.
- 413 MFish acknowledges that implementation of a smaller maximum size limit would potentially further improve spawning escapement, but it may also unnecessarily interfere with the ability of fishery interests to harvest eels at an appropriate size. At this time MFish considers that it would be more efficient to reduce the exploitation rate through an adjustment to the TAC, should there be concerns about the slow growth rates of some populations or stocks, and the amount of spawning escapement as a result. This could be complemented with a prohibition of commercial fishing from particular catchments where this action facilitates spawning escapement as a result.
- 414 MFish recognise that eel fishery interests in some areas may wish to voluntarily adopt maximum size limits or similar measures to facilitate spawning escapement. Such initiatives should be discussed with all other eel fishery interests in order that any such initiative is considered in the context of the overall picture of measures implemented to facilitate spawning escapement.

Biodiversity

- 415 Some submitters assert that biodiversity goals may not be improved with the implementation of a maximum size limit, as larger eels will eat smaller fish. MFish suggests this outcome is consistent with what would be expected if the population structure of the fishery is returned to a less modified state. MFish is also obliged to take into account the environmental principles (s 9) of the Act. People undertaking functions, duties or powers under the Act must take certain environmental obligations into account, including the principles that the long term viability of associated and dependent species, and the biological diversity of the aquatic environment, should be maintained. Nevertheless, MFish notes that there is limited scientific information available to articulate the contribution that large eels make to ecosystem functioning.

- 416 MFish considers that the reductions in exploitation rates that should eventuate as a result of recommended TACs will go some way towards maintaining biodiversity values.

Harvest of eels above barriers

- 417 MFish acknowledges that eels greater than any maximum legal size behind any manmade barrier to fish passage would not contribute to the objective of spawning escapement. However, MFish considers that the real issue here is addressing the provision for fish passage by the party concerned, rather than focusing on the potential yield lost from the fishery.

Prohibition on commercial fishing in particular catchments

Submissions

- 418 **Murray Reed** is concerned that closure of the Wanganui catchment to commercial fishers would have the adverse effect of shifting fishing effort to the Taranaki area. Mr Reed has commercially fished the Ohura and Ongarue Rivers, both tributaries of the Wanganui, for 28 years and notes that these rivers are predominantly occupied by shortfin and not longfin. Mr Reed suggests that if the aim of the closure is focused on improving longfin escapement, then the closure should be limited to the Wanganui main stem beyond the tidal zone to Taumarunui (which supports a predominantly longfin population – over 80% of total catch), and the upper Wanganui main stem and eastern tributaries which support almost exclusively longfin. This would allow continuation of commercial fishing in the tidal zone of approximately 30 kilometres (longfin and shortfin in equal proportion), and the western tributaries including the Tangarakau, Ohura and Ongarue Rivers that support predominantly shortfin populations.
- 419 Mr Reed considers that implementation of this alternative option will have the support of the commercial sector, while reducing the risk that fishing effort will be constricted to the remaining parts of the QMA. Mr Reed believes that it is reasonable to maintain access to areas where commercial fishers have fished for many years, and observes that the alternative option will not only assist with longfin spawning escapement but will also address issues about improving Maori customary catch.
- 420 **Allan Thompson**, a commercial fisher within the QMA 23 area, notes that there are large areas of waterway closed to commercial fishing (eg, National Parks) or inaccessible or unviable in the Taranaki area. Given this, Mr Thompson considers the proposal to close the entire Wanganui catchment as unacceptable. Mr Thompson notes that implementation of this measure could give rise to unsustainable pressure on the rest of the QMA. As an alternative, Mr Thompson supports the closure of the Wanganui main stem above the tidal influence as it is a predominantly longfin fishery, excluding the western tributaries (Tangarakau, Ohura and the Ongarue Rivers) which support predominantly a shortfin population.
- 421 **Grant Williams** submits that Taranaki fishers understand that the complete or partial closure of certain catchments will ultimately help ensure fishery sustainability. He notes that the local industry relies heavily on spawning adults residing in waterways either closed to fishing on a legal basis (eg, National Parks), or as is the case to a large extent in Taranaki, areas that are inaccessible or unviable. The industry has also been

proactive for a number of years in successfully facilitating migratory eel passage. Mr Williams notes that although monitoring of national elver recruitment over the past eight years has not shown a decline in numbers or any significant variation in the ratio of shortfin to longfin, it would still be prudent to legally protect certain areas presently unexploited, or under-exploited. Available information does not confirm that recruitment is sufficient or that the species does not need some degree of protection.

- 422 Mr Williams considers it useful to gain a perspective of the extent of freshwater habitat within QMA 23 that is already 'reserved'. He notes that a recent Taranaki Regional Council Land Management report suggests there is ~8 500 kilometres of streams and rivers on the Taranaki ring plain alone. Extrapolating this to the whole of QMA 23, he conservatively estimates that there is ~40 000 kilometres of streams and rivers within the QMA. Mr Williams contends that following QMS introduction, it is conceivable that eight fishers could fish up to 1 000 kilometres of water each per annum, leaving 32 000 kilometres of waterways unexploited. He further notes that fishers will concentrate their efforts on the most productive waters given the costs of fishing, and will be less likely to disturb other areas, consisting of many small rivers and streams that are preferred longfin habitat.
- 423 Mr Williams notes that the Wanganui River and its tributaries form by far the most extensive eel habitat in QMA 23. It has four distinct areas consisting of (a) the tidal zone (30 kilometres), (b) the Wanganui main stem to Taumarunui, (c) the eastern tributaries of the Wanganui River to Taumarunui and the entire upper Wanganui catchment, and (d) the western tributaries including Tangarakau, Ohura and Ongarue Rivers. The tidal zone is a very productive fishery for both shortfin and longfin and has supported a rotational harvest fishery for over 35 years. The main stem of the Wanganui to Taumarunui supports a predominantly (~80%) longfin population. This area has been subject to very low fishing pressure and has extensive habitat for longfin, although some local depletion has occurred near river access points. The eastern tributaries of the Wanganui River to Taumarunui and the entire upper Wanganui support almost exclusive longfin populations, much of which is virgin unexploited stock. The stock is extensive, dominated by longfin females and would form probably the largest single adult eel stock on the North Island west coast. The western tributaries are characterised by predominantly shortfin populations that have been the subject of rotational harvest for over 35 years. These tributaries provide more than 30% of the shortfin commercial removals for the QMA.
- 424 Mr Williams believes that closure of the areas (b) and (c) would best provide for longfin spawning escapement. He further observes that it seems reasonable to maintain commercial access to areas (a) and (d) given the extensive use of those areas to commercially fish shortfin over a long period of time. It would also help spread commercial fishing effort more evenly across the QMA. He notes that the prospect of hydro development remains low and adult longfin populations have unimpeded access to the sea. In addition, partial closure of the catchment as proposed will address to some extent customary take by Maori within or adjacent to the proposed closure to commercial fishers.
- 425 Mr Williams notes that Taranaki commercial fishers also consider the entire or partial closure of the Waitotara and Rangitikei Rivers as a mitigating option. The upper catchments of both these waterways provide excellent longfin habitat and stocks due to limited access.

- 426 **Te Kawanga o Kahungunu (TKoK)** considers that elvers are like salmon and ‘return to the river they came from’. TKoK suggests that the fishing area between the Waihua and Moeangiagi Rivers (south of Wairoa) should be made non-commercial for eel fishing. This includes the main rivers of the Waihua, Mohaka, Waikare and Moeangiagi. The Moeangiagi River is recognised as a tapu river containing ‘rare eel specimens’. TKoK suggests that any eel quota within this stock area should be relinquished such that all commercial activity, including Maori, would have no claim to the area in the future.
- 427 The **Department of Conservation (DoC)** generally supports the concept of prohibiting eel fishing in selected catchments in view of the scientific evidence (Hoyle and Jellyman 2002) that closed areas are critical for the recruitment of eels. Area closures are an appropriate way for MFish to rectify the declining state of the fishery (by providing for spawning escapement), and ensure that eel populations are maintained at a level appropriate to fulfil their role in aquatic communities. DoC observes that where such waters are also within protected areas, the establishment of appropriate reserve classifications may be a complementary way of implementing closures.
- 428 DoC is disappointed that MFish has only proposed three catchments for closure from commercial fishing given uncertainty about factors affecting eel recruitment and spawning processes and other uses of a catchment. As a minimum, the equivalent of at least one complete freshwater system within each QMA should be closed to all eel harvest immediately. DoC believes that this would encourage greater husbandry and local management of the eel fishery by stakeholders.
- 429 DoC is concerned to note that the proposed areas have been chosen for closure to minimise the impact on the existing fishery. DoC considers it more appropriate for MFish to select catchments on the basis of the eel stocks that they support and their ability to sustain eel stocks in future. Areas that contain predominantly longfin eels (particularly females) with high growth rates are particularly appropriate for closure, and DoC suggests that the currently proposed areas are further assessed in this regard.
- 430 DoC also notes that there is considerable potential for MFish to restrict fishing in places adjacent to protected areas that are already inaccessible for commercial fishing (eg, DoC administered reserves). DoC wishes to see additional areas closed in future once jointly funded research by MFish and DoC on the identification of areas with the greatest potential for spawning escapement is available. DoC also observes that the effectiveness of any closures will rely on MFish communicating with other management agencies to ensure that their management activities (eg, land use, water quality) are complementary. There will also be a need for sufficient enforcement activity to ensure that unlawful harvest does not occur.
- 431 The **Bay of Plenty Conservation Board** favours the establishment of non-fishing catchments to further protect large longfin females from the fishery. However, the Board recommends that new surveys be conducted to better quantify the actual population size and sex and age structures present in the Motu, Mohaka and Wanganui catchments. The Board notes that this may be undertaken after October 2004, and suggests as an option the replacement of these catchments with others if they are found to be unsuitable.

- 432 **The Trustees of the Ngati Rahiri hapu of Taranaki** submit that the main rivers (ie, Waitara River) within their rohe are essential for allowing the escapement of adult eels. The Trustees note that the Waitara River is one of those rivers. The Trustees also list the Onaera, Waiau, Parahaki, Mangahewa, Epiha, Motunui, Waipapa and other unnamed tributaries within the rohe. The Trustees also observe that the Ongairo, Waiau and the Waitara rivers also allow lamprey and whitebait to migrate and spawn and these resources are also taonga and a source of food for customary purposes within the rohe.
- 433 **Te Atiawa Iwi Authority Fisheries Subcommittee (Taranaki)** notes that the Te Atiawa rohe extends from Te Rau o te Huia in the north, across to Midhurst (Stratford) in the west, to the Herekawe Stream bordering the southern boundary of New Plymouth and north to Te Rau o te Huia. The Subcommittee considers that the main rivers within this area, namely Waitara, Waiongona, and Waiwakaiho, are essential for allowing the escapement of adult eels, together with the Waiau, Parahaki, Mangahewa, Te Henui, Kurapeti, Mangaoraka, Maketawa, Ngatoro, Mangarewa, Mangahina, Puketotora, Mangapotoa, Waitara Iti and Manga-o-naia streams.
- 434 **Te Ati Awa / Taranaki Whanui o Poneke (Poneke)** notes that they expect a prohibition on commercial fishing to be applied to the entire Orongorongo Valley as this area is an indigenous forest within the Rimutaka State Forest Park, and includes an untouched pristine wetland at its headwaters 500 metres above sea level. Similarly, Poneke expect a prohibition on commercial fishing in the entire Pakuratahi valley as it is entirely covered in indigenous forest, and the main headwater of the Hutt River as it is a water supply catchment.
- 435 **Eel Enhancement Co. Ltd (EECo)** supports the closure proposals as they relate to the Motu and Mohaka catchments for both eel species. However, EECo rejects the proposal as it relates to the entire Wanganui catchment. EECo considers that closure would displace a sizeable amount of commercial catch to the rest of the QMA and would lower escapement from the area overall. EECo submits that the submission of Grant Williams proposes an excellent package to address and resolve industry concerns for the Wanganui catchment. EECo would accept the closure of the Wanganui River's main stem, from above the tidal reaches to its source for the purpose of assisting longfin escapement. Further, EECo would possibly accept closure of the adjacent Waitotora River if required.
- 436 Another element of the company's concern relates to the potential loss of harvest opportunities on private farmland that includes ponds and dams. These waterways are considered a significant source of fishable area and opportunity for enhancement. EECo also notes that the proposed restriction may also have the effect that non-commercial fishers may take greater amounts of eels from these reserved areas.
- 437 EECo notes that proposals to close further areas should only be made in areas where both upstream and downstream fish passage is not compromised. Similarly, any future proposals should recognise the large amount of waterways that are presently only lightly fished (eg, lower North Island), and the effect of management under the QMS in terms of reduced fishing activity in distant areas likely to be the habitat for longfin eels.
- 438 **Hinaki Eels Ltd (Hinaki)** agrees that area closures for the purpose of facilitating escapement are a good way to ensure each QMA does its share of providing for

sustainability. Hinaki considers that a minimum closure area of 10% is sufficient in the meantime, but closures of a catchment should not include lakes and dams on agricultural land. Hinaki advises that use of such waters is a key feature of the management regime proposed by its draft fisheries plan. Hinaki believes that it is not necessary to provide for any closures by regulation, as the plan can operate to secure closures in a manner that is more effective and flexible. Hinaki suggests that any regulations imposed by MFish to close a catchment must come with a commitment from MFish to revoke or modify those regulations if necessary in order to allow a fisheries plan to operate unimpeded.

- 439 The **Treaty of Waitangi Fisheries Commission (TOKM)** agrees with the need to provide closures for the purpose of providing for spawning escapement. TOKM would like to have seen a more structured selection criteria and consultation process established prior to the identification of the currently proposed rivers and lakes. TOKM also notes the strong objection from Wanganui iwi to the Crown making decisions on the Wanganui River given their current Treaty Settlement negotiations. TOKM observes that the objection is in the context of the overall objection by Wanganui iwi to Crown interference with the river and is not an isolated fisheries issue. TOKM suggests that the areas already identified may possibly need to be reviewed and changed. The current selection will provide an initial basis to ensure spawning escapement, and the current and future alternative proposals will need to be assessed to ensure that individually and collectively they can provide sensible progress towards the objective.
- 440 TOKM advises that NIWA have indicated that simple surveys can assess the sex ratio present in any significant waterbody. TOKM considers that such surveys should be undertaken progressively in water bodies proposed for closure, as they may not substantially assist spawning escapement if it is found that the stock is predominantly male. TOKM notes that an overrepresentation of males would indicate the need for harvest to occur, rather than a closure.
- 441 TOKM suggests that such closures need not be permanent, although would need to be for substantive periods to ensure satisfactory achievement of spawning escapement. TOKM notes that the restrictions could be relaxed if other measures demonstrate that sustainability is ensured. Alternatively, TOKM suggests that other areas could be closed in place of the initial closures if the other areas are considered to be more effective or satisfactory to the participants.
- 442 From discussions with NIWA staff, TOKM notes that there is much still to understand about the behaviour of eels, particularly as it relates to the home range that individual eel will occupy. TOKM believes the consequences of this behaviour are that closed areas, even at a site specific level, can make a contribution to increased biomass. TOKM suggests that, if there are significant areas closed to fishing, this will have a depressing effect on the take possible, and as a result, the TACC in these areas should be lowered to account for this. However, TOKM believes that areas closed to commercial fishing can contribute usefully to the overall mix of measures to be taken into account when arriving at an appropriate TACC.

MFish Discussion

General approach taken at this time

- 443 There is support in principle amongst eel fishery interests to close particular catchments to commercial fishing activity for the purpose of facilitating spawning escapement. MFish has chosen a few significantly sized catchments at this time. The extent of areas required can be reassessed in the future once further research information is available (after September 2004), and eel fishery interests have had the opportunity to discuss the relative merits of further sites and any complementary management measures. MFish has made it clear that the sites selected are a useful starting point from which to assess other options for facilitating spawning escapement.
- 444 Similarly, MFish notes that the catchments proposed were primarily selected for their 'wild' state, the eel populations they support (particularly longfin), and the contribution that they are likely to make for spawning escapement over the longer term. If these catchments also have limited impacts on existing commercial fishing operations, then MFish believes that there is likely to be a greater chance that the eel populations within the catchment are sufficiently aged to contribute to spawning escapement in the short term.
- 445 MFish acknowledges that a more structured approach to selecting sites proposed for closure to commercial fishing for the purpose of facilitating spawning escapement may be helpful. In this regard, MFish mentioned in the IPP a number of criteria that could be used to select further sites. One submitter makes a contribution to this discussion by suggesting that further sites chosen must not be compromised as a result of fish passage issues.
- 446 Some submitters consider that any closure need not be permanent where other measures are shown to ensure sufficient spawning escapement. MFish considers that a regulatory approach for some of these more obvious sites provides more certainty that any gains in spawning escapement can be achieved in the short term. Additional potential sites have not been proposed at this time as any site selected needs to have both the characteristics desired of a potential closure site in terms of species composition, population size structure, sex ratio and productivity etc, and a level of support by eel fishery interests.

Motu and Mohaka River proposals

- 447 Eel fishery interests support the prohibition of commercial fishing from the Motu and Mohaka catchments in their entirety. MFish agrees that updated research on the population size and age structures within the proposed catchments would be useful to confirm that these areas are still suitable sites to facilitate escapement of adult eels in spawning condition. However, MFish notes that there probably has been little change in the characteristics of the eel population since the mid 1980s. Habitat quality is probably about the same, and commercial fishing has been absent or less of a feature in the Motu and Mohaka catchments since that time.

Wanganui River proposal

- 448 Industry members do not support the closure of the entire Wanganui catchment as proposed in the IPP. Their opposition centres on their use of the shortfin fishery in parts of the catchment (either the western tributaries of the upper catchment or the lower tidal reaches of the main river), and the displacement of commercial eel fishing to other areas of the QMA that would result.
- 449 MFish welcomes the information provided by industry members in further elaborating on their activities within the catchment. In addition, industry member's observations of the general distribution of both shortfin and longfin within the catchment are of assistance in further considering the proposal. The alternative proposal mooted by the industry has merit in that longfin escapement would still be enhanced over a large area, while the impact on their fishing for principally shortfin in parts of the catchment would not be affected. MFish also acknowledge the point that there may be ponds and farm dams not connected with the main rivers or tributaries that will not contribute to spawning escapement.
- 450 MFish observes that tangata whenua in the Wanganui through to Taumarunui area are generally supportive of further restrictions on commercial eel fishing in the area, although this view is not necessarily based on an appreciation of the intent of the current proposal.
- 451 Accordingly, MFish agrees to modify the proposal to prohibit commercial fishing in the Wanganui River catchment to encompass the main stem of the Wanganui River to Taumarunui, and the upper Wanganui main stem and eastern tributaries, while excluding the western tributaries (eg, Tangarakau, Ohura, and Ongarue Rivers), the approximate 30 kilometres of tidal influence from the Wanganui River mouth, and any farm dam, pond, or other waterway not connected to a tributary flowing into the Wanganui River or its tributaries.

Other areas identified as potential candidates for closure

- 452 Industry members support identification of the Waitotara River (adjacent to the Wanganui catchment) as a potential candidate for closure, as suggested by MFish. Industry members within QMA 23 observe that this river, as well as the Rangitikei, has good habitat in its headwaters and supports good populations of longfin. MFish also understands that the headwaters of the Waitotara are included in a conservation area that would help protect some of the natural values associated with the catchment.
- 453 Hinaki considers closures should encompass a minimum of 10% of a QMA, provided that ponds and dams on agricultural land can still be fished. Such an approach may reduce the emphasis on the TAC. MFish notes that its selection of catchments in the IPP largely encompassed areas that are undeveloped, and in a wild state. MFish agrees that selection of further areas will need to consider the characteristics of the waterways within a site or catchment, so that areas that are unlikely to assist with spawning escapement are not unnecessarily included.
- 454 MFish agrees that the precise percentage of area required to assist with spawning escapement is partly a function of exploitation rate, as well as an assessment of the amount of area already providing refuge. However, it is also recognised that relatively low exploitation rates can still remove a significant proportion of large longfin females from a population over time. The exploitation rate permitted is

dependent on the level at which a TAC is set, and how this might be adjusted to achieve the management objective established for the fishery.

- 455 MFish is expecting some research findings later this year about the adequacy of the existing areas that are subject to some form of protection from fishing. Preliminary findings suggest that further areas may need to be set aside. The amount of longfin habitat that is protected (within reserves) on a national basis and where eels have unimpeded access to the sea for spawning purposes appears to be around 3% of the total available habitat. A further 7% is in areas closed to fishing, but migrant eels may be fished downstream. A further 18% of habitat is found in small order streams that are lightly fished. Overall about 29% of longfin habitat in rivers, streams and lakes is closed to fishing or lightly fished. For the North Island, 23% of longfin habitat is in closed or lightly fished areas, compared to 34% in the South Island. Areas closed to fishing tend to be at higher altitude and in less productive waters. The most productive waters are lowland lakes, streams and rivers of low gradient. Few reserves occur in these areas and they have been subject to intensive fishing activity.
- 456 MFish welcomes the suggestions about two particular areas in the Wellington region. Poneke articulates the special characteristics of the Orongorongo and Pakuratahi valleys, enabling these areas to be further evaluated in any future assessment.
- 457 MFish also welcomes observations of what are considered important rivers to Taranaki tribal groupings. Eel fishery interests are able to further explore the particular characteristics of the rivers identified in considering whether there is a need to apply specific fisheries management options. A large number of rivers have been identified, but the reasons for the selection of each of these rivers needs to be better specified.
- 458 MFish notes that the current scientific understanding is that glass eels or elvers do not return to the river their parents inhabited. Accordingly, this argument would not form part of the selection criteria for particular sites where commercial fishing should be prohibited. Further, MFish notes that some sites identified may be of special customary importance (eg, Moeangiangi), yet may not necessarily contribute in a significant way to facilitating spawning escapement. MFish considers that the sites identified in the northern Hawke Bay (other than the Mohaka) should be discussed more generally before a determination is made on whether any regulatory response is required.

Other measures to improve escapement

Submissions

- 459 MFish did not specifically propose in the IPP other measures to improve escapement of eels in spawning condition, but submissions were received that identified other options as follows.
- 460 The **Wellington Conservation Board** suggests that eels should not be taken during the months when adults in breeding condition undertake their downstream migration, or alternatively a restriction on the numbers that may be harvested during this period, in the interests of the species sustainability.

- 461 **Eel Enhancement Co. Ltd (EECo)** propose that all fishers and processors who are shareholders of the company will no longer take, and if accidentally taken will release, all migrating longfin female eels, at all times. EECo proposes that this code of practice is to be implemented by voluntary adoption in the first instance. In addition, the code of practice will ask their fishers where reasonably possible to move such fish to below any hydro dam or such like obstructions to their downstream passage. EECo notes that the re-locating of such migrators and the necessary temporary possession of such fish will fit in well with a voluntary code of practice. The company's members have been initially informed verbally and agreed however written follow-up with all the company's shareholders and supporters as well as all other North Island permit holders is in progress.
- 462 **Te Atiawa Iwi Authority Fisheries Subcommittee (Taranaki)** notes that provision of facilities for assisting the safe passage of migrating elvers and adult eels in breeding condition, already in use in some North Island areas, is a positive sign of co-operation between water resource users and fishery interests.
- 463 The **Bay of Plenty Conservation Board** submits that many factors have impacted on eel population dynamics over the last century. While some of these may be positive for some lifestages of eel, and shortfin in particular, the massive loss of wetland habitat and effects of river channelisation on critical flood events associated with conversion of land to agriculture cannot be interpreted as having anything other than negative impacts on eel populations. This is also of particular concern where it results in problems for recruitment and escapement of longfin.
- 464 The Board believes that the problem of habitat degradation does not get adequate attention because they are truly cross-Ministry issues. The Board considers that the rehabilitation of longfin eel stocks cannot progress well without some further research into the expansion of unregulated activities impacting freshwater habitat for eel, and removal of barriers to eel movement within freshwater ecosystems. The Board recommends that MFish pursue collaborative investigations with other relevant agencies and power companies to identify and resolve problems of river regulation and feasibly counteract barriers to fish passage.

MFish Discussion

- 465 MFish welcomes the suggestion that the eel industry will look to adopt a code of practice that ensures that any eel caught in spawning condition is released. The industry will be undergoing some change in participants over the next year, but under the QMS framework the industry will have incentives to maintain its interest in the overall issue of providing for spawning escapement. The implementation of such a code of practice would seem to be particularly appropriate in the lower reaches of the Wanganui River. This would ensure that the closure to commercial fishing in the middle and upper reaches of the catchment to facilitate spawning escapement would not be compromised.
- 466 MFish agrees that the focus on avoiding habitat degradation needs to be improved. However, the statutory responsibilities under the Fisheries Act relate more to the impacts of fishing, and the impacts of other activities fall within the ambit of the RMA. Fishing interests are well placed to integrate the statutory requirements under a fisheries plan.

- 467 Eel fishery interests can assist in further emphasising the importance of the habitat degradation issue through on-going dialogue with Councils about measures implemented to sustain the fishery. Such discussions could avoid fisheries management measures under the Act being undermined as a result of decisions under the RMA. MFish also notes that it has recently commissioned a desk-top study that looks to estimate the extent of mortality on the eel resource caused by non-fishing activities, consistent with that general direction.

Revocation of requirement to hold fishing permit expressly authorising taking or possession of eels

Submissions

- 468 **Eel Enhancement Co. Ltd (EECo)** supports the proposal to revoke the requirement to hold a fishing permit expressly authorising the taking or possession of eels as this measure will be redundant once eels stocks are introduced into the QMS.
- 469 **Hinaki Eels Ltd (Hinaki)** supports this recommendation as consistent with the reduced significance attached to fishing permits as a tool for managing commercial catch after introduction into the QMS. However, Hinaki notes that there may be situations where it is appropriate for MFish to impose conditions on permits to ensure consistency with provision of a proposed fisheries plan, so as to support the primary means of enforcement of the plan through civil contracts.

MFish Discussion

- 470 MFish notes the support for the removal of this regulatory provision. The expectation of a fisheries plan is that the proponents would implement required measures rather than rely on a statutory permitting process.

Revocation of requirement to use not less than 12 mm minimum net mesh size when taking eels as a commercial or non-commercial fisher

Submissions

- 471 The **Department of Conservation (DoC)** appreciates the reasons for revoking the requirement to use nets with a mesh size of not less than 12 mm, but has concerns about the ability of small eels and other bycatch species to escape from nets with smaller mesh. To maximise the chances of these fish escaping, DoC suggests that the minimum net mesh minima should be replaced with a requirement for fishers to incorporate additional escapement tubes per net.
- 472 **Tainui Waka Iwi (Raukawa, Maniapoto, Hauraki and Waikato)** supports the removal of the minimum net mesh size to reduce injury or mortality of eels captured in fyke nets.
- 473 **Eel Enhancement Co. Ltd (EECo)** supports the revocation of the minimum net mesh size as the company considers this measure redundant. However, EECo queries whether the non-commercial sector could increasingly put pressure or even cause wastage of the resource in future as they are not presently required to use escapement tubes in fyke nets. EECo seeks some commonality between commercial and non-commercial gear regulation. Specifically, EECo suggests that the regulatory

provisions should be amended to require that non-commercial traps or fyke nets are fitted with escapement tubes.

474 **Hinaki Eels Ltd (Hinaki)** supports this recommendation.

MFish Discussion

475 MFish does not consider that the level of bycatch of small fish in fyke nets (or set nets) will noticeably increase if the minimum net mesh size requirement is removed. The industry are unlikely to source mesh for use in eel fishing operations beneath a minimum size of 6-8 mm. MFish notes that should bycatch of small fish become an issue there would be an incentive for the industry to include additional escapement tubes to avoid the need for manual sorting.

476 MFish notes that it may be appropriate to consider the inclusion of escapement tubes for non-commercial fishers in order that small eels can escape from their (fyke) nets. The initiative for the present regulatory proposal is mainly to do with the benefits that commercial fishers can obtain through less damage to their catch. There is not such a compelling argument for non-commercial interests at this time, nor was there much interest from non-commercial interests for change evident in submissions.

477 MFish also notes that non-commercial fishers do not have to comply with a minimum legal weight (cf. 220 grams for the commercial sector). There is a risk that removing the requirement to not use less than 12 mm minimum net mesh could encourage fishing activity for small eels, even though recreational fishers are limited to a maximum of six per day. Accordingly, MFish believes that it would be better to reconsider this proposal further in combination with a proposal to require the use of escapement tubes in particular types of nets (eg, fyke nets). Consequently, MFish does not propose to proceed with the current proposal at this time as it relates to the non-commercial sector.

Consequential amendments to the Fisheries (Reporting) Regulations 2001

Submissions

478 **Eel Enhancement Co. Ltd (EECo)** supports amendments to the Fisheries (Reporting) Regulations 2001 to outline the new codes to be used by commercial fishers when completing their statutory catch returns once North Island eel stocks become subject to the QMS.

479 **Hinaki Eels Ltd (Hinaki)** supports this recommendation. Hinaki notes the desirability for Hinaki to have access to records for cross-checking against their own records (provided the fishers involved agree).

MFish Discussion

480 Commercial fishers who submit returns may access their commercial catch records, and therefore eel fishery interests can undertake a cross-checking process. MFish notes that the submitter's observation on this point may be linked to concerns about data quality issues in the QMA 22 area, and that some limited cross-checking has been undertaken by eel processors in the southern North Island in preparing their submissions on the calculation of the TACs.

Sixth Schedule

Submissions

- 481 The **Department of Conservation (DoC)** is concerned that the provision to return live eels may provide an incentive for commercial fishers to hold their catch for a longer period and return the smaller eels that they secure on the basis that larger eels will obtain a better price per kilogram. DoC requests that MFish monitor the size and number of eels being returned under this provision, and review whether it is appropriate for eels to remain on the Sixth Schedule.
- 482 **Eel Enhancement Co. Ltd (EECo)** submits that it does not support the existing requirement for eel stocks managed in the QMS and taken in a dead state to be landed. EECo notes that loading dead eels in a processor's truck that holds live eels will greatly reduce the value of the whole truckload. EECo suggests that 'landing' dead eels at the truck, then discarding them, does not fit at all with the practical reality in the fishery. However, the company does support the requirement for commercial fishers to report all eel deaths that they incur and count them against Annual Catch Entitlement (ACE). EECo notes that the option to discard, but report, catch is presently being considered for the spiny dogfish fishery. The company seeks an amendment to the Sixth Schedule to the Act to allow the return of eels taken in a dead state.
- 483 **Hinaki Eels Ltd (Hinaki)** notes that it is the usual practice to return dead eels to the water on capture on the rare occasions when it occurs. Hinaki notes that there are some cultural objections to this practice, as well as the suggestion that dead eels are counted against quota. Hinaki suggests that the dead eels caught should be disposed of on land, not stored or transported with live eels (as it is a health hazard) and recorded by fishers, but not counted against quota.
- 484 The **Treaty of Waitangi Fisheries Commission (TOKM)** agree that there needs to be an accurate reporting of dead eels by fishers as part of their reporting requirements. TOKM query whether the mechanisms proposed in the IPP may be too restrictive, noting that EECo have suggested alternative means for achieving improved reporting consistent with their aspirations to improve the fishery overall.

MFish Discussion

- 485 Eels throughout New Zealand were included on the Sixth Schedule to the Act in 2000 when the South Island eel fishery was introduced into the QMS. No concerns were raised by the eel industry at that time about the retention of dead eels, although the North Island eel industry may have assumed that there were no issues of consequence for them through that process. MFish notes that the present specification allowing the return of live eels to the water, but not dead eels, has been operating since that time. Further, eel industry representatives in the South Island have not raised the retention of dead eels as an issue requiring further debate as it applies to southern waters since that time.
- 486 The counting of dead eel catch against ACE provides an incentive for the adoption of responsible fishing practices, in that commercial fishers appreciate that the capture of eels in a dead state is an economic waste of their ACE holding. In general, MFish also agrees with eel industry representatives that the capture of eels in a dead state is

generally a rare event. MFish acknowledges EECo's support of the principle that dead eels should be counted against ACE held.

- 487 MFish does not expect eel industry members to mix dead eels in with the catch of live eels, perhaps already in an eel transporter. However, MFish believes that the industry is able to still land dead eels to a licenced fish receiver in a separate bag for subsequent disposal. That may include the option of land disposal. Consequently, MFish considers that the North Island eel industry need to experiment with alternative options under the current legislative arrangements before MFish would consider any proposal to change the specifications of the Sixth Schedule as it relates to eels.
- 488 More generally, MFish observes that the reporting framework underpins the management of stocks within a QMS environment. The current practice of the fishing industry in many fisheries has not been to report fish returned under the Sixth Schedule. Typically, fish can be returned in accordance with the Sixth Schedule where they are taken in either an otherwise illegal state (eg, a rock lobster carrying external eggs), closed season (eg, scallops), or can be returned alive (eg, eels). It is the MFish view that dead eels should be reported and reconciled with ACE. MFish needs to investigate the mechanisms presently in place to determine whether this is happening currently for eel stocks already subject to the QMS before considering any alteration to the specifications for eel stocks in the Sixth Schedule.

Deemed Values

Submissions

- 489 **Eel Enhancement Co. Ltd (EECo)** supports the proposed deemed value of \$8/kilogram as in the case of this fishery any form of accidental catching is to be discouraged and all fish landed should be balanced with ACE.
- 490 **Hinaki Eels Ltd (Hinaki)** strongly supports retention of the deemed value at the current level of \$8 per kilogram. In addition, Hinaki believe that any payments made to the Crown for fishing undertaken without ACE should be returned to the quota owners, as it is, in effect, a reduction in the value of the fishery.
- 491 The **Treaty of Waitangi Fisheries Commission (TOKM)** agrees that a deemed value penalty would provide sufficient disincentive against leaving nets unattended for too long. An alternative would be to specify a maximum net soak time.

MFish Discussion

- 492 MFish recommends that a deemed value of \$8 per kilogram be implemented. MFish notes that a maximum net soak time could be adopted as a voluntary code of practice if considered practical.
- 493 MFish notes that it recommends the implementation of differential annual deemed values applicable to different levels of catch in excess of ACE. MFish also recommends that an over-fishing threshold be applied to these stocks. A commercial fisher's permit can be conditioned to stop him from fishing in the area of that stock where his catch has exceeded his holdings of ACE and the over-fishing threshold established for the stock. Over-fishing thresholds for North Island eel stocks should be aligned with eel stocks in the South Island and Chatham Islands. These are set at

5% of a fisher's available ACE with a tolerance level of 25 kgs for fishers with a small (or no) ACE ownership.

- 494 MFish notes that it is current government policy for deemed values payments to be made to the consolidated fund, rather than returned to quota owners. Consideration of this issue is being reviewed at a generic level by MFish and industry organisations.

Other issues - Quota Management Areas

Submissions

- 495 The **Department of Conservation (DoC)** has previously indicated its preference for a greater number of QMAs to be established in order to facilitate better localised monitoring and management of eel stocks. DoC is concerned about the potential for serial depletion and wishes to ensure that MFish has some measure of the fishing pressure that is being applied at a finer scale than the proposed QMAs. DoC proposes that the QMAs be subdivided into smaller management subunits for reporting, monitoring and management purposes.

MFish Discussion

- 496 MFish notes that a greater number of QMAs would add further cost and inflexibility for commercial fishers without necessarily facilitating localised management. MFish observes that statistical area reporting is already undertaken on a smaller scale than the QMA. Reporting systems have been upgraded for 1 October 2004 such that even finer scale sub-areas can be defined in future. This will allow for the enhanced monitoring of the fishery sought by several eel fishing interests.

Other issues – aquaculture and enhancement

Submissions

- 497 The **trustees of the Ngati Rahiri hapu of Taranaki** observe that there would be huge potential for aquaculture for eel species. The Trustees need the ability and resources to be involved right from the outset.
- 498 **Tainui Waka Iwi (Raukawa, Maniapoto, Hauraki and Waikato)** supports a proposed objective of the Tainui Tuna Working Group to develop a framework to interrelate wild fishery interests with aquaculturists to provide certainty over access to eels for aquaculture purposes.
- 499 **Eel Enhancement Co. Ltd (EECo)** is open to sustainable access to small eels for farming or enhancement (but not for export), provided it is via the QMS and otherwise as per the Act.
- 500 **Te Atiawa Iwi Authority Fisheries Subcommittee** sees huge potential in the aquaculture industry and notes its need to be involved right from the outset.
- 501 The hapu of **Ngati Kikopiri** notes that they may wish to look at the possibility of using Lake Papaitonga (situated south of Levin) as a source of smaller eels for enhancement of other waterways, or as a site where eels sourced from other waterways can be held for a period of time before being sold to a market. The hapu

states their desire for this type of activity to be available to it after eels have been introduced into the QMS.

- 502 The **Treaty of Waitangi Fisheries Commission (TOKM)** notes that enhancement and restoration improvements will only be possible if fishers are able to access ‘recruitment’ for these purposes without undue delay. TOKM agrees that limits should be placed on what ‘recruitment’ is taken and where it is transferred. TOKM recommends that an interim access arrangement is put in place to allow for the transfer of glass and juvenile eels to allow enhancement and reseeding initiatives to assist the wild stock, particularly where juvenile eels are stranded downstream of structures such as dams. In the future, TOKM submits that there will be a need to develop a more rational approach to gaining access to glass and juvenile eels for intensive aquaculture purposes, and TOKM looks forward to participating in that policy development.

MFish Discussion

- 503 MFish agrees that the potential for eel aquaculture could be significant depending on market conditions, the resolution of technical issues, and consideration of a means to access eels beneath the minimum legal size for commercial interests (eg, trade-off with ACE held for a particular eel stock). MFish also sees the use of aquaculture facilities as a means to substitute effort in the wild fishery, and minimise conflict between different fishery interests.
- 504 MFish notes that the use of natural waters as ‘holding areas’ or areas where growth can be markedly improved from source sites, is a form of ‘ranching’. This type of operation, where legal sized but small eels are shifted to more suitable areas, will be possible within a QMS environment.
- 505 Since 1992 a statutory pathway has been in place to consider the collection of juvenile eels for the purpose of enhancement and reseeding initiatives. This has been most successfully used at dam sites in the Waikato, King Country, Bay of Plenty, Taranaki and at Lake Waikaremoana. In addition, MFish has previously noted a preference for eel fishery interests to develop options for the use of the eel resource within a particular area (eg, a QMA), having considered the needs of all interests. These arrangements would most appropriately be detailed in a fisheries plan.

Other issues – general policy on the Conservation Act 1987

Submissions

- 506 The **Wellington Conservation Board** suggests that MFish should take into account the Policy 4.3.5 of DoC’s draft General Policy on the Conservation Act. This policy identifies situations under which established traditions of commercial fishing for eels or whitebait should be allowed to continue when land is newly acquired for public reserves provided that fishing does not have an adverse effect on other species or the values of tangata whenua. Similarly, customary fishing for indigenous species within the waters of public reserves may also occur where it does not have a long term adverse effect on the population structure of indigenous species.

MFish Discussion

507 Consideration of these values is already a feature of the purpose and principles of the Fisheries Act (ie, ss 5 & 9), and is addressed in this advice paper.

Other issues – Resource Management Act 1991

Submissions

508 **Ngati Raukawa ki te Tonga** recommend that MFish work in conjunction with all regional and district councils to stop habitat destruction, and recommend that the Act and the RMA be brought more into alignment, so that they work in support of each other, not against.

509 The **Wellington Conservation Board** states that there needs to be a combined effort from local government bodies, several government departments and regional councils with responsibilities towards freshwater resources and the eel fishery as the QMS will not solve everything. Upstream water quality and quantity has been a concern in many areas as well as fish passage past weirs and culverts. These need to be taken into account in the overall objective of sustainability.

510 The **Trustees of the Ngati Rahiri hapu of Taranaki** also note that there is presently no consultation between the iwi of Te Atiawa and the Taranaki Regional Council to ensure the sustainability of the eel resource. The Trustees consider that pollution of waterways by industrial and agricultural uses, and developments associated with the oil, gas and quarrying activities have contributed to the creation of barriers that hinder the safe passage of migrating elvers, adult eels, whitebait and lamprey.

511 **Tainui Waka Iwi (Raukawa, Maniapoto, Hauraki and Waikato)** support the proposed objective and strategies of the Tainui Tuna Working Group that seek to maintain a sustainable eel fishery by preventing actions that cause deterioration/loss of eel habitat, and giving support to restorative programmes. Much of the focus of these objectives relate to the carrying out of functions under the jurisdiction of the RMA, and the responsibilities of Councils in carrying out functions within that legislation.

512 **The Treaty of Waitangi Fisheries Commission (TOKM)** suggests that MFish consider participation in a central and local government agencies programme of work directed at the eel fishery and including a reporting system (as a component of a whole of government approach) to better estimate non-fishing related mortality in co-operation with tangata whenua and commercial fishers and related industries.

MFish Discussion

513 There is no apparent conflict between the RMA and the Act in terms of responsibilities, or the alignment between the two pieces of legislation. Fisheries legislation manages the direct use of a fisheries resource for customary, recreational or commercial use, while the RMA manages the natural and physical resources of the environment. In combination the two legislative regimes work together to enable the sustainable use of the eel fishery.

514 There is general agreement amongst eel fishery interests that impacts on the state of the environment need to be better managed, so that use of the fishery and the catch

limits in place are not undermined. Where environmental changes lead to a reduced stock size, the level of take permitted may need to be reduced. MFish agrees with submitters that the profile of environmental management issues needs to be raised with all parties with an interest in managing the eel resource. Eel fishery interests may be in a better position to advocate improvements in this area once the focus of discussions has moved on from the current process of introducing catch limits, and any administrative and industry rationalisation is complete.

Other issues – Compliance

Submissions

- 515 **Bill Hohaia** of Marokopa (King Country) requests that a Fishery Officer should be given specific responsibility for looking after the eel resource within their area.

MFish Discussion

- 516 MFish opened a new office in Hamilton in March 2000, and it has recently increased the number of Fishery Officers based there. One of the fisheries of importance in the Waikato and King Country area is the eel fishery, and accordingly compliance resources in Hamilton are directed at this resource. Compliance support is also available from a number of other adjacent centres (ie, Auckland and New Plymouth).

Conclusion

Background

- 517 The North Island eel fishery is due to enter the QMS on 1 October 2004. This follows the introduction of the South Island eel fishery on 1 October 2000 and the Chatham Island eel fishery on 1 October 2003. Its introduction has been deferred in recent years to allow more time for eel fishery interests to appreciate that the QMS enables sustainable use through placement of a restriction on commercial catch, in comparison to the existing system where commercial eel catch in the North Island is unconstrained.
- 518 Four shortfin and four longfin stocks in the North Island were gazetted on 16 October 2003 for QMS introduction on 1 October 2004. An initial position paper setting out the MFish proposals for sustainability measures and other management controls applicable to North Island eel stocks (or nationwide for some proposals) was released on 13 February 2004 for consultative purposes. This paper sets out MFish's final advice on these matters, having considered the views of submissions received, and observations made through a series of 19 consultative hui and other meetings across the North Island.

Consultation

- 519 Discussions with eel fishery interests over bringing the eel fishery into the QMS have occurred since the mid 1980s. The fishing industry and several conservation groups have generally supported this course of action. During the current consultative round, MFish noted its availability to attend meetings or hui to discuss the IPP in its covering letter dated 13 February 2004. MFish convened or attended 19 hui or meetings during the consultative period.

520 Some eel fishery interests noted that they were not able to attend these hui or meetings, or have requested further consultation with MFish about the proposals, or management of the fishery in general. MFish expects to continue its dialogue on the management of the fishery, and to inform eel fishery interests about the use of the QMS to ensure sustainability, over the medium term. In addition, there are on-going opportunities for eel fishery interests to have input and participation in MFish processes that contribute to the management of the fishery. Importantly, the QMS framework provides an opportunity for stakeholders to initiate management discussions in the context of a fisheries plan.

Relationship with Treaty of Waitangi

521 Several submitters state that they continue to exercise rights to the eel fishery by virtue of Article 2 of the Treaty of Waitangi. Another with commercial interests queries whether the Crown has specifically exempted eels from its ownership or control in a particular land purchase agreement with Ngati Kahungunu of 1853. In addition, one submitter referred to the 1849 Rangitikei Turakina Transaction. The submitter considers that the Crown's agent provided an assurance to the ancestors of Ngati Apa for on-going eel fishing access across land sold. In response, MFish notes that the Settlement Act has clarified the nature and extent of fishing rights held by Maori in the modern context.

522 The Courts have held that it is no longer possible to support the proposition that customary fishing rights derive directly from Article 2 of the Treaty of Waitangi. Similarly, the Courts have confirmed that the Settlement Act contains a complete code which preserves and makes allowances for Maori commercial fishing interests, and that there is no basis upon which it can now be argued that Maori commercial fishing can legally be conducted except in accordance with the QMS provided under the Fisheries Act. Furthermore s 3 of the Settlement Act makes it clear that the intention of Parliament was that the Settlement Act should be interpreted in a manner that best furthers the agreements expressed in the Deed of Settlement.

Fisheries (Kaimoana Customary Fishing) Regulations 1998

523 The active exercise of customary fishing rights in the freshwater environ, in areas outside of South Island fisheries waters, is presently constrained to the collection of aquatic life for the purpose of hui and tangi. Aquatic life may only be taken for these limited customary purposes, consistent with what is prescribed by regulation 27 of the Fisheries (Amateur Fishing) Regulations 1986. This is because the Kaimoana Regulations do not presently extend to the freshwater environ, unlike the Fisheries (South Island Customary Fishing) Regulations 1999.

524 Several submitters consider that the inclusion of the North Island eel fishery into the QMS should be accompanied by an amendment to the Kaimoana Regulations, in order that desired customary activities can be fulfilled by tangata whenua. Some Northland hapu representatives consider that QMS introduction should be delayed until such time that the customary regulations are amended. Another is concerned that the customary regulations as they stand impair the traditional right to be able to harvest according to their customs and tikanga.

525 MFish notes that the intent of the Crown when developing the customary regulations in conjunction with Maori was to encompass all fisheries waters. However, some

Maori representatives wished to test the inclusion of freshwater fisheries resources in the Deed of Settlement and the Settlement Act. On 5 December 2000, the High Court confirmed the Crown's view that freshwater fisheries were explicitly included in the settlement legislation. Consequently, an amendment to regulation 3(2) of the Kaimoana Regulations is required before their scope can include the exercise of a broader range of customary fishing activities in fisheries waters outside of the South Island.

- 526 MFish notes that deferring QMS introduction would not safeguard the rangatiratanga of the customary fishery as suggested by some Northland hapu representatives, as this would leave the commercial fishery without a catch limit. There is still the opportunity for input and participation of Maori interests in the setting of sustainability measures and other management controls through the standard consultative obligations specified in s 12 of the Act, even though such interests may not be recognised as kaitiaki/tiaki through the Kaimoana Regulations.

Definition of customary and recreational catch

- 527 Some submissions are concerned that the harvest of eels, by Maori, for family subsistence purposes, is classed as recreational fishing rather than customary fishing. Some submitters believe that the word recreation implies fishing for fun, rather than a more inclusive activity. MFish notes that the classification is consistent with the current definition of customary fishing applicable to freshwater fisheries resources outside of the South Island. MFish observes that many ethnic groups undertake 'recreational fishing' for a range of species for the outcome of collecting food to eat.

Participation in the management of the eel fishery

- 528 The consultation process revealed a considerable degree of interest by eel fishery interests in participating in the management of the eel fishery, either in conjunction with other eel fishery interests and/or in a joint way with MFish. Some submitters felt that they had a better way of co-ordinating the sustainable management of the freshwater environment (other than just the fishery), or expressed the view that they should be given more ability to manage fisheries resources for the betterment of all iwi/hapu/whānau using their own customs and tikanga.
- 529 One submission suggested the development of a forum representing interests from the harvesting sector, the agencies responsible for habitat management, farmers, power companies, research providers etc. Industry submissions identified that they were sufficiently organised to participate in future initiatives, while one group had taken steps to commence development of a fisheries plan. One submission opposes the use of fisheries plans on the basis that it could override management mechanisms that would otherwise be available to tangata whenua via the customary fisheries regulations.
- 530 MFish observes that the introduction of the fishery into the QMS and the consequent improvement in the regime for managing commercial fishing in particular should enable eel fishery interests to extend their current focus away from the immediate needs of ensuring sustainable utilisation. Eel fishery interests will be able to identify and discuss the actions required over the medium term to ensure that any longer term strategies are achieved. This includes discussions with other fishery interests to ensure that strategies identified are reasonable and compatible whenever possible.

Management strategy

- 531 MFish proposed that the management strategy for the North Island eel fishery should be to improve the stock structure and abundance over the medium term, while bringing to a halt any decline in the fishery over the short term. This is intended to have the effect of ensuring the fishery is sustainably managed, improving its availability to non-commercial fishers, and improving the relationship with interdependent stocks. Most submitters did not comment directly on the management strategy, but did make comments consistent with it. Many indicated that sustainable use of the fishery was important, both in terms of the fishery, and the values associated with it, whether these were ecological, social, or economic. MFish clarified during the consultative phase that its perception of medium term was 10 years.
- 532 Several submitters associated the QMS with the goal of achieving sustainability, while one felt that prohibition of commercial fishing within their rohe would address any sustainability concerns. MFish believes that eel fishery interests could be better informed about the role of the QMS and other fisheries management tools used to ensure sustainable use. A general appreciation of these tools is likely to occur as the fishery improves. MFish noted in response to one submission that while desirable, it was not essential to know the whereabouts of the spawning grounds, nor was it appropriate to await an assessment of non-fishing related mortality, prior to including eel stocks into the QMS. Recommendations on a TAC inherently take into account what non-fishing impacts have been caused to the stock, as any standing stock is a reflection of a range of factors affecting its abundance.
- 533 MFish also notes that introduction of a regional licencing system suggested by one submitter to reduce illegal fishing is inconsistent with the intent of the QMS to move away from permitting type controls. In order to better facilitate outcomes aimed at monitoring the performance of the fishery at a local or district level, one submitter advocates for fine scale reporting. This would be possible with the new ESA maps produced by MFish.
- 534 Industry submissions support the setting of TACs using s 14 of the Act on the basis that the calculation of biomass is difficult or impossible to accomplish.

Calculation of Total Allowable Catches

General observations

Consideration of statutory planning documents, and commercial catch taken from reserve areas

- 535 MFish notes that s 11(2)(b) of the Act provides that the Minister shall have regard to any management strategy or plan under the Conservation Act that applies to the coastal marine area. This requirement does not extend to the freshwater environment. Nevertheless, MFish is not aware of anything within such documents that would materially impinge on the recommendations made for the sustainable use of the eel fishery across the environment in which it is found. MFish believes that any specific conservation values can still be recognised within broader management objectives that eel fishery interests discuss in the future.

- 536 Further, MFish does not consider the commercial catch of eels from reserve areas (mainly in the Waikato) since 1990-91 would have contributed a significant amount to the overall quantity taken for an entire stock. Hence it is deemed unnecessary for this catch to be estimated and excluded from calculations.

Data quality issues

- 537 MFish acknowledges that there are data quality issues in the commercial catch information, but considers these sufficiently resolved through the consultation process, and subsequent evaluations of the data. MFish considers that the commercial catch information used for the purpose of setting TACs, along with information for other sectors, is the best available information.

Estimation of non-commercial catch and other sources of fishing related mortality

- 538 MFish notes that its assessment of non-commercial catch was made using the same methodology as applied to many other fisheries being introduced into the QMS. To estimate non-commercial catch using a combination of demographic information on human populations within each stock and an assumed consumption rate per person may exaggerate the actual or expected use of the resource. MFish accepts that this kind of approach could be refined when assessing customary catch, based on the number of marae in the stock, and an assessment of their use of the eel resource for hui and tangi purposes. However, this information is not currently available.
- 539 MFish notes that knowledge of the scale of non-fishing related mortality is not required in order to make a recommendation on a TAC. The standing stock is an inherent reflection of such impacts as well as fishing related mortalities.

Application of qualitative reduction factor

- 540 In order to determine a recommended TAC, MFish has applied a qualitative reduction factor to its estimate of total annual recent removals from a stock (based on the 1990-91 to 2001-02 fishing years). The reduction factor varies depending on the status of the stock in light of the proposed management strategy. MFish does not consider that the scale of initiatives undertaken by eel fishery interests to improve the fishery to date is a better basis on which to derive a TAC. In considering the recommended TAC options, MFish noted that the industry did not support the implementation of a maximum size limit to facilitate spawning escapement, but preferred more direct constraint on the exploitation rate.
- 541 MFish notes that some submitters drew support for greater reductions in TACs on the basis of average exploitation rates recently published in the scientific literature. These average exploitation rates incorrectly assumed that the entire stock was fished when parts of the stock cannot be fished. Nevertheless, MFish notes that even relatively light or modest exploitation rates have the potential to remove a high proportion of large female longfin from a population over time. MFish is to receive further research quantifying the areas that are currently unavailable to fishing, or lightly fished, and the implications for ensuring spawning escapement, by September 2004.

General perceptions of action required

- 542 MFish makes the following observations in forming an overall appraisal of what TACs should be recommended:
- a) The industry experienced a slump in the international market mostly in the latter part of the 2002 and 2003 calendar year. Lower catch was not related to fewer fish in the water;
 - b) Utilisation for all sectors while ensuring sustainability can be achieved at a range of catch limits, while rebuilding the fishery in light of indicators suggesting negative trends in CPUE since 1990-91;
 - c) A measured response needs to be taken to address the risk that longfin stocks are in gradual decline, while noting that there is no serious threat to the resource at present;
 - d) A current research project has provided some preliminary indications that the biomass of migrant longfin females on a national basis is about 30-40% of the total production from present habitats, although this does not take into account habitat reductions caused by hydroelectric development and land drainage, and the high vulnerability of longfin eels to commercial fishing in lowland lakes; and
 - e) Given the longevity of eels, a steady history of commercial catch is not necessarily a guarantee that the fishery will continue to produce at that level.

Re-calculation of total removals and Total Allowable Catches

Evaluation of information

- 543 Evaluation of the catch information forming the basis of TACs underwent considerable scrutiny following the release of the IPP:
- a) Eel fishery interests attending consultative hui or meetings were distributed revised commercial catch information following the inclusion of corrections arising from the IPP (ie, QMA 23: inclusion of ESA 8 data; and QMA 22: inclusion of revised figures for two years where mathematical errors were made by a research provider);
 - b) Further evaluation of the commercial catch data (including re-association of incorrectly reported catch to the QMA 22 stocks) resulted in a letter dated 14 May 2004 being forwarded to industry members, DoC and TOKM that provided updated calculations of total annual recent removals, TACs, and allowances. Only one submission was received that commented on the SFE 20 stock TAC and TACC; and
 - c) All information used for TAC setting was reassessed in preparing the FAP.
- 544 The recommended TACs are set out in Table 16, and discussed by QMA as follows.

QMA 20 – Northland/Auckland

- 545 Having updated commercial catch information, the estimated annual recent removals for SFE 20 is reduced from 248 tonnes to 222 tonnes, and the equivalent removals from LFE 20 is reduced from 86 tonnes to 83.6 tonnes. Application of a 5% qualitative reduction factor for the SFE 20 stock is deemed sufficient on introduction into the QMS, as this stock appears to be the only stock where CPUE has remained relatively stable. The recommended TAC for the SFE 20 stock is 211 tonnes.
- 546 Instead of a 15% qualitative reduction factor for LFE 20, MFish considers that a 20% qualitative reduction factor should be applied given the overall concern about the need to rebuild the longfin resource, and recognition that the inter-related SFE 20 stock has been considerably reduced following the re-association of commercial catch data with SFE 22. Application of a (slightly less than) 20% qualitative reduction factor results in a TAC for the LFE 20 stock of 67 tonnes.

QMA 21 – Waikato/Poverty Bay

- 547 Having updated commercial catch information, the estimated annual recent removals for SFE 21 is increased from 236 tonnes to 262.9 tonnes, and the equivalent removals from LFE 21 is increased from 141.5 tonnes to 141.9 tonnes. This QMA has been subject to intensive commercial fishing pressure for almost 40 years. Application of an increased qualitative reduction factor for LFE 21 (from 25 to 35%) will better recognise the current status of longfin within the stock area, the greater vulnerability of being fished in lowland lakes, and the more extensive and adverse changes in land management practises in QMA 21. The recommended TAC for the LFE 21 stock is 92 tonnes.
- 548 Application of a higher qualitative reduction factor for the SFE 21 stock (from 10 to 20%) recognises the inter-relationship of this stock with the LFE 21 stock, as well as observations from eel fishery interests that the abundance of eels is low in areas where shortfin have previously been more plentiful. The recommended TAC for the SFE 21 stock is 210 tonnes.

QMA 22 – Hawke Bay/Wellington

- 549 Having updated commercial catch information, the estimated annual recent removals for SFE 22 is increased from 118.7 tonnes to 168.8 tonnes, and the equivalent removals from LFE 21 is increased from 56.8 tonnes to 68.3 tonnes. MFish notes that an eel processor queried whether the MFish figures were underestimated in the IPP, and the review of commercial catch information undertaken thereafter resulted in a re-association of a reasonable tonnage of mainly shortfin catch to this QMA. MFish believes that the revised figures are the best available information for contributing to estimated total annual recent removals from the QMA 22 stocks at this time.
- 550 MFish notes that application of a qualitative reduction factor of 15% for SFE 22 will not give rise to a contribution to a real reduction in North Island shortfin catch in comparison to the 2000-01 and 2001-02 fishing years. Application of a 20% qualitative reduction factor gives rise to a relatively neutral position, as indicated by the consequent 0.5% increase in available commercial catch in comparison to the 2000-01 and 2001-02 fishing years. Application of the increased reduction factor for the SFE 22 stock is justified because of the marked decline in CPUE in comparison to

other shortfin stocks, in addition to observations from customary interests that their fishing activities are less than reasonable. The recommended TAC for the SFE 22 stock is 135 tonnes.

- 551 MFish has not adjusted the qualitative reduction factor applied to the LFE 22 stock even though there has been an increase in the estimated total annual recent removals. MFish considers that the recommended TAC of 54 tonnes should provide a reasonable basis from which the longfin stock can be improved. The improvement in the status of the LFE 22 stock is more likely to be a feature of how harvesting strategies are employed.

QMA 23 – Taranaki/Wanganui

- 552 Having updated commercial catch information, the estimated annual recent removals for SFE 23 is increased from 27.3 tonnes to 56.1 tonnes, and the equivalent removals from LFE 23 is increased from 58.4 tonnes to 93.9 tonnes. MFish notes that industry representatives report that there has been a reasonably significant shift in the species composition of the commercial eel catch over the last 15 years. In recognition of the reduction in the proportion of the commercial longfin catch, and in order to rebuild the longfin fishery more generally, MFish considers that an increase in the qualitative reduction factor from 15 to 30% for the LFE 23 stock is desirable to achieve a real reduction in catch in comparison to that taken in the 2000-01 and 2001-02 fishing years. The recommended TAC for the LFE 23 stock is 66 tonnes.

- 553 MFish recommends that the qualitative reduction factor for the SFE 23 stock remain the same at 10%, resulting in a recommended TAC of 50 tonnes.

Table 16: Estimated total annual recent removals and recommended TACs, TACCs, and allowances for North Island eel stocks (tonnes).

Stock	Estimated total annual recent removals⁸	Option	TAC	Customary allowance	Recreational allowance	Other sources of mortality	TACC
SFE 20	222	I	211	30	28	4	149
LFE 20	83.6		67	10	8	2	47
SFE 21	262.9		210	24	19	4	163
LFE 21	141.9		92	16	10	2	64
SFE 22	168.8		135	14	11	2	108
LFE 22	68.3		54	6	5	2	41
SFE 23	56.1		50	6	5	2	37
LFE 23	93.9		66	14	9	2	41

⁸ This estimate represents a summation of adjusted average commercial catch based on all of the 12 fishing years between 1990-91 and 2001-2002, plus estimates of non-commercial catch and other sources of fishing related mortality. It provides a reference for assessing the extent of catch reductions anticipated under the recommended TACs.

Customary catch allowance

- 554 MFish observes that the current regulatory definition of customary fishing applicable in the North Island freshwater environ only encompasses the collection of aquatic life for the purposes of hui and tangi. MFish has taken the approach of basing its recommended customary allowances on estimates of recent customary catch, rather than what might be considered customary catch needs. This is because of the uncertainties surrounding the development of an appropriate methodology to reasonably gauge the extent of customary needs in the context of the size of the resource. Some submitters indicate that the customary allowance proposed in the IPP would not meet their expectations.
- 555 MFish confirms that the customary allowances proposed in the IPP are the same as recommended in the FAP. The recommended allowances are set out in Table 16.

Recreational catch allowance

- 556 MFish notes that there is no substantive information contained in the submissions that materially alters the proposed allowances made in the IPP. However, the recommended allowances are adjusted to take into account corrected information giving rise to the estimated total annual recent removals, and thereafter any change to the percentage reduction required for both the recreational allowances and the TACCs to fit within the TACs. The recommended allowances are set out in Table 16.
- 557 MFish considers that current recreational catch is close to the proposed allowances. Accordingly, it is proposed to retain the daily limit of six eels per person per day.

Allowance for other sources of fishing-related mortality

- 558 MFish confirms that the allowances for other sources of fishing related mortality proposed in the IPP are the same as recommended in the FAP. The recommended allowances are set out in Table 16.

Total Allowable Commercial Catch

- 559 The recommended TACCs have been derived by applying the same proportional reduction to the (revised) estimate of average commercial catch for the period 1990-91 to 2001-02 (for all stocks), as used to determine the recommended recreational allowances. This is the same approach as used in the IPP.
- 560 One submitter suggests an alternative approach to TACC setting based on an assessment of whether eel fishery interests have taken active management steps to sustain a stock. However, eel fishery interests have not formalised and presented a widely understood or accepted strategy, or undertaken actions at a sufficient scale, which would warrant an increased TACC as suggested. MFish notes that the recommended TACCs, and inclusion within the QMS, provide sufficient incentive for eel fishery interests to collaborate on ways the fishery should be improved. In addition, providing higher TACCs is likely to be contrary to the management strategy guiding TAC recommendations.

- 561 MFish notes that the partial closure of the Wanganui catchment is not likely to significantly displace commercial fishing activity to other parts of QMA 23. Hence the TACCs in this QMA do not need to be proportionally reduced.
- 562 A comparison of the recommended TACCs with the average current commercial catch (2000-01 and 2001-02 fishing years) indicates that the North Island shortfin commercial fishery is being reduced by around 8.25%, and the North Island longfin commercial fishery by around 17.8%. MFish considers this is a reasonable starting point for QMS introduction from which the management strategy can be addressed.

Measures to recognise and provide for customary food gathering by Maori

- 563 Submitters support or do not oppose the prohibition of commercial fishing from the four discrete North Island areas identified by MFish. Tangata whenua representatives usefully identify that the Pencarrow lakes proposal would be enhanced if the closure extended to the relatively small tributaries flowing into the lakes. The top and bottom third of these tributaries are already within the East Harbour Regional Park. Inclusion of the tributaries is unlikely to have any impact on commercial fishers, as there is little commercial use of the area. MFish concludes that the proposal to prohibit commercial fishing as a measure to recognise and provide for customary food gathering by Maori should proceed.
- 564 A number of other areas were identified by submitters as requiring some recognition as places of importance for customary food gathering by Maori. However, improvements in the performance of the fishery in some of these areas might be more driven by stock-wide issues. Development of harvesting strategies by all eel fishing interests might also assist in recognising sites of particular importance to Maori for customary food gathering.
- 565 MFish has clarified that regulation 15 of the Fisheries (Central Area Commercial Fishing) Regulations 1986 has no on-going currency or effect on the exercise of commercial rights under the QMS. Regulation 15 provides that no commercial fisher can take eels from Lake Horowhenua or the Hokio Stream unless that person does so in accordance with fishing rights specified by s 18 of the Reserves and Other Lands Disposal Act 1956. Section 9 of the Settlement Act extinguished any commercial rights in existence, and replaced them with access to 20% of the commercial harvesting rights for any new stock introduced into the QMS. Consequently, MFish considers that regulation 15 will need to be revoked in the near future. Nevertheless, MFish is aware that representatives of Muaupoko and Ngati Raukawa ki te Tonga may exert some control over land access surrounding these waters.
- 566 MFish notes that fisheries legislation does not provide any recognition of exclusive eel fishing rights to particular whānau of Ngati Apa in the Pukepuke Lagoon (south of the Rangitikei River mouth).

Measures to facilitate spawning escapement of adult eels

Maximum size limit

- 567 There were mixed views on the merits of implementing a maximum size limit of 4 kilograms for areas beyond the South Island. Industry generally opposed the proposal, whereas Maori and most conservation groups supported it. MFish has considered submissions and taken advice from the Stock Assessment Working Group for the eel fishery. The conclusion is that the broader issue of adequate spawning escapement needs further evaluation before considering the implementation of a maximum size limit in the North Island and Chatham Islands. During the consultation phase, it was determined that a more direct approach to ensure adequate spawning escapement was to reduce the exploitation rate. MFish has taken this view into account in considering final advice on the setting of TACs. Similarly, after the receipt of further research in September 2004, MFish will be assessing the extent of areas where commercial fishing is prohibited with a view to ensuring that the overall area closed is adequate for spawning escapement.
- 568 MFish does not necessarily accept the industry view that the prevalence of large eels in a waterway would have significant negative implications for the industry. Cannibalism of smaller eels in a waterway may actually be positive because a higher density of smaller eels may induce sexually immature juveniles to become males. Neither does MFish necessarily accept that a greater number of larger eels will eat a lot of smaller fish, and thus reduce biodiversity. MFish notes that any increase in the proportion of large eels in the population would reflect a less modified state than is presently the case, and would allow a form of ecological equilibrium to be achieved. MFish accepts the industry view that large eels found in catchments that have barriers to migration (eg, a dam) would not necessarily contribute to spawning escapement without human intervention.
- 569 Some customary Maori representatives indicated a desire to maintain their ability to take large eels for customary fishing purposes, irrespective of any comparable controls applied to other sectors.

Prohibition on commercial fishing in particular catchments

- 570 There is general support amongst eel fishery interests to close identified catchments to commercial fishing activity for the purpose of facilitating spawning escapement. The catchments proposed for prohibition of commercial fishing activity were primarily selected for their 'wild' state, the eel populations they support (particularly longfin), and the contribution this is likely to make for spawning escapement. MFish intends to reassess the extent of areas required in the future once further information is available, and eel fishery interests have had the opportunity to discuss the relative merits of further sites.
- 571 Eel fishery interests support the prohibition of commercial fishing from the Motu and Mohaka catchments in their entirety. However, industry members do not support the closure of the entire Wanganui catchment as proposed. Opposition centres on the industry's use of the shortfin fishery in parts of the catchment (either the western tributaries of the upper catchment or the lower tidal reaches of the main river), and the displacement of commercial eel fishing to other areas of the QMA that would result.

- 572 MFish agrees with the modified proposal for the Wanganui as submitted by industry. The proposed prohibition of commercial fishing in the Wanganui River catchment would encompass the main stem of the Wanganui River to Taumarunui, and the upper Wanganui main stem and eastern tributaries. The closure would exclude the western tributaries (eg, Tangarakau, Ohura, and Ongarue Rivers), the approximate 30 kilometres of tidal influence from the Wanganui River mouth, and any farm dam, pond, or other waterway not connected to a tributary flowing into the Wanganui River or its tributaries.
- 573 MFish notes that the precise percentage of area required to assist with spawning escapement is a function of exploitation rate, as well as an assessment of the amount of area already providing refuge. MFish is expecting some research findings later this year about the adequacy of the existing areas that are subject to some form of protection from fishing. Preliminary findings suggest that further areas may need to be considered. Industry support in identifying possible candidate areas (eg, Waitotara, Rangitikei, or more generic observations), as well as those suggested by tangata whenua (Orongorongo and Pakuratahi valleys (Wellington), and a possible number in northern Taranaki, and rivers near the Mohaka River) is a productive step.

Other measure to improve escapement

- 574 EECO have proposed that all fishers and processors who are shareholders of the company will no longer take, and if accidentally taken will release, all migrating longfin female eels, at all times. The company propose that this code of practice is to be implemented by voluntary adoption in the first instance.
- 575 MFish considers that the management of fish passage issues under the RMA needs to be given a higher priority, with a view to reducing the non-fishing related mortality caused to any eel stock and facilitating spawning escapement.

Revocation of requirement to hold fishing permit expressly authorising taking or possession of eels

- 576 Submissions from the industry support revocation of this regulatory provision, as it will be redundant once North Island eel stocks are introduced into the QMS.

Revocation of requirement to use not less than 12 mm minimum net mesh size when taking eels as a commercial or non-commercial fisher

- 577 Industry submissions support the revocation of the requirement to use not less than 12 mm minimum net mesh size when taking eels as a commercial fisher. DoC suggests that it may be necessary to introduce a requirement for the inclusion of more escapement tubes if more bycatch of small fish is taken. MFish observes that additional escapement tubes could be included as an industry code of practice, if this was in fact an issue.
- 578 MFish does not consider that the present regulatory amendment proposal should extend to non-commercial fishers at this time. MFish notes that non-commercial fishers do not currently have a requirement to incorporate escapement tubes in particular forms of nets, nor do they have to abide by a minimum legal weight for eels.

Consequential amendments to the Fisheries (Reporting) Regulations 2001

- 579 The industry supports amendments to the Fisheries (Reporting) Regulations 2001 to enable commercial fishers to correctly complete their statutory catch returns once North Island eel stocks become subject to the QMS.

Sixth Schedule

- 580 Eels throughout New Zealand were included on the Sixth Schedule in 2000 when the South Island eel fishery was introduced into the QMS. MFish notes that the present specification allowing the return of live eels to the water, but not dead eels, has been operating since that time. The North Island eel industry opposes the requirement to land dead eels, principally because it is an economic cost. There is also a concern by one submitter that dead catch would have to be carried back to a processing plant in the licenced fish receiver's transporter with live catch. This would render a health hazard. MFish and the industry agree that the taking of eels in a dead state is a rare occurrence.
- 581 MFish does not expect eel industry members to mix dead eels in with the catch of live eels. However, MFish believes that the industry is able to still land dead eels to a licenced fish receiver in a separate bag for subsequent disposal. Consequently, MFish considers that the North Island eel industry need to develop alternative options under the current legislative arrangements before the specifications of the Sixth Schedule as it relates to dead eels are reviewed. Further, MFish needs to investigate the mechanisms presently in place to determine whether eel stocks already subject to the QMS, yet taken in a dead state, are being reported.
- 582 More generally, MFish observes that the reporting framework underpins the management of stocks within a QMS environment. It is the MFish view that dead eels should be reported and reconciled with ACE. Current practise is for fish returned under the Sixth Schedule not to be balanced with ACE.

Deemed values

- 583 The industry supports introduction of an \$8 per kilogram deemed value for North Island eel stocks. MFish also notes that it recommends the implementation of differential annual deemed values applicable to different levels of catch in excess of ACE. MFish also recommends that an over-fishing threshold be applied to these stocks.
- 584 MFish notes that it is current government policy for deemed values payments to be made to the consolidated fund, rather than returned to quota owners.

Other issues

Quota Management Areas

- 585 One submitter believes that it would be desirable to subdivide QMAs into smaller management subunits for reporting, monitoring and management purposes. MFish notes that reporting and monitoring arrangements can be refined to ensure fine scale management without the need to alter the QMAs.

Aquaculture and enhancement

586 Submitters identify the potential for eel aquaculture as significant depending on market conditions, the resolution of technical issues to do with on-growing, and resolution of a means to access eels beneath the minimum legal size for commercial interests. MFish also sees the use of aquaculture facilities as a means to substitute effort in the wild fishery, and minimise conflict between different fishery interests. Enhancement of wild fisheries through the upstream transfer of elvers or the downstream transfer of adult eels has been possible given the statutory pathway approved by the Minister of Fisheries in 1992. MFish may undertake further policy work on the taking of eels beneath the minimum legal size for the commercial purposes of aquaculture and some forms of enhancement after October 2004.

Recommendations

587 MFish recommends that you:

- a) **Agree** that TACs should be set under section 14 of the Act, having previously agreed to the inclusion of North Island eel stocks on the Third Schedule of the Act.
- b) **Agree** that the management strategy for North Island eel stocks aim to improve the stock structure and abundance over the medium term, while bringing to a halt any decline in the fishery over the short term. This is intended to have the effect of ensuring sustainability, improving its availability to non-commercial fishers, and improving the relationship with interdependent stocks.
- c) **Agree** to set a TAC for SFE 20 at 211 tonnes and within this set:
 - i) A customary allowance of 30 tonnes;
 - ii) A recreational allowance of 28 tonnes;
 - iii) An allowance of 4 tonnes for other sources of fishing-related mortality; and
 - iv) A TACC of 149 tonnes.
- d) **Agree** to set a TAC for LFE 20 at 67 tonnes and within this set:
 - i) A customary allowance of 10 tonnes;
 - ii) A recreational allowance of 8 tonnes;
 - iii) An allowance of 2 tonnes for other sources of fishing-related mortality; and
 - iv) A TACC of 47 tonnes.
- e) **Agree** to set a TAC for SFE 21 at 210 tonnes and within this set:
 - i) A customary allowance of 24 tonnes;
 - ii) A recreational allowance of 19 tonnes;
 - iii) An allowance of 4 tonnes for other sources of fishing-related mortality; and
 - iv) A TACC of 163 tonnes.

- f) **Agree** to set a TAC for LFE 21 at 92 tonnes and within this set:
 - i) A customary allowance of 16 tonnes;
 - ii) A recreational allowance of 10 tonnes;
 - iii) An allowance of 2 tonnes for other sources of fishing-related mortality; and
 - iv) A TACC of 64 tonnes.
- g) **Agree** to set a TAC for SFE 22 at 135 tonnes and within this set:
 - i) A customary allowance of 14 tonnes;
 - ii) A recreational allowance of 11 tonnes;
 - iii) An allowance of 2 tonnes for other sources of fishing-related mortality; and
 - iv) A TACC of 108 tonnes.
- h) **Agree** to set a TAC for LFE 22 at 54 tonnes and within this set:
 - i) A customary allowance of 6 tonnes;
 - ii) A recreational allowance of 5 tonnes;
 - iii) An allowance of 2 tonnes for other sources of fishing-related mortality; and
 - iv) A TACC of 41 tonnes.
- i) **Agree** to set a TAC for SFE 23 at 50 tonnes and within this set:
 - i) A customary allowance of 6 tonnes;
 - ii) A recreational allowance of 5 tonnes;
 - iii) An allowance of 2 tonnes for other sources of fishing-related mortality; and
 - iv) A TACC of 37 tonnes.
- j) **Agree** to set a TAC for LFE 23 at 66 tonnes and within this set:
 - i) A customary allowance of 14 tonnes;
 - ii) A recreational allowance of 9 tonnes;
 - iii) An allowance of 2 tonnes for other sources of fishing-related mortality; and
 - iv) A TACC of 41 tonnes.
- k) **Agree** to prohibit commercial fishing to recognise the special relationship between tangata whenua and places of importance for customary food gathering in:
 - i) the interconnected Lakes Taharoa, Numiti, Rotoroa, and Lake Harihari, south of Kawhia;
 - ii) Whakaki Lagoon, east of Wairoa;
 - iii) Lake Poukawa (Te Hauke), near Hastings;
 - iv) Lake Kohangapiripiri and Lake Kohangatera (Pencarrow Lakes), and their respective tributaries, Wellington.

- l) **Agree** to prohibit commercial fishing for the purpose of facilitating escapement of adult eels in breeding condition in:
 - i) The entire Motu River catchment;
 - ii) The entire Mohaka River catchment;
 - iii) That part of the Wanganui River catchment upstream of a point beyond the tidal influence (~30 kilometres) including the main stem of the Wanganui River through to Taumarunui, the upper Wanganui catchment and its eastern tributaries, but excluding the western tributaries (eg, Tangarakau, Ohura, and Ongarue Rivers), and any pond or dam within the catchment that is not connected to one of the tributaries leading into the Wanganui River, or the Wanganui River itself.
- m) **Agree** to revoke regulation 51 of the Fisheries (Commercial Fishing) Regulations 2001 that prohibits the taking or possession of eels except by fishing methods expressly authorised on a fishing permit.
- n) **Agree** to amend the Fisheries (Reporting) Regulations 2001 to outline the codes to be used by commercial fishers when completing their statutory catch returns.
- o) **Agree** to revoke that part of regulation 31(6) of the Fisheries (Commercial Fishing) Regulations 2001, specifying that commercial fishers must not use less than a 12 mm minimum net mesh size to take eels.
- p) **Note** that MFish is not recommending the revocation of the requirement for a non-commercial fisher to use not less than 12 mm minimum net mesh to take eels.
- q) **Note** that MFish is not recommending extending the requirement that a commercial fisher may not take or possess an eel that is greater than or equal to a maximum legal weight of 4 kilograms, as currently applied in South Island fisheries waters to encompass the North Island fishery.
- r) **Agree** that annual deemed values be set at \$8.00/kg for all North Island eel stocks.
- s) **Agree** to apply differential deemed values to eel stocks SFE 20, LFE 20, SFE 21, LFE 21, SFE 22, LFE 22, SFE 23 and LFE 23 consistent with balancing regime guidelines.
- t) **Agree** that overfishing thresholds are set for eel stocks SFE 20, LFE 20, SFE 21, LFE 21, SFE 22, LFE 22, SFE 23 and LFE 23 at 5% of a fisher's available ACE with a tolerance level of 25 kgs for fishers with a small (or no) ACE ownership.
- u) **Note** that MFish is not recommending any adjustment to the specifications for the Sixth Schedule, allowing ability for commercial fishers to discard eels taken or possessed in a dead state, until such time as reporting issues can be resolved.

- v) **Note** that amendment of the Fisheries (Kaimoana Customary Fishing) Regulations 1998 would be required to enable tangata whenua to take fisheries resources from the freshwater environ for customary food gathering purposes, as provided in South Island fisheries waters in accordance with the Fisheries (South Island Customary Fishing) Regulations 1999.



Kim Drummond
for Chief Executive

APPROVED / NOT APPROVED / APPROVED AS AMENDED

Hon David Benson-Pope
Minister of Fisheries

/ /2004

ANNEX ONE

Scaled commercial catch information for North Island eel stocks for the fishing years 1990-91 to 2001-02, and for the incomplete 2002-03 fishing year

Fishing Year	SFE20	LFE20	SFE 21	LFE 21	SFE22	LFE22	SFE 23	LFE 23	North Island total
1990-91	206 570.0	96 435.0	109 548.0	174 410.0	80 544.0	39 783.0	58 753.0	101 870.0	867 913.0
1991-92	206 868.0	83 992.0	155 167.0	195 280.0	183 003.0	32 923.0	44 868.0	87 389.0	989 490.0
1992-93	147 353.3	66 186.0	199 534.0	94 835.0	168 971.7	61 263.0	32 121.0	94 854.0	865 118.0
1993-94	106 545.0	48 038.0	162 992.0	91 472.0	142 598.0	84 287.0	44 153.0	63 965.0	744 050.0
1994-95	128 989.3	43 713.7	336 481.0	154 307.0	184 462.7	65 303.3	33 916.0	57 493.0	1 004 666.0
1995-96	140 362.7	42 309.6	347 587.0	110 006.0	153 474.3	66 490.4	49 140.0	53 662.0	963 032.0
1996-97	149 718.1	31 414.1	251 765.0	99 943.0	150 583.9	44 906.9	38 170.0	64 155.0	830 656.0
1997-98	151 989.9	50 664.0	261 795.0	65 037.0	115 514.1	55 150.0	39 676.0	54 245.0	794 071.0
1998-99	160 526.1	79 157.4	177 571.0	78 535.0	148 600.9	55 822.6	49 426.0	54 321.0	803 960.0
1999-00	161 533.2	71 916.2	174 216.0	81 945.0	123 686.8	48 563.8	24 212.0	37 108.0	723 181.0
2000-01	161 610.5	71 518.3	181 487.0	78 075.0	124 068.5	52 785.7	47 101.0	50 354.0	767 000.0
2001-02	174 484.0	53 599.0	172 803.0	71 448.0	90 869.0	44 602.0	44 010.0	47 389.0	699 204.0
2002-03	180 767.0	38 125.0	116 001.0	45 469.0	76 193.0	35 601.0	31 073.0	34 547.0	557 776.0
Sum excl 02-03	1 896 550.1	738 943.3	2 530 946.0	1 295 293.0	1 666 376.9	651 880.7	505 546.0	766 805.0	10 052 341.0
Avg 12 yr	158 045.8	61 578.6	210 912.2	107 941.1	138 864.7	54 323.4	42 128.8	63 900.4	837 695.1

Further selected background reading

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