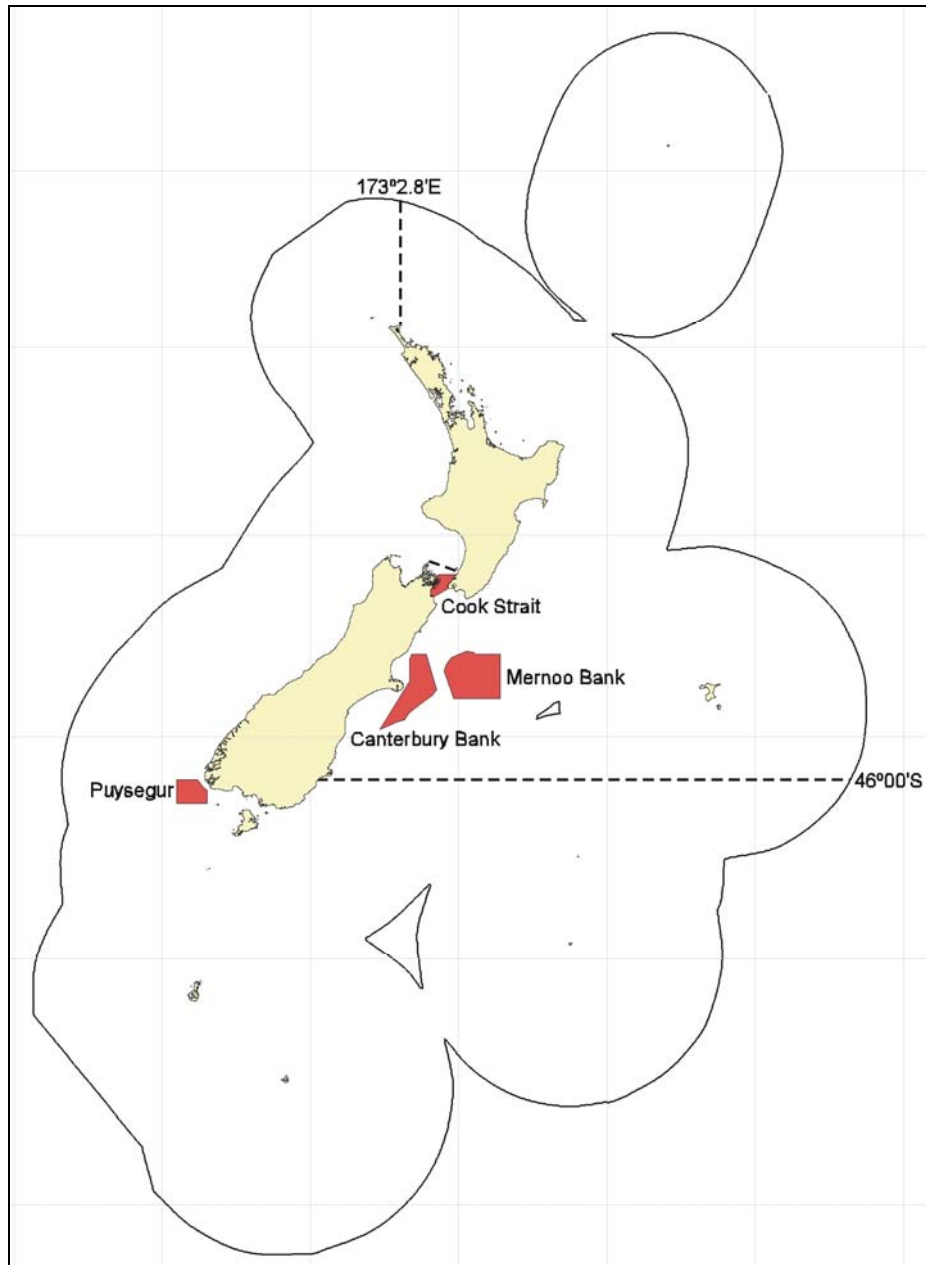


HOKI

Figure 1: The hoki east-west catch split boundary and the hoki closed areas.



Executive summary

- 1 The hoki fishery is managed as one quota management system (QMS) stock, HOK1, although HOK1 is considered to be two stocks, an eastern stock and a western stock. The 2007 hoki stock assessment results indicate that the western stock is below B_{MSY} but the eastern stock is at or above B_{MSY} .
- 2 The 2007 stock assessment predicts that the western stock will rebuild only if recruitment is better than it has been in recent years or catches in the western stock are reduced in comparison to recent catch levels. Three management

options are proposed in this initial position paper (IPP). The model runs used to develop these management options have been based in recent hoki recruitment levels. This is a cautious approach as below average recruitment occurred in the western stock from 1995 to 2003. All options should facilitate a rebuild towards B_{MSY} for HOK1 overall, though at differing rates.

- 3 Option 1 contributes to a stock increase by reducing catch levels in the western stock compared to the past two fishing seasons. Option 2 increases stock size through a reduction in the hoki total allowable commercial catch (TACC) for the 2007-08 fishing season. Option 3 provides for a stock increase by transferring fishing effort from the western stock to the eastern stock while maintaining the TACC at its current level. None of the options is predicted to rebuild the western stock to B_{MSY} within 5 years. Returning the western stock to B_{MSY} in that timeframe is only possible by closing western stock to all fishing effort.
- 4 All options include an east: west catch split arrangement which is a voluntary agreement. However, Option 3 relies most heavily on fishing operators adhering to a range of voluntary initiatives. Given the issues associated with codes of practice and voluntary initiatives in the past the Minister must have confidence that the voluntary initiatives in place to support this option have integrity.
- 5 Recent efforts by both MFish and the Deepwater Group Ltd (DWG) to develop a collaborative management arrangement across deepwater fisheries suggest that this integrity is achievable. However, evidence will only come from the success of various management initiatives being developed for the 2007 winter hoki fishery. MFish is confident that there will be some indication of the success of these initiatives in time for the Minister's decision in August/September 2007.
- 6 The deemed value rates for hoki are also being reviewed for the 2007-08 fishing season as part of the wider deemed value review process.

Summary of options

- 7 The options available for consideration are:
 - a) Option 1 (status quo): Leave the HOK1 TAC and TACC unchanged at 101,040 and 100,000 tonnes respectively. The catch split arrangement will also remain unchanged, with 60% of the TACC being harvested from the eastern stock and the remaining 40% of the TACC being harvested from the western stock.

This option is not strictly the status quo given that the western limit has been exceeded in the past two fishing seasons; rather this option reflects the harvest levels that should have occurred in the past two fishing seasons.
 - b) Option 2: Reduce the HOK1 TAC from 101,040 tonnes to 81,040 tonnes and the TACC from 100,000 tonnes to 80,000 tonnes (a reduction of 20%); and request industry to alter the voluntary catch

split arrangement so that 60,000 tonnes (75% of the TACC) are taken from the eastern stock and 20,000 tonnes (25% of the TACC) are taken from the western stock.

- c) Option 3: Leave the TAC and TACC unchanged at 101,040 tonnes and 100,000 tonnes respectively but request industry to alter the voluntary catch split arrangement so that 65% of the catch is taken from the eastern stock and that this additional 5,000 tonnes is caught from the Cook Strait fishery so as to protect juvenile hoki found on the Chatham Rise.

Background information

- 8 The hoki fishery is currently managed as one stock, HOK1, which covers fisheries management areas 1-9. The fishery consists of two distinct stocks, an eastern stock and a western stock. Within each stock there are the following defined fishing areas:
 - a) Eastern hoki stock: consisting of Cook Strait fishery, Chatham Rise fishery and East Coast South Island fishery (ECSI) and East Coast North Island fishery (ECNI).
 - b) Western hoki stock: consisting of West Coast South Island fishery (WCSI), Sub-Antarctic fishery and Puysegur.
- 9 Juvenile hoki from both stocks mix on the Chatham Rise. They are thought to migrate to the eastern or western stock on maturity.
- 10 The main hoki fishery operates from mid-July to late August on the WCSI where hoki aggregate to spawn. A second major spawning fishery occurs in Cook Strait where the season runs from late June to mid-September peaking in July and August. Small catches of spawning hoki are taken from other spawning grounds off ECSI and, late in the season, at Puysegur Bank.
- 11 Outside the spawning season there is a substantial fishery on the Chatham Rise and a smaller fishery in the Sub-Antarctic. The Chatham Rise fishery generally has constant catch levels across all months except July to September when catches are lower because the fish move to their spawning ground, followed by fishing vessels. In the Sub-Antarctic, catches typically peak in April to June. There is also a small ECNI hoki fishery.
- 12 In 2001 industry implemented a voluntary catch splitting arrangement to manage fishing effort across these two stocks. This catch split arrangement has altered since it was first implemented but, since 2004 it has been set so that 60% of the TACC is taken from the eastern stock and 40% from the western stock.
- 13 Through the hoki Code of Practice, industry has also implemented a range of voluntary measures to protect juvenile hoki. These measures include closing four areas to hoki targeting, believed to be significant to juvenile hoki. These areas are still accessible to vessels targeting other species such as scampi, ling and squid. The four closed areas are (see Figure 1):

- a) Cook Strait
 - b) Area off the coast of Banks Peninsula
 - c) Mernoo Bank
 - d) Puysegur.
- 14 The hoki Code of Practice also requires vessels to alter fishing activity if catch consists of more than 10% small hoki. If this occurs, the vessel is required to move at least five nautical miles away from the area where the 10% threshold was exceeded. There are concerns that this 'move-on rule' does not prevent a vessel from fishing in an area that has just been vacated by another vessel. In the past, MFish has not monitored these voluntary initiatives.
- 15 Three operators own 65% of hoki quota. These three quota owners also represent 62% of ACE fishers. In 2006 the value of hoki quota was estimated to be \$627m.
- 16 Hoki is one of the most important export earners for the fisheries sector. In 2006, 42,000 tonnes (product weight) of hoki were exported realising a value of \$156m. The destination for much of these exports is China where the product is processed for re-export into Europe and the USA. The hoki fishery received Marine Stewardship Council Certification in 2001. The fishery is currently seeking recertification.

Rationale for Management intervention

- 17 Estimates of current biomass for the western stock, based on current recruitment, are between 15-24% B_0 which is approximately 50% lower than the recommended level of 30-40% B_0 .
- 18 The decline in the western stock has been attributed to extended periods of poor recruitment for the period 1995 to 2001. Recruitment since 2001 is estimated to be better than that of 1995-2001, but is still below the long-term average. Hoki is predominantly a recruitment-driven fishery meaning that the landings and the biomass of the stock fluctuate in response to strong year classes. Likely causes of this poor recruitment are unknown and it is unclear if it is due to environmental factors, the effects of fishing activity on juvenile mortality or excess mortality of adult hoki. Ultimately, this means that a full rebuild of the western stock will only occur if recruitment improves compared to recent recruitment levels.
- 19 Stock assessment model projections indicate that the biomass for the western stock will not increase unless future recruitment is better than it has been in recent years or catch from the fisheries that comprise the western stock is reduced compared to recent catch rates.
- 20 In contrast, the eastern stock appears to be at or above B_{MSY} . Current biomass for the stock is estimated to be between 37% and 51% B_0 .

- 21 There is also a concern that in recent years a higher proportion of small fish have been taken from the fishery. This could impact on future recruitment if these small fish are harvested before they recruit to the spawning stock.
- 22 The stock assessment process provided five-year stock projections across three model runs based on recent recruitment levels (1995-2003)¹ Providing stock projections across a five year period ensures the variable nature of hoki stock recruitment is considered. If the stock assessment projections were based on long term recruitment levels (1975-2003), the 5 year projections of biomass for both eastern and western stock are at or above B_{MSY} . However, given the continued period of poor recruitment observed in the western stock it was considered more cautious to base management decisions on model runs that assume recent recruitment levels.

Analysis of management options

- 23 Section 13 of the Act requires the Minister to set a total allowable catch (TAC) limit that:
- a) Maintains the stock at or above a level that can produce a maximum sustainable yield, having regard to the interdependence of stocks (13(2)(a))
 - b) Enables the level of a stock whose current level is below that which can produce the maximum sustainable yield to be altered (13(2)(b))
 - i) In a way and at a rate that will result in the stock being restored to at or above a level that can produce the maximum sustainable yield, having regard to the interdependence of stocks; and
 - ii) Within a period appropriate to the stock having regard to the biological characteristics of the stock and any environmental conditions affecting the stock;
- Or
- c) Enables the level of any stock whose current level is above that which can produce the maximum sustainable yield to be altered in a way and at a rate that will result in the stock moving towards or above a level that can produce the maximum sustainable yield, having regard to the interdependence of stocks.
- 24 While MFish notes that the western stock is below B_{MSY} , under section 13 the Minister is required to set a TAC with respect to the level of the entire quota management area stock as a unit of management (i.e. the combination of the eastern and western stocks). MFish considers that, for the entire HOK1 stock, the Minister should set a TAC under 13(2)(b) to enable HOK1 to be restored

¹ The hoki stock assessment working group approved three model runs for the current stock assessment. Each model run is based on different assumptions but the working group gave each equal weighting. Model run 4.7 does not assume natal fidelity i.e. that hoki return to area they were spawned to spawn.

to at or above B_{MSY} . Table 1 summarises the proposed management options which are described in more detail below – these projections assume recent recruitment levels. None of the management options proposed will effect a significant rebuild in the short term although Option 2 will effect the greatest rebuild over the next five years. As stated above, a significant rebuild will only result with better recruitment. Each of the options proposed prevents the stock biomass from declining further and will put the hoki stock in a better position to benefit from improved recruitment should it occur in the future.

Table 1: Summary of proposed management options for HOK1 including predicted rebuild, based on recent recruitment, over a 5yr period.

Management option	TAC	TACC	Eastern stock limit	Western stock limit	5yr % Bo Eastern stock	5yr % Bo Western stock
Option 1	101,040	100,000	60%	40%	37-49% B_o	18-25% B_o
Option 2	81,040	80,000	75%	25%	37-49% B_o	23-29% B_o
Option 3	101,040	100,000	65%	35%	36-48% B_o	19-26% B_o

Option 1

25 Under this option the TAC will remain at 101,040 and the TACC will remain at 100,000 tonnes and the catch split arrangement will continue so that 60% of the TACC will come from the eastern stock and 40% from the western stock. This option is not strictly the status quo given that the western limit has been breached in the past two fishing seasons; rather this option reflects the harvest levels that should have occurred in the past two fishing seasons. This option will achieve only a negligible rebuild over the five year period.

Option 2

26 Under Option 2 the TAC will be reduced by 20% to 81,040 and the TACC will be reduced by 20,000 tonnes to 100,000 tonnes. In addition the east: west catch splitting arrangement will be set so that 60,000 tonnes (75% of the TACC) is taken from the eastern stock with the remaining 20,000 tonnes (25% of the TACC) coming from the western stock. According to the model projections, this management option will facilitate the strongest rebuild to the western stock over a five year period and it is projected to rebuild to approximately 23-29% B_o . This is still below the recommended B_{MSY} for hoki but this management option will successfully initiate a rebuild. It should also facilitate a rebuild towards B_{MSY} for HOK1 overall.

Option 3

27 Under this option, both the TAC and TACC will remain unchanged at 101,040 tonnes and 100,000 tonnes respectively for the 2007-08 fishing season. A rebuild will be further effected through altering the catch split arrangement and shifting fishing effort from the western stock to the eastern stock. This option will require 65% of the TACC to be taken from the eastern stock. This is an additional 5,000 tonnes above what has been permitted in recent fishing seasons. In the past two fishing seasons 60,000 tonnes of hoki were available for harvest from the eastern stock but this limit was not reached: in 2005-06 57,000 tonnes were removed and in 2004-05 59,000 tonnes were harvested.

- 28 There are concerns that increasing fishing pressure on the eastern stock might impact on juvenile hoki and their ability to recruit to either of the spawning stock, if this extra effort is exclusively focused on the Chatham Rise fishery. Therefore, in addition to altering the catch split arrangement, hoki quota owners will also be requested to catch only 35,000 tonnes of hoki from the Chatham Rise fishery. The remainder of the eastern stock allowance should be harvested from the Cook Strait and ECSI fisheries.
- 29 According to the model projections, this management option will facilitate a rebuild of the western stock over a five year period and it is projected to rebuild to approximately 19-26% Bo. This is still below the recommended B_{MSY} for hoki but, as noted above, a full rebuild of the stock will take longer than five years and is dependent on better recruitment.
- 30 For this management intervention to be effective it requires commitment from hoki quota owners and ACE fishers to abide by the catch splitting arrangement and the requirement to limit catch from the Chatham Rise fishery to 35,000 tonnes. MFish believes this commitment can be achieved through the DWG binding all operators (quota owners and ACE fishers) to a management regime which will include a comprehensive reporting and monitoring programme.

Risk assessment & management

- 31 In addition to the stock assessment concerns set out above, the following issues also need to be considered when determining the most appropriate management intervention for the hoki fishery:
- a) In the last two fishing seasons the hoki catch has exceeded the TACC of 100,000 tonnes; 104,387 tonnes were taken in the 2005-06 fishing season and 104,421 tonnes was taken in the 2004-05 fishing season.
 - b) The voluntary east: west catch split has also not been adhered to for the past two fishing seasons. In the 2005-0006 season approximately 46,500 tonnes was removed from the western stock and 45,000 tonnes was removed during the 2004-05 fishing season. Under the catch split arrangement the western stock limit should be 40,000 tonnes.
 - c) There are also concerns that the juvenile hoki closed areas and other initiatives to protect juvenile hoki have not been adhered to fully or appropriately monitored. However, it is difficult to assess the extent to which these initiatives have been breached.
- 32 Given the issues outlined above the Minister may not wish to rely heavily on voluntary measures in lieu of regulatory sustainability measures. However, all three management options require some form of reliance on industry initiatives. MFish in partnership with industry has initiated a programme to address each of the above points.
- 33 If the Minister wishes to manage the east: west split through the statutory regime he will have to consider splitting the HOKI quota management area (QMA) into two or more quota management system (QMS) stocks. MFish

advises that consideration of QMA splitting is not proposed at this stage, although it remains an option for the Minister to consider at any time.

- 34 The Act allows the Minister to rebuild the western hoki stock at an appropriate way and rate having regard to the interdependence of stocks, the biological characteristics of HOK1 and any environmental conditions affecting HOK1. There is no statutory guidance on what an appropriate ‘way and rate’ might be in any given case – it is a matter for the Minister to determine.
- 35 In determining the ‘way and rate’ of rebuild for the western stock the Minister must consider relevant social, economic and cultural factors. In the projections that assumed recent recruitment levels will continue, none of the options provided are likely to effect a full rebuild to B_{MSY} in five years. Therefore, MFish advises that with respect to rate, rebuild may take longer than five years, though it is open to the Minister to seek to effect a rebuild at a faster rate. MFish considers that seeking to do so would require a drastic TAC reduction. In MFish’s view the short-term economic consequences of such an option would be likely to outweigh the benefits.
- 36 The management options proposed each promote slightly different rates of rebuild, with the greatest rebuild effected under Option 2 and the slowest under Option 1. These options also use different ways to effect the rebuild – Option 2 relies on a TACC reduction supported by an alteration to the east: west catch split. Option 3 is more reliant on industry measures which will include the catch split arrangement but also measures to limit the quantity of juvenile hoki harvested from the Chatham Rise. However, it is the occurrence of stronger recruitment to the western stock that will determine when the stock rebuilds.
- 37 The implications of each management option are discussed below.

Option 1

- 38 Option 1 will only achieve a rebuild of HOK1 (in particular the western stock) if hoki recruitment increases. In essence, this option prevents the stock biomass from declining further and only a slight rebuild can be expected, if below average recruitment continues.

Option 2

- 39 Option 2 still requests that fishers adhere to a catch splitting arrangement but the focus of the rebuild is through a TAC (and a corresponding TACC reduction). Reducing the TAC and the TACC by 20,000 tonnes and altering the catch split arrangement so that only 20,000 tonnes are taken from the western stock is likely to have significant social and economic impact on industry. The impact of this option on the eastern stock is less severe than Option 3 as the total permitted removals remain at 60,000 tonnes. Under this option the eastern stock will remain at or above B_{MSY} .
- 40 If the Minister wishes to effect a faster rebuild then he should consider choosing Option 2. However section 13 (3) of the Act requires the Minister to

have regard to such social, cultural and economic factors as he considers relevant. Option 2 is expected to have considerable socio-economic impacts.

- 41 The reduction to the TAC (and any corresponding reduction to the TACC) will impact on economic utilisation in the hoki fishery as export earnings can be expected to mirror the total catch reduction. While it is not possible to estimate by how much export earnings will fall, MFish estimates that based on the average export price from 2006, of \$3.71 per kg, the impact in export earnings could be around \$30m². There is also the concern that a TACC reduction may impact on overseas supply contracts for other New Zealand species.
- 42 Altering the catch split arrangement will also require a significant adjustment in fleet operations amongst the main hoki fishing companies. Reducing effort on the western stock by 50% will mean that those vessels that rely on this fishery will be forced to either move to the eastern stock or seek alternative fishing arrangements; given that effort in the eastern stock is already at its limit the latter outcome is more realistic.
- 43 MFish notes that the rate of rebuild is likely to be higher than Option 1, though not substantially higher. The Minister must be satisfied that the greater rebuild rate is warranted given the likely economic consequences. This option also places the least reliance on industry's ability to contribute to the management of the fishery. MFish invites submitters to provide information on the economic implications of this management option.

Option 3

- 44 Option 3 should also initiate a rebuild of HOK1 through a rebuild of the western stock. MFish considers that leaving the TAC at the existing level should move HOK1 to B_{MSY} but that the amended catch spreading arrangements under this option should also increase the rate of rebuild. (though likely at a slower rate than Option 2). MFish considers much of the impact of such economic and social changes would be reduced if Option 3 is chosen over Option 2, although Option 3 will cause some industry adjustment.
- 45 However, in deciding to choose Option 3 over Option 2 the Minister has to be satisfied that the recommended amendments to the voluntary management regime have integrity – i.e. so that the intended rate of rebuild of HOK1 is not frustrated. The Minister can only request, not require, fishers to adhere to voluntary initiatives such as the catch split arrangement. Therefore, MFish believes that the Minister should only consider Option 3 if he is confident these voluntary initiatives will be adhered to and will meet the rate of rebuild he considers appropriate.
- 46 MFish considers that this can be achieved if all hoki quota owners sign up to and participate in a hoki monitoring regime jointly administered by the DWG

² Based on export statistics from 2005 and 2006, a TACC of 100,000 tonnes results in an export volume of approximately 42,000 tonnes (42%). If the TACC is reduced to 80,000 tonnes then MFish estimates that approximately 34,000 tonnes will be exported – a difference of approx. 8,000 tonnes. Using the average export price from 2006, of \$3710 per tonne, this equates to \$29.68m.

and MFish. This monitoring regime will include the requirement to submit regular reports to the DWG on the quantities of catch harvested from each of the two stocks. As part of this monitoring regime, quota owners that sell ACE will also be required to ensure all ACE purchasers fully understand the purpose of the regime and are committed to it. MFish will work with DWG to develop an appropriate reporting and monitoring regime that provides the information necessary to ensure integrity, while requiring the least administrative burden and cost on operators and quota owners. If hoki quota owners are unwilling to participate in such a monitoring regime, the integrity of voluntary initiatives cannot be assured.

- 47 Option 3 is likely to have the less economic impact than Option 2, as maintaining the TAC at 101,040 tonnes and the TACC at 100,000 will enable fishers to protect their supply contracts and maintain export revenues at current levels. However, some restructuring of fishing operations is likely as companies will have to alter previous fishing patterns to ensure the new catch split arrangement and juvenile hoki protection measures are achieved. MFish invites submissions from stakeholders on the implications of this management option on vessel operation and management.

Integrity of voluntary initiatives

- 48 Despite concerns about voluntary agreements in the hoki fishery in the past, there is some evidence of the integrity necessary to underpin all proposed management options in the voluntary initiatives that are currently being developed for the 2007 winter hoki fishery (July to September) by the DWG and MFish. These measures reflect industry concern over the status of the western stock and the desire for immediate intervention to assist its rebuild. These measures consist of:
- a) Altering the east: west split so that no more than 40,000 tonnes, and perhaps as little as 5,000 tonnes of hoki is taken from the western stock. If effective this would achieve an immediate catch reduction of between 6,000 and 12,000 tonnes from the previous season. This will be achieved through ACE holders advising the DWG of the western stock ACE they have available to fish from 1 July.³
 - b) Implementing a twice-weekly monitoring regime requiring hoki fishers to report levels of catch against western stock ACE. As part of this reporting regime hoki fishers will also be required to report catch against total ACE across both stocks. When an operator reaches 90% of ACE holding the operator will be required to either source more ACE or prepare to leave the hoki fishery.
 - c) This reporting regime will also be used to collect information on seabird and marine mammal bycatch in the hoki fishery.
 - d) To address concerns over high grading in the hoki fishery, MFish and the DWG are also implementing a programme to profile the length-frequency distribution of all hoki taken from the western stock. This

³ Hoki ACE is sold specified as eastern stock ACE or western stocks ACE.

will be achieved through implementing a catch sampling regime at-sea using both MFish and industry observers. This at-sea sampling will be supplemented by MFish fishery officers undertaking quay side inspections. The purpose of this initiative is to provide appropriate incentives, and to reduce opportunities for discarding and high grading in the fishery through creating an effective deterrent.

- e) Pre-season briefing sessions have been held to advise all operators of the voluntary initiatives in place, explaining the reporting requirements and the purpose of these voluntary initiatives.
- 49 The Minister will be advised of the success of the adoption of these management measures in the hoki final advice paper which will be provided to him in September. This information is likely to be a consideration in MFish advice and the Minister's decision on which management option to approve. If the initiatives in place for the 2007 winter fishery are successfully adopted the Minister may be satisfied that Option 3 is an appropriate management response for HOK1 in the circumstances.
- 50 The integrity of voluntary initiatives is further supported by recent collaborative initiatives in the 2006-07 SQU6T fishery where vessel operators were required to submit twice weekly reports to the DWG detailing number of tows completed and any seabird or marine mammal interactions. The DWG provided this information to MFish so that vessel performance against the sea lion fishing-related mortality limit could be monitored. Performance of the reporting and monitoring system was excellent and the collaborative arrangement meant MFish and the DWG were able to address any issues as they arose.

TAC Allowances

- 51 The TAC must be apportioned between the relevant sectors and interests set out under the provisions of s 20 and 21 of the Act. Section 21 prescribes that the Minister shall make allowances for Maori customary non-commercial interests, recreational fishing interests, and for any other sources of fishing-related mortality, before setting the TACC. In determining these allowances, the Minister should consider how the allowances will enable people to provide for their social, economic and cultural wellbeing (as provided for in the purpose of the Act).
- 52 Recreational and customary fishers do not target hoki as it is predominantly an offshore fishery and there is no data on actual customary and recreational catches of hoki in recent years. However, there are references to customary catches of hoki occurring in the past. MFish also considers it likely a small amount of hoki is caught by recreational fishers while fishing for other middle depth species. A small allowance of 20 tonnes each for both recreational and customary fishers is currently provided for and MFish considers these allowances should continue.
- 53 MFish proposes a nominal allowance for other sources of fishing related mortality of an additional 1,000 tonnes for HOK1. This allowance is required

to take account of hoki mortality that is not reported such as hoki lost due to net bursts or dumping of damaged hoki.

- 54 This means that under both Option 1 and Option 3 the TACC will be set at 100,000 tonnes. Under Option 2, the TACC will be set at 80,000 tonnes.

Deemed Values

- 55 The deemed value rates for hoki have been reviewed as part of the wider deemed value review process. Further information on the deemed value review as it relates to hoki can be found in the Deemed Value Review IPP that accompanies this paper. In summary, the Ministry is proposing that the deemed rates for the 2007-08 hoki season are set as follows:

- a) Annual deemed value rates set at \$0.59 per kg.
- b) Interim deemed value rates set at \$0.55 per kg which is 94% of the annual deemed value rate.
- c) Differential deemed value rates will apply as detailed in the table below.

Table 2: Proposed differential deemed value rates for HOK1

Catch in excess of ACE holdings (%)	Proposed deemed value rate (\$)
105	1.00 per kg
110	2.00 per kg
115	3.00 per kg
125	4.00 per kg
150	5.00 per kg
160	5.00 per kg
170	5.00 per kg
180	5.00 per kg
190	5.00 per kg
≥200	5.00 per kg

Future Management

- 56 MFish considers that a rebuild of HOK1 should be based on a coherent long-term management plan rather than implementing annual management measures as part of the sustainability round. This can be achieved through the fishery plan process and MFish and the DWG are working collaboratively on developing a fishery plan for hoki. This plan will build on the initiatives in place for the 2007 winter fishery and will continue to focus on the necessary rebuild of the western stock. The hoki fishery plan should be approved by the Minister and implemented in time for the start of the 2008-09 fishing season.

Compliance Issues

- 57 MFish compliance supports the proposed management measures that are likely to be introduced in time for the 2007 winter hoki fishery. The proposed management options discussed above are unlikely to result in increased compliance risks in the fishery but continued monitoring of vessel reporting, particularly of small hoki and bycatch species, is required.

Other matters for consideration

- 58 Seabird and marine mammal bycatch concerns are also issues in the hoki fishery. None of the management options proposed above are likely to impact further on the non-fish bycatch rate. The DWG has developed vessel management plans (VMPs) for all vessels operating in the 2007 winter hoki fishery. In addition to the regulatory bird mitigation devices in place, these VMPs set out vessel-specific measures to improve sea bird mitigation through improved offal management practices. MFish observers will also be provided with each vessel's VMP before starting an observer trip and they will be auditing vessel performance against VMPs as part of management measures for the winter hoki fishery.
- 59 The DWG has also developed an operational procedure for mitigating marine mammal bycatch (which is an update of the marine mammal code of practice developed in the 1990s). This operating procedure will be reviewed by a technical expert group in June 2007 and following any necessary modifications, all deepwater vessels will be required to follow it. MFish observers will also be auditing vessel performance against this operating procedure throughout the hoki winter fishery.

Consultation

- 60 MFish is seeking views from stakeholders on management options presented in this IPP. Stakeholder submissions will be considered before the final advice is prepared for the Minister.

Statutory considerations

- 61 When setting sustainability measures, and when making decisions under the authority of the Act, the Minister is required to consider a series of principles and factors.
- 62 **Section 13 – Total Allowable Catch:** MFish proposes that the Minister should set a TAC under 13(2)(b) to enable HOK1 to be restored to at or above B_{MSY} . The specific considerations set out in s13(2)(b) include having regard to the interdependence of stocks, the biological characteristics of the stock and any environmental conditions affecting the stock. The proposed TAC options, and corresponding proposed periods of rebuild, have also taken into account:
- a) The interdependence of stocks for HOK1 (as required by s 13(2)(b)(i)). The HOK 1 fishery entails widespread interactions with other species through bycatch (hake, ling, silver warehou, among others) that are managed through the quota management system. Since none of the options proposed in this IPP will result in an increase in the TACC for hoki, MFish considers the interdependence of stocks are not affected by the management options proposed;
 - b) The biological characteristics of hoki (as required under s 13(2)(b)(ii)). The hoki stock assessment model incorporates current knowledge on the biological characteristics of hoki when determining what levels of TAC and catch splits are acceptable.
- 63 **Section 13(4): Social, cultural and economic factors:** The Minister must consider relevant social, economic and cultural factors when developing the TAC and TACC options set out in this IPP. Options 1 and 3 which will retain the TAC and TACC at 101,040 and 100,000 tonnes respectively are likely to provide for greater utilisation and economic benefits. Option 2 will constrain utilisation and economic benefits as it proposes a reduction to the hoki TAC and TACC by 20%. Relevant social, economic and cultural factors have been discussed in the section of the paper headed “*Analysis of management options*”.
- 64 **Section 8 – Purpose of the Act:** MFish considers that all options presented in this paper, provide for utilisation in the hoki fishery while ensuring stock sustainability. Each management option proposed contributes to the rebuild of HOKI through a rebuild of the western stock. However, Option 2 is the more cautious management option and is likely to move HOK1 towards B_{MSY} in the shortest period but the lower TACC proposed under this option will impact on utilisation.
- 65 Retaining the TACC at 100,000 tonnes, under Options 1 and 3, give effect to a slight rebuild but will allow for current levels of utilisation. The proposal to alter the catch split arrangement also under Option 3 will ensure the rebuild occurs at a faster rate than under Option 1. None of the management options proposed will deliver a full rebuild of HOK1 in the short-term – this will only be achieved through improved stock recruitment in future years.

- 66 The Minister must weigh up providing for the utilisation of HOK1 with ensuring its sustainability – however, ensuring sustainability is the bottom line and the ultimate objective. MFish believes that all three options proposed in this paper will ensure sustainability although the rate of rebuild of the stock will vary. In choosing the appropriate management option the Minister must decide if the greater rate of rebuild provided by Option 2 justifies the impact on utilisation that a TAC cut of 20% will produce.
- 67 **Section 5(a) International and Settlement obligations:** Decision-makers are required to act in a manner consistent with New Zealand’s international obligations relating to fishing, including the Law of the Sea and the Fish Stocks agreement as well as regional fishery management agreements. Decision-makers must also act in a manner consistent with the provisions of the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992. MFish considers that the proposed options are consistent with both New Zealand’s international obligations relating to fishing and the provisions of the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992.
- 68 **Section 9 – Environmental principles and section 11 (1) (a) –** Effects on the aquatic environment: The Minister must take into account any effects of fishing on any stock and the aquatic environment. The Minister must also take into account the following principles:
- a) Associated or dependent species should be maintained above a level that ensures their long-term viability;
 - b) Biological diversity of the aquatic environment should be maintained;
 - c) Habitat of particular significance for fisheries management should be protected.
- 69 The hoki trawl fishery is extensive throughout the exclusive economic zone (EEZ) and the key potential effects of fishing on the environment and marine ecosystem are considered below. MFish considers none of the options proposed are likely to impact on the long-term viability of associated or dependent species, biological diversity of the aquatic environment or on habitats of particular significance for fisheries management.

Seabirds

- 70 Although trawl fisheries for hoki are known to interact with seabirds an estimation of total captures is difficult as captures reported by observers and vessel returns are highly sporadic and often unrepresentative of the fleet. Since the proposed management options are not advocating an increase in fishing effort they are therefore unlikely to have additional adverse implications for seabirds. However, the bulk of estimated captures come from the Chatham Rise and Cook Strait fisheries and the impact of any move to shift effort from the WCSI to these fisheries should be considered. As part of the voluntary management measures for the winter hoki fishery vessels are required to adhere to agreed offal management practices. This is in addition to the regulatory requirements for vessels to use bird mitigation devices.

Fish bycatch

- 71 The main commercial bycatch species in hoki target fisheries are hake, ling, silver warehou and jack mackerel. None of the management options proposed in this paper recommend an increase in fishing effort and therefore the likely impact on bycatch species from the proposed management measure is likely to be small. However the proposed options to reduce fishing effort from the western stock (Options 2 and Options 3) will positively impact on catch rates in the LIN7 fishery which has been consistently over caught in the last 10 years.

Marine mammals

- 72 The hoki fishery is responsible for fur seal mortalities particularly in the WCSI fishery (386 fur seals were estimated captured in the 2005-06 fishing season.). None of the options proposed will result in an increase in fishing effort so the adverse effects of hoki trawling on the fur seal population are unlikely to increase. Options 2 and 3 both propose a reduction in fishing effort on the WCSI fishery which may have a positive impact on the number of fur seal interactions in that area. However, information is scarce on the size of the fur seal population that inhabits the WCSI so it is not possible to truly assess the impact from the management options proposed. MFish does note that as part of the voluntary management measures in place for the winter 2007 hoki fishery industry are required to adhere to a range of measures to limit fur seal interaction.

Benthic habitat

- 73 Hoki is a middle depth species and catches from the western stock are predominantly harvested using mid-water trawl gear. However the target hoki fishery on the Chatham Rise is carried out extensively using bottom trawling gear. This activity is likely to result in trawl disturbances which may alter the benthic habitat. None of the management options propose an increase in fishing effort and while Option 3 does recommend that effort is shifted to the eastern stock the focus of this effort should be in the Cook Strait fishery where hoki is harvested using mid-water gear.
- 74 **Section 11 (1)(b):** The Minister must in his decision take into account of any existing controls that apply to the stock. Apart from the existing TAC, TACC, and allowances, other important existing fisheries management controls for HOK1 include a restriction on vessels greater in size than 46m fishing within 25 nautical miles of the coastline.
- 75 **Section 11 (1)(c):** The Minister must in his decision take into account the natural variability of the stock. As discussed in the IPP, the hoki fishery is prone to fluctuations in biomass over time due to variable recruitment.
- 76 **Section 11 (2)** – Section 11(2) also requires that the Minister must also, when setting sustainability measures, have regard to any provisions of:
- a) Hauraki Gulf Marine Park Act 2000 – Although HOK1 quota management area encompasses the waters of the Hauraki Gulf Marine

Park, the distribution of hoki and the fishery for it do not intersect with the park boundaries. Therefore there are no relevant considerations under the Hauraki Marine Park Act 2000.

- b) Conservation Act 1987 – MFish is not aware of any relevant management strategies or plans under the Conservation Act 1987 for hoki.
- c) Resource Management Act 1991 – MFish is not aware of any relevant policy statements or (proposed) regional plans, under the Resource Management Act 1991 relevant to HOK1.

77 **Section 11(2A)(a) & (c):** Before setting or varying any sustainability measure the Minister must take into account any conservation or fisheries service, or any decision not to require such services. MFish does not consider that existing or proposed services materially affect the proposed TAC options. No decision has been made not to require a service that would be relevant to the HOK1 fishery.

78 **Section 11(2A)(b) – Fisheries plans:** There is currently no fisheries plan in place in the hoki fishery. However, work is progressing on developing a fisheries plan for this stock and this is discussed in the IPP in the section on future management.

79 **Section 20 and 21 - TACC:** The allowances for Maori customary non-commercial interests, recreational fishing interests, and for any other sources of fishing-related mortality, before setting the TACC, are discussed in the section under “TAC allowances”. However, section 21 requires that any mātaihai reserve or closure/restriction under s 186A to facilitate customary fishing be taken into account. There are mātaihai reserves and s 186A measures in HOK1, but none intersect with the HOK1 fishery. No area has been closed or fishing method restricted (that affects the fishery within HOK1) under the customary fishing provisions of the Act. Section 21 also requires that any regulations to prohibit fishing made under s 311 be taken into account when setting allowances for recreational interests. No restrictions under s 311 have been placed on fishing in any area within HOK1.

80 **Section 75 – Minister to set deemed value rates:** New deemed value rates are proposed for the hoki stock for the 2007-08 fishing season. These new rates should ensure that fishers have the necessary incentive to balance all their catch with ACE as per s. 75 (2) (a) of the Act. These considerations are discussed in more detail in relation to HOK1 in the Deemed Value Review IPP that accompanies this paper.

81 **Section 10 – Information principles:** The information principles of the Act require that decisions be based on the best available information, taking into account any uncertainty in that information, and applying caution when information is uncertain, unreliable, or inadequate. The Act also requires that the absence or uncertainty of information should not be used as a reason to postpone, or fail to take, any measure to achieve the purpose of the Act. MFish considers that the information used to support the HOK1 proposals is currently

the best available. The management options proposed in this IPP have been developed based on information from a full hoki stock assessment. Issues surrounding uncertainty of information have been considered as part of the stock assessment process. The model runs used to develop these management options have been based on recent hoki recruitment levels which is a cautious approach, as below average recruitment occurred in the western stock from 1995 to 2003.

