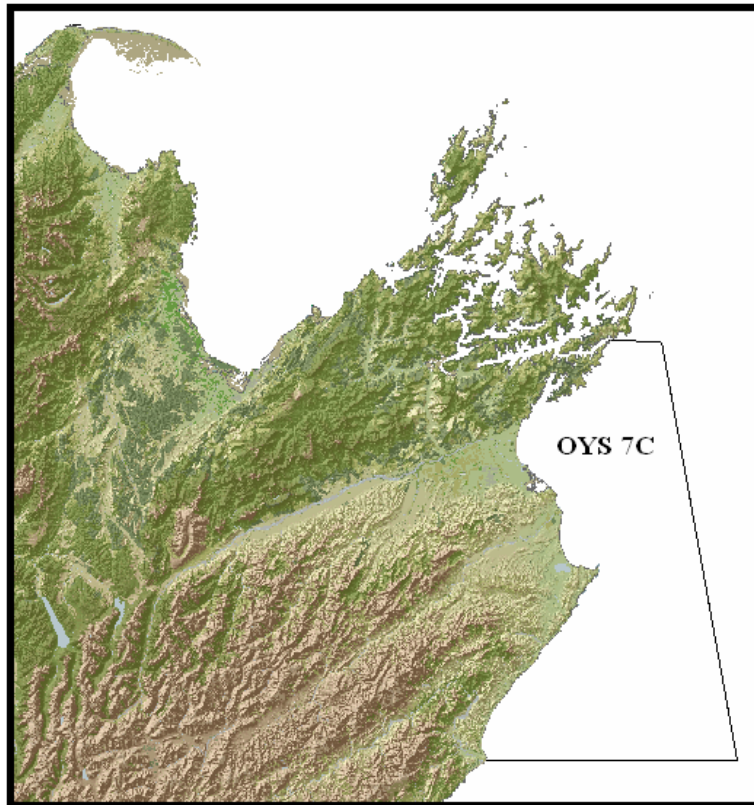


DREDGE OYSTER (OYS 7C)

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



Executive Summary

- 1 The Ministry of Fisheries (MFish) recommends increasing the Total Allowable Catch (TAC) for the Dredge Oyster (OYS 7C) Fishery to provide the commercial sector with greater utilisation opportunities. The fishery extends from the east coast of the Marlborough Sounds (from West Head) in the north to Clarence River in the south. Most known dredge oyster beds are found within Cloudy and Clifford Bays.
- 2 The Minister of Fisheries set a nominal TAC of five tonnes (greenweight) for the OYS 7C stock when dredge oyster was introduced into the Quota Management System (QMS) on 1 October 2005. The Minister set the TAC at a conservative level to reflect the absence of relevant stock assessment information with which to determine a more appropriate sustainable harvest level. The TAC includes allowances of one tonne each for customary and recreational interests, and other sources of fishing-related mortality, and a Total Allowable Commercial Catch (TACC) of two tonnes.
- 3 A reason for setting the TAC at a nominal level was to encourage rights holders to invest and develop a viable sustainable fishery, while taking into account the effects of dredging on the benthic environment. However, new

stock assessment information is now available that suggests the fishery can sustain a greater harvest yield than the current nominal TAC allows.

- 4 Industry is seeking a review of the TAC to enable a larger commercial harvest from the OYS 7C fishery based on the new stock assessment information.
- 5 The impacts of commercial dredging on the benthic environment will increase under a higher TACC and is an important consideration in setting an appropriate TAC level. Various areas within the fishery (mainly inshore and around rocky reefs/clumps ie, foul ground) are understood to support a range of sensitive invertebrate species including soft corals, large erect and divaricating bryozoans, starfish, horse mussel, crabs, etc. While the fishery has been subject to very little commercial dredging to date, the bottom type where dredge oyster beds occur is likely to be already modified by long-term commercial bottom trawling. Industry is proposing to voluntarily restrict commercial dredging to two specified harvest areas to mitigate the impacts of fishing under a higher TACC.
- 6 This paper presents four TAC options. These options range from retaining the current TAC at five tonnes to increasing the TAC to either 25 tonnes, 50 tonnes, or 100 tonnes.

Summary of Options

- 7 This paper presents the following four TAC options for the OYS 7C stock for the 2007-08 fishing year.
 - a) Option 1 – retaining the TAC at 5 tonnes (ie, *status quo*), or
 - b) Option 2 – increase the TAC to 25 tonnes, or
 - c) Option 3 – increase the TAC to 50 tonnes, or
 - d) Option 4 – increase the TAC to 100 tonnes.
- 8 Under each option, the current allowances of one tonne each for customary and recreational interests, and other sources of fishing-related mortality are retained. The TACC allocation is the remainder of the TAC.
- 9 The TAC options are based on a range of available sustainable yield estimates for the OYS 7C stock. As the level of the stock that produces the maximum sustainable yield (B_{MSY}) is poorly known for the OYS 7C fishery, each TAC option has a different, but uncertain likelihood of ensuring the stock is managed at, or above, the B_{MSY} .
- 10 MFish notes the Minister could consider alternative TAC options that lie within the range of those presented above, and which he may consider best address his obligations under the Fisheries Act 1996 (the Act).
- 11 MFish considers that Option 1 is not viable for the Minister to consider because it prevents the commercial sector from deriving greater utilisation opportunities from the fishery based on the available yield estimates. MFish's preliminary recommendation is Option 3, as it enables the commercial sector to obtain greater value from the fishery, while acknowledging the uncertainty

the stock remains sustainable under higher harvest levels and the increased impacts of fishing on the benthic environment.

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

Rationale for Management Options

- 13 The TAC for the OYS 7C stock is set under s 13 of the Act. Under s 13, the TAC must be set at a level that maintains the stock at, or above, a level that can produce B_{MSY} having regard to the interdependence of stocks.
- 14 A nominal TAC of five tonnes for the OYS 7C stock was set when dredge oyster was introduced into the QMS on 1 October 2005. The TAC was set at a conservative level to reflect the absence of relevant stock assessment information with which to determine a more appropriate sustainable harvest level. The TAC also acknowledged the biological characteristics of the species (ie, distribution, biology and life history), and the social and cultural value of oysters within the OYS 7C fishery.
- 15 One reason for setting the TAC at a nominal level was to allocate commercial harvest rights for the fishery. This would encourage commercial rights holders to invest and develop a viable sustainable fishery while taking into account the effects of fishing on the benthic environment.
- 16 Following QMS introduction, there has been negligible commercial catches within the OYS 7C fishery. Annual commercial landings since 1 October 2005 are shown in Table 1.

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

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

- 17 The general lack of commercial fishing effort within the fishery since QMS introduction is a direct consequence of the nominal size of the TAC and the associated fishing costs involved to harvest oysters. These fishing costs include vessel time, fuel, crew wages, etc, as well as costs incurred to obtain the necessary sanitary and biotoxin certification¹ for waters from where dredge oysters are taken. The existing TAC effectively prohibits industry from developing a viable commercial fishery, since the fishing costs to harvest two

¹ The taking of bivalve molluscs (including dredge oysters) for human consumption must be taken from approved waters certified under the Animal Products Act 1999 (Animal Products (Specifications for Bivalve Molluscan Shellfish) Notice 2006).

tonnes of oysters outweigh any economic returns.

Fishery assessment

- 18 A survey of dredge oyster beds within the OYS 7C Quota Management Area (QMA) was conducted in April and May 2007 to collect stock assessment information to review the TAC. This survey focused on specific strata within Cloudy and Clifford Bays where preliminary investigations had suggested sufficient commercial densities of oysters occur within these areas.
- 19 MFish’s Shellfish Stock Assessment Working Group has reviewed the stock assessment information and considers it provides a suitable basis on which to review the OYS 7C TAC.
- 20 The survey indicates the recruited² dredge oyster biomass within the survey area is 1 778 tonnes (greenweight) comprising 19.5 million oysters. Mean density of recruited oysters is estimated at 447 oysters per hectare. About 90% of estimated oyster biomass is found within the southern half of the survey area.
- 21 Based on the 2007 survey information, six *maximum constant yield* (MCY) estimates are calculated to provide a range of yield estimates for the survey area. However, this paper only considers four of these estimates (refer to Table 2), which the Shellfish Stock Assessment Working Group considers to reflect a “plausible range” of sustainable harvest yields for the OYS 7C fishery. Each estimate is based on the following equation and uses a different combination of parameters to estimate dredge efficiency and natural mortality (*M*).

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

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

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

MCY formula	MCY (tonnes)
$\text{MCY}_1 = 0.25 * 0.042 * (\text{recruited biomass} / 1)$	18
$\text{MCY}_2 = 0.25 * 0.042 * (\text{recruited biomass} / 0.64)$	28
$\text{MCY}_3 = 0.25 * 0.3 * (\text{recruited biomass} / 1)$	133
$\text{MCY}_4 = 0.25 * 0.3 * (\text{recruited biomass} / 0.64)$	213

² Recruited dredge oysters are those greater than 58 mm in size (unable to pass through a ring of 58 mm inside diameter).

- 22 MFish notes that specific parameter estimates of M and dredge efficiency are not available for the OYS 7C stock. In the absence of this information, values for M of 0.042 (Foveaux Strait³) and 0.3 (Tasman Bay⁴), and values of dredge efficiency of 0.64 (Tasman Bay using a slightly different dredge design⁵) and 1 (an intentionally conservative value) are used.
- 23 MFish highlights the inherent uncertainty in using the above non-OYS 7C parameters to estimate a range of sustainable harvest yields to reliably reflect the OYS 7C stock. This uncertainty arises from:
- Whether the estimate of M reflects the natural variability in oyster populations in the OYS 7C fishery from year to year;
 - Problems with using a simple MCY-based approach where there may be significant spatial variations in the distribution of oysters and the subsequent concentration of fishing effort;
 - Whether M can be reliably used given the unknown level of incidental fishing mortality under higher catch levels;
 - Inherent variability with available dredge efficiency estimates derived from other dredge fisheries.
- 24 The Stock Assessment Shellfish Working Group agreed the lowest estimate of MCY presented to the meeting (ie, 22 tonnes, subsequently modified to 18 tonnes once corrected for methodological errors) was conservative and almost certain to be sustainable, apart from any issues related to benthic habitat. Without better information on the applicability of the less conservative estimates of M and dredge efficiency to the OYS 7C stock, it becomes increasingly difficult to be assured of sustainability as catch levels increase.

Assessment of Management Options

TAC

- 25 MFish proposes four different TAC options based on the range of MCY-based estimates derived from the 2007 dredge oyster survey. These estimates use a range of values for estimating M and dredge efficiency derived from other dredge oyster fisheries and, therefore, must be treated with caution.
- 26 MFish notes the available MCY estimates provide a guide as to a range of possible harvest levels that can be applied for OYS 7C fishery. The sustainability of each MCY estimate becomes increasingly uncertain under increasing values for M and decreasing values of dredge efficiency. This paper considers four TAC options based on MCY₁, MCY₂, MCY₃ and MCY₄ estimates (as presented in Table 2). Each TAC option has a different but uncertain likelihood of ensuring the OYS 7C stock remains at, or above, a level that produces the B_{MSY} .

³ Dunn *et.al.* (1998)

⁴ Osborne (1999)

⁵ Bull (1989)

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

Option 1 – retain the current TAC (status quo)

- 29 Under Option 1, the current TAC of five tonnes is retained. This option ensures the OYS 7C stock remains at, or above, a level that produces the B_{MSY} . Retaining the current TAC prohibits the industry from developing a viable fishery as the harvest costs (ie, vessel, crew, shellfish sanitation costs, etc.) outweigh any economic returns from harvesting only two tonnes of dredge oysters.
- 30 Option 1 will continue to prevent industry from deriving best economic value from the fishery, as the best available information suggests the stock can sustain a higher catch level than is currently provided for under the existing TAC. MFish notes that one of the premises of managing fisheries under the QMS is to provide a framework that enables commercial rights-holders to develop viable fisheries within a sustainable harvest level. The current TAC was set at a nominal level to allocate commercial development rights to the fishery while acknowledging the absence of stock assessment information. A decision to retain the TAC in response to the availability of new stock assessment is contrary to the intent of introducing the OYS 7C stock into the QMS.
- 31 Under Option 1, the impacts of fishing on the benthic environment will remain negligible.

Option 2 - increase the TAC to 25 tonnes

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

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

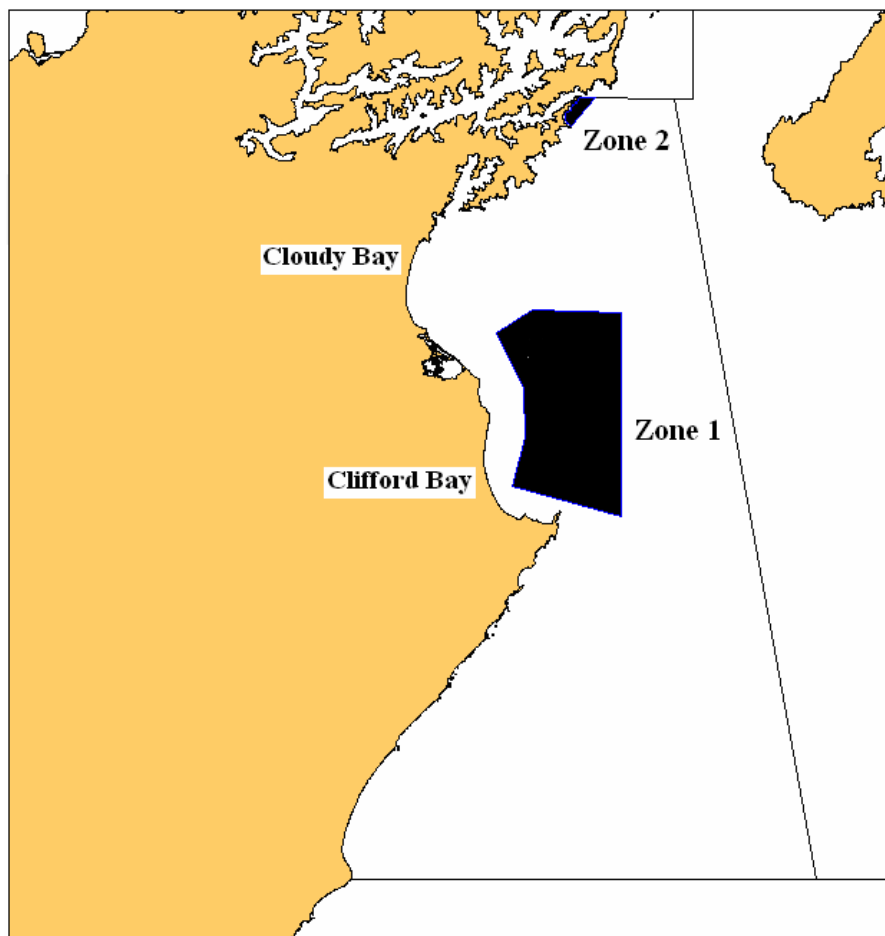
Option 3 – increase the TAC to 50 tonnes

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

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

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

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



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

Option 4 – increase the TAC to 100 tonnes

- 39 Option 4 provides the greatest TAC increase of the four options presented and is based on the MCY₃ estimate of 133 tonnes. This approach accepts the highest degree of risk to sustainability of the four options presented. MFish notes the level of uncertainty of maintaining the stock at, or above, a level that can produce the B_{MSY} is highest under this option.
- 40 There will be a substantial increase in fishing effort on the benthic environment under Option 4. As with Option 3, the industry has signalled it would voluntarily restrict harvest activities to two defined areas (refer to Figure 2) within the QMA to mitigate the environmental effects of fishing under the higher catch level.

TACC and allowances

- 41 Dredge oysters are an important species for many New Zealanders. Under a higher TAC, there is potential for an increased level of conflict between the industry and non-commercial fishers in accessing oysters, particularly those beds that are relatively accessible from shore. However, MFish considers the level of non-commercial harvest within the OYS 7C fishery to be relatively small and certainly away from the main commercial oyster beds within Cloudy and Clifford Bays. As industry intends to restrict commercial harvesting away from inshore areas to address fishing impacts on the benthic environment, this will have an additional effect of spatially allocating the most accessible oyster beds (ie, those beds found close to shore and within Port Underwood) to non-commercial fishers. In addition, commercial fishers are prohibited from taking dredge oysters between 1 September in any year and the last day of February in the following year (both days inclusive). This measure also reduces potential issues of conflict between commercial and non-commercial sectors over the main summer period.
- 42 MFish considers it appropriate to retain the existing allowances of 1 tonne each for customary and recreational interests under each TAC option. MFish contends these allowances do not constrain non-commercial fishers from taking dredge oysters from the fishery, and that there is no new information on non-commercial harvest levels to suggest a review of these allowances.

- 43 The current TAC includes a nominal allowance of 1 tonne for other sources of fishing-related mortality. This allowance acknowledges the potential for an illegal take of dredge oysters and impacts of dredging on oyster beds, while reflecting the absence of quantitative information for the OYS 7C stock. MFish notes there is uncertainty as to the level of other sources of fishing-related mortality under the four TAC options but such mortality is likely to increase as catch levels increase. MFish proposes to retain the current allowance at 1 tonne under each TAC option until new information becomes available to warrant a review.
- 44 This paper considers four TACC options listed in Table 3. This table includes an indicative estimate of the landed value of the commercial fishery under each option and is based on a port price of \$6.75 per kg for dredge oysters within the adjacent OYS 7 fishery.

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

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

- 45 The potential immediate economic return to industry is greatest under the highest proposed TACC (ie, Option 4) and simply reflects the greatest level of utilisation under the four options presented.
- 46 However, the potential economic return to the fishery under a higher harvest level must be balanced against the uncertainty in the available stock assessment information and the environmental effects of an increase in fishing effort. This is further discussed in the next section.

Environmental impacts of dredging

- 47 The harvesting of dredge oysters under a higher catch level will have an impact on the soft, muddy benthic environment within Cloudy and Clifford Bays. These impacts concern both the oyster beds and other invertebrate species found in association with these beds. The environmental principles of the Act require an assessment of the potential impacts of increased fishing effort on the benthic environment under each TAC option.
- 48 The impacts of fishing on the benthic environment will increase under higher TACC levels. These impacts can include the direct removal of various invertebrates, as well as increased suspension of silt over oyster beds. Dredge

oyster beds are susceptible to increased siltation through smothering of both adult oysters and recruitment surfaces, as well as inhibiting oyster growth and a loss or reduction of suitable habitat area. As noted above, dredge oysters are also susceptible to localised depletion due to various biological characteristics. All of these factors may cause an increase in fishing effort to have a significant impact on localised oyster beds and have direct adverse effects on other benthic species.

- 49 In assessing the impacts of fishing on the benthic environment under each TAC option, MFish highlights that large areas of the OYS 7C QMA are likely to have been already modified by bottom trawl fishing over the past 20 to 30 years. While MFish understands there has been little historical dredging activity within the OYS 7C QMA, the main oyster beds are found in areas already subject to long-term bottom trawling. As such, it is important to acknowledge the proposed commercial harvest areas for dredge oysters are unlikely to be in pristine condition with high biological diversity.
- 50 MFish notes the 2007 survey indicates there are several areas within Cloudy and Clifford Bays (particularly in inshore areas) where a wide range of sensitive invertebrate species occur (including soft corals, bryozoans, and horse mussels). However, these species are predominately found in inshore areas and/or areas of foul ground, and are generally away from where the main dredge oyster beds occur.
- 51 MFish notes that industry is prepared to take steps to mitigate the effects of fishing under a higher catch level. In the initial phase of developing the OYS 7C fishery, the industry has signaled it will voluntarily restrict fishing to two discrete areas within the QMA (refer to Figure 2). Under this measure, all commercial dredging would be voluntarily prohibited in the majority of inshore areas within the QMA, and this would include fishing away from areas of foul ground where the potential bycatch of invertebrate species would be higher. MFish understands the industry will require vessels participating within the OYS 7C fishery (which are likely to be no more than six vessels under the highest TAC option) to implement vessel monitoring technology to ensure that fishers adhere to the restricted fishing areas. Over subsequent stages, MFish would work with the industry to develop more durable management measures to ensure the impacts of dredging are minimised.

APPENDICES

Statutory Considerations

- 52 In forming the management options, MFish has considered all the statutory obligations described in the Act. These are summarised below.
- a) **Section 8:** The purpose of the Act is to provide for the utilisation of fisheries resources while ensuring sustainability. The proposed TAC options seek to enable the commercial sector to derive greater value from the OYS 7C fishery to reflect the available resources while mitigating the effects of fishing on the benthic environment. The Act includes obligations to avoid, remedy, or mitigate any adverse effects of fishing on the aquatic environment. This paper discusses those effects and proposed management measures when decisions are made about sustainable utilisation of fisheries resources.
 - b) **Section 13(2):** Under s 13 of the Act, the TAC should be set at a level that ensures the stock is maintained at, or above, a level that can produce the B_{MSY} . This paper presents a range of TAC options each with a different but uncertain likelihood of achieving this objective.
 - c) The proposed TAC options are based on:
 - i) **Section 13(2)(a):** While there are interactions between dredge oysters and associated species, there is no evidence that the interdependence of stocks are of significant magnitude to impact on the setting of the TAC.
 - ii) **Section 13(2)(b)(ii):** Dredge oyster populations inhabit a wide range of habitats (from intertidal rocks to 100 m depth) and are subject to spatial and temporal fluctuations in stock size and structure due to the influence of environmental factors on population dynamics. Factors include temperature, salinity, hydrology, and the effects of *Bonamia*. Dredge oyster populations are susceptible to increased siltation, which can smother both adult oysters and recruitment surfaces; increase organic and mineral pollution may inhibit oyster growth and cause a loss or reduction of suitable habitat area. All of these factors make oysters susceptible to localised depletion.
 - iii) The biological characteristics of dredge oysters mean the stock may have low productivity (relative to other shellfish species) as it is long-lived, slow-growing, brood relatively few larvae that do not disperse widely, and have high post-settlement mortality and low recruit mortality. This suggests the stock may be susceptible to overexploitation and the effects of localised fishing.

- d) **Section 13(3):** There will be social and economic implications under each TAC option. While this paper discusses the broad effects of each option, the precise nature of these effects has not been quantified. The long-term benefits of increasing the TAC are regarded as outweighing the effect of retaining the TAC at the current level to enable commercial fishers to derive greater economic value from the OYS 7C stock.
- e) **Section 9(a) and (b):** MFish has no evidence that maintaining biological diversity and associated or dependent species will be threatened by retaining the TAC at its current level. Under each TAC option, the effects of higher catch levels on biological diversity and associated or dependent species will increase. However, it is anticipated that the effects of fishing on some bycatch species will be managed under the QMS framework. In addition, the industry proposes to initially constrain commercial dredging to two specific areas to mitigate the effects of fishing on the benthic environment.
- f) **Section 9(c):** MFish has not identified any habitats of particular significance with regards to the OYS 7C stock. MFish notes that dredging can have adverse effects on the benthic environment. Dredging, especially in areas with high silt levels, can potentially remove settlement surfaces and suspend silt that can cause high mortality in newly settled recruits for various sessile species.
- g) **Section 5(a) and (b):** MFish states the s 5 considerations arising from New Zealand's international obligations and the provisions of the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992 are adequately addressed by the TAC options discussed in this paper.
- h) **Section 11(1)(a):** The effects of fishing on the stock and the aquatic environment under the current TAC are negligible. MFish notes that dredging under a higher catch level will have an impact on the benthic environment within the OYS 7C QMA. These impacts concern both the oyster beds and other invertebrate species found in association with these beds. While the fishery has been subject to very little commercial dredging to date, the bottom type where dredge oyster beds occur is likely to have already been modified by long-term commercial bottom trawling. The industry is proposing measures to mitigate the impacts of fishing under a higher TAC.
- i) **Section 11(1)(b):** The commercial sector is restricted to a minimum size limit of 58 mm for dredge oysters, as well as a closed season from 1 September in any year and the last day of February in the following year (both days inclusive). There is a daily bag limit for recreational fishers of 50 oysters per person and a minimum size limit of 58 mm also applies.
- j) **Section 11(1)(c):** MFish recognises that dredge oyster stocks can be inherently variable and that discrete oyster beds are prone to fluctuations in abundance that can render them susceptible to fishing.

- k) **Section 11(2A)(b):** No fisheries plan have been approved that would have a bearing on the setting of a TAC for the OYS 7C stock.
- l) **Section 11(2A)(a and c):** MFish is not aware of any fisheries or conservation service decisions, or any decisions not to require fisheries or conservation services that are relevant to setting a TAC for the OYS 7C stock.
- m) **Section 11(2)(a and b):** MFish is not aware of any considerations in any regional policy statement, regional plan or proposed regional plan under the Resource Management Act 1991 or the Conservation Act 1987 that are specifically relevant to setting a TAC for the OYS 7C stock.
- n) **Section 11(2)(c):** The considerations of ss 7 and 8 of the Hauraki Gulf Marine Park Act 2000 are not relevant to setting a TAC for the OYS 7C stock.
- o) **Section 21(1)(a and b) and (4)(i and ii) and (5):** The Minister has set allowances of 1 tonne for customary and recreational interests, respectively. There are no mātaimai within the OYS 7C QMA. No area has been closed or fishing method restricted under s 186A due to issues associated with dredge oysters. There are no areas closed to fishing under s 311 at this time.
- p) **Section 10:** MFish has relied on the May 2007 survey report (TAL07402) prepared by the National Institute for Water and Atmospheric Research (NIWA) on behalf of the OYS 7C quota owners as its principle source of stock assessment information in developing management options presented in this paper.