INTERTEK MOODY MARINE

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NZ Hoki Fisheries: 2nd Reassessment

PUBLIC CERTIFICATION REPORT V5

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Glossary of Acornyms and Abbreviations

ACAP	Agreement on the Conservation of Albatrosses and Petrels
ACE	Annual Catch Entitlement
BPA	Benthic Protection Area
B0	Virgin Biomass
CAY	Current Annual Yield
CITES	Convention on International Trade in Endangered Species
CPUE	Catch per Unit Effort from commercial vessels statutory records
DOC	Department of Conservation
DWG	Deepwater Group Limited
EEZ	Exclusive Economic Zone ENGO
eNGO	Environmental Non-Governmental Organisation
ETP	Endangered, Threatened, Protected Species
F	Fishing Mortality
FAO	Food and Agriculture Organisation of the United Nations
FCV	Foreign Charter Vessel
FL	Fork length
GWT	Green weight tonne
ITQ	Individual Transferable Quota
KPI	Key Performance Indicator
LFR	Licensed Fish Receiver
M	Natural Mortality
MARPOL	International Convention for the Prevention of Pollution from Ships
MAY	Maximum Average Yield
MCMC	Markov Chain Monte Carlo
MCS	Monitoring, Control and Surveillance
MCY	Maximum Constant Yield
BOMEC	Benthic-Optimised Marine Environmental Classification
MFish	New Zealand Ministry of Fisheries
MHR	Monthly Harvest Return
MPA	Marine Protected Area
MSC	Marine Stewardship Council
MSY	Maximum Sustainable Yield
NIWA	National Institute of Water and Atmospheric Research Limited
NZ	New Zealand
PI	Performance Indicator
PSA	Productivity-Sensitivity Analysis
QMS	Quota Management System
SG	Scoring Guidepost
TAC	Total Allowable Catch
TACC	Total Allowable Commercial Catch
TCEPR	Trawl Catch, Effort and Processing Return
U_{max}	Maximum Exploitation Rate
UNCLOS	United Nations Convention on the Law of the Sea
VMP	Vessel Management Plan
VMS	Vessel Monitoring System
WG	Working Group

WWF	World Wildlife Fund
Y	Yield
YCS	Year Class Strengths

1. Executive Summary

This report provides information on the second reassessment for the New Zealand Hoki Fishery.

1.1 The Intertek Moody assessment team

Jo Akroyd	Lead Assessor with P3 responsibility
Andre Punt	Assessor with P1 responsibility
Johanna Pierre	Assessor with P2 responsibility

1.2 Process used

The assessment team used Part C of the MSC Certification Requirements V1.1 October 24, 2011 and the default assessment tree contained within for this assessment.

Assessment timeline

Announcement of main assessment	22 September 2011
Site visit and stakeholder consultation	13- 18 November 2011
Expected completion date	12 October 2012

1.3 The main strengths and weaknesses of the client's operation

The New Zealand hoki fishery has been MSC certified for 10 years. Since 2001 there have been many improvements in the management of the fishery. There are now well-defined and documented processes for most of the operations. The amount of data available to evaluate consistency with the MSC Criteria is also a significant strength.

The strong communication and ongoing liaison between the client, Deep water Group (DWG) and their operators is an important factor.

In recent years, the client has supported a shift away from prescriptive regulatory fisheries management to a strong focus on more collaborative fisheries management, including industry implementation of operational plans which are monitored and audited by government.

There is a partnership approach to fisheries management between the DWG and the Ministry of Fisheries, underpinned by a Memorandum of Understanding. The two parties have developed a single joint-management framework with agreed strategic and operational priorities and workplans.

A weakness is that the relationship between the DWG and eNGOs is still not considered by the environmental groups to be satisfactory. Although proposed, there is currently not a Ministry-led environmental advisory group for deepwater fisheries.

1.4 The determination reached

It has been determined by Intertek Moody Marine that this fishery should be recertified in accordance to the MSC principles and criteria subject to one Condition

Scores for each Principle

Principal 1: 90.6
Principal 2: 86.7
Principal 3: 94.8

For each of the three principles, the overall score has exceeded 80.

Conditions and timescales

One Performacne Indicator failed to attain a score of ≥ 80 which resulted in a Condtion of Certification:

Condition 1: Habitat Structure
Improve management of habitat impacts of the hoki fishery, such that by the end of the third surveillance audit, it can be shown that the fishery is highly unlikely (i.e. there should be no more than a 30% probability) to reduce habitat structure and function to a point where there would be serious or irreversible harm[i].

Recommendations

Principle 1:

1. Further review and understand the retrospective pattern.
2. Conduct an external review of the stock assessment.

Principle 2:

1. Work towards quantitative measures of direct impact on all ETP species.
2. Continue to implement discharge management measures, and incorporate newly available information in practices described in VMPs and other measures intended to reduce ETP impacts.
3. Evaluate knowledge of pale ghost shark in GSP7 more comprehensively, for example using a fisheries characterization, to increase confidence that this stock is within biological limits in all areas.
4. Increase understanding of ecological impacts of the hoki fishery and the indicators that may be used to assess these impacts.

Principle 3:

1. Continue to support government policy development in alignment with the intent and Principles of MSC
2. Work with the Ministry to establish a Ministry-led Environmental Advisory Group with terms of reference agreed to by government, eNGOs and industry

2. Authorship and Peer Reviewers

2.1 Team members

Lead Assessor and Expert Advisor P3: Jo Akroyd.

Jo Akroyd is Director and Principal Consultant of Jo Akroyd Ltd, an International consultancy company specialising in marine fisheries policy and marine ecosystem and community based management. She has also provided services in quality system implementation and training in project management and negotiation skills. Prior to a career in consultancy, she was manager of International Projects at the Auckland University of Technology and Director of Quality and Strategic Management and Assistant Director of Marine Research at the Ministry of Agriculture & Fisheries, Wellington, New Zealand. Her specific experience relating to MSC assessments includes acting as Lead auditor and team member on the assessment of the Tosakatsuo Suisan Skipjack tuna Japan, the NZ albacore troll, Hokkaido scallops Japan, NZ southern scallop, Zhangzidao Scallop Fishery, Fiji albacore tuna longline fishery, NZ hoki fishery reassessment and providing specialist inputs on Principle 3 (Fisheries management), the Ross Sea Toothfish fishery and NZ EEZ fisheries.

Expert Advisor P2: Johanna Pierre

Johanna completed her BSc (Hons) in Zoology at the University of Canterbury, New Zealand, and followed that with a PhD in ecology and environmental biology at the University of Alberta, Canada. In the course of conducting her PhD research on the ecological impacts of forestry activities in northern Canada, she became especially interested in working at the environment - economic interface. After completing a post-doctoral fellowship in biodiversity science at the University of Tokyo, Japan, Johanna returned to New Zealand to work at the Department of Conservation (DOC). During her time at DOC, Johanna focussed on the environmental effects of fishing. This included leading a team producing science, policy and management tools for the New Zealand commercial fisheries environment. As well as working with New Zealand-based stakeholders, Johanna maintained extensive international engagement, for example, with Regional Fisheries Management Organisations, as New Zealand representative for the Agreement on the Conservation of Albatrosses and Petrels, and as a practising scientist. Johanna went on to lead New Zealand's science and innovation engagement with Asia for the Ministry of Science and Innovation.She now consults fulltime, currently focussing on marine science and fisheries issues.

Expert Advisor P1: Andre Punt

André E. Punt is a Professor of Aquatic and Fishery Sciences at the University Washington, Seattle. He received his B.Sc, M.Sc and Ph.D. in Applied Mathematics at the University of Cape Town, South Africa. Before joining the University of Washington, Dr Punt was a Principal Research Scientist with the CSIRO Division of Marine and Atmospheric Research. His research interests include the development and application of fisheries stock assessment techniques, bioeconomic modelling, and the evaluation of the performance of stock assessment methods and harvest control rules using the Management Strategy Evaluation approach. He has published over 170 papers in the peer reviewed literature, along with over 400 technical reports. He is currently an Associate Editor for *Fisheries Research*, *Population Ecology*, and the *Journal of Applied Ecology*. Dr Punt was a member of the Independent Objections Panel convened by the Marine Stewardship Council (MSC) in 2003 to consider the proposed certification of the South Georgia Patagonian toothfish longline fishery, was a member of the Team which conducted the re-assessment of the New Zealand Hoki fishery in 2005-7, and is currently a member of Audit Team for the New Zealand Hoki fishery. He is also a member of the Scientific and Statistical Committee of the Pacific Fishery Management Council, the Crab PLAN

Team of the North Pacific Fishery Management Council, the Science Panel of the North Pacific ResearchBoard, and the Scientific Committee of the International Whaling Commission.

General Manager: Paul Knapman

Paul is the General Manager and a Lead Assessor for Intertek Moody Marine (IMM). He has extensive experience of the fishing industry in North America and Europe. He was previously a fisheries consultant working in Europe and Canada; Head of a UK inshore fisheries management organization; a senior policy advisor to the UK government on fisheries and environmental issues; and a fisheries officer.

2.1 Peer reviewers

Dr Graham Pilling

Graham has over fifteen years' experience working in tropical, temperate and polar marine and freshwater ecosystems, gaining in depth experience in the practical assessment and management of pelagic and demersal fisheries through a wide range of methodologies. Fisheries studied include industrial tuna fisheries and artisanal reef fisheries in the tropics and Arabian Gulf. The impacts of anthropogenic influences such as oil spill events and climate change on fish stocks and fisheries have been examined. Designed and developed models to simulate the long-term impacts of uncertainty in stock biology and assessments on fisheries management, and methods to assess and manage data poor fisheries. Reviewed international biological stock assessments for scientific rigor. Chair of STECF SGMED (2008) and FAO GFCM stock assessment meetings for assessment of demersal species within the Mediterranean Sea (2008 and 2009). Member of a number of Marine Stewardship Council accreditation teams assessing fisheries for sustainability against the MSC principles. Has played a key role at international commissions in tropical and polar regions. Work has contributed significantly to the institutional strengthening of fisheries institutions in the tropics.

Extensive experience in the administration and management of fisheries and environmental development and research programmes, including provision of technical support, project and programme management and strategic development, institutional development, and fiscal management.

Dr Neil Klaer

Neil is a fisheries scientist with CSIRO Marine and Atmospheric Research in Australia. He has worked on fisheriespolicy advice to the Federal Government and fisheries stock assessment for the past 25 years. Between 1988 and 2004he provided stock projections to the international Commission for the Conservation of Southern Bluefin Tuna, andmanaged the scientific team responsible for management strategy evaluation and stock assessment for the Southern Bluefin Tuna fishery. Since 2004 he has assisted with the implementation of a formal harvest strategy framework for the Australian demersal Southern and Eastern Scalefish and Shark Fishery, developed automated systems to facilitate the assessment of more than 30 quota species or groups in the fishery, and provided stock assessments for variousquota species. Since 2007 he has undertaken independent reviews of the US NW Rockfish, SE Striped Bass, Gulf ofMexico King Mackerel, Alaska Sablefish, SE/GoM Red and Black Grouper, SE Blacknose Sandbar and Dusky Sharkand the Hawaii DeepslopeBottomfish fisheries.

3. Description of the Fishery

3.1 Unit(s) of certification and scope of certification sought

The assessment team has determined that the fishery is within scope of the MSC certification sought.

3.1.1 Unit of certification

The fishery proposed for certification is therefore defined as:

Species: NZ Hoki (*Macruronus novaezelandiae*)
Geographical Area: HOK1, NZ EEZ
Method of Capture: Trawl
Client Group: Deepwater Group, NZ

3.1.2 Rationale

The MSC requirements specify that the unit of certification is "The **target stock(s)** combined with the fishing method/gear and practice (including vessel/s) pursuing that stock".

There are two stocks of New Zealand hoki (*Macruronus novaezelandiae*), which are caught by trawl by vessels which belong to members of the Deepwater Group (DWG).

3.1.3 Eligible fishers

Eligible fishers are those operators who have been fully assessed against the MSC's Principles and Criteria for Sustainable Fishing as part of the Unit of Certification; and are not currently part of the client group, but may become eligible to join the client group under a certificate sharing arrangement.

The client group catches between 94 and 96% of the recorded hoki landings. Those outside the group comprise fishers targeting the same stock using the same methods/gear and operating under the same management regime as the fishers included in the client group.

In the course of the certification it is possible that these companies/vessels may join the client group. This would be in accordance with the MSC's stated desire to allow fair and equitable access to the certification.

3.2 Overview of the fishery

3.2.1 Management operations

Deepwater Group Ltd (DWG) was formed in September 2005. The company is an amalgamation of EEZ fisheries quota owners in New Zealand. It is a non-profit organisation. Fisheries managed by DWG are those targeted commercially, and usually fished at depths between 200 and 1,200 m. These include hoki, hake, ling, orange roughy, oreo dory, squid and jack mackerel.

Prior to September 2005, there were separate management companies for each of the hoki, squid and orange roughy fisheries in New Zealand. That year, the three companies agreed to amalgamate, combining deepwater interests in a single management company with a mission to optimise the sustainable economic value of NZ deepwater fisheries.

Activities of the DWG include:

- representing the interests of quota holders with Government and government departments;

- undertaking fisheries research and stock assessment programs;
- implementing and monitoring fisheries management programs;
- working on multiple fronts to manage and minimise any adverse environmental affects;
- ensuring integrity at all levels of process and engagement; and
- maintaining fisheries management standards that meet or exceed those required for Marine Stewardship Council Certification.

The New Zealand deepwater fisheries industry involves more than 50 seafood companies, which between them operate more than 60 commercial vessels and collectively employ more than 15,000 people.

3.2.2 Species type and history

Hoki belong to the Merlucciidae family (hakes). They are one of New Zealand's most important commercial deepwater species. Hoki are caught by trawling all around New Zealand and are most common in Cook Strait and off the west coast of South Island during the winter spawning season. They are fished on the Chatham Rise and in the south on the Campbell Plateau other times of the year.

The pattern of fishing has changed markedly since 1988-89 when over 90% of the total catch was taken in the West Coast South Island (WCSI) spawning fishery. This has been due to a combination of changes to the total allowable catch (TAC) and re-distribution of fishing effort. The catch from the WCSI declined steadily from 1988-89 to 1995-96, increased again to between 90 000 and 107 000 t from 1996-97 until 2001-02, then dropped sharply over seven years, to 20 600 t in 2008-09. The WCSI catch increased to 36 400 t in 2009-10, which was about 34% of the total hoki catch. In Cook Strait, catches peaked at 67 000 t in 1995-96, but have been below 20 000 t for the last three years. Non-spawning catches on the Chatham Rise increased from 1993-94, peaked at about 75 000 t in 1997-98 and 1998-99, then decreased to a low of 30 700 t in 2004-05. The Chatham Rise catch has increased over the past five years to 39 200 t, and is now the largest hoki fishery, contributing about 37% of the total catch in 2009-10. Catches from the Sub-Antarctic area peaked at over 30 000 t in 1999-00 to 2001-02, declined to a low of 6200 t in 2004-05 before increasing slowly to 12 300 t in 2009-10. Catches from other areas have remained at relatively low levels.

From 1999-00 to 2001-02, there was a redistribution in catch from eastern stock areas (Chatham Rise, East Coast South Island (ECSI), East Coast North Island (ECNI), and Cook Strait) to western stock areas (WCSI, Puysegur, and Sub-Antarctic). This was initially due to industry initiatives to reduce the catch of small fish in the area of the Mernoo Bank, but from 1 October 2001 was part of an informal agreement with the Minister of Fisheries that 65% of the catch should be taken from the western fisheries to reduce pressure on the eastern stock. This agreement was removed following the 2003 hoki assessment in 2002-03, which indicated that the eastern hoki stock was less depleted than the western stock, and effort was shifted back into eastern areas, particularly Cook Strait. From 2004-05 to 2006-07 there was a further agreement with the Minister that only 40% of the catch should be taken from western fisheries. From 1 October 2007, the target catch from the western fishing grounds was further reduced to 25 000 t within the overall total allowable commercial catch (TACC) of 90 000 t. This target was exceeded in both 2007-08 and 2008-09, with about 30 000 t taken from western areas. In 2009-10, the target catch from the western fishing grounds was increased to 50 000 t within the overall Total Allowable Commercial Catch (TACC) of 110 000 t, and catches were at about the industry-agreed catch split. In the current fishing year (2010-11), the target catch from the western fishing grounds has been increased to 60 000 t within the TACC of 120 000 t. Figure 1 shows the reported landings and TACCs for HOK1 since 1988-89.

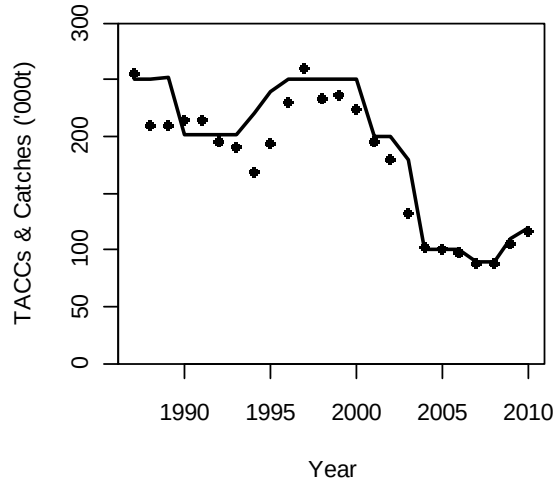


Figure 1.TACCs (solid lines) and estimated catches (dots) of hoki (1986/87-2010/11))

3.2.3 User rights

The Quota Management System (QMS) is based on controlling outputs, and is designed to ensure sustainable use of the fisheries resources while allowing economic efficiency in the industry. The QMS approach is to directly limit the total quantity of fish taken. The major focus is on the amount taken by the commercial fishing industry so that there are sufficient fish available for non-commercial uses and for the conservation of the resource. (The needs of recreational fishers and Maori interests are provided for before commercial quota levels are set.)

Within the commercial catch limit, access is determined by ownership of quota and ownership of Annual Catch Entitlement (ACE). Quota is a right which gives individuals and companies a share of the TACC for a particular species in a defined area. Quota can be bought or sold. ACE is generated in proportion to the amount of quota owned by an individual of company at the start of each fishing year, and is the right to harvest a particular species in a defined area in that quota year. ACE "disappears" at the end of each fishing year.

The QMS is also being used in dealing with Maori claims to commercial fisheries. The Government has purchased quota and transferred it to the Te Ohu Kai Moana (TOKM, i.e., Treaty of Waitangi Fisheries Commission) in recognition of Maori rights to the commercial fishery. TOKM distributes quota to iwi (Maori tribes). When the initial species were introduced into the QMS (e.g. hoki) 10% was given to Maori. 20% of commercial quotas of all new species now brought into the QMS are given to the TOKM to distribute.

3.3 Principle One: Target species background

3.3.1 Outline of the fishery resources[1]

Hoki (*Macruronus novaezelandiae*) are widely distributed throughout New Zealand waters from 34° S to 54° S, from depths of 10 m to over 900 m, with greatest abundance between 200 and 600 m. Large adult fish are generally found deeper than 400 m, while juveniles are more abundant in shallower water. Exploratory tows with mid-water gear over a hill complex east of the Chatham Rise found low density concentrations of hoki in mid-water at 650 m in areas of 900 m depth or greater (Livingston et al. 2004). The proportion of larger hoki outside these survey grounds is unknown. Commercial data also indicate that small catches of older hoki have been taken over other hill complexes outside both the Chatham Rise and Sub-Antarctic area (Dunn and Livingston 2004), and are also caught as a bycatch by tuna fishers over very deep water (Bull and Livingston 2000).

Hoki migrate to spawning grounds in Cook Strait, WCSI, Puysegur, and ECSI in the winter months. Throughout the rest of the year the adults are dispersed around the edge of the Stewart and Snares shelf, over large areas of the Sub-Antarctic area and Chatham Rise, and to a lesser extent around the North Island. Juvenile fish (2–4 years) are found on the Chatham Rise throughout the year.

Hoki spawn from late-June to mid-September, releasing multiple batches of eggs. They have moderately high fecundity, with a female of 90 cm Total Length (TL) spawning over 1 million eggs in a season (Schofield and Livingston 1998). Not all hoki within the adult size range spawn in a given year. Winter surveys of both the Chatham Rise and the Sub-Antarctic area have found significant numbers of large hoki with no gonadal development, at times when spawning is occurring in other areas. Histological studies of female hoki in the Sub-Antarctic area in May 1992 and 1993 estimated that 67% of hoki aged 7 years and older in this area would spawn in winter 1992, and 82% in winter 1993 (Livingston et al. 1997). A similar study repeated in April 1998 found that a much lower proportion (40%) of fish aged 7 and older was developing to spawn (Livingston and Bull 2000).

The main spawning grounds are centred on the Hokitika Canyon off the WCSI and in Cook Strait Canyon. The planktonic eggs and larvae move inshore by advection or upwelling (Murdoch et al. 1990; Murdoch 1992), and are widely dispersed north and south with the result that 0+ and 1-year-old fish can be found in most coastal areas of the South Island and parts of the North Island. The major nursery ground for juvenile hoki aged 2–4 years is along the Chatham Rise, in depths of 200 to 600 m. The older fish disperse to deeper water and are widely distributed on both the Sub-Antarctic area and Chatham Rise. Analyses of trawl survey (1991-2002) and commercial data suggests that a substantial proportion of hoki move from the Chatham Rise to the Sub-Antarctic area as they approach maturity, with most movement occurring between ages 3 and 7 years (Bull and Livingston 2000; Livingston et al. 2002). Based on a comparison of RV *Tangaroa* trawl survey data, on a proportional basis (assuming equal catchability between areas), 80% or more of hoki aged 1– 2 years occur on the Chatham Rise. Between ages 3 and 7, this drops to 60–80%. By age 8, 35% or fewerfish are found on the Chatham Rise compared with 65% or more in the Sub-Antarctic. A study of the observed sex ratios of hoki in the two spawning and two non-spawning fisheries found that in all areas, the proportion of male hoki declines with age (Livingstonet al. 2000). There is little information at present to determine the season of movement, the exact route followed, or the length of time required, for fish to move from the Chatham Rise to the Sub-Antarctic area. Bycatch of hoki from tuna vessels following tuna migrations from the Sub-Antarctic area showed a northward shift in the incidence of hoki towards the WCSI in May–June (Bull and Livingston 2000). The capture of net-damaged fish on the Pukaki Rise following the WCSI spawning season where there had been intense fishing effort in

[1] Much of the material in this section and those following has been taken from the report of stock assessment plenary report for hoki (Ministry of Fisheries, 2011a)

1989 also provides circumstantial evidence that hoki migrate from the WCSI back to the Sub-Antarctic area post-spawning (Jones 1993).

Hoki are found in Australian and New Zealand waters. Hoki in New Zealand have been found to be genetically distinct from those in Australia, suggesting that there is little, if any, dispersal between Australia and New Zealand. Morphometric and ageing studies have found consistent differences between adult hoki taken from the two main dispersed areas (Chatham Rise and Southern Plateau), and from the two main spawning grounds in Cook Strait and the WCSI (Livingston et al. 1992; Livingston and Schofield 1996; Horn and Sullivan, 1996). These differences clearly demonstrate that there are two sub-populations of hoki. Whether or not there are genetic differences between them, or the differences are just the result of environmental differences between the Chatham Rise and Sub-Antarctic area, is not known. No genetic differences have been detected using selectively neutral markers (Smith et al. 1981, 1996), but a low exchange rate between stocks could reduce genetic differentiation.

Two pilot studies appeared to provide support for the hypothesis of spawning stock fidelity for the Cook Strait and WCSI spawning areas. Smith et al. (2001) found significant differences in gill raker counts, and Hicks and Gilbert (2002) found significant differences in measurements of otolith rings, between samples of 3-year-old hoki from the 1997 year-class caught on the WCSI and in Cook Strait. However, when additional year-classes were sampled, differences were not always detected (Hicks et al. 2003). It appears that there may be differences in the mean number of gill rakers and otolith measurements between stocks, but, due to high variation, large sample sizes would be needed to detect these (Hicks et al. 2003).

Growth is fairly rapid, with juveniles reaching about 27–30 cm TL at the end of their first year. There is some variability in growth rates, but hoki reach about 40–45, 50–55 and 60–65 cm TL respectively in the following three years. Males appear to mature at 60–65 cm TL at 4–5 years, while females mature at 65–70 cm TL. From the age at maturity, the growth of males and females differs. Males grow up to about 115 cm TL, while females grow to a maximum of 130 cm TL and up to 7 kg weight. Horn and Sullivan (1996) estimated growth parameters for the two stocks separately. Fish from the eastern stock sampled in Cook Strait are smaller on average at all ages than fish from the WCSI. Maximum age is 20–25 years, and the instantaneous rate of natural mortality in adults is about 0.25 to $0.3year^{-1.}$ There is evidence that ageing error causes problems in the estimation of year class strength. For example, the 1989 year class appeared as an important component in the catch-at-age data of older fish, yet this year class is believed to have been extremely weak in comparison to the preceding 1988 and 1987 year classes. A new ageing protocol has been developed to increase the consistency of hoki age estimation. This protocol has been applied to the survey data from 2000 onwards and to catch samples from 2001 (Francis 2001).

Annual variations in hoki recruitment have a considerable impact on this fishery and a better understanding of the influence of climate on recruitment patterns would be very useful for the future projections of stock size. However, the link between climate, oceanographic conditions and recruitment is still unknown, and different studies have arrived at different conclusions regarding these links (Bull and Livingston 2001; Francis et al. 2006; Dunn et al. 2009).

3.3.2 Status of stocks

The Ministry of Fisheries or "MFish" Hoki Working Group has assessed the two spawning groups as separate stocks. Hoki off the west coasts of the North and South Islands and the area south of New Zealand, including Puysegur, Snares Shelf and the Southern Plateau has been taken as one stock (the "western" stock). Hoki off the east coasts of the North and South Islands, Mernoo Bank, the Chatham Rise, and Cook Strait are assumed to be taken to be from the other ('eastern") stock.

Stock assessments of hoki are conducted annually, and have been for many years. The stock assessment for New Zealand hoki has been based on the general stock assessment package CASAL (Bull et al. 2008) since 2003. This package is applied for the stock assessments of several fish stocks in New Zealand and elsewhere. The stock assessment for hoki assesses the stock status of the two stocks of hoki simultaneously, in particular because both stocks are caught in some fishery regions (e.g., the Chatham Rise), and because this also allows some parameters (e.g. natural mortality) to be assumed to be the same for the two stocks.

Fishery-dependent and –independent data are available for stock assessment purposes (e.g., Ministry of Fisheries 2011a; Ballaraet al. 2011; O'Driscoll et al. 2011). Abundance indices based on trawl and acoustic surveys are available for the various regions included in the assessment (Table 1). Data on the age- and size-structure of the population are available from these surveys. Data on catch and effort are available, and information is available on whether a trawl is a single trawl, twin trawl or likely one of these, and this information used to determine the total area trawled (Black and Wood 2011). The catch and effort data have been standardized (Ballaraet al. 2011). However, catch-rate data are not used in the stock assessment because fishery-dependent indices of abundance are available and are preferred given concerns regarding the relationship between catch-rate and stock abundance. Data on the length-composition of the fishery catches by region are available from (government and in the past industry) observers, and these catches are also sampled for age. Information on diet (e.g. Horn and Dunn 2010) and maturity (and hence movement rates) are available.

The New Zealand Ministry of Fisheries has developed a Research and Science Information Standard (Ministry of Fisheries 2011b). The 10-year research programme for deepwater fisheries includes plans for future surveys (Ministry of Fisheries 2010b, c; Table 2).

The stock assessment is developed as part of the New Zealand MFish Working Group process. The stock assessment team provides interim reports and updates to the Hoki Working Group, which reviews the reports and provides recommendations to the team for how the assessment should be conducted. The Working Group is open to all participants, but meeting reports and preliminary documents are not publically available. Rather, the public record of the assessment process is a technical assessment report (e.g., McKenzie and Francis 2009; McKenzie 2011), and the report of the New Zealand Stock Assessment Plenary (e.g., Ministry of Fisheries 2011a). The assessment of hoki was externally reviewed in 1999 (Quinn and Sullivan 1999), but that assessment review was not based on the same assessment method as is that which is currently used.

The population dynamics model for the most recent (2011) stock assessment was sex-specific, and considered 17 age groups (ages 1-17), four areas [Chatham Rise (CR), West Coast South Island (WC), Sub-Antarctic (SA), and Cook Strait (CS)], and two stocks [east (E), and west (W)] which do not mix as adults. The assessment considered six 'fisheries' based on spatial and temporal considerations. The model's annual cycle divided the fishing year into five steps, and included four types of migration. The first type of migration involved only newly spawned fish, all of which were assumed to move from the spawning grounds (CS and WC) to arrive at CR at time step 2 and approximate age 1.6. The second type of movement affected only the young W fish, which were assumed to migrate at time step 3 from CR to SA. The last two types of migrations relate to spawning. Each year, some fish migrate from their home ground (CR for E fish, SA for W fish) to their spawning ground (CS for E fish, WC for W fish) at time step 4. At time step 1 in the following year all spawners return to their home grounds.

The assessment is based on a variety of assumptions. These include that the steepness of the stock-recruitment relationship is known and equal to 0.75. The assessment treats the annual deviations about the stock-recruitment relationship as estimable parameters. The specifications of the assessment have

been largely unchanged since the 2005 assessment, although the pre-specified value for steepness was changed from 0.9 to 0.75 in 2008 (Francis 2009), some of the data inputs have been updated, and the model runs used for management purposes have changed over time. In common with stock assessments for most whitefish fisheries, the key outputs from the hoki stock assessment are unfished spawning biomass, B_0, for each stock, current spawning biomass for each stock, the selectivity patterns for the fisheries and the surveys, and the time-trajectories of spawning stock biomass, fishing mortality and recruitment by stock.

The results from the assessment are summarized in terms of (a) fits to the various data sources corresponding to the maximum posterior density estimates, and (b) posterior distributions for key model outputs including B_0, "current depletion" (the ratio of the current female spawning biomass to B_0), and other reference points. Consistent with the New Zealand harvest policy (Ministry of Fisheries, 2007, 2008, 2011d), hard and soft limits have been defined for the hoki fishery. These limits are defined in terms of fractions of virgin biomass (0.1 and 0.2 B_0) respectively and correspond to reductions in recruitment compared to that expected at the unfished stock size of 43% and 25% respectively given the assumed stock-recruitment steepness of 0.75. Although stock status is reported relative to the estimate of biomass at which MSY is expected to occur under deterministic dynamics ($0.24B_0$ and $0.25B_0$ for the eastern and western stocks respectively), a Management Target of $0.35 – 0.5B_0$ is defined. Reasons for using a more precautionary target reference point than B_{MSY} include that its derivation involves the assumption of perfect information regarding the population and fishery dynamics and that annual changes in TACC occur. Ministry of Fisheries (2011a), note that a target of deterministic B_{MSY} would likely lead to an undesirably high probability of dropping below the soft limit of $0.2B_0$. The choice of target reference point is supported by the results of Management Strategy Evaluation simulations (Langley 2009, 2011). Fishing intensity (defined as the maximum of the ratio of catch-by-age to the numbers-at-age) is reported relative to the fishing intensities corresponding to $0.35 – 0.5B_0$.

The 2011 assessment is the most recent. This assessment was based on two final accepted model runs (denoted runs 1.1 and 1.2 in the 2011 assessment; run 1.1 was the base model). These two sets of model specifications represent different ways of dealing with the unexplained lack of older fish in commercial catches and surveys (age-specific natural mortality or dome-shaped selectivity). The assessment also reported results from two sensitivity tests (runs 1.8 and 1.9), which aimed to address the inability of the model to mimic the large increase in the biomass estimates from the trawl survey in the sub-Antarctic area by postulating changes in survey catchability. One reason explored during the 2011 assessment for the inability of the standard model to mimic these data was that catchability for this survey changed during 2003-07 or during 2008-10. Both of these sensitivity tests led to better fits to the data even when the trawl survey biomass estimates for the sub-Antarctic area were not upweighted.

Figure 2 summarizes the 2011 assessment results in the form of Kobe plots while Figure 3 shows posterior distributions for the time-trajectories of spawning stock biomass, along with the hard and soft limits and the Management Target from the 2011 assessment (Ministry of Fisheries2011a). Table 3 lists the estimates of current stock depletion from each of the stock assessments from 2005 to 2011. The 2011 assessment indicates that, in median terms, the eastern stock has only dropped below the lower end of the Management Target once (2004) [Figure 3, left panel]. In contrast, the western stock dropped below lower end of the Management Target in median terms in 2001 and only recovered to above this stock size in 2010 [Figure 3, right panel]. The western stock was below the soft limit ($0.2B_0$) from 2003-2007. Reasons for the depletion of the western stock include fishing intensity in excess of that corresponding the lower end of Management Target from 2000-2006 (Figure 2, lower panel) and a sequence of poor recruitments from 1995-2001. By 2011, the spawning stock biomass of the western stock had doubled in abundance from a nadir in population size of 0.172 B_0 (lower 95% probability interval for depletion of 0.143 B_0) in 2006 owing to lower exploitation rates and stronger

recruitment. The 2011 assessment estimates that there is a very high probability that both stocks are currently (2011) above the soft limit of $0.2B_0$ and the B_{MSY} values estimated under the assumption of deterministic dynamics (Ministry of Fisheries 2011a). The probability that the western stock has recovered to the lower end of the Management Target ($0.35B_0$) is > 0.90 for the base model (run 1.1). In addition, there is a greater than 0.5 probability that the eastern stock is above the upper end of the management target range ($0.5B_0$). The 2011 fishing intensity is estimated to be equal to (western stock) or lower than (eastern stock) that corresponding to $0.5B_0$ (Figure 1).

Figure 4 shows the posterior median time-trajectories of spawning stock biomass relative to B_0 from the five most recent stock assessments (2007-2011). The results for the eastern stock are more consistent over time than those for the western stock. Both stock assessments appear to exhibit a retrospective pattern whereby the updated assessment is somewhat more pessimistic than the previous stock assessment (Figure 4, lower panels).

Table 1. Abundance indices ('000 t) used in the 2011 stock assessment (source: Ministry of Fisheries 2011a).

Year	Acoustic survey WCSI, winter	Trawl survey Sub-Antarctic, December	Trawl Survey Sub-Antarctic, April	Trawl Survey Chatham Rise, January	Acoustic survey Cook Strait, Winter
1988	417	-	-	-	-
1989	249	-	-	-	-
1990	255	-	-	-	-
1991	340	-	-	-	180
1992	345	80	68	120	-
1993	550	87	-	186	583
1994	-	100	-	146	592
1995	-	-	-	120	427
1996	-	-	89	153	202
1997	654	-	-	158	295
1998	-	-	68	87	170
1999	-	-	-	109	243
2000	396	-	-	72	-
2001	-	56	-	60	220
2002	-	38	-	74	320
2003	-	40	-	53	225
2004	-	14	-	53	-
2005	-	18	-	85	132
2006	-	21	-	99	126
2007	-	14	-	70	216
2008	-	46	-	77	167
2009	-	47	-	144	315
2010	-	65	-	98	-
2011	-	-	-	94*	-

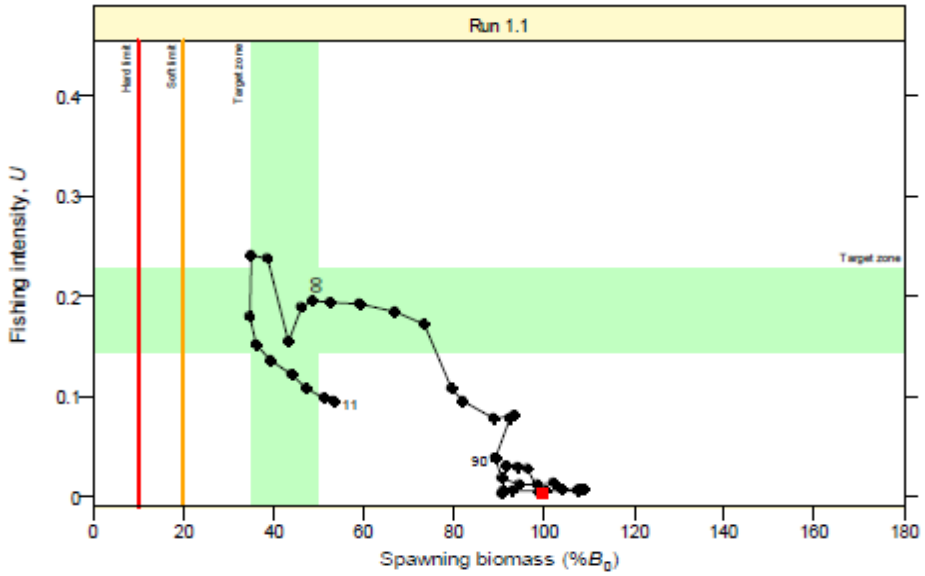
Table 2. Planned surveys for hoki (2011-12 to 2016-17).

Year	Trawl/acoustic survey WCSI	Trawl survey Sub-Antarctic	Trawl Survey Chatham Rise	Acoustic survey Cook Strait
2011-12	Y	Y	Y	Y
2012-13	Y	Y	Y	
2013-14	Y			Y
2014-15		Y	Y	
2015-16	Y		Y	Y
2016-17		Y	Y	

Table 3. Estimates (posterior medians) of spawning biomass in the most recent year (percentage of B_0) from the 2005, 2006, 2007, 2008, 2009, 2010 and 2011 assessments ("current year" is 2005 for the 2005 assessment, is 2008 for the 2008 assessment, etc.). The values in parenthesis are 95% probability intervals.

Assessment year	Run Number	Stock	
		Eastern Stock	Western Stock
2005	4.1	42 (29, 56)	18 (11, 26)
2006	2.4	41 (32, 52)	24 (16, 37)
2007	4.4	46 (37, 54)	20 (12, 32)
2008	2.3	45 (38, 52)	28 (20, 48)
2009	1.1	47 (40, 56)	36 (27, 53)
2010	2.1	51 (43, 60)	40 (33, 53)
2011	1.1	53 (45, 63)	41 (32, 56)
2005	4.3	35 (28, 42)	23 (18, 30)
2006	2.5	33 (27, 40)	24 (17, 31)
2007	4.5	37 (30, 48)	24 (19, 31)
2008	2,4	42 (34, 50)	30 (25, 37)
2009	1.2	49 (40, 59)	39 (32, 49)
2010	2.2	57 (47, 70)	52 (42, 63)
2011	1.2	56 (45, 68)	55 (44, 67)

(a) Eastern stock



(b) Western stock

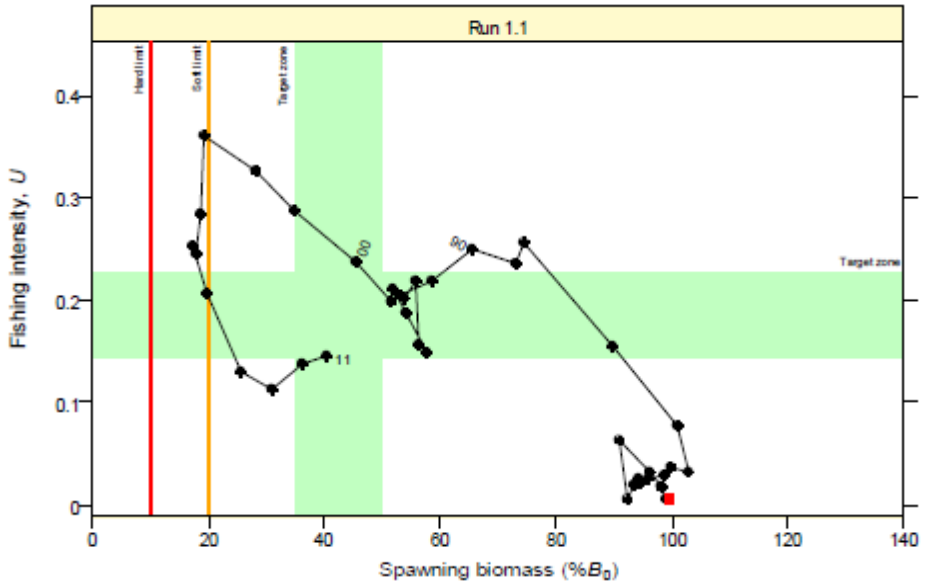


Figure 2.Trajectories over time of fishing intensity (*U*) and spawning biomass (% B_0), for (a) the eastern hoki stock, and (b) the western hoki stock from the start of the assessment period in 1972 (represented by a red square), to 2011. The vertical line at 10% B_0 represents the hard limit, that at 20% B_0 is the soft limit, and the shaded area represents the management target ranges for biomass and fishing intensity. Biomass estimates are based on MCMC results, while fishing intensity is based on corresponding MPD results. Reproduced with permission from the 2011 assessment plenary report (Ministry of Fisheries 2011a).

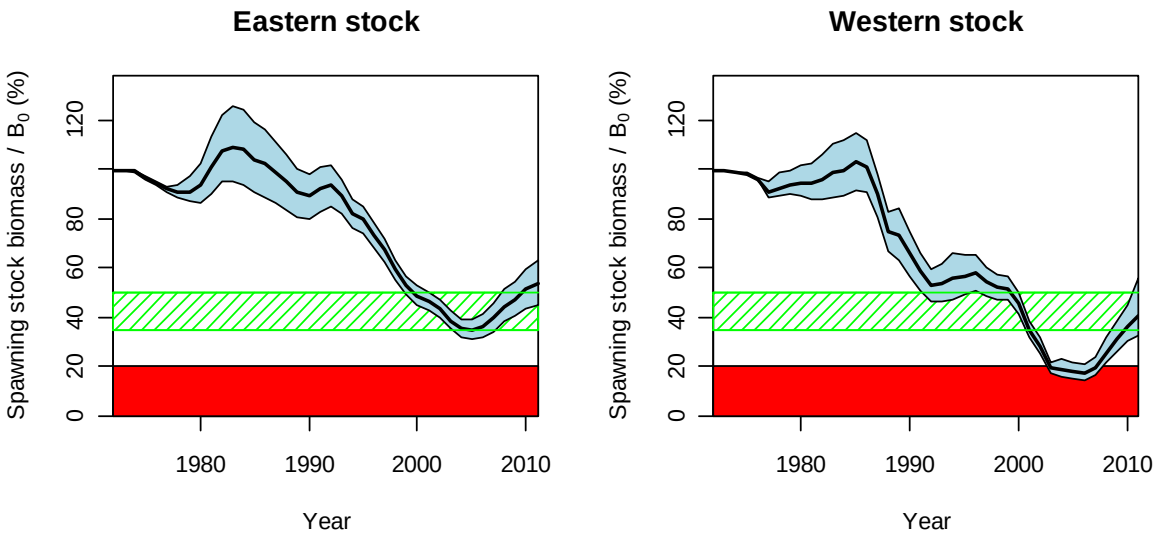


Figure 3.Posterior distributions (medians and 95% probability intervals) for spawning stock biomass relative to B_0 from the 2011 assessment. The red area indicates relative biomass levels below the soft limit and the green hashed area biomass levels within the Management Target.

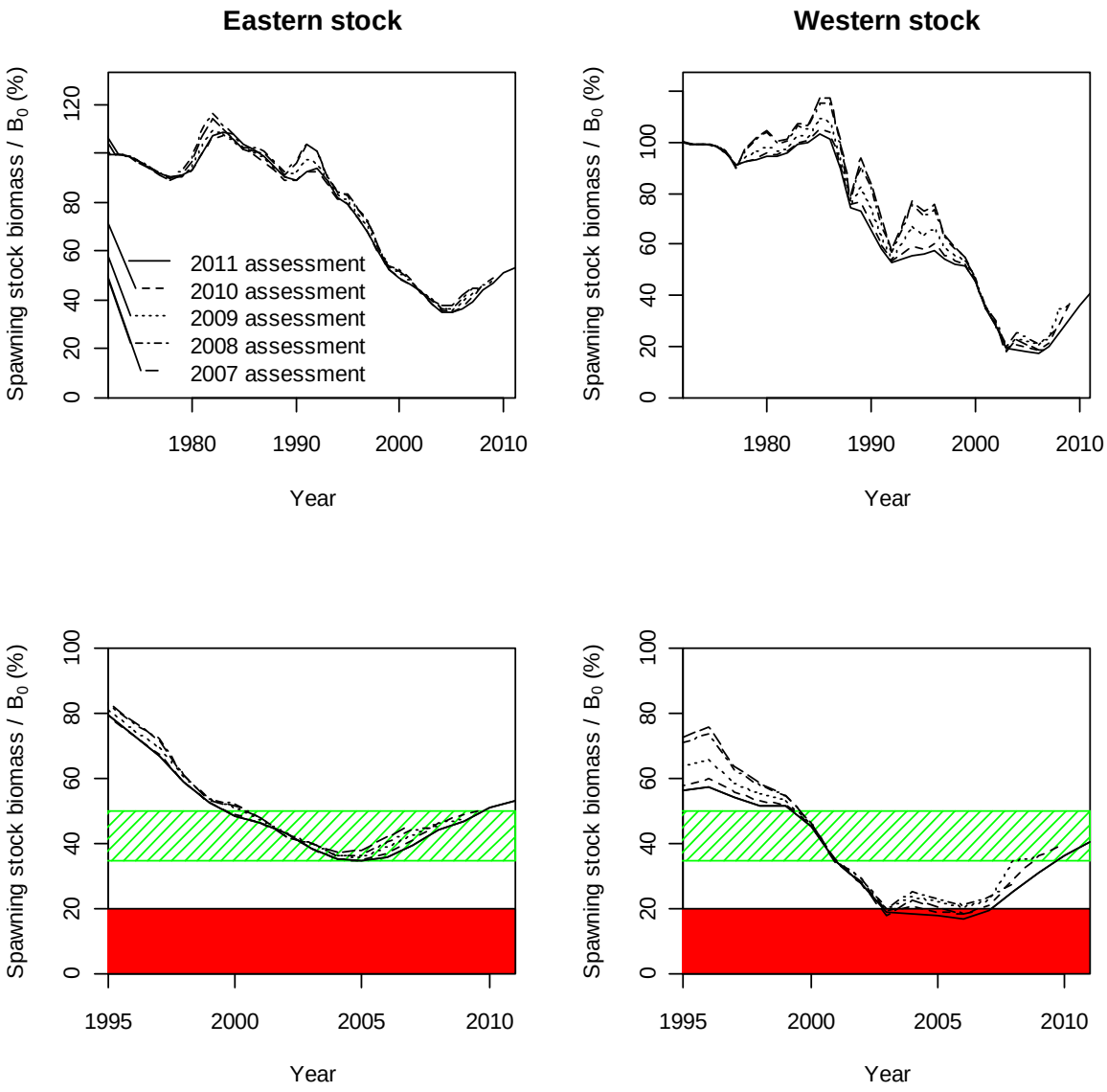


Figure 4.Time trajectories of spawning stock biomass relative to B_0 (posterior medians) by stock for the five most-recent assessments. The red area indicates relative biomass levels below the soft limit and the green hashed area biomass levels within the Management Target.

3.3.3 History of fishery and management

3.3.3.1 History

Historically, the main fishery for hoki has operated from mid-July to late August on the WCSI where hoki aggregate to spawn. The spawning aggregations begin to concentrate in depths of 300–700 m around the Hokitika Canyon from late June, and further north off Westport later in the season. Fishing in these areas continues into September in some years. Since 1988, another major fishery has developed in Cook Strait, where separate spawning aggregations of hoki occur. The spawning season in Cook Strait runs from late-June to mid-September, peaking in July and August. Small catches of spawning hoki are taken from other spawning grounds off the ECSI and late in the season at Puysegur Bank.

Outside the spawning season, when hoki disperse to their feeding grounds, substantial fisheries have developed since the early 1990s on the Chatham Rise and in the Sub-Antarctic area. These fisheries usually operate in depths of 400–800 m (see Figure 5 for the geographic distribution of bottom trawl fishing effort in the New Zealand Exclusive Economic Zone (NZ EEZ)). The Chatham Rise fishery generally has similar catches over all months, except for lower catches in July-September. In the Sub-Antarctic area, catches typically peak in April-June. Out-of-season catches are also taken from Cook Strait and the east coast of the North Island, but these are small by comparison to those elsewhere.

The hoki fishery was developed by Japanese and Soviet vessels in the early 1970s. Catches peaked at 100000 t in 1977, but dropped to less than 20000 t in 1978 when the EEZ was declared and quota limits were introduced (Table 4a). From 1979 on, the hoki catch increased to about 50000 t until an increased TACC from 1986 to 1990 saw the fishery expand to a maximum catch in 1987–88 of about 255000 t (Table 4b). Annual catches ranged between 175000 and 215000 t from 1988–89 to 1995–96, increasing to 230000 t in 1996–97, and peaking at 261000 t in 1997–98, when the TACC was over-caught by 11000 t. Catches have since declined, and the TACC was reduced from 250000 t to 200000 t for the 2001–02 fishing year and further to 180000 t in 2003–04, and to 100000t from 2004-05 to 2006-07 (Table 4b). The TACC was reduced to its lowest level, 90000t, during 2007-08 and 2008-09 owing to the depleted status of the western stock. The TACC for 2009–10 was 110000 t, that for 2010-11 was 120000 t, and that for 2011-12 is 130000t.

The TACC applies to all areas of the EEZ except the Kermadec Fishery Management Area (FMA) which has had a TACC of 10 t. The pattern of fishing has changed markedly since 1988–89 when over 90% of the total catch was taken in the WCSI spawning fishery. The catch from the WCSI declined steadily from 1988–89 to 1995–96, increased again to between 90000 and 110000 t from 1996–97 until 2001–02, then dropped to 45200 t in 2003–04 and continued to decline until 2008-09 when the catch from WCSI was only 20600 t (Table 4c). The catch from WCSI increased to 36400 t in 2009-10. In Cook Strait, catches increased from 1988–89 to 1995–96, declined to a low of 24200 t in 2001–02, and increased again to 40900 t in 2003–04 and have declined essentially continuously since, with the 2009-10 catch from Cook Strait being 17800 t, the third lowest catch from this area since 1988-89. Non-spawning catches on the Chatham Rise increased from 1988–89, peaked at over 75000 t in 1997–98 and 1998–99, then decreased to a low of 30700 t in 2004–05. Catches on the Chatham Rise have varied between 34000 t and 39000 t since 2005-06. Catches from the Sub-Antarctic area increased from under 10000 t in 1988-89 to over 30000 t in 2001-02 and declined substantially to a low of 6200 t in 2004-05 and have increased since, with a 2008-09 catch of 12300 t. Declines in the spawning fisheries at Puysegur and the ECSI in 2003–04 were due to voluntary area closures by industry.

From 1999–2000 to 2001–02, there was a redistribution in catch from eastern stock areas (Chatham Rise ECSI, ECNI, and Cook Strait) to western stock areas (WCSI, Puysegur, and Sub-Antarctic)

(Table 4d). This was initially due to industry initiatives to reduce the catch of small fish in the area of the Mernoo Bank, but from 1 October 2001 this became part of an informal agreement with the Minister of Fisheries that 65% of the catch should be taken from the western fisheries to reduce pressure on the eastern stock. This agreement was removed following the 2003 hoki assessment, which indicated that the eastern hoki stock was less depleted than the western stock, and effort was shifted back into eastern areas, particularly Cook Strait. There was a further agreement with the Minister from 2004-05 to 2006-07 than only 40% of the catch could be taken from western fisheries and the target catch was set to 25000 t from 1 October 2007. The target catch from the western stock was exceeded in 2007-08 and 2008-09. The target catch from the western stock was increased to 50000t (from a total TACC of 110000t) in 2009-10 and this target was achieved. The target catch from the western stock for the 2010-11 fishing year was 60000t. As of 20 December 2011, the catch from the western stock was 60616 t which, given carryover of approximately 2 000t of western ACE, was below the catch limit for the western stock.

Table 4: (a) Reported trawl catches (t) from 1969 to 1987–88, 1969–83 by calendar year, 1983–84 to 1987–88 by fishing year (Oct-Sept) (Ministry of Fisheries 2011a).

Year	USSR	JAPAN	South Korea	New Zealand		Total
				Domestic	Chartered	
1969	–	95	–	–	–	95
1970	–	414	–	–	–	414
1971	–	411	–	–	–	411
1972	7 300	1 636	–	–	–	8 936
1973	3 900	4 758	–	–	–	8 658
1974	13 700	2 160	–	125	–	15 985
1975	36 300	4 748	–	62	–	41 110
1976	41 800	24 830	–	142	–	66 772
1977	33 500	54 168	9 865	217	–	97 750
1978*	2 028†	1 296	4 580	678	–	8 581
1979	4 007	8 550	1 178	2 395	7 970	24 100
1980	2 516	6 554	–	2 658	16 042	27 770
1981	2 718	9 141	2	5 284	15 657	32 802
1982	2 251	7 591	–	6 982	15 192	32 018
1983	3 853	7 748	137	7 706	20 697	40 141
1983–84	4 520	7 897	93	9 229	28 668	50 407
1984–85	1 547	6 807	35	7 213	28 068	43 670
1985–86	4 056	6 413	499	8 280	80 375	99 623
1986–87	1 845	4 107	6	8 091	153 222	167 271
1987–88	2 412	4 159	10	7 078	216 680	230 339

* Catches for foreign licensed and New Zealand chartered vessels from 1978 to 1984 are based on estimated catches from vessel logbooks. Few data are available for the first 3 months of 1978 because these vessels did not begin completing these logbooks until 1 April 1978.

† Soviet hoki catches are taken from the estimated catch records and differ from official MAF (Ministry of Agriculture and Fisheries) statistics. Estimated catches are used because of the large amount of hoki converted to meal and not recorded as processed fish.

Table 4: (b) Reported catch (t), and TACC (t) for Fishery Management Area HOK 1 from 1986– 87 to 2004–05 (rounded to nearest 500 t). (Source: Ministry of Fisheries 2011a).

Year	Reported catch	Estimated catch	TACC
1986–87	158 171	175 000	250 000
1987–88	216 206	255 000	250 000
1988–89	208 500	210 000	250 000
1989–90	210 000	210 000	251 884
1990–91	215 000	215 000	201 897
1991–92	215 000	215 000	201 897
1992–93	195 000	195 000	202 155
1993–94	191 000	190 000	202 155
1994–95	174 000	168 000	220 350
1995–96	210 000	194 000	240 000
1996–97	246 000	230 000	250 000
1997–98	269 000	261 000	250 000
1998–99	244 500	234 000	250 000
1999–00	242 000	237 000	250 000
2000–01	230 000	224 500	250 000
2001–02	195 500	195 500	200 000
2002–03	184 500	180 000	200 000
2003–04	136 000	133 000	180 000
2004–05	104 500	102 000	100 000
2005–06	104 500	100 500	100 000
2006–07	101 000	97 500	100 000
2007–08	89 500	87 500	90 000
2008–09	89 000	87 500	90 000
2009–10	107 000	105 000	110 000
2010–11	115 782*		120 000
2011–12			130 000

Note: Discrepancies between QMS data and actual catches from 1986 to 1990 arose from incorrect surimi conversion factors. The estimated catch in those years has been corrected from conversion factors measured each year by Scientific Observers on the WCSI fishery. Since 1990 the new conversion factor of 5.8 has been used, and the total catch reported to the QMS is considered to be more representative of the true level of catch. * Provisional (20 December 2011)

Table 4: (c) Estimated total catch (t) of hoki by area[1], 1988–89 to 2004–05. Estimated catches were scaled to reported catch totals (Source: Ministry of Fisheries, 2011a).

	Spawning fisheries				Non-spawning fisheries				
Fishing Year	WCSI	Puysegur	Cook Strait	ECSI	Sub-Antarctic	Chatham Rise and ECSI	ECNI	Null[2]	Total catch
1988–89	188 000	3 500	7 000	-	5 000	5 000	-	-	208 500
1989–90	165 000	8 000	14 000	-	10 000	13 000	-	-	210 000
1990–91	154 000	4 000	26 500	1 000	18 000	11 500	-	-	215 000
1991–92	105 000	5 000	25 000	500	34 000	45 500	-	-	215 000
1992–93	98 000	2 000	21 000	-	26 000	43 000	2 000	3 000	195 000
1993–94	113 000	2 000	37 000	-	12 000	24 000	2 000	1 000	191 000
1994–95	80 000	1 000	40 000	-	13 000	39 000	1 000	-	174 000
1995–96	73 000	3 000	67 000	1 000	12 000	49 000	3 000	2 000	210 000
1996–97	91 000	5 000	61 000	1 500	25 000	56 500	5 000	1 000	246 000
1997–98	107 000	2 000	53 000	1 000	24 000	75 000	4 000	3 000	269 000
1998–99	101 100	2 900	43 200	2 400	34 200	56 500	1 400	500	242 400
1999–00	100 600	6 900	36 600	2 400	30 400	50 500	2 100	100	229 900
2000–01	91 200	5 400	24 200	2 900	30 500	39 600	1 200	-	195 500
2001–02	73 900	6 000	36 700	7 100	20 100	39 200	900	-	184 700
2002–03	45 200	1 200	40 900	2 100	11 700	33 600	900	-	135 800
2003–04	33 100	5 500	24 800	3 300	6 200	30 700	500	100	104 400
2004–05	38 900	1 500	21 800	700	6 700	34 100	700	-	104 400
2005–06	33 100	400	20 100	1 000	7 700	37 900	700	-	101 000
2007–08	21 000	300	18 400	2 300	8 700	38 000	600	-	89 300
2008–09	20 600	200	17 500	1 100	9 800	39 000	600	-	88 800
2009–10	36 400	300	17 800	700	12 300	39 200	600	-	107 200

* Estimated catches adjusted *pro rata* to the reported catch in Table 1(b) for 1993–94 to 2003–04.

– Catch less than 500 t.

Table 4: (d) Proportions of total catch (Source: Ministry of Fisheries 2011a).

	Spawning fisheries		Non-spawning fisheries	
Fishing Year	West	East	West	East
1989-1990	82%	7%	5%	6%
1990-1991	74%	13%	8%	5%
1991-1992	51%	12%	16%	21%
1992-1993	51%	11%	14%	24%
1993-1994	60%	19%	7%	14%
1994-1995	47%	23%	7%	23%
1995-1996	36%	33%	6%	25%
1996-1997	39%	26%	10%	25%
1997-1998	41%	20%	9%	30%
1998-1999	38%	20%	10%	32%
1999-2000	43%	19%	14%	24%
2000-2001	47%	17%	13%	23%
2001-2002	49%	14%	16%	21%
2002-2003	43%	24%	11%	22%
2003-2004	34%	32%	9%	25%
2004-2005	37%	27%	6%	30%
2005-2006	39%	21%	7%	33%
2006-2007	33%	21%	8%	38%
2007-2008	24%	23%	10%	43%
2008-2009	23%	21%	11%	45%
2009-2010	34%	17%	12%	37%

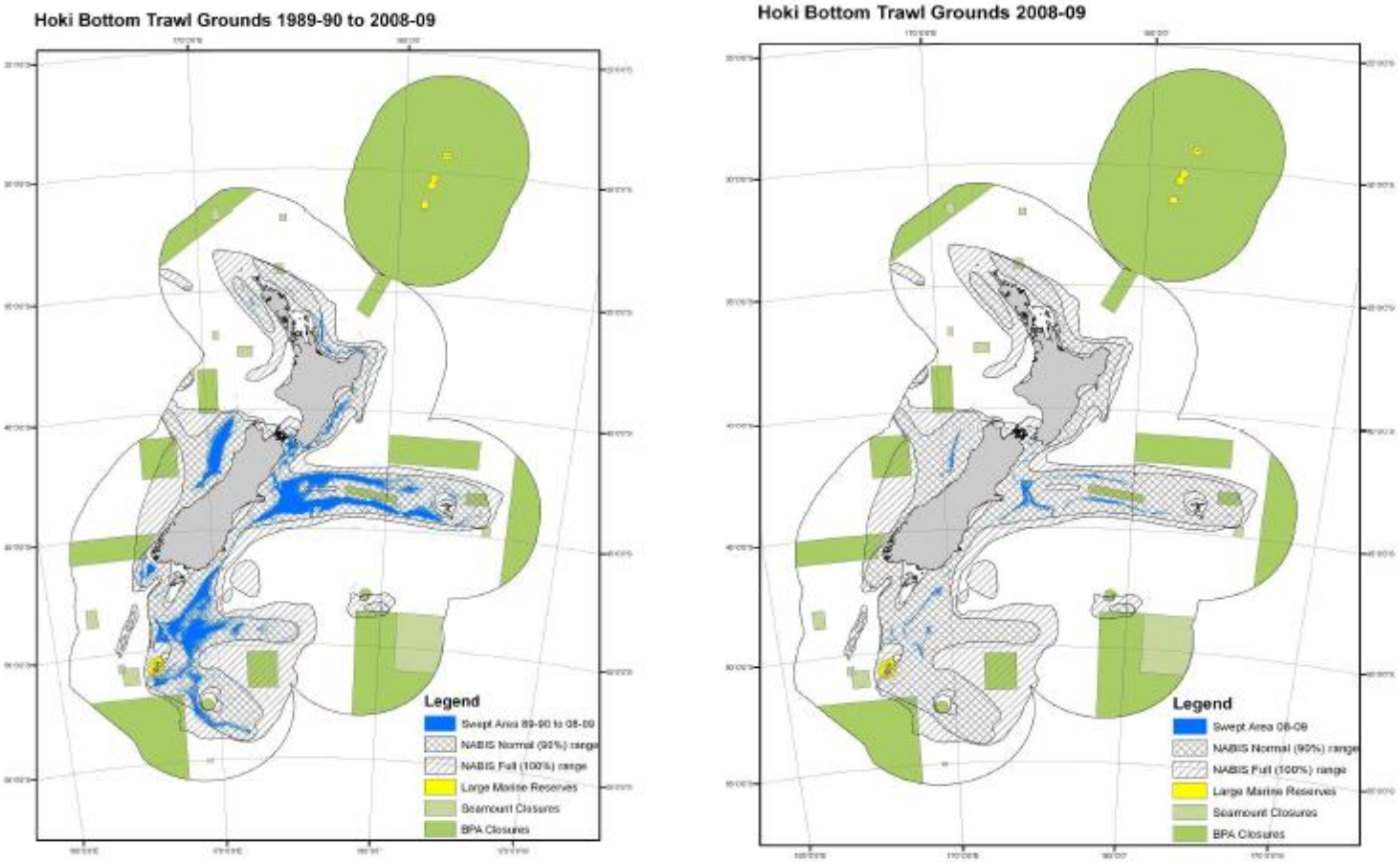


Figure 5. Hoki bottom trawl grounds (1989-89 to 2008-09; 2008-09) (Source: Black and Wood 2011).

3.3.3.2 The harvest strategy

The Fisheries Act 1996 requires the Minister of Fisheries to set a TAC that maintains the stock at or above a level that can produce the maximum sustainable yield (MSY), B_{MSY}, or which moves the stock towards B_{MSY} (or a higher biomass). Various interpretations of *MSY* (and hence B_{MSY}) have been developed (e.g. Constant Annual Yield, CAY; Maximum Constant Yield, MCY) and estimates of these quantities are reported for some New Zealand fish stocks. The legislation does not specify whether B_{MSY} is a target, limit, or threshold.

The New Zealand Harvest Strategy Standard, (HSS) (Ministry of Fisheries, 2007, 2008, 2011d) defines the target biomass for a New Zealand fish stock as "the desired biomass level or fishing mortality rate, or catch or proxies for each of these" and notes that "Fish populations fluctuate in size even in the absence of fishing. With any harvest strategy the biomass will continually fluctuate. The average level around which biomass is expected to fluctuate constitutes the target biomass". In relation to limits, the HSS defines limits as "the point at which further reductions in stock size (or proxies) are likely to ultimately lead to an unacceptably high risk of stock collapse and/or a point at which current and future utility values are diminished. Limits (both "soft" and "hard") should be set well above extinction thresholds – rather should act as upper bounds on the zone where depensation may occur", and adopts default values for the hard and soft limits. The default soft limit is 50% of B_{MSY} or $0.2B_0$, whichever is higher, and the default hard limit is 25% of B_{MSY} or $0.1B_0$, whichever is higher. The HSS provides guidelines for the information which Working Groups should provide for stocks between the soft limit and the target (Ministry of Fisheries 2011d).

The assessment is developed and peer-reviewed by the Hoki Working Group (see Ministry of Fisheries (2011e) for the Terms of Reference for Fisheries Assessment Working groups). Each of these Working Groups, including the Hoki Working Group, has selected its own set of reference points. The hard and soft limits for hoki are 0.1 B_0 and 0.2 B_0 respectively while theManagement Target is 0.35 - 0.5 B_0. Langley (2009) reports that the Management Target was initially essentially an "educated guess" by hoki fishery managers and was set at a level that was expected to maintain the spawning biomass above 0.2 B_0.

The annual stock assessment reports spawning stock biomass relative to the soft and hard limits, the estimate of B_{MSY} based on deterministic considerations, and the Management Target. The assessment then forms the basis for forecasts of spawning biomass under different levels of TACC and the split of the catch between the western and eastern stocks. The Ministry of Fisheries then analyses the report of the Stock Assessment Plenary and proposes several options for consideration by the Minister (e.g. in 2011 whether to retain the TAC at 121240 t (a TACC of 120000 t) or increase it to 131240 t (a TACC of 130000 t); Ministry of Fisheries, 2011c), and provides an analysis of the options in terms of the Minister's responsibilities under the Fisheries Act. The analysis includes the impact of each option on the stock size of hoki, bycatch of marine protected species, other fish species in the hoki fishery, and benthic interactions. The initial and final position papers are made available for comment by stakeholder groups; in 2011 comments on the options were received from fishing companies, industry groups, environmental NGOs, and SeaFIC (Ministry of Fisheries, 2011f). The comments are integrated into a final advice paper (e.g. Ministry of Fisheries, 2011g), which is then used by the Minister when s/he makes his decision.

While the harvest strategy is based on the objectives and goals of the Fisheries Act and the Harvest Strategy Standard specifies soft and hard limits and provides guidance regarding target reference points and rebuilding plans for stocks depleted to below the soft limit, there is no formal harvest control rule (or decision rule) for hoki in the sense of a mathematical function which determines the TAC giving the results of monitoring data. Langley (2009, 2011) conducted an evaluation of alternative specifications for the lower and upper ends of the Management Target using Management Strategy Evaluation (MSE). However, that study was somewhat limited because it did not explicitly

simulate the actual stock assessment and because the harvest control rules evaluated were necessarily approximations to what is done in practice.

3.3.3.2 Management controls

3.3.3.2.1 The Quota Management System

The primary management tool to implement the harvest strategy is the Quota Management System (QMS) (see Clement et al. 2003, for a guide to the QMS). The QMS is based on controlling outputs, and is designed to achieve sustainable use of the fisheries resources while allowing economic efficiency in the industry. The QMS approach is to directly limit the total quantity of fish taken. The major focus is on the amount taken by the commercial fishing industry so that there are sufficient fish available for non-commercial uses and for the conservation of the resource. (The needs of recreational fishers and Maori interests are provided for before commercial quota levels are set.)

The quantity of fish that can be taken for each fish stock by both commercial and recreational fishers is known as the TAC. An allowance is made from the TAC to provide for recreational fishing and customary Maori uses. The remainder is available to the commercial sector as the TACC. This is the total quantity of each fish stock that the commercial fishing industry can catch that year.

The TACC for each fishery comprises individual transferable quotas (ITQs) in the form of quota shares. There are 100 million quota shares for each quota stock. Quota shares give commercial fishers the right to harvest a proportion of the TACC for a particular quota stock (a quota species in a defined quota area). Quota shares allow individual commercial fishers or companies to own a share of the TACC for a particular species in a defined area (a quota stock). Quota shares are tradable and can be bought or sold on the open market. Quota shares generate ACE at the start of each fishing year and the number of quota shares owned determines the amount of ACE that quota owner receives. ACE is the right that allows the holder of the ACE to commercially harvest a given quantity of fish. This ACE lasts for one fishing year and is also tradable on the open market. The sum of all ACE for a particular fishstock is equal to the TACC.

When a TACC is increased or reduced, the amount of ACE generated by the quota owner's quota shares is proportionately increased or reduced. Quota ownership gives commercial fishers secure access to the commercial fishery and stops the so-called 'race for the fish'. Fishers can make long term plans because their rights are secure and tradable; they can spread their catch throughout the year and decide when to catch "their" fish. They can also fine tune their ACE holdings by purchasing additional ACE they require to balance ACE holdings against their catch and by selling ACE for fish they are unlikely to catch. Penalties associated with catching stocks for which a fisher does not have sufficient ACE provide an incentive for fishers to balance ACE holdings with their catch.

The Minister of Fisheries, under Section 13 of the Fisheries Act 1996, sets a total allowable catch for a quota management species that:

a) maintains the stock at or above a level that can produce the maximum sustainable level or
b) enables the level of any stock whose current level is below that which can produce the maximum sustainable level to be altered -
    i) in a way and at a rate that will result in the stock being restored to or above a level that can produce the maximum sustainable level 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 maximum sustainable level 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.

In considering the way in which and rate at which a stock is moved towards or above maximum sustainable level, the Minister must have regard to such social, cultural and economic factors as he/she considers relevant.The QMS is also being used in dealing with Maori claims to commercial fisheries. The Government has purchased quota and transferred it to Te Ohu Kai Moana (TOKM i.e. Treaty of Waitangi Fisheries Commission) in recognition of Maori Treaty of Waitangi rights to the commercial fishery. TOKM distributes quota to iwi. When the initial species were introduced into the QMS (e.g. hoki) 10% was given to Maori. 20% of commercial quotas of all new species now brought into the QMS are given to the TOKM to distribute.

3.3.3.2.2. Other regulatory management tools

Regulations cover both commercial and recreational fishers to protect fish stocks and the environment. For example, chartered vessels may not fish within 25 miles of the New Zealand coast, and there are various vessel restrictions around some parts of the coast (Ministry of Fisheries 2011a). On the WCSI for example, a 25-mile line has closed much of hoki spawning area in the Hokitika Canyon and most of the area south to Cook Canyon to vessels larger than 46 m since 1998, with restriction on fishing areas having been in place since 1986. In Cook Strait, the whole spawning area is closed to vessels larger than 46 m.

Deemed values are an administrative penalty and a financial disincentive to overcatching ACE and form an important tool in encouraging commercial fishers to balance catch against ACE. The deemed value rate that applies for each quota stock is set at a level designed to achieve this. When the amount of reported catch is more than the amount of ACE owned by a fisher, a deemed value invoice is issued. Deemed value invoices must be paid within 20 days of the date on the invoice otherwise the fishing permit will be suspended. There are two types of deemed values, annual and interim deemed values. The Ministry of Fisheries sets both interim and annual deemed value rates for each quota management stock. The annual deemed value rate for a stock will always be higher than the interim deemed value rate.

An interim deemed value is charged if the reported catch for the month is more than the ACE as at the 15th day of the following month. Interim deemed values are charged each month for all quota stocks, for the first eleven months of the fishing year for that stock. An annual deemed value is charged if the reported catch for the fishing year for a stock is more than the ACE on the 15th day of the month following the end of the fishing year. The annual deemed value is calculated by multiplying the total amount 'overfished' for the year by the annual deemed value rate for that stock. A differential annual deemed value will be usedfor some stocks. Any interim deemed values that have already been paid will be deducted from this figure and this will leave the annual deemed value that will be charged.

3.3.3.2.3 Non-regulatory management tools

The former Hoki Fishery Management Company introduced a Code of Practice for hoki target trawling in 2001 with the aim of protecting small fish. This Code of Practice was revised by the DWG in October 2009, and aims to manage and monitor fishing effort within four industry Hoki Management areas, where there are thought to be high abundance of juvenile hoki (defined as fish less than 55 cm total length) (Narrows Basin of Cook Strait, Canterbury Banks, Mernoo and Puysegur) (Deepwater Group 2011a). These areas are closed to hoki targeting by vessels greater than 28 m, with increased monitoring when targeting species other than hoki. There is also a general recommendation that vessels move from areas where catches of juvenile hoki compromise more than 20% of the hoki catch by number.

Hoki is assessed and managed as two separate stocks (eastern and western) included under a single TAC and QMS fishstock (HOK1). Within the TACC there are separate catch limits for the eastern and western stocks. Managing the catch limits for the eastern and western stocks is a process coordinated

by industry (DWG, on behalf of quota owners). Owners of hoki quota and ACE become signatories to an agreement that contains the following key elements:

- ACE generation / trading: For each signatory, their HOK1 ACE is partitioned into either east or west ACE in proportion to the agreed east/west catch limit. Each signatory must use east or west ACE to balance catch from the eastern or western stocks respectively. East or west ACE must be traded as east or west ACE in order to maintain the integrity of the agreement.
- Reporting catch / catch verification / catch balance information: Signatories must report all catch of hoki as coming from either the eastern or western stocks (Deepwater Group 2011b). A verification process is undertaken to confirm the catch as coming from the stock to which it has been reported. During a fishing year, DWG publishes both aggregated and signatory-specific catch balances.
- Becoming signatories to the agreement is an annual process that is voluntary: Each year a proportion of ACE is held by parties who have not signed up to the agreement. Quota/ACE holders can become parties to the agreement at any stage during a fishing year; they are not required to sign up prior to the start of a fishing year. The ACE trading / catch balancing arrangements are administered by FishServe. FishServe operates an ACE register that operates outside the statutory ACE register required under the Fisheries Act 1996. When trading hoki ACE, signatories must notify FishServe of the details of each ACE transfer. Fishers must notify FishServe whether their hoki catch is from the eastern or western stock. This must be done at the same time as providing statutory Monthly Harvest Returns required under the Fisheries Act 1996. The verification process involves FishServe obtaining reports from the Ministry of catch and effort information from returns provided by signatories. FishServe analyses that information, which contains positional data, to verify that a signatory's catch has been taken in the stock to which it has been attributed.

3.4 Principle Two: Ecosystem background

3.4.1. The aquatic ecosystem, its status and any particularly sensitive areas, habitats or ecosystem features influencing or affected by the fishery

New Zealand's EEZ extends over 30^{o} of latitude, and covers sub-tropical to sub-Antarctic marine ecosystems. Consequently, it is an extremely diverse area biologically, and in terms of habitats. Hoki occur widely through New Zealand's EEZ, andfishingtakes place in four main areas: West Coast South Island and Cook Strait (fisheries based on spawning hoki), and the Chatham Rise and Sub-Antarctic (non-spawning hoki). The Chatham Rise and Sub-Antarctic areas share many key ecosystem characteristics (e.g. primary productivity, depth, benthos, fish (Pinkerton 2011)).

Hoki is a key ecological component of the systems it inhabits (reviewed in Pinkerton 2011), particularly in the non-spawning fisheries. Its ecological functions include predator, prey and competitor. Hoki dominates the demersal fish community of the upper slope (200-800 m), especially around the South Island of New Zealand (Francis et al. 2002). On the Chatham Rise, hoki forage at benthopelagic and mesopelagic depths. Its main prey are midwater fishes especially lanternfish, and natant decapods (Clark 1985a, b; Dunn et al. 2009). Larger hoki (> 80 cm) tend to prey on fish and squid to a greater extent than smaller hoki (Dunn et al. 2009). Hoki diet overlaps with that of other fish and molluscs, such as alfonsino, arrow squid, hake, javelinfish, Ray's bream, and shovelnose dogfish (Dunn et al. 2009). Diets are similar for hoki in the Chatham Rise and Sub-Antarctic areas. Hoki are prey to piscivorous species such as hake, ling, stargazers, smooth skates, and deep water sharks (Dunn et al. 2009).

The trawl method affects the ecosystem through removing target, retained, and bycatch species, as well as causing incidental mortalities of Endangered Threatened and Protected (ETP) species. In spawning fisheries, midwater trawls are used more frequently than demersal trawls due to spawning hoki occurring in midwater aggregations. In midwater habitats, trawl disturbance relates largely to ecosystem impacts (see below).Demersal trawls are used largely in the non-spawning fisheries on the Chatham Rise and in the Sub-Antarctic area (Ministry of Fisheries 2011a). Potential effects of demersal trawling include habitat damage, sediment disturbance, disruption of benthic processes, lack of organism regeneration, especially when repeat trawling occurs, and are increasingly well studied worldwide (e.g. Thrush and Dayton 2002; Clark and Rowden 2009).

Management of the hoki fishery has not yet included an extensive assessment of 'significant' habitats (Ministry of Fisheries 2011a). However, relevant information in this regard includes areas of particular importance for fishery sustainability (e.g. for spawning, or occupied by juvenile hoki (O'Driscoll et al. 2003)), and spatial overlays of trawl tracks with marine environment and/or biological classifications. Currently, the best single tool currently available to evaluate benthic habitat types is the Benthic-Optimised Marine Environment Classification (BOMEC) for New Zealand waters (Leathwick et al. 2009). Using the fifteen classes categorised therein, Black and Wood (2011) overlaid demersal trawl tracks comprising hoki fishing effort for each fishing year from 1989/90 – 2009/10. Resulting exposure to demersal trawling is summarised in Black and Wood (2011). This analysis highlights the areal extent and intensity of demersal trawling for hoki, e.g., trawling covers parts of the same habitat classesinterannually, and the most extensively trawled BOMEC class is 9 on the Chatham Rise, where from 1989/90 - 2009/10, 11% of BOMEC 9 remaineduntrawled.

Some submarine features (seamounts) are closed to demersal trawling in the New Zealand EEZ. These closures confer effective habitat protection. Closures occur largely outside the areas fished intensively for hoki (Ministry of Fisheries 2010a). Finally, although of controversial ecological or

biodiversity value, Benthic Protection Areas, where demersal trawling is not permitted, were established in 2007 (Helson et al. 2010, but see Leathwick et al. 2008).

From an ecological perspective, the removal of hoki biomass in quantity is expected to result in some ecosystem-level effects in non-spawning fisheries, given the dominance of hoki in these systems. However, assessing and quantifying causation is challenging due to the operation of other fisheries in the hoki fishery areas, as well as due to the effects of any environmental factors (although expert opinion is that the effects of climate change and the El Nino Southern Oscillation, for example, are unlikely to lead to the changes observed (Boyd 2011)). The Chatham Rise fishery is best understood in this respect, and an ecosystem model has been developed for this fishery (Pinkerton 2011). Changes include declines in the mean trophic level of commercial and trawl survey catches and changes in species abundance (Tuck et al. 2009, Pinkerton 2011) although this may be a consequence of the data analysed in these coming from when the biomass of hoki was declining. The ecosystem supporting the hoki fishery in the Sub-Antarctic area is less well studied than that on the Chatham Rise. However, ecosystem impacts are considered likely to be similar inthe two non-spawning fisheries. Ongoing change is reported from the Sub-Antarctic ecosystem, including declining mean trophic level (Tuck et al. 2009). Again, a key driver of this observed change is expected to have been the decline in hoki biomass. At an EEZ level, the impacts of fisheries' removals on ecosystem productivity have also been examined. The effects of fisheries were assessed, preliminarily, to be sustainable in an energetic context (Knight et al. 2011).

In summary, the two most significant ecosystem-level considerations in the hoki fishery are the effects of removal of hoki biomass from the system and the impacts of demersal trawling activity on the benthos and benthic habitats. Retained, bycatch, and ETP species are considered further below.

Other fisheries overlap with the hoki fishery spatially, such as trawl fisheries targeting hake and ling (Ministry of Fisheries 2011a). Consequently, while considered separately for the purposes of this re-assessment, trawl activity in all these fisheries will naturally have additive effects on the marine ecosystems that support them.

3.4.2. The retained, bycatch and endangered, threatened or protected (ETP) species including their status and relevant management history

3.4.2.1 Retained and bycatch species

The hoki fishery is a component of New Zealand's Deepwater and Middle-depth fisheries which target a range of species (Ministry of Fisheries, 2010a). Ballara et al. (2010) provide an overview of catches and discards in the hoki fishery. The bulk of the catch in the hoki fishery consists of hoki (>80% for 2006-07 to 2010-11according to observer data). The remaining species can be divided into those which are managed under the QMS and those which are not included in the QMS and are generally discarded. For the purposes of this assessment, retained species are taken to species for which a small percentage of the catch is recorded as being discarded in Ballaraet al. (2010). Incidental bycatch species are defined in the hoki management plan (Ministry of Fisheries 2010b) as non-QMS species which are usually discarded or rendered to fish meal and are considered to be of little commercial value. The top 50 species caught in hoki trawls between 2006-07 –2010-2011based on observer dataare shown in Table 5. The main retained species caught is ling. Vessel catch reporting and trawl surveys provide additional information on retained and bycatch species.

Table 5: Catch weight by species name for the top 50 species caught in hoki trawls – from observer records for the period 1 October 2006 to 30 September 2009 (source: from Ministry of Fisheries (2010b), Ministry of Fisheries 2012)

	2006/07		2007/08		2008/09		2009/10		2010/2011	
Common name	Sum of observed catch (t)	% of catch	Sum of observed catch (t)	% of catch	Sum of observed catch (t)	% of catch	Sum of observed catch (t)	% of catch	Sum of observed catch (t)	% of catch
Hoki	18,864.5	85.96	20,139.5	83.13	19,521.6	87.17	24,696.0	87.19	19,150.7	86.33
Ling	475.2	2.17	1,210.9	5.00	548.0	2.45	623.5	2.20	527.1	2.38
Javelinfish	573.2	2.61	601.3	2.48	494.0	2.21	733.6	2.59	436.0	1.97
Rattails	200.4	0.91	372.5	1.54	334.2	1.49	571.9	2.02	381.0	1.72
Silver warehou	358.3	1.63	221.7	0.92	190.8	0.85	337.0	1.19	376.2	1.70
Hake	208.7	0.95	227.5	0.94	227.1	1.01	234.6	0.83	307.2	1.38
Spiny dogfish	238.4	1.09	214.6	0.89	187.3	0.84	232.5	0.82	216.5	0.98
Frostfish	176.4	0.80	159.5	0.66	132.7	0.59	18.6	0.07	17.7	0.08
White warehou	166.7	0.76	116.7	0.48	58.0	0.26	64.3	0.23	78.8	0.36
Pale ghost shark	84.5	0.39	131.4	0.54	81.4	0.36	101.1	0.36	72.2	0.33
Black oreo	50.4	0.23	81.2	0.34	13.6	0.06	62.0	0.22	3.6	0.02
Shovel-nose dogfish	25.9	0.12	73.3	0.30	34.7	0.16	29.3	0.10	34.8	0.16
Ribaldo	41.5	0.19	49.1	0.20	27.2	0.12	39.2	0.14	28.3	0.13
Southern blue whiting	1.1	0.00	60.9	0.25	37.3	0.17	7.2	0.03	40.2	0.18
Lookdown dory	48.1	0.22	24.4	0.10	24.4	0.11	33.4	0.12	34.3	0.15
Baxter's lantern dogfish	6.9	0.03	62.4	0.26	22.2	0.10	60.1	0.21	17.1	0.08
Alfonsino	59.4	0.27	20.3	0.08	8.6	0.04	59.9	0.21	8.1	0.04
Sea perch	38.6	0.18	33.0	0.14	15.9	0.07	55.3	0.20	68.3	0.31
Blue warehou	0.2	0.00	0.5	0.00	80.2	0.36	3.0	0.01	0.3	0.0
Squid	27.2	0.12	24.1	0.10	16.3	0.07	26.3	0.09	29.3	0.13
Other sharks and dogfish	21.7	0.10	29.7	0.12	14.2	0.06	21.3	0.08	13.7	0.06
Redbait	7.9	0.04	12.1	0.05	41.9	0.19	9.4	0.03	2.9	0.01
Stargazer	23.5	0.11	22.4	0.09	14.2	0.06	23.4	0.08	22.9	0.10
Jack mackerel	0.6	0.00	1.5	0.01	47.8	0.21	0.7	0.00	1.9	0.01
Rays bream	7.1	0.03	17.4	0.07	23.3	0.10	9.8	0.03	11.5	0.05
Silverside	13.4	0.06	26.9	0.11	7.1	0.03	4.7	0.02	12.9	0.06
Smooth skate	14.2	0.06	21.5	0.09	10.5	0.05	22.1	0.08	25.0	0.11
Barracouta	28.7	0.13	7.2	0.03	6.3	0.03	4.0	0.01	44.1	0.20
Orange roughy	9.7	0.04	10.8	0.04	20.3	0.09	1.6	0.01	1.3	0.01
Spiky oreo	13.8	0.06	22.8	0.09	3.0	0.01	5.2	0.02	8.0	0.04

	2006/07		2007/08		2008/09		2009/10		2010/2011	
Common name	**Sum of observed catch (t)**	**% of catch**	**Sum of observed catch (t)**	**% of catch**	**Sum of observed catch (t)**	**% of catch**	**Sum of observed catch (t)**	**% of catch**	**Sum of observed catch (t)**	**% of catch**
Warty squid	5.2	0.02	18.8	0.08	11.7	0.05	27.0	0.10	7.9	0.04
Long-nosed chimaera	10.4	0.05	15.4	0.06	6.6	0.03	11.1	0.04	7.6	0.03
Ghost shark	9.9	0.04	9.5	0.04	12.4	0.06	12.2	0.04	17.1	0.08
Seal shark	8.3	0.04	13.3	0.06	5.5	0.02	5.8	0.02	12.8	0.06
Smooth oreo	14.5	0.07	6.6	0.03	0.5	0.00				
Red cod	12.2	0.06	4.9	0.02	3.1	0.01				
Bluenose	5.5	0.03	3.0	0.01	7.1	0.03	8.8	0.03	2.3	0.01
Porbeagle shark	2.3	0.01	4.3	0.02	8.6	0.04	3.7	0.01	2.3	0.01
Gemfish	2.9	0.01	1.5	0.01	9.1	0.04	5.5	0.02	27.2	0.12
Longnose velvet dogfish	1.3	0.01	10.6	0.04	1.4	0.01	7.5	0.03	0.9	0.00
Rocks / stones	0.2	0.00	12.5	0.05	-	-				
Scabbard-fish	3.2	0.01	2.7	0.01	6.7	0.03	8.4	0.03	2.2	0.01
Leafscale gulper shark	1.0	0.00	9.2	0.04	2.3	0.01				
Deepsea flathead	5.4	0.02	4.5	0.02	2.5	0.01	6.2	0.02	7.0	0.03
Oliver's rattail	-	-	5.9	0.02	5.9	0.03				
Rudderfish	3.5	0.02	4.2	0.02	4.0	0.02	8.9	0.03	5.3	0.02
Banded bellows-fish	7.3	0.03	1.6	0.01	2.0	0.01	4.6	0.02	12.7	0.06
Silver dory	3.1	0.01	2.6	0.01	4.1	0.02	2.5	0.01	4.3	0.02
Deepwater dogfish (un-specified)	3.5	0.02	0.9	0.00	4.3	0.02	3.7	0.01	1.4	0.01
Lucifer dogfish	2.1	0.01	2.6	0.01	2.9	0.01	5.4	0.02	3.1	0.01
Sponges					3.9	0.02	1.9	0.01	7.2	0.03
Rough skate					2.6	0.01	5.6	0.02	3.1	0.01
Bellows-fish					1.0	0.00	1.5	0.01	6.9	0.03
Conger eel					1.0	00	5.3	0.02	8.9	0.04
Floppy tubular sponge					0.1	0.00	13.2	0.05	4.9	0.02
Others	60.2	0.26	96.8	0.39	51.9	0.23	85.3	0.30	67.0	0.30
Total	**21,946.6**		**24,226.0**		**22,393.8**		**28,325**		**22,184**	

The Deepwater Plan (Ministry of Fisheries 2010b) identifies key retained species (denoted "bycatch" in the Ministry of Fisheries (2010b) as those which account for at least 1% of the total catch weight in the hoki fishery as recorded by observers (MSC (2011) in contrast notes that species which comprise less than 5% of the total by weight may normally be considered to be a minor species, but that for fisheries for which the catch is large 5% may be a considerable catch). For the purposes of this assessment, the main retained species are taken to those which are included in the QMS system and were recorded to be at least 5% of total catch by the hoki fishery at least once during 2006-07 to 2010-11, while the main bycatch species are identified using the same criterion. The only species which satisfies this criterion is ling, which constituted 5.00% of the observed catch in 2007-08. This assessment also considers species which are caught in small quantities (>0.3% of the total catch), but that may be vulnerable due to low productivity as main retained species or main bycatch species.

Table 6 summarizes the status of three retained species which constitute the largest proportion of the observed catch during 2006-07 to 2010-11(note that of these species only ling is considered a 'main' retained species for this assessment). Ling is assessed as five stocks (Chatham Rise, Sub-Antarctic, West Coast South Island, Cook Strait Bounty Platform), the first four of which are found within the range of the hoki fishery. All four stocks are estimated to be above the soft limit with probability > 90% and all four stocks are assessed to be above the target reference point.

None of the non-retained species constituted more than 3% of the total observed catch in the hoki fishery between 2006-07 and 2010-11. The only non-retained species which constitute at least 1% of total observed catch between 2006-07 and 2010-11 are javelinfish and rattails. No assessments exist for these species. However, data on trends in biomass are available from surveys on the Chatham Rise. Both species are very well monitored by these surveys. Javelinfish appear to be increasing, while the most abundant rattail species, Bollons' rattail exhibits no trend, at least on the Chatham Rise (O'Driscollet al. 2011).

In relation to Tier 2 species (key bycatch species), it will not always be easyto implement specific harvest strategies. Management Action 28 in the Annual Operational Plan for the hoki fishery (Ministry of Fisheries 2011h) aims to develop management procedures for silver warehou and white warehou. These species were selected taking account of their size and extent. Fisheries characterizations, e.g. for silver warehou (Parker and Fu 2011), could provide additional information for lesser species. They involve analysing all available data including: (a) survey data, (b) catch-effort information, and (c) observer data. Catch-effort data can be used to inform spatial distribution as well as how and when a species is caught. Observer data provide better biological data such as length and perhaps age-compositions. In principle, changes in the age-compositions among years can be used to estimate changes in fishing mortality over time.

In relation to Tier 3 species (non-QMS species, usually discarded), if a sustainability problem is detected, that species can be added to the QMS under Section 17B of the Fisheries Act and/or the species managed under Section 11 of the Act. Section 17B of the Act requires that stocks or species be added to the QMS if the existing management is not ensuring sustainability or is not providing for utilization. Under the Act, 'ensuring sustainability' means 'maintaining 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' while 'utilisation' means 'conserving, using, enhancing and developing a fisheries resource to enable people to provide for their social, economic, and cultural wellbeing'. Two recent species introductions into the QMS were Patagonian toothfish (Ministry of Fisheries, 2010c) and attached bladder kelp (Ministry of Fisheries, 2010d). The latter was added to the QMS *inter alia* because the Ministry of Fisheries concluded that there was increasing demand for the species.

It is difficult to detect whether there is a sustainability concern for many Tier 2 and Tier 3 species. A number of projects related to improving the information base for Tier 2 and Tier 3 species are either planned or underway:

(a) A project has been funded (DEE2011-03) to conduct Level 1 risk assessments for Tier 3 species which could lead to additional research being conducted (Ministry of Fisheries 2010e).

(b) A project is underway to synthesize the results of the trawl surveys for the sub-Antarctic area, which will complement the results in O'Driscollet al. (2011) which summarized trends in biomass indices for all species recorded regularly during the surveys on the Chatham Rise. Similar analyses for the WCSI regions require a longer time-series of data than is available at present.

(c) A project, led by the New Zealand Seafood Industry Council (Trident) is being planned which will involve (a) non-regulatory catch sampling [length, catch and effort] for inshore finfish, (b) conducting comprehensive regular fisheries characterizations for deepwater species using catch and effort data, and (c) identifying genetic management procedures for Tier 2 species.

Table6. Overview of the status of the stocks of the QMS species which constitute at least 1% of the observed catch from 2006-07 to2010-11.

Stock	Last assessment (assessment type)	Status relative to the soft limit	Status relative to the target
Ling(main retained species)			
LIN 3&4	2007 (model)	< 10% probability below 0.2B_0	>60% probability above target (40% B_0)
LIN 5&6	2007 (model)	< 10% probability below 0.2 B_0	>90% probability above target (40% B_0)
LIN 6B	2006 (model)	< 10% probability below 0.2 B_0	>90% probability above 60% B_0
LIN 7WC	2008 (model)	< 10% probability below 0.2 B_0	>90% probability above target (40% B_0)
LIN 7CK	2010 (model)	< 10% probability below 0.2 B_0	>90% probability above 50% B_0
LIN 2&7	2010 (model)	< 10% probability below 0.2 B_0	>60% probability at or above target (40% B_0)
Silver warehou			
SWA1	Catch curve analysis		*F* from catch curve analyses is probably less than *M*
SWA 3 & 4	None	Unknown	Unknown
Hake			
HAK1	2007 (model)	< 1% probability below 0.2B0	>99% probability at or above target (40%B_0)
HAK4	2009 (model)	< 10% probability below 0.2B0	>60% probability at or above target (40%B_0)
HAK7	2010 (model) [no reliable index of abundance]	Unknown	*F* from catch curve analysis ~ *M*

3.4.2.2 Fur seals

Like all marine mammals in New Zealand waters, fur seals are legally protected. The population of New Zealand fur seals is widely believed to be increasing although there are no robust population count data available. Baird (2011) summarises current knowledge relating to population status. The longest term data set is from three rookeries on the West Coast of New Zealand's South Island. At these sites, surveys of pup production have occurred since the 1990s. Summary findings (not currently published) from this work indicate net declines in pup production between the 1990s and 2000s. In contrast, work around Kaikoura and Banks Peninsula (east coast of the South Island) suggests populations there are increasing/expanding. Despite the lack of accurate population assessments, the life history characteristics of fur seals are well understood (see Baird 2011 for an extensive review).

Fur seals are caught in trawl and other fisheries around New Zealand. Numerically across all fisheries, they are the most captured New Zealand protected species. Captures of fur seals in the hoki fishery occur in all fishing areas (Table 7). Other fisheries capturing fur seals include trawl fisheries targeting southern blue whiting, and surface longline fisheries (Ramm 2010, 2011). Fur seal captures were the focus of a Corrective Action Request duringthe 2007 – 2012 certification of the hoki fishery (SGS 2007). The CAR required a reduction of fur seal bycatch in the West Coast South Island hoki fishery, and was closed during the second annual surveillance audit. All vessels managed under the DWG are required to follow specific operating procedures to reduce the risk of seal captures. Procedures described in the Operating Procedures: Marine Mammals, based on data analyses and expert opinion (Deepwater Group 2011c). Current research and management priorities for fur seals include better assessments of capture levels in Cook Strait, identifying the regional provenance of bycaughtfur seals, and investigating female foraging behaviour.

Fur seal captures (observed and estimated) in the hoki fishery from 1998/88 to 2008/09 are summarised in Table 7.

Table 7: Summary of New Zealand fur seal captures in hoki trawl fisheries, with the number of tows, tows observed, percentage of tows observed, number of observed captures, capture rate per hundred tows, total estimated captures with 95% confidence intervals, and percentage of tows included in the estimate. Estimated type: M - modelled; R - ratio estimated (Source: Abraham and Thompson (2011)).

	Observed					Estimated		
	Tows	No. obs	% obs	Capt.	Rate	Type	Est. captures	% inc.
2008–09	8 172	1 658	20.3	37	2.23	M	191 (112 - 306)	99.2
2007–08	8 773	1 869	21.3	58	3.10	M	290 (180 - 463)	99.2
2006–07	10 626	1 757	16.5	29	1.65	M	216 (118 - 370)	98.8
2005–06	11 591	1 777	15.3	62	3.49	M	390 (244 - 627)	99.2
2004–05	14 529	2 133	14.7	120	5.63	M	658 (417 - 1 020)	99.4
2003–04	22 516	2 347	10.4	49	2.09	M	637 (392 - 1 043)	99.3
2002–03	27 776	2 592	9.3	44	1.70	M	538 (332 - 849)	99.7
2001–02	27 224	3 274	12.0	110	3.36	R	770 (713 - 827)	98.1
2000–01	32 018	3 549	11.1	66	1.86	R	946 (865 - 1028)	97.6
1999–00	33 061	3 273	9.9	102	3.12	R	1003 (915 - 1092)	97.5
1998–99	32 242	3 558	11.0	84	2.36	R	951 (866 - 1 037)	97.1

3.4.2.3 Seabirds

The oceans around New Zealand are home to a diversity of seabirds, including penguins, shags, albatrosses, petrels, gulls, and terns. Many of these species interact with fishing methods. The majority of seabird interactions with the hoki fishery involve albatrosses and petrels, such as white-

capped albatrosses, Buller's albatrosses, Salvin's albatrosses, white-chinned petrels, cape petrels, Westland petrels, and sooty shearwaters (Abraham and Thompson 2011, Table 8, 9).

Table 8.Summary of all bird captures in hoki trawl fisheries, with the number of tows, tows observed, percentage of tows observed, number of observed captures, capture rate per hundred tows, total estimated captures with 95% confidence intervals, and percentage of tows included in the estimate. Estimated type: M - modelled; R - ratio estimated (Source: Abraham and Thompson (2011a)).

		Observed				Estimated			
	Tows	No. obs	% obs	Capt.[s]	Rate	Type	Est. captures		% inc.
2008–09	8 172	1 658	20.3	37	2.23	M	232	(163 - 345)	100.0
2007–08	8 773	1 869	21.3	30	1.61	M	152	(107 - 222)	100.0
2006–07	10 626	1 757	16.5	23	1.31	M	228	(125 - 447)	100.0
2005–06	11 591	1 777	15.3	54	3.04	M	323	(220 - 512)	100.0
2004–05	14 529	2 133	14.7	46	2.16	M	334	(251 - 446)	100.0
2003–04	22 516	2 347	10.4	33	1.41	M	330	(234 - 469)	100.0
2002–03	27 776	2 592	9.3	84	3.24	M	1 143	(689 - 2 023)	100.0
2001–02	27 224	3 274	12.0	50	1.53	R	811	(721 - 908)	98.1
2000–01	32 018	3 549	11.1	296	8.34	R	1 207	(1 099 - 1 324)	97.6
1999–00	33 061	3 273	9.9	91	2.78	R	1 082	(963 - 1 214)	97.5
1998–99	32 242	3 558	11.0	133	3.74	R	1 106	(983 - 1 244)	97.1

All observed captures by species 1998/99 – 2008/09: sooty shearwater (346), white-capped albatross (104), Salvin's albatross (86),Buller's albatross (67), white-chinned petrel (52), Cape petrels (39), seabird – small (34), short-tailed shearwater (33), albatrosses (unidentified) (27), petrel (unidentified) (10), Campbell albatross (9), prions (unidentified) (9), seabird – large (8), northern giant petrel (7), grey petrel (6), black-browed albatross (unidentified) (6), southern black-browed albatross (5), shy albatross (5), fairy prion (4), Westland petrel (3), other species (17)

Table 9. Summary of all bird captures in hoki fisheries, broken down by fishing areas, with the number or tows, number of tows observed, percentage of tows observed, number of observed captures, capture rate per hundred tows, total estimated captured with 95% confidence intervals, and percentage of tows included in the estimate. Estimate type: M – modelled, R – ratio estimated, B – both methods, N – not estimated. (Source: Abraham and Thompson (2011b)).

		Observed				Estimated			
	Tows	No. obs	% obs	Capt.	Rate	Type	Est. captures		% inc.
2008–09									
Chatham Rise	3 994	569	14.2						
White-capped albatrosses				1	0.18	M	6	(2 - 13)	100.0
White-chinned petrels				0	0.00	M	9	(2 - 19)	100.0
Sooty shearwaters				15	2.64	M	72	(30 - 179)	100.0
Other albatrosses[a]				3	0.53	M	57	(31 - 94)	100.0
Other birds[b]				1	0.18	M	15	(5 - 30)	100.0
Cook Strait	1 843	173	9.4						
White-capped albatrosses				1	0.58	M	4	(1 - 10)	100.0
Other birds[c]				2	1.16	M	6	(2 - 13)	100.0
West Coast SI	1 170	501	42.8						
Other albatrosses (Buller's albatross)				2	0.40	M	6	(2 - 11)	100.0
Other birds[d]				2	0.40	M	6	(2 - 14)	100.0
Stewart-Snares	805	301	37.4						
White-capped albatrosses				3	1.00	M	5	(2 - 12)	100.0
White-chinned petrels				0	0.00	M	3	(1 - 9)	100.0
Sooty shearwaters				2	0.66	M	8	(2 - 27)	100.0
Other albatrosses (Buller's albatross)				1	0.33	M	5	(2 - 10)	100.0
Other birds (black-bellied storm petrel)				1	0.33	M	3	(1 - 9)	100.0
Subantarctic	100	72	72.0						
White-chinned petrels				1	1.39	M	0	(0 - 1)	100.0
Other albatrosses[e]				2	2.78	M	1	(1 - 3)	100.0
2007–08									
Chatham Rise	4 481	751	16.8						
White-capped albatrosses				2	0.27	M	7	(3 - 13)	100.0
White-chinned petrels				5	0.67	M	14	(7 - 23)	100.0
Sooty shearwaters				2	0.27	M	40	(12 - 96)	100.0
Other albatrosses (Buller's albatross)				2	0.27	M	35	(18 - 58)	100.0
Other birds[f]				3	0.40	M	11	(4 - 21)	100.0
Cook Strait	1 759	204	11.6						
White-capped albatrosses				0	0.00	M	1	(0 - 5)	100.0
Other birds				0	0.00	M	2	(0 - 5)	100.0
West Coast SI	1 388	462	33.3						
Other albatrosses (Buller's albatross)				10	2.16	M	13	(10 - 17)	100.0
Other birds (seabird – small)				1	0.22	M	4	(1 - 9)	100.0
Stewart-Snares	743	341	45.9						
White-capped albatrosses				0	0.00	M	1	(0 - 3)	100.0
White-chinned petrels				3	0.88	M	4	(3 - 8)	100.0
Sooty shearwaters				1	0.29	M	2	(1 - 7)	100.0
Other albatrosses (Buller's albatross)				1	0.29	M	2	(1 - 5)	100.0
Other birds				0	0.00	M	1	(0 - 4)	100.0
Subantarctic	144	72	50.0						
White-chinned petrels				0	0.00	M	0	(0 - 1)	100.0
Other albatrosses				0	0.00	M	0	(0 - 2)	100.0

[a] Salvin's albatross (2), albatrosses (unidentified) (1)
[b] Petrels, prions and shearwaters (1)
[c] Cape petrels (1), Cape petrel (1)
[d] Westland petrel (1), Cape petrel (1)
[e] Salvin's albatross (1), albatrosses (unidentified) (1)
[f] Flesh-footed shearwater (1), petrel (unidentified) (1), grey petrel (1)

IUCN status of species reported captured ranges from Least Concern (e.g. Cape petrel) to Vulnerable (www.iucnredlist.org). Almost all seabirds are legally protected in New Zealand by the Wildlife Act (1953). Some have specific management strategies applied to them (e.g. for indigenous harvest of the sooty shearwater), and some breed on islands with strictly managed access (e.g. the Auckland Islands). Most seabirds interacting with the hoki fishery breed on offshore islands where there are no permanent human settlements. Following withdrawal of the 2004 version, New Zealand does not have a National Plan of Action – Seabirds in place. MFish is developing a seabird policy, and expects to consider a NPOA-Seabirds as part of creating a seabird management framework with DOC.

The level of understanding of seabird populations and ecology is highly variable, and depends on a number of factors, including accessibility of breeding islands and the severity of perceived threats. For example, despite being captured in many New Zealand fisheries, Salvin's albatross is a very poorly known species, due to the largest population breeding on the remote and inhospitable Bounty Islands. Population studies have commenced on a number of seabird species affected by fisheries, including the hoki fishery, during the last 5-10 years (e.g. white-capped albatross and white-chinned petrel). There isalso a small number of longer term studies, e.g. of Buller's albatross on the Snares Islands. Albatrosses and petrels generally lay a single egg each breeding event, and many don't breed every year. Adult survival is the most important parameter determining population trends.

A Level 2 risk assessment was completed for seabirds in 2011 (Richard et al. 2011). This assessment highlights the effects of cumulative seabird catches across New Zealand fisheries. The hoki fishery was not thought by experts to represent an especially high risk for seabird populations, as long as effective management measures, including mitigation, are in place (Rowe 2010). However, when considered across New Zealand fisheries (Richard et al. 2011), the following species may be threatened by commercial fisheries activities (species in italics have been observed captured in the hoki fishery): black petrel, grey-headed albatross, *Westland petrel*, Chatham albatross, flesh-footed shearwater, *Salvin's albatross*, light-mantled albatross, Stewart Island shag, *northern giant petrel*, northern royal albatross, New Zealand king shag, *Campbell albatross*, *Buller's albatross*, Gibson's albatross, Antipodean albatross, *white-capped albatross*, *white-chinned petrel*, *cape petrel*, and southern royal albatross. Species italicised here, but excluded from Table 10 above, are observed caught in numbers too low to allow estimation of captures in the hoki fishery. However, seabird captures in the hoki fishery account for approximately 15% of seabirds caught in New Zealand offshore trawl fisheries in 2007/08 and 2008/09 (Abraham and Thompson 2011b). Captures of potentially at-risk species require particularly careful monitoring to ensure that the impact of the hoki fishery does not threaten sustainability.

In the 2007-2012 hoki certification period, a CAR (7) was raised that required development of an offal management system to reduce seabird bycatch in the hoki fishery. Across the deepwater trawl fleet managed by the DWG, vessels >28 m now have Vessel Management Plans in place, which document their fish waste management procedures. The implementation of these plans is audited by onboardobservers and DWG staff when vessels are in port. By law, trawlers over 28 m in length fishing in New Zealand waters are required to use one of three specified devices to reduce seabird interactions with trawl warps: paired streamer lines, a bird baffler, or a warp scarer (New Zealand Gazette 2010).

3.4.2.4 Sharks

Four species of sharks (the basking shark, deepwater nurse shark, white pointer shark, and the whale shark) are protected by domestic legislation in New Zealand waters. Only the basking shark has been reported to interact with the hoki fishery. This species is also listed on CITES Appendix 1. Basking sharks may be in decline around New Zealand, given the lack of reported sightings in recent years. Work is underway to review knowledge on these species (DOC 2011). Fifty observed captures of basking sharks have been reported in the hoki fishery since 1994-95, which is ~50% of the 99

captures observed during that period. More than 40% of these observed captures in the hoki fishery occurred from 1997-98 to 1998-99 (Francis and Smith 2010).

3.4.2.5 Protected benthos

The following benthic organisms are protected in New Zealand: black corals (all species in the order Antipatharia), Gorgonian corals (all species in the order Gorgonacea), Stony corals (all species in the order Scleractinia), Hydrozoa (hydra-like animals), and Hydrocorals (all species in the family Stylasteridae). As for other protected species, protection does not make capture in commercial fisheries illegal. However, captures are required by law to be reported in accordance with MFish reporting regulations. Similar to other protected species, observers on commercial vessels also document captures of these species. Where identification is unclear, samples can be returned to experts onshore.

Spatial closures are the main tool used in New Zealand waters to mitigate captures of vulnerable benthic species. For example, seamounts closed to fishing are located around the EEZ. An industry initiative led to the creation of Benthic Protected Areas, referred to above.

Understanding of the distribution of benthic organisms, including protected species, is gradually growing for New Zealand waters. However, knowledge is still at a reasonably low level, for both the locations of various species and vulnerable communities, and the biology and ecology of these organisms. Some work is underway to look forbenthic recovery after trawling, e.g. on seamounts. Currently, the development of robust management policies is constrained to a degree by a lack of knowledge.

3.4.3 Details of any critical environments or sources of concern and actions required to address them.

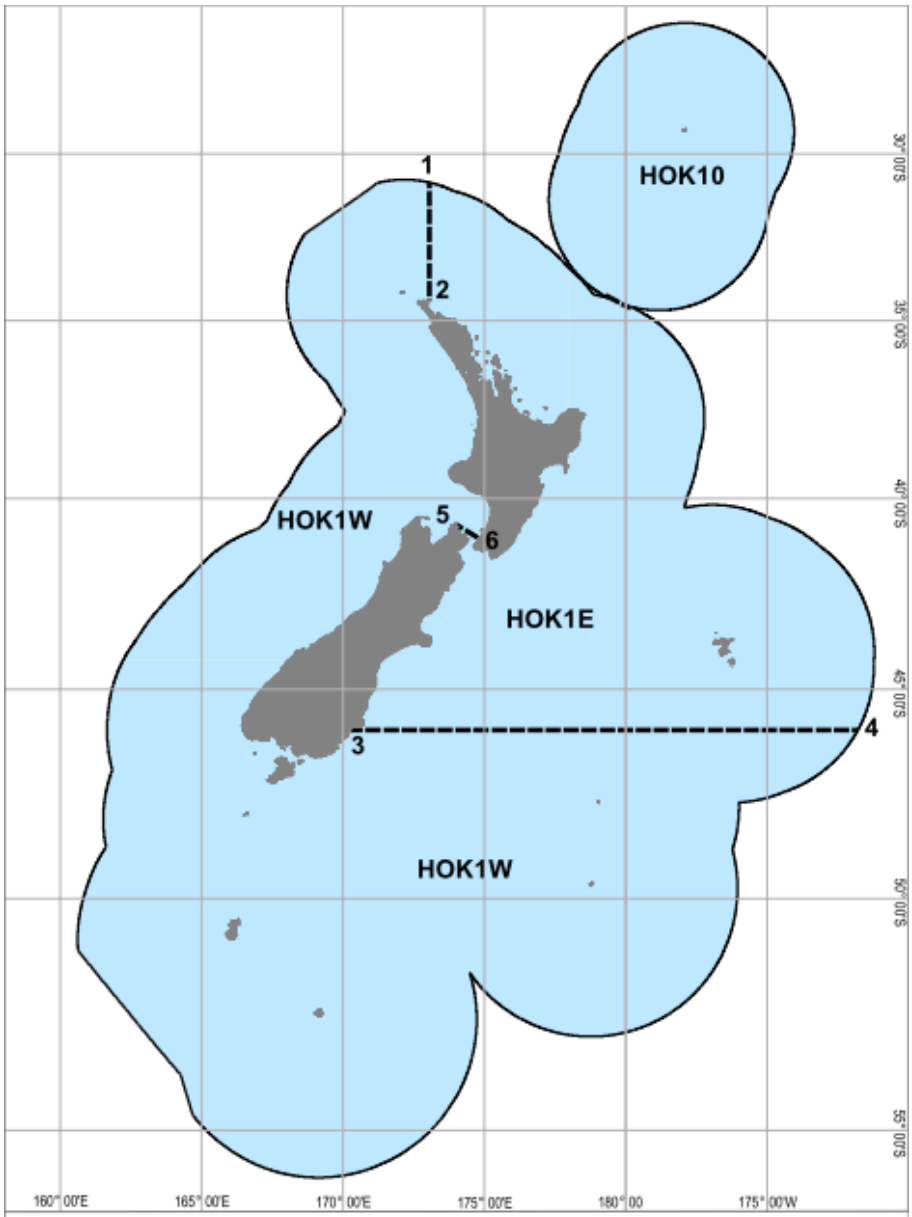
As noted above, knowledge on benthic habitats and organisms is not well developed. Further work determining distribution of these, and resilience and recovery to trawling activity would be valuable. From a management perspective, such knowledge would be extremely valuable to assessments of the biological value of Benthic Protected Areas, for example.

SGS (2007) reflects best practice in this area as having in place an effective ongoing system for progressively determining, and keeping under review, the levels of acceptable impacts in the fishery, and responding to these by implementing fishery measures as appropriate to maintain impacts within those levels determined to be acceptable. At that time, the hoki fishery was assessed as not having a fully effective system in place to routinely determine and review levels of acceptable impacts on benthic habitats. Subsequently, Akroyd et al. (2011) reported that significant new information had become available in this respect for the hoki fishery. Annual mapping of trawl tracks (Black and Wood 2011) overlaid with the Benthic-Optimised Marine Environment Classification (Leathwick et al. 2009) provides a mechanism with which to regionally assess the impacts of the hoki fishery on benthic habitat, though the communities inhabiting habitat types are less known and relatively difficult to sample.

3.5 Principle Three: Management system background

3.5.1 Area of operation

HOK1, which comprises two sub-stocks, are considered to be two separate spawning groups. These are known as the "western stock" (referred to as HOK1 W in map below) and the "eastern stock" (referred to as HOK1 E in map below).



HOKI FISHERY EAST:WEST CATCH LIMIT BOUNDARIES

Hoki East:West Catch Limit Boundaries	Map Compilation: 01 August 2011 Map Projection: Mercator	Hoki East:West Catch Limit Boundary Co-ordinates: 1 30°53.1'S 173°02.8'E 2 34°24.8'S 173°02.8'E 3 46°00.0'S 170°16.0'E 4 46°00.0'S 171°46.7'W 5 40°41.57'S 173°57.35'E 6 41°06.02'S 174°50.93'E

3.5.2 The management system

New Zealand's hoki fisheries are managed as two separate stocks, a western stock and an eastern stock. The Ministry of Fisheries (MFish) and hoki quota owners contract a range of research programmes to routinely monitor the fisheries and undertake annual stock assessments on both stocks. The stock assessment process is open to all stakeholders. These science programmes are supported by hoki quota owners through DWG, a non-profit company established to represent quota owners' interests in fisheries science and management. DWG represents the interests of hoki quota owners who own 95% of the TACC.

A single TACC is set for HOK1 by regulation, within which quota owners manage their catches under agreed limits for each of the western and eastern stocks. Compliance with these measures is administered by DWG and audited by the Ministry.

Since 2006 the following management changes have been made to further improve sustainability

- Management partnership between the Ministry and quota owners established
- TACC changes in response to research and stock assessments implemented
- Management Reference Points revised and implemented
- Rebuilding strategy developed and implemented
- Western stock rebuilt to within new management target range
- Management Strategy Evaluation completed and findings implemented
- Fisheries Plan completed, approved by Minister of Fisheries, and implemented
- Compliance Group established to achieve improved compliance
- Audits against agreed KPIs(Key Performance Indicators) show compliance rates of 96-100% with management requirements
- Ecosystem indicators developed
- Ecological Risk Assessment completed and findings being implemented
- Bycatch and discard rates assessed
- Risk assessment of incidental interactions with seabirds completed
- Incidental interactions with seabirds reduced
- Interactions with benthic communities assessed
- Benthic Protection Areas developed and implemented
- Incidental interactions with marine mammals mitigated and minimised

3.5.3 Interested parties

- Ministry of Fisheries(NZ Government department responsible for the management of NZ Fisheries;
- DWG (Hoki Quota Owners; ACE Owners; Selected Vessel Operators);
- NZ Federation of Commercial Fishermen (Inshore fishermen, ACE Fishermen);
- Department of Conservation (NZ Government department responsible for the management protected species and marine mammals); and
- E-NGOs (Environmental interests).

NOTE: there are no recreational or customary access rights in this fishery.

3.5.4 Consultations for Fisheries Plan

There is widespread consultation across all stakeholder groups and interested parties on proposed management measures and every encouragement and support is made to incorporate stakeholders' views into final management interventions.

3.5.5 Ongoing consultations

Management decisions are clearly linked to a set of agreed high-level objectives for a fishery.The proven collaborative management regime ensures there is stakeholder participation in the development and implementation of management changes. This collaborative approach means there is good exchange of information to enable full cost/benefit assessments of proposed management measures.The management approach and decisions are documented and are publicly available in aformat that is accessible to all interested parties.

3.5.6 Non fishery users

Section 12 of the 1996 Fisheries Act includes a range of specific consultation requirements, and the additional requirement to provide for input and participation of tangatawhenua[2] in particular circumstances. There are three aspects to this section:

a) Under Section 12(a) of the 1996 Act, the Minister of Fisheries is required to consult with those classes of persons having an interest (including, but not limited to, Maori, environmental, commercial and recreational interests) in the stock or the effects of fishing on the aquatic environment in the area concerned;
b) Section 12(1)(b) outlines the Crown's commitments to provide for the input and participation of tangatawhenua. Involving tangatawhenua in fisheries management decisions reflects the provisions in the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992, and the Crown's commitment to its partner.
c) Section 12(1)(b)(ii) requires that the Minister have particular regard for the exercise of kaitiakitanga in relation to the people of the area.

Section 12 only relates to certain sections of the 1996 Act. There are many other sections of the 1996 Act that require the Minister or MFish Chief Executive to consult with stakeholders before making a decision. There are also other MFish activities where consultation is encouraged, e.g., setting of policies and guidelines.

Although the consultation requirements set out in Section 12 specifically relate to sustainability decisions, the general principles outlined can be applied to all consultation activities.

- engagement with Scientific Service providers (including: National Institute of Water and Atmospheric Research Limited(NIWA), GNS Science, Dragonfly, 42°S, Innovative Solutions Ltd, Cawthron Institute, Adam Langley);
- Ministry of Fisheries and DWG Partnership Agreement (See DWG (2010) Memorandum of Understanding between the Ministry of Fisheries and the Deepwater Group: Continuing a partnership between the Ministry of Fisheries and the deepwater fishing industry for the management of New Zealand's deepwater fisheries);
- WWF-NZ – Activedialogue with DWG (Monthly meetings); and
- other eNGOs – as required and for specified matters (e.g. ERA), and the Science Working Groups (Hoki and Aquatic Environment Working Groups).

[2]Māori term of the indigenous peoples of New Zealand and literally means "people of the land", from **tangata**, 'people' and **whenua** land

3.5.7 Decision–making processes

Consultation is required wherever it is prescribed under Section 12 or another section of the 1996 Fisheries Act. Consultation may also be required in cases where it is not legislatively mandated, such as on policy statements or standards.

Other considerations that will influence whether to consult include:

a) whether consultation is required on any decision that is likely to materially affect the ability or interest of a person in fisheries resources;
b) the degree to which the outcome of a decision may affect the interests of a particular group of stakeholders, e.g., a significant change in livelihood or business practices. Note that this impact may not necessarily depend on the number of people affected. However, the manner of consultation will vary depending on whether only one person is potentially affected, or two or more;
c) the appropriateness of limiting consultation (e.g., considerations of legal risk, stakeholder relationships and impacts on the quality of informed decision-making);
d) the nature of the proposed measure, whether the amendment is substantive or technical;
e) the benefits of consulting the widest number of stakeholders for the longest period possible, including considerations of stakeholder buy-in and improvements to Ministry processes and quality of decision-making. In general MFish will consult widely and for long periods on decisions that affect stakeholders.
f) the management framework, (e.g., development of the Statement of Intent, the development of Environmental Performance Standards, and the developmentof Fisheries Management Plans).

Administrative law also provides some guidance to the decision-maker. A decision to consult or not to consult, and any decision made after consultation, must be made in accordance with the principles of administrative law, and in accordance with Fisheries Act obligations. These principles require decision-makers to act:

- in accordance with law;
- reasonably; and
- fairly, in accordance with the principles of natural justice.

Decisions not made in accordance with these requirements may be challenged.

The requirement to act fairly is most relevant to consultation. Decision-makers must follow proper processes to ensure that those individuals or groups affected by their decisions are given natural justice.A decision can be challenged if a decision-maker is biased in such a way that prevents him or her from fairly considering the issue with an open mind. Examples include where a decision-maker has a financial interest in the issue or has already made up his or her mind before considering relevant information (i.e., predetermination).Any statements or conduct which may suggest a closed mind or predetermination – in the sense that decision-makers are not open to persuasion or argument - should be avoided

3.5.8 Objectives for the fishery

The Fisheries Plan (Ministry of Fisheries, 2010a) outlines the objectives for the all deepwater and middle-depth fisheries:

Use Outcomes (pertains to how fisheries resources are used in a manner that provides the greatest overall economic, social and cultural benefit).

- MO (Management Objective).1 1.1 Enable economically viable deepwater and middle-depth fisheries in New Zealand over the long-term
- MO 1.2 Ensure there is consistency and certainty of management measures and processes in the deepwater and middle depths fisheries
- MO 1.3 Ensure the deepwater and middle-depths fisheries resources are managed so as to provide for the reasonably foreseeable needs of future generations
- MO 1.4 Ensure effective management of deepwater and middle-depth fisheries is achieved through the availability of appropriate, accurate and robust information
- MO 1.5 Ensure the management of New Zealand's deepwater and middle-depth fisheries are recognised as being consistent with or exceeding national and international best practice
- MO 1.6 Ensure New Zealand's deepwater and middle-depth fisheries are transparently managed
- MO 1.7 Ensure the management of New Zealand's deepwater and middle-depth fisheries meets he Crown's obligations to Maori.

Environmental outcomes (pertains to ensuring the capacity and integrity of the aquatic environment, habitats and species are sustained at levels that provide for current and future use)

- MO2.1 Ensure deepwater and middle-depth fish stocks and key bycatch fish stocks are managed to an agreed harvest strategy
- MO 2.2 Maintain the genetic diversity of deepwater and middle-depth target and bycatch species
- MO 2.3 Protect habitats of particular significance for fisheries management
- MO 2.4 Identify and avoid or minimise adverse effects of deepwater and middle-depth fisheries on incidental bycatch species
- MO 2.5 Manage deepwater and middle-depth fisheries to avoid or minimise adverse effects on the long-term viability of endangered, threatened and protected species
- MO 2.6 Manage deepwater and middle-depth fisheries to avoid or minimise adverse effects on biological diversity
- MO 2.7 Identify and avoid or minimise adverse effects of deepwater and middle-depths fishing activity on the benthic habitat

3.5.9 Fleet characteristics

Factory trawlers	No. in fleet	Duration of activity	Products produced	~ catch volume/vessel
Fillet	8	Year round	Frozen at sea fillets, fillet block, mince, fishmeal	8,000-10,000 green weight tonnes(gwt)
Head and gut	6	Seasonal 1-2mths	Frozen at sea trunks, fishmeal	2,000-3,000 gwt
Head and gut	14	Seasonal up to 3-4mths	Frozen at sea trunks	2,000- 3,000gwt
Fresh fish trawlers				
< 28m	3	Seasonal 1-3mths	Fresh fish on ice	1,000-5,000gwt
>28m	17	Seasonal 1-2mths	Fresh fish on ice	150-500gwt

3.5.10 Rights of access to fishery

Since 1986, the major commercial fisheries in New Zealand fisheries waters have been managed through a QMS based on ITQs. A fishing permit is required to fish for QMS and non-QMS species, all fishing vessels must be registered, and all fishing permit holders are required to furnish accurate monthly returns on locations fished, fishing gear used, catches of main species, information on processing and landing of catches and to reconcile these against ACE.

3.5.10.1 Vessel registration

Section 103 of the Fisheries Act 1996 requires vessels to be registered in the Fishing Vessel Register in order to take fish, aquatic life, or seaweed for sale, in New Zealand fisheries waters.

3.5.10.2 Permitting of commercial fishers

Any person who wishes to take fish for the purpose of sale can only do so under the authority of a commercial fishing permit issued under the Fisheries Act 1996 (the Act). Commercial fishers are required to:

- fish from a registered fishing vessel;
- keep records of all catch, effort and landings;
- report regularly to the Ministry their effort and landings;
- not discard quota species (with limited, documented exceptions);
- land catch to approved licensed fish receivers (LFRs) (with limited, documented exceptions); and
- furnish Monthly Harvest Returns (MHRs) to MFish detailing all the catches made for that month by the permit holder, as they may fish from more than one vessel.

3.5.10.3 Foreign Charter Vessels (FCVs)

Foreign Charter Vessels (FCVs) are vessels owned or operated by an overseas entity under contract or charter to a New Zealand company. While FCVs remain flagged to a foreign State during the time of the charter, their registration status makes them subject to New Zealand's law and fisheries management regime, including an obligation to meet all the requirements listed above, while fishing in New Zealand waters.

In recent years the industry has supported a shift away from prescriptive regulatory fisheries management to a strong focus on more collaborative fisheries management, including industry implementation of operational plans which are monitored and audited by government. This collaboration includes all stakeholders and shareholders in the DWG along with government and non-government organisations and interested parties.

This partnership approach to fisheries management between the DWG and the Ministry of Fisheries is underpinned by a Memorandum of Understanding. This MOU sets out the agreement between the Ministry of Fisheries before a FCV can take fish commercially, the New Zealand party in whose name the vessel is registered must also hold a commercial fishing permit that has been issued under Section 91 of the Fisheries Act 1996. All products and fishing activities on board such vessels are the responsibility of the New Zealand permit holder.

3.5.11 Description of the measures agreed upon for the regulation of fishing in order to meet the objectives within a specified period

MFish and the DWG to work in partnership outlining the prime areas and workplan to better manage deepwater fisheries. The two parties have developed a single joint-management framework with agreed strategic and operational priorities and workplansand timeframes.

The partnership was formed to:

- advise the Minister of Fisheries on clear and agreed objectives for the deepwater fisheries;

- advise the Minister of Fisheries on management measures to support these objectives;
- define service requirements to support these objectives;
- ensure efficient delivery and value from these services; and
- provide consistent and agreed advice to the Minister wherever possible.

The partnership is focused on determining the maximum economic yield of the deepwater fisheries by setting catch limits that maximise returns over the long term within the constraints of ecological sustainability. This collaborative approach to fisheries management has an industry-wide impact on the behaviour of seafood companies by way of creating a "self management" responsibility amongst industry participants.

This co-operation between seafood companies replaces historical competitive behaviours, improves industry wide management initiatives and subsequent compliance with standards and outcomes set, monitored and audited by government.

3.5.12 Details of any planned education and training for interest groups.

With respect to avoiding or mitigating interactions with ETP species, DWG has implemented a range of non-regulatory measures and supplementary measures. As part of this DWG has an Environmental Liaison Officer whose role is to:

- ensure each vessel's management plan is implemented and up to date;
- assist with development and implementation if required;
- lecture vessel operators, skippers (on all trawlers in HOK1 >28m and from 2011 all trawlers <28m in the Cook Straight) on best practice; and
- provide a best practice manual

3.5.13 Review and audit of Management Plan

This is to occur on an annual basis.

4. Evaluation Procedure

4.1 Harmonised fisheries

There are no overlapping fisheries

4.2 Previous assessments

The fishery has been assessed for MSC twice before, once in 2000 and again in 2006 (SGS 2001, 2007). The assessment team concluded on both occasions that that the hoki fishery complies with the MSC Principles and Criteria, and recommended that the fishery be issued a joint fishery/claim of custody certificate. Both assessments were subject to external peer-review, and objections to the assessment results were made by environmental NGOs for both assessments. These objections were evaluated by Independent Objections Panels (IOPs) and resulted in a number of directions and recommendations to the Certification Body and changes to the final assessment reports (see Lodge et al. (2007) for the report of the IOP and SGS (2007) for the responses to these directions and recommendations). The objections by WWF-NZ and the Royal Forest and Bird Protection Society of New Zealand to the most recent re-assessment included a lack of information on gear use in the fishery, lack of operational reduction/restriction of the trawl impact on benthic habitats, how the assessment team evaluated the potential for the ecosystem to recover from fishery-related impacts, the ability of restrict ling catches to within the TACC, the inability to estimate impacts of the fishery on endangered/threatened species, the inability to set levels for the unacceptable impacts of the fishery on protected, endangered, threatened or at-risk species, the lack of a bycatch specialist on the peer review team, and procedural issues including the incorrect use of guideposts, unexplained increases in scores, inappropriate comparisons with other fisheries, lack of adoption of the precautionary principle, inappropriate assumptions based on fishery commitment, and incorrect perception of the Benthic Protected Area proposal and the foundation for the Marine Environmental Classification.

Conditions for continued certification were raised during both assessments. Those related to the most recent re-assessment (and their current status – whether and when closed and the conclusion of the audit team regarding performance relative to the condition when it was closed) were:

a. Select appropriate target and limit reference points (Principle 1, closed November 2009*; Appropriate target and reference points are used in the hoki stock assessment. These reference points are in line with current practice for well managed fisheries and take account of the species and the nature of the fishery*).
b. Develop a rebuild strategy (Principle 1, closed December 2010; *The adoption of a Fisheries Plan which includes the requirement for a time-constrained rebuilding satisfies the requirements under PI 1.2.1.1; the western stock of hoki is now rebuilt to within the management target range with high probability*).
c. Improve knowledge of the nature and distribution of habitat (Principle 2, closed December 2010; *The requirements of Condition have been satisfied with the completion of the BOMEC studies*).
d. Improve knowledge of trophic relationships of the target species (Principle 2, closed November 2009; *Detailed knowledge of the overall trophic structure of the Chatham Rise has been collected and preliminary analyses conducted. Previous data taken from the commercial fishery has thus been augmented by data from research surveys covering the spatial areas of the fishery and other areas not at the core of the fishery, and specifically examining fish smaller than those taken in the commercial fishery. Other studies looking at the Chatham Rise ecosystem (ENV2007/06) have been completed and are due to report shortly. Trophic models exist to explore these new data further*).
e. Improve knowledge of impacts of fishing gear on habitats (Principle 2, closed November 2009; *The outputs from the various research efforts coupled with the management change in terms of data collection satisfy this condition*).

f. Conduct an ERA to work towards assessing levels of acceptable risk and impact (Principle 2, closed December 2011; *The ERA was conducted in late 2010*).
g. Reduce the risk of interactions between seabirds and trawl vessels in the hoki fishery through implementation of an offal management system that includes a verifiable auditing process to enable monitoring of compliance (Principle 2, closed November 2009; *The evidence of a reduction in observed mortality of those species most at risk, as well as the overall reduction in seabird mortality (Abraham et al., 2009), as a direct result of changes in fishing practices over recent years inevitably leads the surveillance team to conclude that the requirements of this condition have been fulfilled*).
h. Develop a series of annual targets for the numbers of fur seals in bycatch to deliver an effective annual reduction in fur seal bycatch numbers and bycatch/trawl in the WCSI fishery in each consecutive year of certification (Principle 2, closed November 2009; *With the completion of the survey of fur seal populations (Baker et al. 2009) there is additional information upon which to assess the level of impact that this fishery is having on the fur seal population. Mortality of fur seals attributed to fishing activities appears, on current evidence, to be below a level that would give rise to concern for the rebuilding of the fur seal population. This position will continue to be monitored and kept under review at the annual surveillance especially with respect to changes in the level of fishing driven by changes in the TACC and developments associated with the PBR*).
i. Write strategic overview of the management system (Principle 3, closed December 2010; *the National Fisheries Plan for deepwater and middle depth species has now been approved and a plan for implementation is in place*).
j. Increase the number of quota holders signed up to the Management Deed (Principle 3, closed November 2009; *An effective system for assessing compliance and enforcing management measures is now apparent with penalties to discourage non–compliant behaviour (although there are no formal sanctions attached, such as financial penalties or the possibility of a prosecution)*).
k. Implement internal and external assessment and review of the management system within DWG (Principle 3, closed November 2009; *There is now an apparent process for regular internal and independent external evaluation of the management system. The management system adjusts its practices based on the results of such evaluations*).
l. Develop a long-term research plan (Principle 3, closed November 2009;*The MFish Medium Term Research Plan for hoki is available on MFish website. MFish has a priority setting process in place to determine priority research projects and stakeholders are involved in this process. Funding is available for many high priority research projects for hoki through the Fisheries Research Services (Aquatic Environment and Hoki middle depths) process. Other research projects have been directly funded by DWG)*).

4.3 Assessment methodologies

The second reassessment of the NZ hoki fishery has been carried out using the Marine Stewardship Council's certification requirements v1.1 24 October 2011.

The Full Assessment reporting template used is the MSC v 1.0 August 2011.

The default assessment tree has been used without any adjustments.

4.4 Evaluation processes and techniques

4.4.1 Site Visits

Date	Time	Organisation	Venue	Participants
Sun 13 Nov	1300 -1530	CAB meeting	Museum Hotel Board Room	Jo Akroyd Andre Punt Johanna Pierre
Sun 13 Nov	1600 -1900	Client Opening Meeting	Museum Hotel Board Room	George Clement (client DWG) Aoife Martin (MFish) Vicki Reeve (MFish) Jo Akroyd (CAB) Andre Punt (CAB) Johanna Pierre (CAB) Wetjens Dimmlich (ASI)
Mon 14 Nov	0830 -1100	Ministry Deepwater Operations	Ministry of Fisheries	Aoife Martin (MFish Manager) Vicky Reeve (MFish Analyst)) Jo Akroyd (CAB) Andre Punt (CAB) Johanna Pierre (CAB) Wetjens Dimmlich (ASI)
Mon 14	1100 – 1230	Ministry Science	Ministry of Fisheries	RohanCurrey (Snr scientist) Martin Cryer (Science Manager, Aquatic Environment) Kevin Sullivan (Science Manager, Stock Assessment) Pamela Mace (Chief Scientist) Mary Livingstone (Principal Scientist, Biodiversity) Geoff Tingley (Principal Scientist, stock assessment) Vicki Reeve (MFish Analyst) Jo Akroyd (CAB) Andre Punt (CAB) Johanna Pierre (CAB) Wetjens Dimmlich (ASI)
Mon 14	1330 - 1630	E NGOs	WWF	Kevin Hackwell (Forest &Bird) Katrina Subedar (Forest &Bird) Bob Zuur (WWF) Rebecca Bird (WWF) Jo Akroyd (CAB) Andre Punt (CAB) Johanna Pierre (CAB) Wetjens Dimmlich (ASI)
Tue 15	0900 - 1030	Seafood Industry Council	SeaFIC	Alastair MacFarlane (General Manager) David Middleton, (Chief Scientist) Jo Akroyd (CAB) Andre Punt (CAB) Johanna Pierre (CAB) Wetjens Dimmlich (ASI)
Tue 15	1100 - 1300	NIWA Research providers	Greta Point	Andy McKenzie (stock assessment) Neil Bagley (trawl surveys) Peter Horn (Fishery monitoring) Ian Tuck (via video link) Jo Akroyd (CAB)

				Andre Punt (CAB) Johanna Pierre (CAB) Wetjens Dimmlich (ASI)
Tues 15	1400-1600	MFish Compliance	MFish	Dean Baigent (National Manager) Gary Orr (Manager Maritime Planning and Forensics) Vicky Reeve (MFish operations) Jo Akroyd (CAB) Andre Punt (CAB) Johanna Pierre (CAB) Wetjens Dimmlich (ASI)
Wed 16 Nov	1000 -1200	NIWA	NIWA	Matt Dunn (NIWA Snr scientist) Matt Pinkerton (NIWA Snr scientist) Jo Akroyd (CAB) Andre Punt (CAB) Johanna Pierre (CAB) Wetjens Dimmlich (ASI)
Wed 16 Nov	1400-1500	Fishing Industry	SeaFIC	Richard Wells (Manager DWG) Jo Akroyd (CAB) Andre Punt (CAB) Johanna Pierre (CAB) Wetjens Dimmlich (ASI)
Thu 17 Nov	0930 - 1030	DoC	DoC	Ian Angus(Marine Conservation) Kris Ramm (Marine Conservation Services) Russell Harding (Marine Conservation Services Manager) Clinton Duffy via phone (Shark biologist) Jo Akroyd (CAB) Johanna Pierre (CAB) Wetjens Dimmlich (ASI)
Thu 17 Nov	1100 - 1200	Dragonfly Research providers	Dragonfly office	Edward Abraham (researcher) Finlay Thompson (researcher) Yvan Richard (researcher) Jo Akroyd (CAB) Johanna Pierre (CAB) Wetjens Dimmlich (ASI)
Thurs 17	1330-1400	Boyd Fisheries Consultants	SeaFIC	Rick Boyd (facilitator ERA process) Jo Akroyd (CAB) Johanna Pierre (CAB) Wetjens Dimmlich (ASI)
Fri 18	1400 - 1600	Closing Meeting	SeaFIC	George Clement (client DWG) Aoife Martin (MFish) Vicki Reeve (MFish) Geoff Tingley (MFish) Jo Akroyd (CAB) Johanna Pierre (CAB) Wetjens Dimmlich (ASI) Andre Punt (CAB) (by phone)

4.4.2 Consultations

Consultations were held with the individuals and organisations as identified in 4.3.2 above.

A written record was made for all interviews. These were sent to interviewees who, where necessary, made alterations and confirmed by email as a true and accurate record.The corrected and confirmed records are attached as Appendix 3-1.One written submission was received from WWF. This is attached in Appendix 3-2 with IMMs response.

4.4.3 Evaluation techniques

4.4.3.1 Media

As well as notification on the MSC website, advertisements were placed in three major NZ newspapers, The NZ herald, The Press and the Nelson Mail. This was to inform any New Zealander who wished to participate in the process when the site visit was occurring and who to contact if they were interested.

4.4.3.2 Methodology used

All recognised stakeholders including government agencies, industry, eNGOs and research providers were contacted prior to the re-assessment and encouraged to participate in the re-assessment process to ensure that the CAB would be exposed to a working knowledge of the management and fishing operations.

Inspection of the fishery focused on the practicalities of fishing operations, the mechanisms and effectiveness of management agencies and the scientific assessment of the fisheries.

4.4.3.3 Scoring process

After the team compiled and analysed all relevant information (including technical, written and anecdotal sources), the fishery was scored against the Performance Indicators and Scoring Guideposts (PISGs) in the default assessment tree. The team:

- discussed evidence together;
- weighed up the balance of evidence; and
- used its judgement to agree a final score following the processes below.

In summary the team used a group consensus approach.

4.4.3.4 Decision rule

The team scored individual performance indicators by applying the following:

If any one or more of the SG60 scoring issues was not met, the fishery would fail and there would be no further scoring.

If all of the SG60 scoring issues weremet, the PI would achieve at least a 60 score.

The team assessed each of the scoring issues at the SG80 level. If all of the SG80 scoring issues were met, the PI scored 80. If any of the scoring issues under the SG80 were not met an intermediate score (65, 70 or 75) was allocated, reflecting the overall performance against the different SG80 scoring issues

In order to achieve an 80 score, all of the 60 scoring issues and all of the 80 issues had to be met and each scoring issue justified by supporting rationale.

If all of the SG80 scoring issues were met, the PI achieved at least an 80 score and the team assessed each of the scoring issues at the SG100 level. If not all of the SG100 scoring issues were met the PI was given an intermediate score (85, 90 or 95) reflecting overall performance against the different SG100 scoring issues.

In order to achieve a 100 score, all of the 60 issues, all of the 80 issues, and all of the 100 issues needed tobemet and each scoring issue justified by supporting rationale.

In Principle 2, the team scored PIs comprised of differing scoring elements (species or habitats) that comprised part of a component affected by the fishery. If any single scoring element failed substantially to meet SG80, the overall score for that element became less than 80 and a condition raised. The score given reflected the number of elements that failed, and the level of their failure, rather than being derived directly as a numerical average of the individual scores for all elements.

Scores were determined for each scoring element by applying the process as above.

Table C2 MSC certification requirements v 1.1 October 2011, was used to determine the overall score for the PI from the scores of the different scoring elements.

The weighted average score for all Criteria under each Principle for the fishery was calculated and if it were less than 80 for any of the three Principles the fishery would not be certified.

4.4.3.5 List of all P2 species (including under which component they were assessed)

Species or species group	P2 component
Ling *Genypterus blacodes*	Main retained species
Alfonsino *Beryx splendens, B. decadactylus*	Other retained species
Barracouta *Thyrsites atun*	
Black oreo *Allocyttus niger*	
Bluenose *Hyperoglyphe antarctica*	
Blue warehou *Seriolella brama*	
Frostfish *Lepidopus caudatus*	
Gemfish *Rexea solandri*	
Ghost shark *Hydrolagus novaezelandiae*	
Hake *Merluccius australis*	
Jack mackerel *Trachurus declivis, T. novaezelandiae, T. murphyi*	
Lookdown dory *Cyttustraversi*	
Orange roughy *Hoplostethus atlanticus*	
Pale ghost shark *Hydrolagus bemisi*	
Porbeagle shark *Lamna nasus*	
Ray's bream *Brama brama*	
Redbait *Emmelichthys nitidus*	
Red cod *Pseudophycis bachus*	
Ribaldo *Mora moro*	
Rough skate *Dipturus nasutus*	
Sea perch *Helicolenus* spp.	
Silver warehou *Seriolella punctata*	
Smooth oreo *Pseudocyttus maculatus*	
Smooth skate *Dipturusin nominata*	
Southern blue whiting *Micromesistius australis*	
Spiky oreo *Neocyttus rhomboidalis*	

Spiny dogfish *Squalis acanthias* Squid *Nototodarus gouldi, N. sloanii* Stargazer *Kathetostoma giganteum* White warehou *Seriolella caerulea*	
Shovelnose dogfish *Deania calcea*	Main vulnerable species caught as bycatch
Banded bellowsfish *Centriscops humerosus* Baxter's lantern dogfish *Etmopterus baxteri* Bellowsfish unspecified Conger eel *Conger verreauxi* Deepsea flathead *Hoplichthys haswelli* Floppy tubular sponge Javelinfish *Lepidorhynchus denticulatus* Leafscale gulper shark *Centrophorus squamosus* Longnose velvet dogfish *Centroselachus crepidater* Long-nosed chimaera *Hariottara leighana* Lucifer dogfish *Etmopterus lucifer* Oliver's rattail *Caelorinchus oliverianus* Rattails Rudderfish *Centrolophus niger* Scabbardfish *Benthodesmus spp.* Seal shark *Dalatius licha* Silver dory *Cyttus novaezelandiae* Silverside *Argentina elongata* Warty squid *Moroteuthis spp.*	Bycatch species
Marine mammals	Endangered, threatened and protected species
Seabirds: all species[3]	Endangered, threatened and protected species
Sharks: Basking shark *Cetorhinus maximus*	Endangered, threatened and protected species
Corals: all species in the order Antipatharia, all species in the order Gorgonacea, all species in the order Scleractinia, all species in the family Stylasteridae	Endangered, threatened and protected species

[3] Note that sooty shearwaters (*Puffinus griseus*) and grey faced petrels (*Pterodroma macroptera*) can be hunted on land, as chicks, with explicit permission from the Minister of Conservation.

5 Traceability

5.1 Target eligibility date

The target eligibility date is 1 October 2012. That is the start of the fishing year, also the current MSC certificate for this fishery expires in October 2010.There are no traceability and segregation systems in the fishery to be concerned about as this fishery is already certified.

5.2 Traceability within the fishery

Existing fisheries management requirements include the clear identification of species, quantity, fishing method and area of capture by all vessels landing fish from the fishery. All catches are reported in logbooks and in catch and effort landing returns. On-board observer coverage also monitors, cross checks and verifies catches and landings with the vessels logbook.

Cross referencing of VMS data with logbooks, observer and aerial and at-sea surveillance reports also ensures that fish is reported from the correct area of capture. All landings are monitored by a dockside monitoring program. Vessels have to advise MFish before landing and maybe subject to monitoring by enforcement officers

5.2.1 Tracking and tracing

As this fishery has already been certified (2001) and re-certified (2006), clear traceability and tracking is already in place, there are procedures and audits are regularly carried out. Procedures that are in place include "when Hoki product is brought on to a factory site that is not from a MSC fishery or not from a site with a chain of custody certification for (a) reprocessing, or (b) future sale, it must be brought on to inventory with the appropriate quality status and a logistic status. The narrative will read "Not MSC certified". This will prevent its movement without proper control." (DWG, Quality Manual).

If a vessel were fishing outside the Unit of certification there are systems in place. All factory trawlers in NZ are operating under NZ Food Safety Authority (NZFSA) and NZ Fisheries Act rules and regulations. As such they are required to both land all catch of QMS species (such as hoki) and ensure that any fish that will not be fit for human consumption, e.g. through damage or accidental contamination, is not able to be inadvertently sold into market. This drives the need for all vessels to be able to mark, 'ring-fence' and inventory product or products on a reasonably regular basis. This is coupled with the fact that all vessels produce a wide range of species and products, all of which are needed to be marked by date and numerous other information, and able to be sorted on arrival in port and inventoried for market and export purposes. Both physical and electronic inventory management is inherent in the systems that these vessels operate

5.2.2 Vessels fishing outside the unit of certification

No hoki caught outside NZ EEZ is processed in New Zealand. Frozen hoki from Australia maybe landed, labelled and sold as a product of Australia which is not an MSC product. It is controlled and labelled to identify as imported non MSC Fish

5.2.3 At sea processing

Factory trawlers	No. in fleet	Products produced
Fillet	8	Frozen at sea fillets, fillet block, mince, fishmeal
Head and gut	6	Frozen at sea trunks, fishmeal
Head and gut	14	Frozen at sea trunks
Fresh fish trawlers		
< 28m	3	Fresh fish on ice
>28m	17	Fresh fish on ice

At-sea processing occurs on all the major factory ships participating in this fishery. At-sea processing includes the sorting, heading and gutting, filleting, freezing, reduction to surimi and packaging of hoki.

There are two levels of process technology in the fleet

1. Fully integrated weighing labelling systems which barcode every carton on production and before storage in the ship's hold. This data is downloaded on arrival, reconciled on landing figures and thus final inventory is arrived at. This system allows the tagging of product lines which is non-certified so that it is barcoded as non-certified and trackable and separable ever after simply by scanning. Onshore systems in load-out audit exports.
2. The rest of the fleet practice standard practice where all product (by carton) is labelled as per MAF and NZFSA requirements. The outer markings are used to separate and inventory all product on landing. All NZ hoki is certified.

The risk of substitution is considered to be well managed and therefore negligible besides all hoki caught in NZ are certified. Under MFish regulations every container in which fish is packaged on a licenced fish receiver's premise shall be marked with species name, date, licenced fish receivers name, processed state, area fished.

5.2.4 Trans shipping

Transhipping is rare in the hoki fishery. However if it did occur there is legislation in place to ensure the potential traceability risks associated with any transhipping are minimal.

Section 110, of the Fisheries Act states:

Fish taken in New Zealand fisheries waters must be landed in New Zealand—

(1) No person shall land, at any place outside New Zealand, any fish… taken in New Zealand fisheries waters unless… has the prior approval of the chief executive and is in accordance with any conditions imposed… .

(2) For the purposes of subsection (1) of this section, fish, aquatic life, or seaweed shall be deemed to have been landed at a place outside New Zealand if—

(a) It is transported beyond the outer limits of the exclusive economic zone by the vessel that took it; or

(b) It is taken… and transferred to a vessel and then transported… beyond the outer limits of the exclusive economic zone without having been lawfully purchased or acquired by a licensed fish receiver in New Zealand before transportation; or

(c) It is transhipped… to another vessel.

(3) The conditions that may be imposed on any approval granted under subsection (1) of this section include conditions relating to one or more of the following:

(a) The vessel that will take the fish, aquatic life, or seaweed:

(b) Any vessel, which will receive the fish, aquatic life, or seaweed:

(c) The manner and conditions under which the storage, transportation, transhipment, recording, reporting, landing, and disposal of the fish, aquatic life, or seaweed will take place.

If transhipment takes place then CoC is not compromised due to checks including records and labelling, that is in place.

5.3 Eligibility to enter further chains of custody

To be eligible to carry the MSC logo, product from the certified fishery, must enter into separate Chain of Custody certifications after the first point of sale.

The main points of landing for this fishery are all major New Zealand ports.

The scope of this certification ends at the points of landing. Downstream certification of the product would require appropriate certification of storage and handling facilities at these locations.

IMM determined that the systems in place for tracking and tracing are sufficient, fish and fish products from the fishery may enter into further certified chains of custody and be eligible to carry the MSC ecolabel.

The eligible parties to use the fisheries certificate are shareholders of the Deepwater Group. Currently 94.8% of total hoki quota is held by DWG shareholders. Anyone who owns hoki quota has the opportunity to become a DWG shareholder

6 Evaluation Results

6.1 Principle level Scores

Final Principle Scores	
Principle	**Score**
Principle 1 – Target Species	90.6
Principle 2 – Ecosystem	86.7
Principle 3 – Management System	94.8

6.2 Summary of scores

Prin-ciple	Wt (L1)	Component	Wt (L2)	PI No.	Performance Indicator (PI)	Wt (L3)	Weight in			Score	Contribution to Principle Score	
						Either		Or			Either	Or
One	1	Outcome	0.5	1.1.1	Stock status	0.5	0.25	0.333	0.1667	90	22.50	15.00
				1.1.2	Reference points	0.5	0.25	0.333	0.1667	90	22.50	15.00
				1.1.3	Stock rebuilding			0.333	0.1667			0.00
		Management	0.5	1.2.1	Harvest strategy	0.25	0.125			95	11.88	11.88
				1.2.	Harvest control rules & tools	0.25	0.125			90	11.25	11.25
				1.2.	Information & monitoring	0.25	0.125			90	11.25	11.25
				1.2.	Assessment of stock status	0.25	0.125			90	11.25	11.25
Two	1	Retained species	0.2	2.1.	Outcome	0.333	0.0667			80	5.33	5.33
				2.1.	Management	0.333	0.0667			95	6.33	6.33
				2.1.	Information	0.333	0.0667			90	6.00	6.00
		Bycatch species	0.2	2.2.	Outcome	0.333	0.0667			80	5.33	5.33
				2.2.	Management	0.333	0.0667			100	6.67	6.67
				2.2.	Information	0.333	0.0667			90	6.00	6.00
		ETP species	0.2	2.3.	Outcome	0.333	0.0667			85	5.67	5.67
				2.3.	Management	0.333	0.0667			85	5.67	5.67
				2.3.	Information	0.333	0.0667			80	5.33	5.33
		Habitats	0.2	2.4.	Outcome	0.333	0.0667			75	5.00	5.00
				2.4.	Management	0.333	0.0667			80	5.33	5.33
				2.4.	Information	0.333	0.0667			80	5.33	5.33
		Ecosystem	0.2	2.5.	Outcome	0.333	0.0667			90	6.00	6.00
				2.5.	Management	0.333	0.0667			95	6.33	6.33
				2.5.	Information	0.333	0.0667			95	6.33	6.33
Three	1	Governance and policy	0.5	3.1.1	Legal & customary framework	0.25	0.125			100	12.50	
				3.1.2	Consultation, roles &	0.25	0.125			100	12.50	
				3.1.3	Long term objectives	0.25	0.125			100	12.50	
				3.1.4	Incentives for sustainable fishing	0.25	0.125			90	11.25	
		Fishery specific management system	0.5	3.2.	Fishery specific objectives	0.2	0.1			90	9.00	
				3.2.	Decision making processes	0.2	0.1			90	9.00	
				3.2.	Compliance & enforcement	0.2	0.1			100	10.00	
				3.2.4	Research plan	0.2	0.1			100	10.00	
				3.2.5	Management performance	0.2	0.1			80	8.00	

Overall weighted Principle-level scores		Either	Or
Principle 1 - Target species	Stock rebuilding PI not scored	90.6	
	Stock rebuilding PI scored		
Principle 2 - Ecosystem		86.7	
Principle 3 - Management		94.8	

6.3 Summary of conditions

Summary of Conditions

Condition number	Condition	Performance Indicator
1	**Improve management of habitat impacts of the hoki fishery, such that by the end of third surveillance audit, it can be shown that the fishery is highly unlikely (i.e. there should be no more than a 30% probability) to reduce habitat structure and function to a point where there would be serious or irreversible harm.**	**PI 2.4.1**

6.4 Recommendations

Principle 1:

1. Further review and understand the retrospective pattern.
2. Conduct an external review of the stock assessment.

Principle 2:

1. Work towards quantitative measures of direct impact on all ETP species.
2. Evaluate knowledge of pale ghost shark in GSP7 more comprehensively, for example using a fisheries characterization, to increase confidence that this species is within biological limits in all areas.
3. Continue to implement discharge management measures, and incorporate newly available information in practices described in VMPs and other measures intended to reduce ETP impacts.
4. Increase understanding of ecological impacts of the hoki fishery and the indicators that may be used to assess these impacts.

Principle 3:

1. Continue to support government policy development in alignment with the intent and Principles of MSC
2. Work with the Ministry to establish a Ministry-led Environmental Advisory Group with terms of reference agreed to by government, eNGOs and industry

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Maori Fisheries Act 2004
Treaty of Waitangi (Fisheries Claims) Settlement Act 1992 No 121.

Appendix 1 Scoring and Rationales

Appendix 1.1 Performance Indicator Scores and Rationale

Evaluation Table PI 1.1.1

PI 1.1.1		The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
60	**a**	**Y**	It is **likely** that the stock is above the point where recruitment would be impaired.
			The best estimates of spawning biomass for the two stocks (eastern stock: 53% of B_0; western stock: 41% of B_0) are larger than the soft and hard limits (Ministry of Fisheries 2011a). It is therefore likely (probability > 0.7) that the two stocks are above the point at which recruitment would be impaired.
80	**a**	**Y**	It is **highly likely** that the stock is above the point where recruitment would be impaired.
			The best estimates of spawning biomass for the two stocks (eastern stock: 53% of B_0; western stock: 41% of B_0) are larger than the soft and hard limits. The probabilities that the two stocks are above both the hard and soft limit points are > 0.99 (Ministry of Fisheries 2011a). It is therefore highly likely (probability > 0.8) that the two stocks are above the point at which recruitment would be impaired.
	b	**Y**	The stock is at or fluctuating around its target reference point.
			The best estimates of spawning biomass for the two stocks (eastern stock: 53% of B_0; western stock: 41% of B_0) exceed the lower end of the Management Target range (0.35 B_0) while the eastern stock is estimated to be above the upper end of the Management Target range (0.5 B_0) (Ministry of Fisheries 2011a). The 2011 stock assessment indicates that the east stock has only dropped below the lower end of the Management Target once during the history of the fishery (in 2005) [Figures 2 and 3]. The 2011 assessment indicates that the western stock was below the soft limit from 2003-2007, but has since recovered, and is projected to remain above the Management Target over the next five years under TACCs of 130000 t and less (Ministry of Fisheries 2011b; McKenzie 2011). The stocks have therefore fluctuated about the target reference point for the past few years and will likely do so in the near future.
100	**a**	**Y**	There is a **high degree of certainty** that the stock is above the point where recruitment would be impaired.
			The best estimates of spawning biomass for the two stocks (eastern stock: 53% of B_0; western stock: 41% of B_0) are larger than the soft and hard limits. The probabilities that the two stocks are above both the hard and soft limit points are > 0.99 (Ministry of Fisheries 2011a). There is consequently a high degree of certainty (probability > 0.95) that the two stocks are above the point at which recruitment would be impaired.

PI 1.1.1		The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing	
	b	Y:E N:W	There is a **high degree of certainty** that the stock has been fluctuating around its target reference point, or has been above its target reference point, **over recent years**.
			The spawning biomass of the eastern stock has consistently been assessed to be above the lower end of the Management Target. Although the western stock is currently above the lower end of the Management Target, it only achieved this status in 2010 following the application of a rebuilding plan. There is therefore insufficient evidence to conclude that there is a high degree of certainty that both stocks are fluctuating about the target reference point for more than the last few years.
References			McKenzie, A. 2011. Alternative catch projections for hoki in 2011. Note to Aoife Martin (MFish) 10th May 2011. Ministry of Fisheries. 2011a. Hoki, Fishery Assessment Plenary Report for 2011. Ministry of Fisheries. 2011b. Review of Sustainability Measures and Other Management Controls for Hoki (HOK1) Final Position Paper September 2011.

Stock Status relative to Reference Points			
	Type of reference point	**Value of reference point**	**Current stock status relative to reference point**
Target reference point	Spawning biomass ('000t of female spawners)	Spawning stock biomass between 35% of 50% of the unfished equilibrium level (i.e. 0.35-0.5 B_0).	East stock 1.51 of the lower end of the Management Target West stock: 1.17of the lower end of the Management Target
Limit reference point	Spawning biomass ('000t of female spawners)	Spawning stock biomass of 20% of the unfished equilibrium level (i.e. 0.2B_0).	East stock: 2.65 B_{lim} West stock: 2.05 Bl_{im}

OVERALL PERFORMANCE INDICATOR SCORE: The score is 90 because all of the scoring issues for the 80 scoring guidepost are met as is one of the two scoring issues for the 100 scoring guidepost.	**90**
CONDITION NUMBER (if relevant):	**N/A**

Evaluation Table: PI 1.1.2

PI 1.1.2		Limit and target reference points are appropriate for the stock	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
60	**a**	**Y**	Generic limit and target reference points are based on justifiable and reasonable practice appropriate for the species category.
			The management system includes two limit reference points, hard and soft ($0.1B_0$ and $0.2B_0$ for hoki), as required under the New Zealand harvest strategy standard (Ministry of Fisheries 2008, 2011a). The target reference point is a range from 0.35 – $0.5B_0$, which is higher than B_{MSY} under deterministic conditions (0.24 and 0.25 B_0 for eastern and western stocks). The soft limit and the Management Target are consistent with limit and target reference points for fisheries for species similar to hoki. The limit and target reference points are therefore based on justifiable and reasonable practice appropriate for the species category.
80	**a**	**Y**	Reference points are appropriate for the stock and can be estimated.
			The Management Target (0.35-$0.5B_0$) is consistent with maintaining the stock above the B_{MSY} calculated under deterministic considerations (0.24 B_0 for the eastern stock and $0.25B_0$ for the western stock). The limit reference point on which this re-assessment is based (the soft limit of $0.2B_0$) is larger than 75% of B_{MSY} and between 40 – 57% of the Management Target. The values for the reference points are calculated as part of the stock assessment. The reference points are therefore appropriate for the stocks and can be estimated.
	b	**Y**	The limit reference point is set above the level at which there is an appreciable risk of impairing reproductive capacity.
			Given the assumed form of the stock-recruitment relationship (Beverton-Holt) and the assumed extent of compensation (a steepness of 0.75), the hard limit corresponds to a reduction in expected recruitment from virgin levels of 43% and the soft limit to a reduction in expected recruitment from virgin levels of 25%. Given the nature of time-series of stock and recruitment for hoki, it is currently not possible to estimate steepness. However, steepness estimates for similar species tend to be higher than 0.75 (Myerset al. 2002). The limit reference point is therefore above the level at which there is an appreciable risk of impairing reproductive capacity.
	c	**Y**	The target reference point is such that the stock is maintained at a level consistent with B_{MSY} or some measure or surrogate with similar intent or outcome.
			The Management Target of 0.35 – $0.5B_0$ is higher than the estimate of B_{MSY} given deterministic dynamics. B_{MSY} itself is not used as the target reference point *inter alia* because its derivation involves the assumption of perfect information regarding the population and fishery dynamics and that annual changes in TACC occur. Ministry of Fisheries (2011) note that a target of deterministic B_{MSY} would likely lead to an undesirably high probability of dropping below the soft limit of $0.2B_0$. The choice of target reference point is supported by the results of Management Strategy Evaluation simulations (Langley 2009,2011). The target reference point is therefore such that the stock is maintained above B_{MSY}.
	d	**Y**	Key low trophic level species, the target reference point takes into account the ecological role of the stock.

PI 1.1.2		Limit and target reference points are appropriate for the stock	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
			Hoki does not satisfy the criteria for a LTL species: (a) family Melucciidae does not appear in the list of "key LTL species" in Box CB1 of MSC (2011), and (b) although hoki is a key component of the slope ecosystem (Francis et al. 2002), the diet of hoki is not predominantly plankton and hoki do not have the biological characteristics of LTL species identified in Box CB3 of MSC (2011).
100	**b**	**N**	The limit reference point is set above the level at which there is an appreciable risk of impairing reproductive capacity following consideration of **precautionary issues**.
			The hard and soft limits are defaults under the harvest strategy standard. There is no evidence that they were selected to be deliberately precautionary.
	c	**Y**	The target reference point is such that the stock is maintained at a level consistent with B_{MSY} or some measure or surrogate with similar intent or outcome, or a **higher level**, and takes into account relevant precautionary issues such as the ecological role of the stock with a **high degree of certainty.**
			The Management Target is higher than the deterministic estimates of B_{MSY} primarily because these estimates are based on the assumption of perfect information about the fishery and the population, and because targeting a deterministic B_{MSY} would lead to an undesirably high probability of breaching the soft limit. Langley (2009, 2011) shows the relationship between the choice of the range for the target reference point and the probability of breaching the soft limit for a given harvest control rule. The target reference point is higher than B_{MSY}, and takes into account the fact that estimation of B_{MSY} involves unrealistic assumptions. The Management Target is precautionary in the sense that it reduces the risk of the stock dropping below the soft and hard limits.
References			Francis MP, Hurst RJ, McArdle B, Bagley NW and OF Anderson. 2002. New Zealand demersal fish assemblages. Environmental Biology of Fishes 62: 215-234. Langley A. 2009. Determining an appropriate target biomass reference point for the New Zealand hoki fishery. Document dated December 2009. Langley A. 2011. Determining an appropriate target biomass reference point for the New Zealand hoki fishery – Supplementary analysis. Document dated November 2011. Ministry of Fisheries. 2008. Harvest Strategy Standard for New Zealand Fisheries. Ministry of Fisheries. 2011a. Hoki, Fishery Assessment Plenary Report for 2011. MSC. 2011. MSC Certification Requirements. Version 1.0 August 15, 2011. Myers RA, Barrowman NJ, Hilborn R and DH Kehler. 2002. Inferring Bayesian priors with limited direct data: Applications to risk analysis. North American Journal of Fisheries Management 22: 351-364.
OVERALL PERFORMANCE INDICATOR SCORE: The score is 90 because all of the scoring issues for the 80 scoring guidepost are met as is one of the two scoring issues for the 100 scoring guidepost.			**90**

PI 1.1.2		Limit and target reference points are appropriate for the stock	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
CONDITION NUMBER (if relevant):			**N/A**

Evaluation Table: PI 1.2.1

PI 1.2.1		There is a robust and precautionary harvest strategy in place	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
60	**a**	**Y**	The harvest strategy is **expected** to achieve stock management objectives reflected in the target and limit reference points.
			The harvest strategy involves collecting fishery-dependent and –independent data, analysing those data using a stock assessment model, assessing stock status relative to agreed reference points, conducting projections under alternative TACCs and splits between the western and eastern stocks, and setting a TACC (and other regulations) which is consistent with the Fisheries Act 1996. This type of harvest strategy has all the characteristics of a system which is expected to achieve stock management objectives as reflected in the target and limit reference points.
	b	**Y**	The harvest strategy is **likely** to work based on prior experience or plausible argument.
			The harvest strategy led to reduced catches of hoki (particularly for the western stock) following a period during which recruitment was poor and when harvest rates exceeded levels now considered to be target levels. These reduced catches led, along with stronger recruitment, to stock rebuilding, and catches have been once again increased. Thus, the harvest strategy is therefore **likely** to work based on prior experience of plausible argument.
	c	**Y**	Monitoring is in place that is expected to determine whether the harvest strategy is working.
			Fishery-dependent and –independent data are available to monitor trends in abundance as well as the age- and sex-structure of the population and the removals from the population. These data are included in the stock assessment, which estimates stock status relative to limit and target reference points. A plan is in place which determines future levels of monitoring (surveys and sampling for age and length) (Ministry of Fisheries 2010). Thus, monitoring is in the place that is expected to determine whether the harvest strategy is working.
80	**a**	**Y**	The harvest strategy is responsive to the state of the stock and the elements of the harvest strategy **work together** towards achieving management objectives reflected in the target and limit reference points.
			The four aspects of the harvest strategy (monitoring, assessment, projections, and decision making consistent with the Fisheries Act 1996) are all integrated and linked. There is no formal harvest control rule and the Minister has flexibility in terms of how s/he satisfies the requirements of the Act. However, overall the harvest strategy is responsive to the state of the stock and the elements of the harvest strategy do work together towards achieving management objectives, as reflected in the target and limit reference points.
	b	**Y**	The harvest strategy may not have been fully tested but monitoring is in place and evidence exists that it is achieving its objectives.
			The harvest strategy is not specified as a mathematical function. However, adequate monitoring is in place to detect changes in abundance, and application of the harvest strategy led to rebuilding of the western stock from below to the soft limit to above the lower end of the Management Target. Langley (2009, 2011) used Management Strategy Evaluation, MSE, to

PI 1.2.1		There is a robust and precautionary harvest strategy in place	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
			evaluate harvest strategies which mimic to a large degree the harvest strategy, and reported estimated probabilities of, for example, dropping below the limit reference point. Thus, although the harvest strategy has not been fully tested, monitoring is in place and evidence exists that the harvest strategy is achieving its objectives.
100	**a**	**Y**	The harvest strategy is responsive to the state of the stock and is **designed** to achieve stock management objectives reflected in the target and limit reference points.
			The harvest strategy is consistent with the New Zealand Harvest Strategy Standard, HSS (Ministry of Fisheries 2008). This standard requires the definition of (a) a target level about which a fishery or stock should fluctuate, (b) a soft limit that triggers a requirement for a formal, time-constrained rebuilding plan, and (c) a hard limit below which fisheries should be considered for closure. The HSS requires a rebuilding plan when a stock is depleted to be below the soft limit (or fishery closure if the stock is estimated to be below the hard limit). This contrasts with the MSC guidelines for PI 1.1.3 which consider a stock to be depleted when it is consistently below the target reference point (MSC 2011). However, under the HSS, management needs to implement controls to allow the stock to fluctuate about the target range. How that is to be achieved for stocks between the target and soft limit is not explicitly prescribed in the HSS. The recent management decision for scampi (Ministry of Fisheries 2011a) illustrates management actions for a stock projected to drop below the soft limit, suggesting that the harvest strategy will react before a stock drops below the limit reference point. The stock assessment reports stock status relative to the reference points and quantifies the implications of future TACC levels and catch splits between the western and eastern stocks. The harvest strategy is therefore responsive to the state of the stock and is designed to achieve stock management objectives, as reflected by the target and limit reference points.
	b	**N**	The performance of the harvest strategy has been **fully evaluated** and evidence exists to show that it is achieving its objectives including being clearly able to maintain stocks at target levels.
			While the HSS recognizes the value of MSE to evaluate harvest strategies, MSE has only been used to limited extent for New Zealand hoki. Specifically, given that the harvest strategy is not mathematicallyspecified, any MSE evaluation can only be approximate. Furthermore, Langley (2009) notes that his MSE did not fully explore a range of likely uncertainties (such as time-varying fishery selectivity and natural mortality, a wide range of trends in recruitment, etc.) Thus, it is premature to conclude that the harvest strategy has been fully evaluated.
	d	**Y**	The harvest strategy is periodically reviewed and improved as necessary.
			The HSS was published in 2008, and represents the current constraints on the harvest strategy. The guidelines for applying the HSS were revised in 2011 (Ministry of Fisheries 2011b). The major changes to the document relate to metrics for quantifying fishing intensity as well as to the roles and responsibilities of Science Working Groups and fisheries managers. The harvest strategy for hoki has evolved during the most recent certification period. For example, there were no formal limits or target reference points when the 2006 re-certification took place (although $0.2B_0$ acted as a *de facto* limit reference point). In contrast, formal limit and target reference points

PI 1.2.1		There is a robust and precautionary harvest strategy in place	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
			were in place by the 2009 stock assessment (Ministry of Fisheries 2009). Thus, the harvest strategy has been reviewed periodically and revised.
References			Langley A. 2009. Determining an appropriate target biomass reference point for the New Zealand hoki fishery. Document dated December 2009. Langley A. 2011. Determining an appropriate target biomass reference point for the New Zealand hoki fishery – Supplementary analysis. Document dated November 2011. Ministry of Fisheries. 2008. Harvest Strategy Standard for New Zealand Fisheries. Ministry of Fisheries 2009. Hoki, Fishery Assessment Plenary Report for 2009. Ministry of Fisheries. 2010. Research Specifications for the 10-year Research programme for Deepwater Fisheries. Document dated 28 July 2010. Ministry of Fisheries. 2011a**.** Review of Sustainability Measures and Other Management Controls for Deepwater Fisheries. Final Position Paper - September 2011. Ministry of Fisheries. 2011b. Operational guidelines for New Zealand's harvest strategy standard. Revision 1. June 2011. MSC. 2011. MSC Certification Requirements. Version 1.0 August 15, 2011.
OVERALL PERFORMANCE INDICATOR SCORE: The score is 95 because all of the scoring issues for the 80 scoring guidepost are met as are two of the three scoring issues for the 100 scoring guidepost.			**95**
CONDITION NUMBER (if relevant):			**N/A**

Evaluation Table: PI 1.2.2

PI 1.2.2		There are well defined and effective harvest control rules in place	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
60	**a**	**Y**	**Generally understood** harvest rules are in place that are consistent with the harvest strategy and which act to reduce the exploitation rate as limit reference points are approached.
			The harvest control rule for New Zealand hoki is "Management actions determined by the results of a series of forward projections under a range of catch assumptions, guided by the biological reference points" (Ministry of Fisheries 2011a). The harvest control rule is therefore not a catch control rule (i.e. a mathematical function which determines TACCs as a function of stock status relative to limit and target reference points). Rather the harvest control rules are the consequences of the requirements of the Fisheries Act 1996 and Harvest Strategy Standard, HSS (Ministry of Fisheries 2008). For the purposes of P.1.2.2, the harvest control rule is interpreted here as comparing estimated stock status with the soft and hard limits, implementing a rebuilding plan if the stock is assessed to be below the soft limit, considering the fishery for closure if the stock is below the hard limit, and using 5-year projections to assess future stock status given assumptions regarding future recruitment, TACCs and catch limits for the western and eastern stocks. The HSS indicates that the probability of breaching the soft limit should not exceed 10%. Thus, the harvest rules are generally understood and consistent with the harvest strategy and will act to reduce the exploitation rate as the limit reference point is approached.
	c	**Y**	There is **some evidence** that tools used to implement harvest control rules are appropriate and effective in controlling exploitation.
			The main tools used to implement the harvest control rules are the TACC and the associated non-regulatory restrictions related to the east-west split of the TACC. A system of deemed values is used to deter or deal with catches over quota. There are other ways to handle over catch by individual operators, e.g. purchase of ACEfrom other quota holders. The estimated catch is almost always less the TACC, although some overruns have occurred in the recent past (e.g. by 0.5% and 2% in 2004-05 and 2005-06; Table 4b). Attempts to keep the catch from the western stock below theircatch limits have been less successful, with the target catch from the western stock exceeded in both 2007-08 and 2008-09. The approaches used to implement the catch limits for western and eastern stocks have been modified in recent years, and appear to be working better. The actual catch from the western stock was below that intended in 2009-10 and 2010-11. Thus, there is clearly some evidence that the tools used to implement harvest control rules are appropriate and effective in controlling exploitation.
80	**a**	**Y**	**Well defined** harvest control rules are in place that are consistent with the harvest strategy and ensure that the exploitation rate is reduced as limit reference points are approached.
			The harvest control rule for New Zealand hoki is "Management actions determined by the results of a series of forward projections under a range of catch assumptions, guided by the biological reference points" (Ministry of Fisheries 2011a). The harvest control rule is therefore not a catch control rule (i.e. a mathematical function which determines TACCs as a function of stock status relative to limit and target reference points). Rather the harvest control rules are the consequences of the requirements of the Fisheries Act 1996 and Harvest Strategy Standard, HSS (Ministry of Fisheries, 2008). For the purposes of P.1.2.2, the harvest control rule is interpreted here as

PI 1.2.2		There are well defined and effective harvest control rules in place	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
			comparing estimated stock status with the soft and hard limits, implementing a rebuilding plan if the stock is assessed to be below the soft limit, considering the fishery for closure if the stock is below the hard limit, and using 5-year projections to assess future stock status given assumptions regarding future recruitment, TACCs and catch limits for the western and eastern stocks. The HSS indicates that the probability of breaching the soft limit should not exceed 10%. The TACC for scampi was reduced in 2011 when stock was projected to drop between the target and limit reference points (Ministry of Fisheries 2011b). Thus, the harvest rules are well defined and consistent with the harvest strategy and will act to reduce the exploitation rate as the limit reference point is approached.
	b	**Y**	The **selection** of the harvest control rules takes into account the **main** uncertainties.
			The assessment is based on a series of scenarios which capture the main assessment-related uncertainties identified by the Stock Assessment Plenary (e.g. Ministry of Fisheries 2009, 2010, 2011c). Projections are undertaken for a subset of these scenarios and those projections account for uncertainty regarding future recruitment. The results of the projections are expressed in terms of probabilities of failing to achieve various goals (e.g. McKenzie 2011). Thus, the selection of the harvest control rules takes into account the main uncertainties related to stock status and conducting projections.
	c	**Y**	**Available evidence indicates** that the tools in use are appropriate and effective in achieving the exploitation levels required under the harvest control rules.
			The main tools used to implement the harvest control rules are the TACC and the associated non-regulatory restrictions related to the east-west split of the TACC. A system of deemed values is used to deter or deal with catches over quota. There are other ways to handle over catch by individual operators, e.g. purchase of ACEfrom other quota holders. The estimated catch is almost always less the TACC, although some overruns have occurred in the recent past (e.g. by 0.5% and 2% in 2004-05 and 2005-06; Table 4b). Attempts to keep the catch from the western stock below theircatch limits have been less successful, with the target catch from the western stock exceeded in both 2007-08 and 2008-09. The approaches used to implement the catch limits for western and eastern stocks have been modified in recent years, and appear to be working better. The actual catch from the western stock was below that intended in 2009-10 and 2010-11. Thus, available evidence shows that the tools used to implement harvest control rules are appropriate and effective in controlling exploitation.
100	**a**	**Y**	The **design** of the harvest control rules takes into account a **wide range** of uncertainties.
			The harvest strategy standard provides a formal and well specified process for setting harvest regulations and is designed so that a range of uncertainties can be accounted for. Thus, the design of the harvest control rules takes a wide range of uncertainty into account.
	b	**N**	**Evidence clearly shows** that the tools in use are effective in achieving the exploitation levels required under the harvest control rules.
			While the amounts by which catches have exceeded TACCs are largely

PI 1.2.2		There are well defined and effective harvest control rules in place	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
			negligible in terms of their impact on the total stock and the ability the achieve conservation objectives, the ability to ensure that the catch is split as intended between the eastern and western stocks has been less successful. Performance in this respect has improved, but further years of information are needed to conclude that the new methods in now place are sufficient to clearly show that catches can be constrained east-west as intended. Thus, there is insufficient evidence to **clearly show** that the tools in use are effective in achieving exploitation levels required under the harvest control rules.
References			McKenzie A. 2011. Alternative catch projections for hoki in 2011. Note to Aoife Martin (MFish) 10th May 2011. Ministry of Fisheries. 2008. Harvest Strategy Standard for New Zealand Fisheries. 30 pp. Ministry of Fisheries. 2009. Hoki, Fishery Assessment Plenary Report for 2009. Ministry of Fisheries. 2010. Hoki, Fishery Assessment Plenary Report for 2010. Ministry of Fisheries. 2011a. Review of Sustainability Measures and Other Management Controls for Hoki (HOK1) Final Position Paper - September 2011. Ministry of Fisheries. 2011b. Annual Operational Plan for Deepwater Fisheries for 2011/12. Ministry of Fisheries. 2011c. Hoki, Fishery Assessment Plenary Report for 2011.
OVERALL PERFORMANCE INDICATOR SCORE: The score is 90 because all of the scoring issues for the 80 scoring guidepost are met as is one of the two scoring issues for the 100 scoring guidepost.			**90**
CONDITION NUMBER (if relevant):			**N/A**

Evaluation Table: PI 1.2.3

PI 1.2.3		Relevant information is collected to support the harvest strategy	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
60	**a**	**Y**	**Some** relevant information related to stock structure, stock productivity and fleet composition is available to support the harvest strategy.
			The report of the Stock Assessment Plenary (e.g. Ministry of Fisheries 2009, 2010, 2011) summarizes information on stock structure and growth of hoki, while the assessment estimates movement rates, fleet selectivity patterns and natural mortality. Thus, it can be concluded that there is at least some relevant information related to stock structure, stock productivity and fleet composition available to support the harvest strategy.
	b	**Y**	Stock abundance and fishery removals are monitored and at least one indicator is available and monitored with sufficient frequency to support the harvest control rule.
			Five sources of fishery-independent data are included in the stock assessment, although only three of the fishery-independent surveys have been conducted regularly since 2000 [Table 1]. In 2011, data from only one fishery-independent survey (the Chatham Rise trawl survey) was available owing to the lack of a research boat to conduct the survey of the sub-Antarctic area. Removals are estimated by region and fishery, and information on age and length are sampled from the catches and the surveys (e.g., Ballaraet al. 2011; Ministry of Fisheries 2011). Thus, stock abundance and fishery removals are monitored, and at least one indicator is available and monitored with sufficient frequency to support the harvest control rule.
80	**a**	**Y**	**Sufficient** relevant information related to stock structure, stock productivity, fleet composition and other data is available to support the harvest strategy.
			1. Stock structure. The two stocks of hoki have been distinguished based primarily on differences in morphology and age structure, as well as because of the presence of separate spawning grounds (Ministry of Fisheries 2011). 2. Productivity. Data on growth rates are available from age and growth studies, fecundity-at-size has been estimated, and it is known that some mature hoki do not spawn each year. Natural mortality is estimated within the stock assessment, and historical recruitment is treated as estimable parameters. Understanding of the drivers of recruitment remains poor, and consequently the assessment conducts projections for two scenarios regarding future recruitment. 3. Fleet composition. Hoki are caught using bottom and midwater trawls. The total effort in the fishery is known, and comprehensive data are available at fine spatial scales (e.g. Ballara et al. 2011). Although the gear types can be broadly categorized into bottom and midwater trawls, the data on the TCEPR (Trawl Catch and Effort Processing Returns) forms are not sufficient to identify how the gear is used, for example, midwater trawls may take place close to the bottom. Some data exist to determine whether single or twin rig gear has been used (Black and Wood 2010). Although detailed information is available on catch and effort, including gear type and location, this information is not used to construct an index of abundance that is used in the stock assessment, primarily because of the availability of fishery-independent data sources. 4. Movement. The geographic ranges of both stocks and the general patterns of ontogenetic and seasonal movement among areas are well

PI 1.2.3		Relevant information is collected to support the harvest strategy	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
			understood from fishery-dependent and -independent data although the routes and timing of migration are not known exactly. The ranges and temporal distribution by age-class are less well-known than the ranges and behaviour of the whole population. Quantitative rates of movement are inferred primarily based on fishery-dependent and -independent data using the assessment model, although information on the movement rates to the spawning grounds can be inferred directly from maturation rates. 5. A variety of other data sources (diet, etc.) is also available for use in assessments and other analyses. Thus, relevant information related to stock structure, stock productivity and fleet composition is available to support the harvest strategy.
	b	**Y**	Stock abundance and fishery removals are **regularly monitored at a level of accuracy and coverage consistent with the harvest control rule**, and one or more indicators are available and monitored with sufficient frequency to support the harvest control rule.
			Five sources of fishery-independent data are included in the stock assessment, although only three of the fishery-independent surveys have been conducted regularly (essentially annually) since 2000 [Table 1]. In 2011, data from only one fishery-independent survey (the Chatham Rise trawl survey) was available. The sampling coefficients of variation, CVs, of the abundance indices range from 0.06 to 0.16 (e.g., Ministry of Fisheries 2011), although additional variance ("process error") is usually added to these CVs to account for unquantified uncertainty between stock abundance and the abundance indices (Francis 2001). Removals are estimated by region and fishery, and information on age and length are sampled from the catches and the surveys. Thus, stock abundance and fishery removals are regularly monitored at a level of accuracy and coverage consistent with the harvest control rule, and several indicators are available and monitored with sufficient frequency to support the harvest control rule.
	c	**Y**	There is good information on all other fishery removals from the stock.
			Catches by gears other than midwater and bottom trawl are negligible. The landed catches by Maori for customary purposes and by recreational fishers are known to be negligible. Catches by all commercial fishing sectors (including non-hoki fisheries) are counted against the TACC.Ballaraet al. (2011) report that until 2003-04 most of the hoki catch was from target hoki tows, but that hoki targeting has decreased since then, especially in the sub-Antarctic area, West Coast South Island, and the Chatham Rise, with catches of hoki occurring on shots targeting ling, hake and silver warehou. Thus, there is good information on all fishery removals from the stocks.
100	**a**	**N**	A **comprehensive range** of information (on stock structure, stock productivity, fleet composition, stock abundance, fishery removals and other information such as environmental information), including some that may not be directly related to the current harvest strategy, is available.
			1. Stock structure. While the available information is clearly sufficient to support the two-stock hypothesis, there is not a full understanding of whether the differences between the stocks are genetic or not. Also, although genetic methods have been applied to hoki (Smith et al. 1981, 1996), the use of more powerful markers, as well as further analysis of morphometric information would be needed for a comprehensive understanding of stock structure.

PI 1.2.3		Relevant information is collected to support the harvest strategy	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
			2. Productivity. Information on growth rates and ageing techniques are sufficient for assessment purposes. However, problems with ageing have been identified and a solution proposed (Ministry of Fisheries 2011), but the solution has not been applied to age data collected before 2001. Natural mortality is estimated within the assessment, but, in common with most other stock assessments, natural mortality is assumed constant over time. Perhaps the largest uncertainty in terms of productivity pertains to recruitment (in particular future recruitment), with some studies suggesting links between climate and recruitment (e.g. Bull and Livingston 2001; Dunn et. al. 2009) and others not supporting such links (e.g. Francis et al. 2006). 3. Fishery removals are well documented through a number of monitoring systems. There is some mortality due to fish passing through the net and subsequently dying. However, the size of this effect is unknown. Highgrading of hoki occurred in 2004 and led to a conviction of the vessel concerned. MFish compliance have modified their approaches to monitoring compliance in the hoki fishery in 2011 which should detect any major breaches of regulations. 4. Environmental data have been collected and considered as possible drivers of recruitment 5. The proportion spawning is a source of data included in the stock assessment, but has not been routinely updated. This data source is informative about movement rates. Thus, while there is considerable information on the biology of hoki in New Zealand, sufficient data gaps remain that it cannot be concluded that the range of information available is comprehensive.
	b	**Y**	**All information** required by the harvest control rule is monitored with high frequency and a high degree of certainty, and there is a good understanding of inherent **uncertainties** in the information [data] and the robustness of assessment and management to this uncertainty.
			Until 2011, multiple estimates of abundance were available for assessment purposes. However, only one index of relative abundance was obtained during 2011. Catches are regularly sampled for age and structure, and analyses account for the sampling protocol when assembling the data for use in the stock assessment. The abundance indices are obtained with low sampling CVs (10-20%), the catches are estimated accurately, the length-frequencies are based on 1000s of measurements, and the age compositions are based on ages for 300-500 fish of each sex each year (Ballara et al. 2011). The assessment allows for the sampling errors associated with the survey data and catch samples, as well as additional variance based on the methodology of Francis (2001). Recent stock assessments have specifically focused on the reasons for the inconsistencies between model predictions and the trend in the sub-Antarctic trawl survey. Thus, all information required by the harvest control rule is monitored with high frequency and a high degree of certainty, and there is a good understanding of inherent uncertainties in the data and the robustness of the assessment and management to this uncertainty.
References			Ballara SL, O'Driscoll RL and D Fu. 2011. Catches, size, and age structure of the 2008-09 hoki fishery and a summary of input data for the 2010 stock assessment. New Zealand Assessment Report 2011/8. Black J and R Wood. 2010. Analysis of New Zealand's trawl grounds for key middle depths and deepwater Tier 1 fisheries. GNS Science

PI 1.2.3		Relevant information is collected to support the harvest strategy	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
			Consultancy Report 2010/167, September 2010. Bull B and ME Livingston. 2001. Links between climate variation and year class strength of New Zealand hoki (*Macruronusnovaezelandie*): an update. New Zealand Journal of Marine and Freshwater Research 35: 871-880. Dunn M, Horn P, Cornell A, Stevens D, Forman J, Pinkerton M, Griggs L, Notman P and B Wood. 2009. Ecosystem-scale trophic relationships: diet composition and guild structure of middle-depth fish on the Chatham Rise. Ministry of Fisheries Research Project ZBD2004-04 Final Report Francis RICC 2001. Improving the consistency of hoki age estimation. New Zealand Fisheries Assessment Report2001/12. Francis RICC, Hadfield, MG, Bradford-Grieve, JM and PJH. Sutton. 2006. Links between climate and recruitment of New Zealand hoki. New Zealand Journal of Marine and Freshwater Research 40: 547-560. Ministry of Fisheries 2009. Hoki, Fishery Assessment Plenary Report for 2009. Ministry of Fisheries 2010. Hoki, Fishery Assessment Plenary Report for 2010. Ministry of Fisheries 2011. Hoki, Fishery Assessment Plenary Report for 2011. Smith PJ, McVeagh SM and A Ede. 1996. Genetically isolated stocks of orange roughy (*Hoplostethusatlanticus*), but not of hoki (*Macruronusnovaezelandiae*), in the Tasman sea and southwest Pacific ocean around New Zealand. Marine Biology 125: 783–793. Smith PJ, Patchell G and PG Benson. 1981. Genetic tags in the New Zealand hoki *Macruronusnovaezelandiae.* Animal Blood Groups and Biochemical Genetics 12: 37–45.
OVERALL PERFORMANCE INDICATOR SCORE: The score is 90 because all of the scoring issues for the 80 scoring guidepost are met as is one of the two scoring issues for the 100 scoring guidepost.			**90**
CONDITION NUMBER (if relevant):			**N/A**

Evaluation Table: PI 1.2.4

PI 1.2.4		There is an adequate assessment of the stock status	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
60	**b**	**Y**	The assessment estimates stock status relative to reference points.
			The stock assessment explicitly accounts for the two-stock nature of the hoki resource, and provides estimates of spawning biomass relative to (a) the soft and hard limits (0.1 and $0.2B_0$), (b) B_{MSY} values estimated under the assumption of deterministic dynamics, and (c) the Management Target (0.35 – 0.5 B_0). It also provides estimates of fishing intensity relative to those corresponding to the upper and lower ends of the Management Target. Thus, the assessment estimates stock status relative to reference points.
	c	**Y**	The assessment **identifies major sources** of uncertainty.
			The report of the Stock Assessment Plenary does not include a full list of all uncertainties associated with the stock assessment in a specific section. However, each assessment includes sensitivity tests ("runs") which explore key uncertainties (in the most recent year to how to account for the lack of old fish in fishery- and survey-based observations and the inability to mimic the change in the outcome of the trawl survey in the sub-Antarctic). The Plenary report also identifies uncertainty regarding future recruitment as key, and consequently reports projections for recent and long-term levels of recruitment. Thus, the assessment identifies major sources of uncertainty.
80	**a**	**Y**	The assessment is appropriate for the stock and for the harvest control rule.
			The CASAL package (Bullet al. 2008) is tailored specifically for the two-stock nature of the hoki resource, and the fact that fish from both stocks are caught in the Chatham Rise fishery. The assessment is based on the 'statistical catch-at-age' paradigm, which is state-of-the-art for fisheries stock assessment and makes use of most available data sources (data on, for example, diet are ignored becausethe model assumes natural mortality is independent of time, while catch-rate data are ignored because of the availability of fishery-independent estimates of abundance). The assessment outputs include stock status relative to reference points and projections for different levels of catch as well as for different splits of the TACC between the western and eastern areas. The assessment is thus appropriate for the stock and for the harvest control rule.
	c	**Y**	The assessment **takes uncertainty into account**.
			The assessment is based on the CASAL package, which accounts for both observation and process error. Uncertainty is explored in the report of the Stock Assessment Plenary by showing results for several sensitivity tests, and through probability distributions for key model outputs for each sensitivity test. Although retrospective analyses have been presented in the past, this has not been the case recently. Figure 4 suggests that it would be worthwhile examining the reasons for retrospective patterns in future assessments. The data are weighted according to their assumed levels of uncertainty, and sensitivity is shown for changes to this weighting scheme. Thus, the assessment takes uncertainty into account.
	e	**Y**	The assessment of stock status is subject to peer review.
			The assessment is reviewed internally at NIWA and MFish before publication. However, the primary form of peer-review takes place in the Hoki Working Group, which is open to the public (see Ministry of Fisheries

PI 1.2.4		There is an adequate assessment of the stock status	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
			[2011] for Terms of Reference). The Hoki Working Group is chaired by MFish, and includes members from NIWA, MFish, industry and environmental NGOs, Thus, the assessment of stock status is subject to peer review.
100	**a**	**Y**	The assessment is appropriate for the stock and for the harvest control rule and takes into account the major features relevant to the biology of the species and the nature of the fishery.
			As noted above, there is no formal (i.e. mathematical) harvest control rule for New Zealand hoki. Rather, decisions regarding the TACC and any split of the TACC to stock is based on stock status as it assessed relative to biomass-based reference points. The assessment model takes account of most of the types of features included in world's best stock assessments including dimorphic growth, movement, and spatial as well as time-varying selectivity. The projections conducted for different levels of future catches, and splits of the catch between the western and eastern stocks, are adequate to inform decision makers regarding changes in abundance. Thus, the assessment is appropriate for the stock and the harvest control rules, and takes account of the major features relevant to the biology and nature of the fishery.
	c	**Y**	The assessment takes into account uncertainty and is evaluating stock status relative to reference points in a **probabilistic** way.
			The results of the assessment include the probability that the current spawning stock biomass exceeds the hard and soft limits, the B_{MSY} values estimated under the assumption of deterministic dynamics, and the Management Target. Posterior distributions based on MCMC sampling are also provided for current spawning biomass and for B_0. The results of the projections include probability intervals for future stock size, and the probability of dropping below various biomass levels. Thus, the assessment takes uncertainty into account, and is evaluating stock status relative to reference points in a probabilistic way.
	d	**N**	The assessment has been tested and shown to be robust. Alternative hypotheses and assessment approaches have been rigorously explored.
			The assessment method, CASAL, has been applied extensively in New Zealand and elsewhere. However, results of, for example, simulation studies exploring estimation performance for CASAL as it is applied to hoki are not available. The assessment considered alternative hypotheses regarding some factors, but all analyses are within the CASAL framework. Thus, it cannot be concluded that the assessment has been fully tested and alternative assessment approaches are rigorously explored.
	e	**N**	The assessment has been **internally and externally** peer reviewed.
			While the assessment is peer-reviewed though the MFish Working Group process (see Ministry of Fisheries (2011) for the Terms of Reference for the Working Groups for 2011), the last external review (Quinn and Sullivan 1999) was undertaken more than 10 years ago.
References			Bull B, Francis RICC, Dunn A, McKenzie A, Gilbert DJ, Smith MH, and R Bian. 2008. CASAL (C++ algorithmic stock assessment laboratory): CASAL User Manual v2.20-2008/02/14. NIWA Technical Report 120. Ministry of Fisheries. 2011.Terms of Reference for Fisheries Assessment

PI 1.2.4		There is an adequate assessment of the stock status	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
			Working Groups(FAWGs) in 2011. Undated document. Quinn TJ II and P Sullivan. 1999. Review of the MFish contracted hoki stock assessment research. Document dated 13 August 1999
OVERALL PERFORMANCE INDICATOR SCORE: The score is 90 because all of the scoring issues for the 80 scoring guidepost are met as are two of the four scoring issues for the 100 scoring guidepost.			**90**
CONDITION NUMBER (if relevant):			**N/A**

Evaluation Table: PI 2.1.1

PI 2.1.1		The fishery does not pose a risk of serious or irreversible harm to the retained species and does not hinder recovery of depleted retained species	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
60	**a**	**Y**	Main retained species are **likely** to be within biologically based limits (if not, go to scoring issue d below).
			1. All stocks of ling are assessed to be above the soft limit with high probability (>90%) (Ministry of Fisheries 2011a). 2. Spiny dogfish are included in the QMS. Stock assessments are not available for any of the four stocks of spiny dogfish in the range of the fishery. However, the Stock Assessment Plenary concluded that "at the present level of minimal catches, stocks are at or close to their natural level. This is nominally a virgin biomass, but not necessarily a stable one" (Ministry of Fisheries 2011b). 3. Pale ghost shark are included in the QMS. Of the three stocks of pale ghost shark, two are assessed using trends in biomass, and it is assessed that it is unlikely that these stocks are below the soft limit of $0.2B_0$. No reliable index data are currently available for GSP7.However, landings are an order of magnitude less than in GSP1 and GSP5 (11 t in the 2009/10 fishing year, Ministry of Fisheries 2011c). Therefore, it is reasonable to conclude that the main retained species are **likely** (probability > 0.6)to be within biologically based limits.
	c	**Y**	If main retained species are outside the limits there are **measures**in place that are **expected**to ensure that the fishery does not hinder recovery and rebuilding of the depleted species.
			N/A. However, TACCs are set for all of the retained species and could be adjusted given the results of assessments. The assessments for ling assess stocks relative formally-specified limit and target reference points. The harvest strategy standard (Ministry of Fisheries 2008) includes specific measures which need to be implemented if the soft limit is breached. Therefore, had assessments / data suggested that one of the stocks of the main retained species were outside the limits there are measures in place that are expected to ensure that the fishery does not hinder recovery and rebuilding of the depleted species.
	d	**Y**	If the status is poorly known there are measures or practices in place that are expected to result in the fishery not causing the retained species to be outside biologically based limits or hindering recovery.
			N/A.
80	**a**	**Y**	Main retained species are **highly likely**to be within biologically based limits (if not, go to scoring issue c below).
			1. All stocks of ling are assessed to be above the soft limit with high probability (>90%) (Ministry of Fisheries 2011a). 2. Spiny dogfish are included in the QMS. Stock assessments are not available for any of the four stocks of spiny dogfish in the range of the fishery. However, the Stock Assessment Plenary concluded that "at the present level of minimal catches, stocks are at or close to their natural level. This is nominally a virgin biomass, but not necessarily a stable one" (Ministry of Fisheries 2011b). 3. Pale ghost shark is included in the QMS. Of the three stocks of pale ghost shark, two are assessed using trends in biomass. These two

PI 2.1.1		The fishery does not pose a risk of serious or irreversible harm to the retained species and does not hinder recovery of depleted retained species	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
			stocks (GSP1 and GSP5) areconsideredunlikely (P<0.4)tobebelow the soft limit of $0.2B_0$and very unlikely (P<0.1) to be below the hard limit of $0.1B_0$. No reliable index data are currently available for GSP7. However, landings are an order of magnitude less than in GSP1 and GSP5 (11 t in the 2009/10 fishing year, Ministry of Fisheries 2011c).. Therefore, it is reasonable to conclude that the main retained species are **highly likely** (probably > 0.7)to be within biologically based limits. However, we recommend that knowledge of pale ghost shark in GSP7 be evaluated more comprehensively, for example using a fisheries characterization, to maintain confidence in this assessment.
	c	**Y**	If main retained species are outside the limits there is a **partial strategy**of**demonstrablyeffective**management measures in place such that the fishery does not hinder recovery and rebuilding.
			N/A. However, TACCs are set for all of the retained species and could be adjusted given the results of assessments. The assessments for ling assess stocks relative formally-specified limit and target reference points. The harvest strategy standard (Ministry of Fisheries 2008) includes specific measures which need to be implemented if the soft limit is breached. Therefore, had assessments / data suggested that one of the stocks of the main retained species were outside the limits there are measures in place that are expected to ensure that the fishery does not hinder recovery and rebuilding of the depleted species.
100	**a**	**N**	There is a **high degree of certainty** that retained species are within biologically based limits **and** fluctuating around their target reference points.
			The assessments for the stocks for which assessments are available (e.g., four ling stocks and two hake stocks) indicate that the stocks are above their target reference points with high probability. All retained species are recorded and monitored by MFish.
	b	**N**	Target reference points are defined for retained species.
			Target reference points are defined for several retained species, e.g. hake and ling. Explicit target reference points are, however, not set for many other retained species, although the harvest strategy standard provides guidance on what these might be were assessments available. Therefore target reference points are not defined for all retained species.
References			Ministry of Fisheries. 2008. Harvest Strategy Standard for New Zealand Fisheries. Ministry of Fisheries. 2011a. Ling (*Genypterusblacodes*), Fishery Assessment Plenary Report for 2011. Ministry of Fisheries. 2011b. Spiny dogfish. Fishery Assessment Plenary Report for 2011. Ministry of Fisheries. 2011c. Pale Ghost Shark. Fishery Assessment Plenary Report for 2011.
OVERALL PERFORMANCE INDICATOR SCORE: The score is 80 because all of the scoring issues for the 80 scoring guidepost are met and none of those for 100scoring guidepost.			**80**

PI 2.1.1		The fishery does not pose a risk of serious or irreversible harm to the retained species and does not hinder recovery of depleted retained species	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
CONDITION NUMBER (if relevant):			**N/A**

Evaluation Table: PI 2.1.2

PI 2.1.2		There is a strategy in place for managing retained species that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to retained species	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
60	**a**	**Y**	There are **measures** in place, if necessary, that are expected to maintain the main retained species at levels which are highly likely to be within biologically based limits, or to ensure the fishery does not hinder their recovery and rebuilding.
			TACCs are set for all of the retained species in the QMS, and the status of each QMS species is reviewed by the Stock Assessment Plenary. Thus, there are measures in place that are expected to maintain the main retained species at levels which are highly likely to be within biologically based limits.
	b	**Y**	The measures are considered **likely** to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/species).
			The main tool used to manage the retained species is the TACC system. A system of deemed values is used to deter or deal with catches over quota. TACCs are reviewed annually. There are other ways to handle overcatch by individual operators, e.g. purchase of quota from other quota holders. Thus, it is reasonable to conclude that the measures are likely to work based on plausible argument.
80	**a**	**Y**	There is a **partial strategy** in place, if necessary that is expected to maintain the main retained species at levels which are highly likely to be within biologically based limits, or to ensure the fishery does not hinder their recovery and rebuilding.
			The process for providing management advice involves collecting fishery-dependent and –independent data, analysing those data using a stock assessment model, catch survey analysis or trends in biomass indices, assessing stock status relative to agreed reference points and conducting projections under alternative TACCs for stocks with stock assessments, and setting a TACC which is consistent with the Fisheries Act 1996. This type of harvest strategy has all the characteristics of a system which is expected to achieve stock management objectives as reflected in the target and limit reference points. Thus, there is at least a partial strategy that is expected to maintain the main retained species at levels which are highly likely to be within biologically based limits, or to ensure the fishery does not hinder their recovery and rebuilding.
	b	**Y**	There is some **objective basis for confidence** that the partial strategy will work, based on some information directly about the fishery and/or species involved.
			Few changes have been made the TACCs for the main target species. However, the stocks of the main target species are all assessed to be above their target levels. There is consequently some objective basis for confidence that the partial strategy will work, based on some information directly about the fishery and/or species involved.
	c	**Y**	There is **some evidence** that the partial strategy is being **implemented successfully.**
			All of the stocks of ling are currently above their target reference points and trends in spiny dogfish and two of three pale ghost shark stocks are flat or increasing. Thus, there is some evidence that the partial strategy is being implemented successfully.

PI 2.1.2		There is a strategy in place for managing retained species that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to retained species	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
100	**a**	**Y**	There is a **strategy** in place for managing retained species.
			Several of the retained species (ling, hake, southern blue whiting) are managed using the same harvest strategy as hoki. Some of the retained species are managed as adaptive management species (e.g. SWA1). The TACCs for most of the other retained species are seldom changed, but the species are all monitored under the QMS, and using observer and vessel-based reporting. Management Action 28 in Annual Operational Plan (Ministry of Fisheries, 2011a) aims to develop specific management procedures for silver warehou and white warehou.
	b	**N**	**Testing** supports **high confidence** that the strategy will work, based on information directly about the fishery and/or species involved.
			No testing of the strategies for the retained species has been undertaken.
	c	**Y**	There is **clear evidence** that the strategy is being **implemented successfully.**
			Observers conduct detailed monitoring of trawled catches at sea as well as operational measures. In the hoki fishery, 15.3-20.3% of tows have been covered by observers over the 2005/06 – 2008/09 fishing years (Abraham and Thompson 2011). Reporting on the main species caught is also required from vessels. This provides a rich dataset with which to assess implementation of catch management strategies. There is clear evidence, based on this information, that the strategy for managing retained species is being implemented successfully.
	d	**Y**	There is some **evidence** that the strategy is **achieving its overall objective**.
			Regular updates of stock assessments underlying harvest strategies occur to include new information, and TACCs are reviewed every year (Ministry of Fisheries 2011b). With these tools and processes, there is some evidence that the strategy is achieving its overall objective.
References			Abraham ER and FN Thompson. 2011. Summary of the capture of seabirds, marine mammals, and turtles in New Zealand commercial fisheries, 1998-99 to 2008-09. Final Research Report prepared for the Ministry of Fisheries project 2007/01. Ministry of Fisheries 2011a. Annual Operational Plan for Deepwater Fisheries for 2011/12. Document dated 11 July 2011. Ministry of Fisheries. 2011b. Report from the Fisheries Assessment Plenary, May 2011: stock assessments and yield assessments. 1178 p.
OVERALL PERFORMANCE INDICATOR SCORE: All of the scoring issues for the 60 and 80 scoring guidepostare met as are three of four for the 100 scoring guidepost. The resultant score is 95.			**95**
CONDITION NUMBER (if relevant):			**N/A**

Evaluation Table: PI 2.1.3

PI 2.1.3		Information on the nature and extent of retained species is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage retained species	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
60	**a**	**Y**	**Qualitative information** is available on the amount of main retained species taken by the fishery.
			Data on removals of all retained species are collected and are available. They are summarized in the report of the Stock Assessment Plenary (Ministry of Fisheries 2011).Qualitative information is therefore available on the amount of main retained species taken by the fishery.
	b	**Y**	Information is **adequate to qualitatively** assess outcome status with respect to biologically based limits.
			The pale ghost shark and five stocks of ling are assessed using the CASAL modelling platform. These assessments make use of indices of abundance from trawl surveys, catch-rate indices, as well as age- and length-composition data. Trends in abundance from surveys are available for pale ghost shark andspiny dogfish. Thus, information is adequate to qualitatively assess outcome status with respect to biologically based limits.
	c	**Y**	Information is adequate to support **measures** to manage **main** retained species.
			The assessments for ling estimate stock status relative to target and limit reference points and express the results in probabilistic terms. Thus, information is adequate to support measures to manage main retained species.
80	**a**	**Y**	**Qualitative information** and **some quantitative information** are available on the amount of main retained species taken by the fishery.
			Data on removals of all retained species are collected and are available. They are summarized in the report of the Stock Assessment Plenary (Ministry of Fisheries 2011). Thus, some quantitative information is available on the amount of main retained species taken by the fishery
	b	**Y**	Information is **sufficient to estimate** outcome status with respect to biologically based limits.
			The five stocks of ling are assessed using the CASAL modelling platform. These assessments make use of indices of abundance from trawl surveys, catch-rate indices, as well as age and length composition data. Trends in abundance from surveys are available for two of three pale ghost shark stocks and spiny dogfish. For the third pale ghost shark stock (GSP7), observer coverage on the West Coast of the South Island provides independent monitoring of landed catch. Thus, information is sufficient to estimate outcome status with respect to biologically based limits.
	c	**Y**	Information is adequate to support a **partial strategy** to manage **main** retained species.
			The assessments for ling estimate stock status relative to target and limit reference points and the stock assessment expresses the results in probabilistic terms. Thus, information is adequate to support a partial strategy to manage main retained species.
	d	**Y**	Sufficient data continue to be collected to detect any increase in risk level (e.g. due to changes in the outcome indicator score or the operation of the fishery or the effectiveness of the strategy)

PI 2.1.3		Information on the nature and extent of retained species is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage retained species	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
			The assessments for ling estimate stock status relative to target and limit reference points and the stock assessment expresses the results in probabilistic terms. Survey data with reasonable precision are available for both two of three stocks of pale ghost shark and spiny dogfish. For the third pale ghost shark stock (GSP7), observer coverage on the West Coast of the South Island provides independent monitoring of landed catch. Characteristics of the fishing operation are recorded in detail by government observers. For example, the location of fishing activity, gear type, and fishing strategy are recorded, which would facilitate detection of changes in risk levels. Thus, sufficient data continue to be collected to detect any increase in risk level.
100	**a**	**N**	Accurate and verifiable information is available on the catch of all retained species and the consequences for the status of affected populations.
			Data on removals of all retained species are collected and are available are summarized in the report of the Stock Assessment Plenary (Ministry of Fisheries 2011). However, due to lack of knowledge of population parameters, consequences for the status of affected populations cannot be assessed.
	b	**N**	Information is **sufficient to quantitatively** estimate outcome status with **a high degree of certainty.**
			Indices of biomass are available from surveys (e.g. O'Driscoll et al. 2011) for many areas and catch-rate indices can be developed for several stocks. However, not all of the retained species are indexed well by the surveys and trends in catch-rate indices may not always be plausible. Consequently, the status of many stocks of retained species are considered unknown. The Ministry of Fisheries is planning to revise the tables used to summarize the results of stock assessments, in particular to include estimates of the probability of being below soft and hard limits. This may prove easier to assess than whether the current TACC is sustainable, at least in a qualitative sense. A number of research projects are either underway or are planned which could increase the information base for the retained species. Currently however, sustainability of some TACCs is unknown (e.g. frostfish and spiny dogfish, Ministry of Fisheries 2010).
	c	**Y**	Information is adequate to support a **comprehensive strategy** to manage retained species, and evaluate with a **high degree of certainty** whether the strategy is achieving its objective.
			The Harvest Strategy Standard provides a basis for a comprehensive strategy to manage retained species and there are survey results, length composition information, and catch-rate data. In addition, in the hoki fishery, 15.3-20.3% of tows have been covered by observers over the 2005/06 – 2008/09 fishing years (Abraham and Thompson 2011). This coverage provides independent monitoring of fishery operations and catch characteristics. Many of these data are used to investigate and analyse fishery performance against strategic and management objectives. Thus, information is adequate to support a comprehensive strategy to manage retained species, and evaluate with a high degree of certainty whether the strategy is achieving its objective.
	d	**Y**	Monitoring of retained species is conducted in sufficient detail to assess

PI 2.1.3		Information on the nature and extent of retained species is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage retained species	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
			ongoing mortalities to all retained species.
			Observer monitoring and catch reporting is extensive, both in terms of placements on vessels and coverage of tows (15.3 – 20.3% of tows, over the 2005/06 – 2008/09 fishing years (Abraham and Thompson 2011). Vessel-based reporting also occurs for the main species caught. Thus, monitoring of retained species is conducted in sufficient detail to assess ongoing mortalities of all retained species.
References			Abraham ER and FN Thompson. 2011. Summary of the capture of seabirds, marine mammals, and turtles in New Zealand commercial fisheries, 1998-99 to 2008-09. Final Research Report prepared for the Ministry of Fisheries project 2007/01. Ministry of Fisheries. 2010. Hoki Fisheries Plan. September 2010. Ministry of Fisheries. 2011. Report from the Fisheries Assessment Plenary, May 2011: stock assessments and yield estimates. O'Driscoll RL, MacGibbon D, Fu S, Lyon W and DW Stevens. 2011. A review of hoki and middle-depth trawl surveys of the Chatham Rise, January 1992-2010.
OVERALL PERFORMANCE INDICATOR SCORE: The score is 90because all of the scoring issues for the 80 scoring guidepost are met as are two of the 100 scoring guidepost.			**90**
CONDITION NUMBER (if relevant):			**N/A**

Evaluation Table: PI 2.2.1

PI 2.2.1		The fishery does not pose a risk of serious or irreversible harm to the bycatch species or species groups and does not hinder recovery of depleted bycatch species or species groups	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
60	**a**	**Y**	Main bycatch species are **likely** to be within biologically based limits (if not, go to scoring issue b below).
			None of non-QMS species are considered to be main bycatch species owing to the size of the catch as no non-QMS species constitutes more than 5% of the observed catch during 2006-07 to 2008-09. Javelinfish and rattails constitute the largest proportions of the observed catch (up to 2.6% in 2006-07 for javelinfish and 1.5% for rattails in 2007-08) (Ministry of Fisheries 2010). One shark species (shovelnose dogfish) likely has low productivity and is caught in reasonable numbers in the fishery (>0.25% of the total catch reported by observers in 2006-07 to 2008-09). Shovelnose dogfish are not included in the QMS so no assessments of the stocks of this species are untaken. Limited data are available for this species, although it is monitored on the Chatham Rise though trawl surveys which estimate relative abundance with reasonable precision (sampling CVs of ~20%) (O'Driscoll et al. 2011). These data suggest that abundance has not changed from 1992 onwards. The 2010 ERA (Boyd 2011) concluded that impacts on deepwater sharks and rays were negligible-minor (although the confidence in this conclusion was 'low'), and deepwater dogfish was minor-moderate (although the confidence in this conclusion was 'low') and captures of this species are recently recorded at 0-0.02% of total catch. A research project has been funded (DEE2011-03) to conduct Level 1 risk assessments for Tier 3 species which could lead to additional research taking place. Thus, it reasonable to conclude the main vulnerable species are likely (probabillity> 0.6) to be within biologically based limits.
	b	**Y**	If main bycatch species are outside biologically based limits there are mitigation **measures** in place that are **expected** to ensure that the fishery does not hinder recovery and rebuilding.
			N/A.
	c	**Y**	If the status is poorly known there are measures or practices in place that are expected to result in the fishery not causing the bycatch species to be outside biologically based limits or hindering recovery.
			N/A. However, if a sustainability problem is detected, a species can be added to the QMS and/or the species managed under Section 11 of the Act. However, it is difficult to detect whether there is a sustainability concern for many of the bycatch species (e.g. O'Driscoll et al. 2011).
80	**a**	**Y**	Main bycatch species are **highly likely** to be within biologically based limits (if not, go to scoring issue b below).
			None of non-QMS species are considered to be main bycatch species owing to the size of the catch as no non-QMS species constitutes more than 5% of the observed catch during 2006-07 to 2008-09. Javelinfish and rattails constitute the largest proportions of the observed catch (up to 2.6% in 2006-07 for javelinfish and 1.5% for rattails in 2007-08) (Ministry of Fisheries, 2010). One shark species (shovelnose dogfish) likely has low productivity and is caught in reasonable numbers in the fishery (>0.25% of the total catch reported by observers in 2006-07 to 2008-09). Shovelnose dogfish are not included in the QMS so no assessments of the stocks of this species

PI 2.2.1		The fishery does not pose a risk of serious or irreversible harm to the bycatch species or species groups and does not hinder recovery of depleted bycatch species or species groups	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
			are undertaken. Limited data are available for this species, although it is monitored through trawl surveys. On the Chatham Rise, these estimate relative abundance with reasonable precision (sampling CVs of ~20%). Survey data from 1992 – 2010 suggest that abundance has not changed (O'Driscollet al. 2011). In the shorter time series of trawl surveys conducted in Southland/sub-Antarctic (2000-2005), there was also no trend in abundance (Blackwell 2010). Monitoring will contrinue through trawl surveys, occurring in four or five of the next six years (2011/12-2016/17) depending on the area (Table 2) . The 2010 ERA (Boyd, 2011) concluded that impacts on deepwater sharks and rays were negligible-minor (although the confidence in this conclusion was 'low'), and deepwater dogfish was minor-moderate (although the confidence in this conclusion was 'low'). A research project has been funded (DEE2011-03) to conduct Level 1 risk assessments for Tier 3 species which could lead to additional research taking place. Thus, it reasonable to conclude the main vulnerable species are highly likely (probabillity> 0.7) to be within biologically based limits.
	b	**Y**	If main bycatch species are outside biologically based limits there is a **partial strategy** of **demonstrably effective** mitigation measures in place such that the fishery does not hinder recovery and rebuilding.
			N/A
100	**a**	**N**	There is a **high degree of certainty** that bycatch species are within biologically based limits.
			Given the large number of bycatch species and the difficulty monitoring many of these, it is not possible to draw conclusions regarding all bycatch species, especially those which constitute a very small fraction of the total catch.
References			Blackwell, R.G. 2010. Distribution and abundance of deepwater sharks in New Zealand waters, 2000–01 to 2005–06. New Zealand Aquatic Environment and Biodiversity Report No. 57. Boyd I 2011. Ecological risk assessment of the New Zealand hoki fisheries. Report for the Deepwater Group Limited, Nelson, March 2011. Ministry of Fisheries. 2010. Hoki Fisheries Plan. September 2010. O'Driscoll RL, MacGibbon D, Fu S, Lyon W and DW Stevens. 2011. A review of hoki and middle-depth trawl surveys of the Chatham Rise, January 1992-2010.
OVERALL PERFORMANCE INDICATOR SCORE: The score is 80 because all of the scoring issues for 80 scoring guidepostare met, but none for the 100 scoring guidepost.			**80**
CONDITION NUMBER (if relevant):			**N/A**

Evaluation Table: PI 2.2.2

PI 2.2.2		There is a strategy in place for managing bycatch that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to bycatch populations	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
60	**a**	**Y**	There are **measures** in place, if necessary, which are expected to maintain main bycatch species at levels which are highly likely to be within biologically based limits or to ensure that the fishery does not hinder their recovery.
			As above, there are no bycatch species considered to be 'main' bycatch species in this fishery. However, ongoing monitoring of trawlcatches provides data such that ifa sustainability problem is detected, a species can be added to the QMS and/or the species managed under Section 11 of the Act. There are consequently measures in place which are expected to maintain main bycatch species at levels which are highly likely to be within biologically based limits or to ensure that the fishery does not hinder their recovery.
	b	**Y**	The measures are considered **likely** to work, based on plausible argument (e.g. general experience, theory or comparison with similar fisheries/species).
			Adding a species to the QMS would allow catches of the species to be restricted. Catches are generally below TACCs, especially for lower value non-target species. A system of deemed values is used to deter or deal with catches over quota. There are other ways to handle over catch by individual operators, e.g. purchase of quota from other quota holders. Thus, the measures are considered likely to work, based on plausible argument (e.g. general experience, theory or comparison with similar fisheries/species).
80	**a**	**Y**	There is a **partial strategy** in place, if necessary, for managing bycatch species at levels which are highly likely to be within biologically based limits or to ensure that the fishery does not hinder their recovery.
			The QMS Introduction Process Standard is one of the ways to give effect to the Ministry's statutory requirements for sustainability of species caught. This approach limits catch, which may also limit fishing effort. Generally, if any changes in the reported catch of a non-QMS species are observed over time, the species will be considered for QMS introduction (V. Reeve, pers. comm.).Once included in the QMS, reports have to be produced for such species, and TACCs could be adjusted to ensure that the stock remains above the soft limit. Thus, there is a partial strategy in place, if necessary, for managing bycatch species at levels which are highly likely to be within biologically-based limits or to ensure that the fishery does not hinder their recovery
	b	**Y**	There is **some objective basis for confidence** that the partial strategy will work, based on some information directly about the fishery and/or the species involved.
			As reflected above, components of the QMS framework are regularly reviewed, based on species harvests recorded and any other significant new information. Reviews can lead to annual modifications in TACC. Catch limits are often reviewed in the hoki fishery, including for target and retained species. Thus, there is an objective basis for confidence that the partial strategy will work.
	c	**Y**	There is **some evidence** that the partial strategy is being implemented successfully.

PI 2.2.2		There is a strategy in place for managing bycatch that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to bycatch populations	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
			Two recent examples of species introduced through the QMS Introduction Process Standard are Patagonian toothfish and attached bladder kelp (Ministry of Fisheries 2010a. b). The Patagonian toothfishwas introduced because MFish recognised that continued management outside the QMS (as an open-access fishery) could lead to an unsustainable increase in catch over a relatively short timeframe. Attached bladder kelp was introduced firstly to ensure the sustainable use of this resource, and secondly to prevent future sustainability concerns that could arise from unrestricted use. Thus, there is evidence that the partial strategy is being implemented successfully.
100	**a**	**Y**	There is a **strategy** in place for managing and minimising bycatch.
			As described above, the QMS Introduction Process Standard provides for bycatch species about which there are actual or potential sustainability concerns. This Standard is part of the wider management framework, which includes specific management objectives for bycatch species in the hoki fishery (Ministry of Fisheries 2010c).
	b	**Y**	**Testing** supports **high confidence** that the strategy will work, based on information directly about the fishery and/or species involved.
			The strategy has been tested through various species being incorporated into the QMS. While there are no recent examples from the hoki fishery, the strategy is an explicit part of the management framework for hoki (Ministry of Fisheries 2010c). More broadly, the QMS has been recognised as a relatively robust management approach (Sharp 2005).
	c	**Y**	There is **clear evidence** that the strategy is being implemented successfully.
			As above, recent examples of species brought into the QMS include Patagonian toothfish and attached bladder kelp. So, there is clear evidence that the strategy is being implemented successfully.
	d	**Y**	There is some **evidence** that the strategy is achieving its objective.
			The strategy appears to be achieving its objective, in that the Standard is followed and new species are brought under the QMS framework, facilitating closer management of sustainability issues.
References			Ministry of Fisheries. 2010a. Introduction of Bladder Kelp Seaweed, *Macrocystispyrifera* (KBB), in Fisheries Management Areas 3 and 4 into the Quota Management System on 1 October 2010. Document dates 24 September 2009. Ministry of Fisheries. 2010b. Introduction of Patagonian Toothfish (PTO) into the Quota Management System on 1 October 2010: Final Advice Paper. Document dated 15 February 2010. Ministry of Fisheries. 2010c. National Fisheries Plan for Deepwater and Middle-depth fisheries. Part 1B. Fishery-specific chapter: Hoki. O'Driscoll, RL, MacGibbon, D, Fu, S, Lyon, W and DW Stevens. 2011. A review of hoki and middle-depth trawl surveys of the Chatham Rise, January 1992-2010. Sharp BMH. 2005. ITQs and beyond in New Zealand fisheries. In: Evolving property rights in marine fisheries. Ed: DR Leal. Rowman and Littlefield, Lanham.

PI 2.2.2		There is a strategy in place for managing bycatch that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to bycatch populations	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
OVERALL PERFORMANCE INDICATOR SCORE: All of the scoring issues for the 60, 80 and 100 scoring guideposts are met. Consequently, the score is 100.			**100**
CONDITION NUMBER (if relevant):			**N/A**

Evaluation Table: PI 2.2.3

PI 2.2.3		Information on the nature and the amount of bycatch is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage bycatch	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
60	**a**	**Y**	**Qualitative information** is available on the main bycatch species affected by the fishery.
			As noted above, there are not any species considered to be "main"bycatch species in this fishery. O'Driscollet al. (2011) summarize trends in abundance from trawl surveys for the Chatham Rise. A research project is underway to synthesize the results of the trawl surveys for the sub-Antarctic region, which will complement the results on O'Driscoll et al. (2011) who summarized trends in biomass indices for all species recorded regularly during the surveys on the Chatham Rise. Similar analyses for the WCSI regions require a longer time-series of data than is available at present.
	b	**Y**	Information is **adequate** to **broadly understand** outcome status with respect to biologically based limits
			The data available for Chatham Rise (O'Driscollet al. 2011) and an analysis of the data for the sub-Antarctic region should provide an adequate basis to comment of the status of bulk, but not all, of the bycatch species. Information is therefore adequate to broadly understand outcome status with respect to biologically based limits.
	c	**Y**	Information is adequate to support **measures** to manage bycatch.
			The 2010 ERA evaluated the qualitative and quantitative data available for the bycatch species in the hoki fishery. Some of the available information was considered to be of low confidence (poor or conflicting). However, the information available is sufficient to support the measures to manage bycatch.
80	**a**	**Y**	**Qualitative information and some quantitative information** are available on the amount of main bycatch species affected by the fishery.
			As noted above, there are not any species considered to be "main" bycatch species in this fishery. O'Driscollet al. (2011) summarize trends in abundance from trawl surveys for the Chatham Rise. A project is underway to synthesize the results of the trawl surveys for the sub-Antarctic area, which will complement the results on O'Driscollet al. (2011) who summarized trends in biomass indices for all species recorded regularly during the surveys on the Chatham Rise. Similar analyses for the WCSI require a longer time-series of data than is available at present. Thus, qualitative informationand some quantitative information is available on the main bycatch species affected by the fishery.
	b	**Y**	Information is **sufficient to estimate** outcome status with respect to biologically based limits.
			As noted above, there are no bycatch species in the hoki fishery that meet the definition of 'main' for this assessment. However, the main vulnerable species caught in bycatch, is monitored on the through trawl surveys on the Chatham Rise and in the sub-Antarctic. Future surveys are planned in four or five of the next six years (2011/12-2016/17) depending on the area (Table 2). To date, trends in abundance have not been detected in either the Chatham Rise surveys (which estimate relative abundance with reasonable precision: sampling CVs of ~20%, O'Driscollet al. 2011) or the sub-Antarctic surveys (Blackwell 2010). On this basis, information is sufficient to estimate relative abundance, as a proxy for biologically-based limits.

PI 2.2.3		Information on the nature and the amount of bycatch is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage bycatch	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
	c	**Y**	Information is adequate to support a **partial strategy** to manage main bycatch species.
			Sufficient information is available from catch reporting, by observers and vessels, to support the development of a comprehensive strategy to manage main bycatch species.
	d	**Y**	Sufficient data continue to be collected to detect any increase in risk to main bycatch species (e.g., due to changes in the outcome indicator scores or the operation of the fishery or the effectively of the strategy).
			The data collected from the surveys are generally sufficiently precise (CVs ~20%) and cover the major areas of the fishery (Chatham Rise & sub-Antarctic) that increases in risk to the main bycatch species could be detected.
100	**a**	**N**	**Accurate and verifiable information** is available on the amount of all bycatch and the consequences for the status of affected populations.
			An observer programmeis in place which requires comprehensive reporting of trawled catches. This programmeprovides for the production of estimates of bycatch by quota area. The precision of the estimates depends on the level of observer coverage. Some data on affected populations is available from trawl surveys. However, this information is not available for all regions of the fishery and some bycatch species are not well monitored by the surveys. Therefore, it is not possible to evaluate the consequences of fishing activities on **all** bycatch species' populations.
	b	**N**	Information is **sufficient** to quantitatively estimate outcome status with respect to biologically based limits with a **high degree of certainty**.
			Although observer reporting and trawl survey data provides high quality information on trawl catches, information available on population parameters is not sufficient to quantitatively estimate outcome status for bycatch species with respect to biologically-based limits with a high degree of certainty.
	c	**Y**	Information is adequate to support a **comprehensive strategy** to manage bycatch, and **evaluate** with a **high degree of certainty** whether a strategy is **achieving its objective**.
			In the three fishing years 2005/06 – 2008/09, observers monitored 15.3 – 20.3 % of all tows targeting hoki (Abraham and Thompson 2011). In addition to data collection by observers, vessel-based reporting of species caught also occurs. When combined with information collected through trawl surveys, a significant body of data is available to support a comprehensive strategyto manage bycatch, and evaluate whether this strategy is achieving its objective.
	d	**Y**	Monitoring of bycatch data is conducted in sufficient detail to assess ongoing mortalities to all bycatch species.
			Observer monitoring and catch reporting is extensive, both in terms of placements on vessels and coverage of tows (Ramm 2010, 2011; Rowe 2010). In the three fishing years 2005/06 – 2008/09, observers monitored 15.3 – 20.3 % of all tows targeting hoki (Abraham and Thompson 2011). Vessel-based reporting also occurs for the bycatch species caught. Many of

PI 2.2.3		Information on the nature and the amount of bycatch is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage bycatch	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
			these data are used to investigate and analyse fishery performance against strategic and management objectives. Thus, monitoring of bycatch data is conducted in sufficient detail to assess ongoing mortalities of all bycatch species.
References			Abraham ER and FN Thompson. 2011. Summary of the capture of seabirds, marine mammals, and turtles in New Zealand commercial fisheries, 1998-99 to 2008-09. Final Research Report prepared for the Ministry of Fisheries project 2007/01. Blackwell, R.G. 2010. Distribution and abundance of deepwater sharks in New Zealand waters, 2000–01 to 2005–06. New Zealand Aquatic Environment and Biodiversity Report No. 57. O'Driscoll RL, MacGibbon D, Fu S, Lyon W and DW Stevens. 2011. A review of hoki and middle-depth trawl surveys of the Chatham Rise, January 1992-2010. Ramm K. 2010. Conservation Services Programme Observer Report: 1 July 2008 to 30 June 2009, Final Draft. Marine Conservation Services, Department of Conservation. Ramm K. 2011. Conservation Services Programme Observer Report: 1st July 2009 to 30 June 2010. Marine Conservation Services, Department of Conservation. Rowe S. 2010. Level 1 risk assessment for incidental seabird mortality associated with New Zealand fisheries in the NZ-EEZ. Marine Conservation Services, Department of Conservation.	
OVERALL PERFORMANCE INDICATOR SCORE: All of the scoring issues for the 60 and 80 scoring guideposts are met as are two of the four scoring issues for the 100 scoring guidepost. Consequently, the score is 90.			**90**
CONDITION NUMBER (if relevant):			**N/A**

Evaluation Table: PI 2.3.1

PI 2.3.1		The fishery meets national and international requirements for the protection of ETP species The fishery does not pose a risk of serious or irreversible harm to ETP species and does not hinder recovery of ETP species	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
60	**a**	**Y**	Known effects of the fishery are **likely** to be within limits of national and international requirements for protection of ETP species.
			The Fisheries Act specifies that associated or dependent species should be maintained above a level that ensures their long-term viability and that biological diversity of the aquatic environment should be maintained. Further, in the absence of a population management plan, the Minister of Fisheries may, after consultation with the Minister of Conservation, take such measures as s/he considers are necessary to avoid, remedy, or mitigate the effect of fishing-related mortality on any protected species. Thus, accidental and incidental captures of legally protected species by permitted commercial fisheries operations are not prohibited in New Zealand. Captures must be reported to the Ministry of Fisheries on a mandatory form (Ministry of Fisheries Compliance Information Sheet 8). Reporting from unobserved vessels has improved in recent years. Trawl vessels over 28 m in length are also required to deploy specified mitigation measures to reduce seabird captures (New Zealand Gazette 2010); compliance with these measures is assessed by government observers. Occasionally, the New Zealand government will identify a maximum allowable mortality level for protected species in accordance with legislative provisions. There are no such levels currently for protected species caught in the hoki fishery. CITES Appendix 1 includes the Basking shark, which is also legally protected in New Zealand fisheries waters. The Agreement for the Conservation of Albatrosses and Petrels (ACAP) covers 29 species of these seabirds, the majority of which occur in New Zealand waters (and are legally protected). This Agreement requires New Zealand to take measures to achieve and maintain a favourable conservation status for albatrosses and petrels (Further detail: www.acap.aq). There is evidence through monitoring by fisheries observers and reportin, that the requirements for species protection are being achieved. In addition to the implementation of regulated and non-regulatory bycatch reduction measures at sea, there are significant habitat protection and management measures in place on land for New Zealand seabirds included under ACAP. Thus, across marine protected species taxa, known effects are likely to be within limits of national and international requirements.
	b	**Y**	Known direct effects are **unlikely** to create **unacceptable impacts** to ETP species.
			Risk assessments were conducted during 2010 and 2011 to assess the risks of the hoki fishery on ETP species(Boyd 2011 excluding seabirds; Rowe 2010 and Richard et al. 2011 for seabirds in the all New Zealand fisheries, including the hoki fishery). These assessments concluded that it is unlikely that known direct effects of the hoki fishery are creating unacceptable impacts on ETP species nationally. However, the hoki fishery does capture some seabird species which, given captures across all New Zealand fisheries, may be at risk of population decline (Richard et al. 2011). Data collection and analysis is ongoing with respect to monitoring of protected species bycatch (e.g. Abraham and Thompson 2011a, b), including in areas

			of particular interest (e.g. fur seals in Cook Strait), and for species of particular vulnerability (e.g. basking sharks, DOC 2011). The results of such work will increase confidence in conclusions drawn about the magnitude of fishery impacts.
80	**a**	**Y**	The effects of the fishery are known and are **highly likely** to be within limits of national and international requirements for protection of ETP species.
			Observer coverage and reporting within the hoki fishery mean that the effects of the fishery are known, in terms of bycatch of ETP species and implementation of sustainability measures (e.g. deployment of mitigation devices) required. Observers identify and photograph all protected species landed dead. They also return most protected species landed dead for expert identification onshore. Focussed coverage can be implemented to improve knowledge where additional information is required for management (DOC 2011). Land-based initiatives complement those undertaken for ETP species at sea, e.g. protection and monitoring of breeding sites. Data collected are subjected to appropriate exploratory and/or quantitativeanalyses, e.g. monitoring populations, modelling population parameters, the Ecological Risk Assessment, and a level 2 risk assessment (for seabirds). Limits focus on sustainability and minimising incidental catch of ETP species. Consequently, the effects of the fishery on ETP species are known, and are highly likely to be within limits of national and international requirements.
	b	**Y**	Direct effects are **highly unlikely** to create **unacceptable impacts** to ETP species.
			Ongoing monitoring, both of at-sea captures and (sub)populations detectable on land or at sea, provides data with which effects on vertebrate ETP species are evaluated, including at the population level. For many species, available population information is not of high quality, e.g. it may be dated and/or imprecise. This requires the use of precautionary assessments of fisheries impacts (Hamilton and Baker 2010; Richard et al 2011). For protected marine invertebrates, populations cannot be delineated readily and so area-based assessments of impacts are made. Currently, direct effects of hoki fishing are deemed highly unlikely to create unacceptable impacts to ETP species populations. However, ETP species affected by the hoki fishery are also affected by other fisheries. Impacts are cumulative across fisheries and so any changes in fisheries affecting rates or outcomes of ETP interactions must be monitored carefully. Further, changes in fishing effort in the hoki fishery may result in changes in numbers of ETP interactions. This also requires monitoring and appropriate management.
	c	**Y**	Indirect effects have been considered and are thought to be unlikely to create unacceptable impacts.
			The Expert Panel conducting the 2010 Ecological Risk Assessment of the hoki fishery considered the direct and indirect ecological impacts of this fishery. The assessment of indirect effects was qualitative and based on expert opinion, and the Panel did not identify any moderate or major indirect effects of this fishery on ETP species (Boyd 2011).
100	**a**	**Y**	There is a **high degree of certainty** that the effects of the fishery are within limits of national and international requirements for protection of ETP species.
			As described above, ongoing monitoring is at sufficient levels that there is a high degree of certainty that the effects of the hoki fishery on ETP species are within the limits of national and international requirements. Reporting captures and deploying seabird bycatch mitigation devices are the legal

			requirements relevant to ETP captures in this fishery. Observer monitoring is also undertaken routinely (Between the 2005/06 and 2008/09 fishing years, observers covered 15.3 – 20.3% of hoki-target tows (Abraham and Thompson 2011a)).
	b	**N**	There is a **high degree of confidence** that there are no significant **detrimental direct effects**of the fishery on ETP species.
			Currently, it appears unlikely that on its own, the hoki fishery is causing significant detrimental direct effects on fur seals or seabirds (Hamilton and Baker 2010; Richard et al. 2011). However, addressing key knowledge gaps (e.g. the quality of population estimates for many species) would improve confidence. For seabirds, Rowe (2010) reported the necessity of management measures on vessels for reducing seabird bycatch in this fishery (e.g. discharge management and deployment of mitigation devices to reduce warp strikes). For benthic protected species, assessments of direct effects are made through spatial analysis and identification of species landed by trawls. This is a pragmatic, though not biologically-driven, assessment. Further, and as noted above, ETP species affected by the hoki fishery are also affected by other fisheries. Impacts are cumulative across fisheries and so any changes in fisheries affecting rates or outcomes of ETP interactions must be monitored carefully. Currently, there is not a high degree of confidence of a lack of significant detrimental fishery impacts on all ETP species.
	c	**N**	There is a **high degree of confidence** that there are no significant **detrimental indirect effects**of the fishery on ETP species.
			The Expert Panel at the 2010 Ecological Risk Assessment considered the indirect ecological impacts of the hoki fishery. Indirect effects were considered qualitatively. The Panel did not identify any moderate or major indirect effects of this fishery on ETP species (Boyd 2011). However, given the qualitative nature of this assessment, there cannot be a high degree of confidence that there are no significant detrimental indirect effects of the fishery on ETP species. Indirect effects on ETP species are subject to ongoing review by DOC as part of the Marine Conservation Services Programme (DOC 2011).
References			Abraham ER and FN Thompson. 2011a. Estimated capture of seabirds in New Zealand trawl and longline fisheries, 2002-03 to 2008-09. New Zealand Aquatic Environment and Biodiversity Report No. 79. Ministry of Fisheries. Abraham ER and FN Thompson 2011b. Summary of the capture of seabirds, marine mammals, and turtles in New Zealand commercial fisheries, 1998–99 to 2008–09. Final Research Report prepared for Ministry of Fisheries project PRO2007/01. Boyd RO. 2011. Ecological risk assessment of the New Zealand hoki fisheries. Report for the Deepwater Group Limited, Nelson. Department of Conservation. 2011. Marine Conservation Services Annual Plan 2011/12. Marine Conservation Services, Department of Conservation. Hamilton S and B Baker. 2010. Assessment of the impacts of selected fisheries mortality on New Zealand fur seal populations using the Potential Biological Removal (PBR) approach. Draft report to the Deepwater Group Ltd. New Zealand Gazette 2010. Fisheries Commercial Regulations 2001: Seabird scaring devices circular 2010 (No. F517). No. 29. New Zealand Government.

	Richard Y, Abraham ER and D Filippi. 2011. Assessment of the risk to seabird populations from New Zealand commercial fisheries. Final Research Report for Ministry of Fisheries projects IPA2009/19 and IPA2009/20. Rowe S. 2010. Level 1 risk assessment for incidental seabird mortality associated with New Zealand fisheries in the NZ-EEZ. Marine Conservation Services, Department of Conservation.
OVERALL PERFORMANCE INDICATOR SCORE: All of the scoring issues of the 80 scoring guidepost are met as well as one of the scoring issues of the 100 scoring guidepost. Consequently, the score for this PI is 85.	**85**
CONDITION NUMBER (if relevant):	**N/A**

Evaluation Table: PI 2.3.2

PI 2.3.2			The fishery has in place precautionary management strategies designed to: • **Meet national and international requirements;** • **Ensure the fishery does not pose a risk of serious harm to ETP species;** • **Ensure the fishery does not hinder recovery of ETP species; and** • **Minimise mortality of ETP species.**
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
60	**a**	**Y**	There are **measures** in place that minimise mortality, and are expected to be **highly likely to achieve** national and international requirements for the protection of ETP species.
			Fur seals: The DWG document Operating Procedures: Marine Mammals (OPMM, DWG 2011) describes measures vessel operators are required and recommended to take to minimise marine mammal bycatch. Seabirds: Measures are in place to achieve or maintain a favourable conservation status for albatrosses and petrels, as required by ACAP. Legislative measures include the deployment of specified seabird bycatch mitigation devices (New Zealand Gazette 2010). Non-regulatory measures include vessel-specific Vessel Management Plans, which describe how fishery waste will be managed to reduce the risk of seabird captures (DWG 2009). Protected corals: Area closures are the measure in place to contribute to the management of interactions with protected corals. Protected fishes: There are no specific measures in place to minimise interactions with protected elasmobranchs or other fishes. (The basking shark is the only protected fish reported to interact with the hoki fishery). Reporting ETP captures by fishing gear is required by New Zealand law. Thus, there are measures in place that minimise mortality and are highly likely to achieve national and international requirements for ETP species protection.
	b	**Y**	The measures are **considered likely** to work, based on **plausible argument** (e.g., general experience, theory or comparison with similar fisheries/species).
			Fur seals: The OPMM is based on knowledge of marine mammal species and expert opinion. Seabirds: Tori lines (one of the three specific measures that can be selected for seabird bycatch reduction) are international best practice for reducing warp strikes. VMPs describe offal retention measures demonstrated to reduce seabird interactions with trawl gear (Bull 2009). Protected corals: Spatial management is global best practice for minimising demersal trawling impacts on the benthos. Key issues relate to the specifications of closed areas, connectivity, any infringements etc. Protected fishes: While no specific measures are in place to minimise captures of protected fishes, reporting provides the opportunity for informed management, should captures be detected at levels considered to threaten species conservation. The above measures are considered likely to work based on plausible argument (e.g. expert opinion, international best practice).
80	**a**	**Y**	There is a **strategy** in place for **managing the fishery's impact** on ETP species, including measures to minimise mortality,that is designed to be **highly likely to achieve** national and international requirements for the protection of ETP species.
			The strategic framework for managing protected species interactions with the hoki fishery currently includes: - Legislation: the Fisheries Act, Wildlife Act, and Marine Mammals Protection Act - The National Plan of Action – Sharks (Ministry of Fisheries 2008)

PI 2.3.2		The fishery has in place precautionary management strategies designed to: • Meet national and international requirements; • Ensure the fishery does not pose a risk of serious harm to ETP species; • Ensure the fishery does not hinder recovery of ETP species; and • Minimise mortality of ETP species.	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
			- The Annual Operational Plan for Deepwater Fisheries (Ministry of Fisheries 2011a) - The National Fisheries Plan for Deepwater and Middle-depth Fisheries: Part 1B, Hoki chapter (Ministry of Fisheries 2010) - The Marine Conservation Services Programme (e.g. Annual Plan, DOC 2011) Draft documents relating to management of ETP impacts include: - The draft seabird policy (Ministry of Fisheries 2011b). The above documents reflect a strategy in place for managing the fishery's impact on ETP species, including measures to minimise mortality. This strategic framework is designed to be highly likely to achieve national and international requirements for the protection of ETP species.
	b	**Y**	There is an **objective basis for confidence** that the strategy will work, based on **information** directly about the fishery and/or the species involved.
			There is an objective basis for confidence that the strategy will work, based on information derived from scientific research (e.g. Bull 2009), knowledge of species and their interactions with fisheries, global best practice, and past performance under operational plans.
	c	**Y**	There is **evidence** that the strategy is being implemented successfully.
			Evidence that the strategy is being implemented successfully is found in audit trails (e.g. Observers monitoring VMPs), and monitoring of protected interactions in the hoki and other trawl fisheries (e.g. Rowe 2008; Ramm 2010, 2011; Abraham and Thompson 2011). Also, the legislative framework has been tested by past bycatch events, notably in the squid trawl, ling demersal longline, and tuna/swordfish longline fisheries.
100	**a**	**N**	There is a **comprehensive strategy** in place for managing the fishery's impact on ETP species, including measures to minimise mortality that is designed to achieve **above** national and international requirements for the protection of ETP species.
			A comprehensive strategy is a completed and tested strategy made up of linked monitoring, analyses, and management measures and responses (MSC 2011). The strategic framework in place to manage the fishery's impact on ETP species is thorough for most ETP. Combinations of the components of a 'comprehensive strategy' are in place for most ETP, and some represent global best practice at the time of this reassessment (i.e. seabirds). However, not all ETP are managed through comprehensive strategies, as defined by MSC, designed to exceed national and international requirements (e.g. basking sharks, corals).
	b	**N**	The strategy is mainly based on information directly about the fishery and/or species involved, and a **quantitative analysis** supports **high confidence** that the strategy will work.
			Seabirds: Tori lines (one of the three gazetted measures that can be selected for seabird bycatch reduction) are an international best practice measure for reducing warp strikes. Quantitative analyses in other fisheries (involving some of the same seabird species) demonstrate the efficacy of these devices

PI 2.3.2		The fishery has in place precautionary management strategies designed to: • Meet national and international requirements; • Ensure the fishery does not pose a risk of serious harm to ETP species; • Ensure the fishery does not hinder recovery of ETP species; and • Minimise mortality of ETP species.	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
			(Bull 2009). VMPs describe offal retention measures demonstrated to reduce seabird interactions with trawl gear. The efficacy of VMPs as a whole has not been tested. However, there is a substantial body of work on fisheries waste management which shows quantitatively that holding waste, discharging in batches, etc is effective in reducing seabird interactions with vessels (reviewed in Bull 2009, Pierre et al. 2010). Fur seals: The OPMM is based on detailed knowledge (and expert opinion) of marine mammal species, the hoki fishery,and interactions between the hoki fishery and marine mammals. Quantitative analyses of fur seal interactions with the fishery have been conducted. However, the efficacy of the particular measures the strategy contains have not been evaluated quantitatively in the hoki (or other) fishery). Currently, declines in fur seal captures cannot be conclusively attributed to the OPMM, versus a reduction in fishing effort. Protected corals: Spatial management measures have not yet been fully evaluated with respect to their efficacy in managing impacts on protected corals (e.g. inclusion of corals within closed areas especially BPAs, and representativeness of habitats protected). Protected fishes: No specific operational actions are in place to minimise captures of protected fishes, specifically the basking shark. However, work has begun reviewing knowledge of this species (DOC 2011). While the management strategy is multi-faceted, and considers information from the fishery, the efficacy of some components has not been evaluated quantitatively.
	c	**Y**	There is **clear evidence** that the strategy is being implemented successfully.
			For the strategic framework that is in place, thorough monitoring is conducted by fisheries Observers. For example, Observers complete the "Vessel Management Plan/Marine Mammal Operating Procedure Observer Reviews" form, as well as record ETP interactions with fishing gear. Compliance monitoring of areas subject to spatial management also occurs. Strategic documents are also reviewed from time to time, e.g. the Annual Operational Plan, the NPOA – Sharks (proposed for review in 2012), legislation (reviews in recent years have included the addition of new species as legally protected, revised reporting regulations, and gazetting of required mitigation measures).
	d	**N**	There is evidence that the strategy is achieving its objective.
			Management objectives to achieve environmental outcomes desired from the hoki fishery focus on avoiding and minimising adverse environmental impacts, including on ETP species (Ministry of Fisheries 2010). As noted above, the strategic framework is well developed and rich in operational procedures developed with the intent of reducing impacts. However, empirical evidence that the strategy is achieving its objectives is difficult to provide for all ETP. This could be addressed in a variety of ways (e.g. by quantitative definition of a specific adverse effect or environmental standard, against which performance could be evaluated).
References			Abraham, ER and FN Thompson. 2011. Estimated capture of seabirds in New Zealand trawl and longline fisheries, 2002-03 to 2008-09. New

PI 2.3.2			The fishery has in place precautionary management strategies designed to: • Meet national and international requirements; • Ensure the fishery does not pose a risk of serious harm to ETP species; • Ensure the fishery does not hinder recovery of ETP species; and • Minimise mortality of ETP species.
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
			Zealand Aquatic Environment and Biodiversity Report No. 79. Bull LS. 2009. New mitigation measures reducing seabird by-catch in trawl fisheries. Fish and Fisheries 10:408–427. Deepwater Group Ltd. 2009. Vessel Management Plan (VMP) Deepwater Factory Trawler over 28 m. Version 4.0. Deepwater Group Ltd. 2011. Operating Procedures: Marine Mammals. Version 7. 1 October 2011. Department of Conservation. 2011. Marine Conservation Services Annual Plan 2011/12. Marine Conservation Services, Department of Conservation. Marine Stewardship Council. 2011. Guidance to the MSC Certification Requirements. Version 1.0, August 15, 2011. Ministry of Fisheries. 2008. New Zealand National Plan of Action for the Conservation and Management of Sharks. October 2008. Ministry of Fisheries. 2010. National Fisheries Plan for Deepwater and Middle-depth Fisheries. Ministry of Fisheries. 2011a. Annual Operational Plan for Deepwater Fisheries for 2011/12. Ministry of Fisheries. 2011b. Draft policy for addressing the fishing-related mortality of seabirds in New Zealand fisheries waters. May 2011. New Zealand Gazette 2010. Fisheries Commercial Regulations 2001: Seabird scaring devices circular 2010 (No. F517). No. 29. New Zealand Government. Pierre JP, ER Abraham, DAJ Middleton, J Cleal, R Bird, NA Walker and SM Waugh. 2010. Reducing interactions between seabirds and fisheries: Responses to foraging patches provided by fish waste batches. Biological Conservation 143: 2779-2788. Ramm K. 2010. Conservation Services Programme Observer Report: 1 July 2008 to 30 June 2009, Final Draft. Marine Conservation Services, Department of Conservation. Ramm K. 2011. Conservation Services Programme Observer Report: 1st July 2009 to 30 June 2010. Marine Conservation Services, Department of Conservation. Rowe SJ. 2008. Conservation Services Programme Observer Report. July 2007 to 20 June 2008. DOC Marine Conservation Services Series 4. Department of Conservation.
OVERALL PERFORMANCE INDICATOR SCORE: All of the scoring issues of the 60 and 80 scoring guideposts are met, and one component ofthe 100 scoring guidepost.			**85**
CONDITION NUMBER (if relevant):			**N/A**

Evaluation Table: PI 2.3.3

PI 2.3.3			Relevant information is collected to support the management of fishery impacts on ETP species including: • Information for the development of the management strategy; • Information to assess the effectiveness of the management strategy; and • Information to determine the outcome status of ETP species.
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
60	**a**	**Y**	Information is sufficient to qualitatively estimate the fishery related mortality of ETP species.
			Information collected by fisheries observers on ETP mortalities in the fishery is of excellent quality and supported by expert input onshore (e.g. for difficult identifications of ETP landed dead). Thus, information is sufficient to qualitatively estimate the fishery-related mortality of ETP species.
	b	**Y**	Information is **adequate** to **broadly understand** the impact of the fishery on ETP species.
			While some population estimates of ETP species are not of high quality, in combination with information on fisheries captures of ETP, information is adequate to broadly understand the impacts of the fishery on ETP species.
	c	**Y**	Information is adequate to support **measures** to manage the impacts on ETP species.
			The combination of information collected by fisheries observers and that provided by other research, e.g. on ETP species populations (DOC 2011), and knowledge of ETP-specific mitigation measures (e.g. Bull 2007, 2009) is adequate to support measures to manage the impacts on ETP species.
80	**a**	**Y**	**Sufficient data** are available to allow fishery related mortality and the impact of fishing to be **quantitatively** estimated for ETP species.
			For seabirds and marine mammals, quantitative estimates can be generated to determine the extent of incidental mortalities (e.g., Abraham and Thompson 2011). Where information is less robust, specific data collection initiatives have been developed (e.g. fur seal captures in Cook Strait, DOC 2011). For other ETP species, data are not so extensive (e.g. basking sharks, but see DOC 2011). However, observers collect information on all ETP species caught during voyages, providing for a quantitative assessment of fishing impact. For protected corals, this is not possible on an individual level, but observers use weight of specimens landed to provide a quantitatively-based scale of impact. The data collected from fishing vessels at sea and available from other sources are sufficient to allow fishery\-related mortality and the impact of fishing to be quantitatively estimated for ETP species, with varying degrees of accuracy and precision.
	b	**Y**	Information is **sufficient** to determine whether the fishery may be a threat to protection and recovery of the ETP species.
			Such determinations are generally more limited by the population information available than the quality and amount of data collected from the fishery. For example, for many seabird species and fur seals, population estimates can be dated or imprecise. However, using the best available information, assessments can be made of fishing risks to ETP species populations (e.g. Richard et al. 2011). For protected corals, spatial surrogates are used to evaluate impacts, e.g. trawl tracks and corals brought to the surface. Due to the difficulties of

PI 2.3.3			Relevant information is collected to support the management of fishery impacts on ETP species including: • Information for the development of the management strategy; • Information to assess the effectiveness of the management strategy; and • Information to determine the outcome status of ETP species.
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
			coral identification, observers return samples of specimens landed on deck for onshore identification by experts (Tracey et al. 2011). While not always ideal in quality or quantity, information is deemed to be sufficient to determine whether the fishery may be a threat to the protection and recovery of ETP species.
	c	**Y**	Information is sufficient to measure trends and support a full **strategy** to manage impacts on ETP species.
			Information on ETP species as available through observer data collection and scientific research is sufficient to support a full strategy to manage impacts on ETP species. For seabirds, effective bycatch reduction measures are well known. For fur seals, some effective bycatch reduction measures are known, and others (which would benefit from testing) are based on expert opinion and observation of the species. As noted above, fishing impacts on protected coral species are determined by weight, and managed using spatial measures. Knowledge of the distribution of coral species could be improved substantially. However, distribution is broadly known in areas of relevance to the fishery. Trends in fisheries captures and mortalities are measured through observer data collection. A number of population-level research projects are also underway on ETP species, which will provide information useful for management (e.g. DOC 2011).
100	**a**	**N**	Information is **sufficient** to **quantitatively** estimate outcome status of ETP species with a high degree of certainty.
			Observer data collection is of a high standard at sea. However, information gaps or low quality information constrain the estimation of outcome statuses for ETP interactions at a high degree of certainty. For example, where observer coverage has been low, and for species without a robust population estimate, the outcome status of ETP species cannot be quantitatively estimated with a high degree of certainty.
	b	**N**	**Accurate and verifiable information** is available on the **magnitude of all impacts, mortalities and injuries** and the **consequences for the status** of ETP species.
			Quality information is provided by government fisheries observers. However, the magnitude of injuries and consequences for the status of ETP species are often unknown, or at best partially known. For example, ETP alive on capture are released/returned to the sea. The magnitude of impacts and injuries sustained by these animals, and the consequences of their injuries for the status of ETP species, are unknown. For protected coral species, the consequences of fisheries interactions are also unknown at the species level, although weights on capture and capture locations are recorded (Tracey et al. 2011).
	c	**N**	Information is adequate to support a **comprehensive strategy** to manage impacts, minimise mortality and injury of ETP species, and evaluate with a **high degree of certainty**whether a strategy is achieving its objectives.

PI 2.3.3		Relevant information is collected to support the management of fishery impacts on ETP species including: • Information for the development of the management strategy; • Information to assess the effectiveness of the management strategy; and • Information to determine the outcome status of ETP species.	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
			While an extensive body of information is available to support the development of a strategic framework, information on injury of ETP species is typically deficient (as reflected in (b) above). This precludes the development of the comprehensive strategy described here, and an assessment of whether the strategy is achieving its objectives.
References			Abraham, ER and FN Thompson. 2011. Estimated capture of seabirds in New Zealand trawl and longline fisheries, 2002-03 to 2008-09. New Zealand Aquatic Environment and Biodiversity Report No. 79. Ministry of Fisheries. Bull LS. 2007. Reducing seabird bycatch in longline, trawl and gillnet fisheries. Fish and Fisheries 8:31-56. Bull LS. 2009. New mitigation measures reducing seabird by-catch in trawl fisheries. Fish and Fisheries 10:408–427. Department of Conservation. 2011. Marine Conservation Services Annual Plan 2011/12. Marine Conservation Services, Department of Conservation. Richard Y, Abraham ER and D Filippi. 2011. Assessment of the risk to seabird populations from New Zealand commercial fisheries. Final Research Report for Ministry of Fisheries projects IPA2009/19 and IPA2009/20. Tracey D, Baird SJ, Sanders B and MH Smith. 2011. Identification of Protected Corals: distribution in relation to fishing effort and accuracy of observer identifications. Draft Final Report prepared for Marine Conservation Services (MCS), Department of Conservation. Project: MCSINT 2010/03 / DOC11302 (Objective 1, Milestones 3 & 4)
OVERALL PERFORMANCE INDICATOR SCORE: All of the scoring issues of the 60 and 80 scoring guideposts are met, but none of the scoring issues of the 100 scoring guidepost.			**80**
CONDITION NUMBER (if relevant):			**N/A**

Evaluation Table: PI 2.4.1

PI 2.4.1		The fishery does not cause serious or irreversible harm to habitat structure, considered on a regional or bioregional basis and function	
SG	**Issue**	**Met? (Y/P[4] /N)**	**Justification/Rationale**
60	**a**	**Y**	The fishery is **unlikely** to reduce habitat structure and function to a point where there would be serious or irreversible harm.
			As the trawl net is deployed to towing depth, pelagic habitats will experience short-term disruption. Some disruption of the water column and its inhabitants will also occur as the net is towed. However, longer term and more severe effects of the fishery on habitat structure are benthic, given the bottom trawl method widely used. Midwater trawls may also contact the bottom at times.The short-term impacts of bottom trawling have been well documented and reviewed globally (e.g. Thrush and Dayton 2002; NEFMC 2010). Longer-term effects are poorly known but some habitat-creating organismsrequiresignificant recovery periods after trawling (e.g. > 8 years for some sponges, ≥10 years for corals (Kaiser et al. 2006; Althaus et al. 2009, Williams et al. 2010; Clark et al. 2012). Currently, the best single tool currently available to evaluate benthic habitat types is the Benthic-Optimised Marine Environment Classification (BOMEC) for New Zealand waters (Leathwick et al. 2009). The Ecological Risk Assessment Expert Panel considered the consequences of hoki fishing to be major on BOMEC classes 7 and 8 in Cook Strait, and 9 on the Chatham Rise (Boyd 2011a, b). Spatially, BOMEC class 9 has been trawled the most extensively during the last 20 years of hoki fishing (1989/90-2008/09).11% of BOMEC 9 in the Chatham Rise fishery was unfished over the 20-year period examinedwhilethroughout the EEZ, 34% of this class has never been trawled (Black and Wood 2011). Over the period 1998/99-2009/10, 41% of this habitat class was not trawled, EEZ-wide (Black 2012).For the other BOMEC classes across the EEZ,69% or more of the habitat class area has not been trawled in during the 20-year period (Black and Wood 2011). While the 20-year spatial extent examined does not reflect the fishery's extent in shorter timeframes, the Ecological Risk Assessment Expert Panel considered the consequence of hoki fishing on BOMEC 9 on the Chatham Rise as close to a level 4 - that is, likely to cause local extinctions if continued in the longer term (Boyd 2011a, b). Across the EEZ, the proportion of this habitat class that has been trawled is notably greater than any other. The long recovery periods needed for some trawled habitats highlights the timeframe over which it is appropriate for management to consider impacts on habitat structure. Spatial overlays of trawl tracks and BOMEC habitat classes are a highly informative way to start identifying habitat impacts. The management approach for habitat impacts could be strengthened by, for example, increasing the resolution of assessments of habitat impacts by using all available data, considering vulnerability and resilience and post-trawl recovery times of habitats encountered by the fishery, considering spatial scale and extent of habitats, quantitatively defining management objectives, and assessing the efficacy of management measures (as perrecommendations for demersal trawl fisheries in other locales, Fuller et al. 2008). The maintenance of habitat function can be assessed at many levels, for example from the continuation of nutrient cyclesin substrates through availability of refugia or nursery areas, to the presence of top predators. For

[4]Partially met

PI 2.4.1		The fishery does not cause serious or irreversible harm to habitat structure, considered on a regional or bioregional basis and function	
SG	**Issue**	**Met? (Y/P[4] /N)**	**Justification/Rationale**
			midwater trawls, habitat function is expected to experience only short-term disruption (noting that fish, bycatch and retained species removals are considered elsewhere in this assessment). Again, bottom trawling is expected to have greater impacts, for example, changes in biogeochemical cyclesand removal of refugia(Thrush and Dayton 2002). With no direct information available on benthic components of habitat function, structure is a pragmatic proxy with which to assess functional impacts. It is reasonable to expect that the functionality of biogenic habitats will be compromisedto some extent as structure is compromised (e.g. NRC 2002). It is also reasonable to conclude that annually the current fishery is unlikely (no more than 40% probability) to reduce habitat structure to a point where there would be serious or irreversible harm. However, due to the sensitivity, lack of resilience, and required regeneration times for some habitat-forming organisms when disturbed, the effects of the current fishery are cumulative and require consideration over a greater than annual timescale to increase the confidence of this outcome.
80	**a**	**P**	The fishery is **highly unlikely** to reduce habitat structure and function to a point where there would be serious or irreversible harm.
			As above, pelagic impacts on habitats are considered to be less severe than benthic impacts, and effects of fish, retained species, and bycatch removals are considered elsewhere. The spatial extent of trawling in the current fishery is less than the 20-year footprint, as noted above. Further, as noted above, it is reasonable to conclude that in any one year, the fishery is unlikely to reduce habitat structure to a point where there would be serious or irreversible harm. However, the recovery times for most habitat types are more than one year after trawling, and for recovery timesfor some habitat-creating organisms are greater than 10 years (see references above). EEZ-wide, most habitat classes have been assessed as impacted at negligible or minor levels by the hoki fishery. However, BOMEC 7 and 8 (Cook Strait), and 9 (Chatham Rise) are highlighted as habitats that have experienced major impacts (Boyd 2011a, b). As noted above, the ERA Panel considered that the consequence of hoki fishing on BOMEC 9 on the Chatham Rise was close to that likely to cause local extinctions if continued in the longer term (Boyd 2011a, b). Due to the sensitivity, lack of resilience, and required regeneration times for some habitat-forming organisms, the effects of the current fishery require consideration over a greater than annual timescale to increase the certainty of this outcome. Explicit links between stock harvest scenarios (e.g. Langley, unpublished, 2009, 2011) and habitat impacts would improve confidence that the fishery is highly unlikely to reduce habitat structure and function to a point where there would be serious or irreversible harm. Currently, this confidence does not exist for all habitat classes at the SG80 level. The fishery is deemed highly unlikely to reduce pelagic habitat structure and function to a point where there would be serious or irreversible harm. However, the same cannot be said for all benthic habitat classes (in accordance with the rationale outlined in the report text). To reflect this, a partial score of 75 is assigned.
100	**a**	**N**	There is **evidence** that the fishery is highly unlikely to reduce habitat structure and function to a point where there would be serious or irreversible

PI 2.4.1		The fishery does not cause serious or irreversible harm to habitat structure, considered on a regional or bioregional basis and function	
SG	**Issue**	**Met? (Y/P[4] /N)**	**Justification/Rationale**
			harm.
			A cohesive spatial management approach is best practice for reducing fishery impacts on habitat structure and function. For the hoki fishery, evidence required to address this scoring issue could be obtained following the implementation of a more developed analysis and management approach (e.g., as mentioned above, linking stock harvest scenarios and habitat impacts). Thus, evidence is not currently available to show that the fishery is highly unlikely to reduce habitat structure and function to a point where there would be serious or irreversible harm, at a regional or bioregional basis.
References			Althaus F, Williams A. Schlacher TA, Kloser RJ, Green MA, Barker BA, Bax NJ, Brodie P and Schlacher-Hoenlinger MA 2009. Impacts of bottom trawling on deep-coral ecosystems of seamounts are long-lasting. Marine Ecology Progress Series 397: 279–294. Black J and R Wood. 2011. Analysis of New Zealand's trawl ground by the hoki fishery. Unpublished GNS Science Consultancy Excel Worksheets (2011a-o). Prepared for the Deepwater Group Ltd. Black 2012. BOMEC_hoki 98-99 to 09-10. Accessed at: http://www.deepwater.co.nz/f2111,108260/108260_Black_2012a_bomec_hoki_98-99_to_09-10.pdf. Bowden D, Compton TJ, Snelder TH and JE Hewitt. 2011. Evaluation of the New Zealand Marine Environment Classifications using Ocean Survey 20/20 data from Chatham Rise and Challenger Plateau. New Zealand Aquatic Environment and Biodiversity Report No. 77. Boyd RO. 2011a. Ecological risk assessment of the New Zealand hoki fisheries. Report for the Deepwater Group Limited, Nelson. Boyd RO. 2011b. Updated benthic risk assessment of the New Zealand hoki fisheries. Unpublished report for the Deepwater Group Ltd, Nelson. Clark MR, SchlacherTA,Rowden AA, Stocks KI and Consalvey M 2012. Science priorities for seamounts: research links to conservation and management. PLoS One 7(1): e29232. doi:10.1371/journal.pone.0029232. Fuller SD, C Picco, J Ford, C-F Tsao, LE Morgan, D Hangaard and R Chuenpagdee. 2008. How we fish matters: addressing the ecological impacts of Canadian fishing gear. Ecology Action Centre, Living Oceans Society, and Marine Conservation Biology Institute. Kaiser MJ, Clarke KR, Hinz H, Austen MCV, Somerfield PJ and Karakassis I. 2006. Global analysis of response and recovery of benthic biota to fishing. Marine Ecology Progress Series 311: 1–14. Langley A. 2009. Determining an appropriate Target Biomass Reference Point for the New Zealand hoki fishery. Unpublished report held by DWG. http://www.deepwater.co.nz/n2111,126.html. Langley A. 2011. Determining an Appropriate target Biomass Reference Point for the New Zealand Hoki Fishery – Supplementary Analysis. Unpublished report held by DWG, http://www.deepwater.co.nz/n2111,126.html. Leathwick JR, Rowden A, Nodder S, Gorman R, Bardsley S, Pinkerton M, Baird SJ, Hadfield M, Currie K and A Goh. 2009. Benthic-optimised marine environment classification for New Zealand waters. Final Research Report for BEN2006-01. Ministry of Fisheries.

PI 2.4.1		The fishery does not cause serious or irreversible harm to habitat structure, considered on a regional or bioregional basis and function	
SG	**Issue**	**Met? (Y/P[4] /N)**	**Justification/Rationale**
			NEFMC 2010. Essential fish habitat (EFH) omnibus amendment "The swept area seabed impact (SASI) model: a tool for analyzing the effects of fishing on essential fish habitat. Part 1: Literature review and vulnerability assessment. Joint New England Fishery Management Council Habitat Meeting 1-2 April 2010. NRC 2002. Effects of trawling and dredging on seafloor habitat. National Research Council. National Academy Press, Washington, DC. Thrush SF and Dayton PK 2002. Disturbance to marine benthic habitats by trawling and dredging: implications for marine biodiversity Annual Review of Ecology and Systematics 33: 449-473. Williams A, Schlacher TA, Rowden AA, Althaus F, Clark MR, Bowden DA, Stewart R, Bax NJ, Consalvey M and Kloser RJ 2010. Seamount megabenthic assemblages fail to recover from trawling impacts. Marine Ecology 2010: 1-17.
OVERALL PERFORMANCE INDICATOR SCORE: The fishery satisfies the scoring issues for the 60 scoring guidepost, the scoring issues of the 80 scoring guidepost for several habitat types,but not the 100 scoring guidepost. The fishery is deemed highly unlikely to reduce pelagic habitat structure and function to a point where there would be serious or irreversible harm. However, the same cannot be said for all benthic habitat classes (in accordance with the rationale outlined in the report text). To reflect this, a partial score of 75 is assigned, and Condition 1 is raised.			**75**
CONDITION NUMBER (if relevant):			**1**

Evaluation Table: PI 2.4.2

PI 2.4.2		There is a strategy in place that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to habitat types	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
60	**a**	**Y**	There are **measures** in place, if necessary, that are expected to achieve the Habitat Outcome 80 level of performance.
			Measures in place include reporting of captures of protected coral species and some spatial closures (e.g. seamounts and Benthic Protection Areas, some of which occur in the hoki fishery area). These measures are expected to meet current legal requirements and policy objectives. Appropriately scoped and implemented, such measures are expected to provide effective mitigation of habitat impacts, including at the Habitat Outcome 80 level of performance.
	b	**Y**	The measures are considered **likely** to work, based on plausible argument (e.g. general experience, theory or comparison with similar fisheries/habitats).
			Reporting of interactions between fisheries and habitats is critical to understanding habitat impacts. Spatial management is the most effective measure currently deployed for mitigating habitat impacts due to demersal trawling. This combination of measures is considered likely to work, based on fisheries internationally (e.g. Fuller et al. 2008).
80	**a**	**Y**	There is a **partial strategy** in place, if necessary, that is expected to achieve the Habitat Outcome 80 level of performance or above.
			The strategic framework for managing habitat impacts of the hoki fishery currently includes: - Legislation: the Fisheries Act and Wildlife Act - The Annual Operational Plan for Deepwater Fisheries (Ministry of Fisheries 2011) - The National Fisheries Plan for Deepwater and Middle-depth Fisheries: Part 1B, Hoki chapter (Ministry of Fisheries 2010) - The Marine Conservation Services Programme (e.g. Annual Plan, DOC 2011) For example, the Management Objectives outlined in Ministry of Fisheries (2010) include objective "2.7 Identify and avoid of minimise adverse effects of deepwater fishing activity on benthic habitat". Thus, there is a partial strategy in place that is designed to achieve the Habitat Outcome 80 level of performance.
	b	**Y**	There is some **objective basis for confidence** that the partial strategy will work, based on **information directly about the fishery and/or habitats** involved.
			Currently, the main basis for confidence that the partial strategy will work is the closure of some areas to mitigate fishing effects (e.g. seamounts, Benthic Protection Areas).
	c	**Y**	There is **some evidence** that the partial strategy is being implemented successfully.
			Fisheries observers monitor compliance with the boundaries of Benthic Protection Areas or other closed areas. The Ministry of Fisheries and DWG are able to follow up if compliance anomalies are detected.
100	**a**	**N**	There is a **strategy** in place for managing the impact of the fishery on habitat types.

PI 2.4.2		There is a strategy in place that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to habitat types	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
			Currently, the fishery does not have a cohesive and strategic arrangement in place to manage the fishery impacts on habitats, which also includes mechanisms for the modification fishing practices in the light of the identification of unacceptable impacts (MSC 2011).For example, the work overlaying trawl tracks and habitat types is extremely informative. It would be helpful to clarify how this information is used for management of habitat impacts. Issues for consideration could include when an impact on a habitat class is deemed worthy of management attention, how practices might be changed to manage identified impacts, any restrictions on trawling new areas or trawl gear, etc.
	b	**N**	**Testing** supports **high confidence** that the strategy will work, based on **information directly about the fishery and/or habitats**involved.
			A strategy is not in place.
	c	**N**	There is **clear evidence** that that strategy is being implemented successfully.
			A strategy is not in place.
	d	**N**	There is some evidence that the strategy is achieving its objective.
			A strategy is not in place.
References			Department of Conservation. 2011. Marine Conservation Services Annual Plan 2011/12. Marine Conservation Services, Department of Conservation. FullerSD, C Picco, J Ford, C-F Tsao, LE Morgan, D Hangaard and R Chuenpagdee. 2008. How we fish matters: addressing the ecological impacts of Canadian fishing gear. Ecology Action Centre, Living Oceans Society, and MarineConservation Biology Institute Ministry of Fisheries. 2010. National Fisheries Plan for Deepwater and Middle-depth Fisheries. Ministry of Fisheries. 2011. Annual Operational Plan for Deepwater Fisheries for 2011/12. MSC. 2011. Guidance to the MSC Certification Requirements. Version 1.0, August 15, 2011.
OVERALL PERFORMANCE INDICATOR SCORE: All of the scoring issues of the 60 and 80 scoring guideposts are met, but none of those for the 100 scoring guidepost.			**80**
CONDITION NUMBER (if relevant):			**N/A**

Evaluation Table: PI 2.4.3

PI 2.4.3		Information is adequate to determine the risk posed to habitat types by the fishery and the effectiveness of the strategy to manage impacts on habitat types	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
60	**a**	**Y**	There is **basic understanding** of the types and distribution of main habitats in the area of the fishery.
			There is basic understanding of the type and distribution of main habitats in the area of the fishery, on a regional scale (Leathwick et al. 2009; Bowden et al. 2011; Tracey et al. 2011) through the BOMEC process, data collection by observers as a result of fishing activities, and ocean floor mapping projects (e.g. OS20/20).
	b	**Y**	Information is adequate to broadly understand the nature of the main impacts of gear use on the main habitats, including spatial overlap of habitat with fishing gear.
			Knowledge of spatial overlap between the sea floor and fishing gear is excellent (Black and Wood 2011). Interpretations of habitat effects rely on additional information layers (e.g. BOMEC). Information is adequate to broadly understand the main impacts of gear use on the main habitats, including spatial overlap of habitat with fishing gear.
80	**a**	**Y**	The nature, distribution and **vulnerability** of all main habitat types in the fishery are known at a level of detail relevant to the scale and intensity of the fishery.
			Characteristics of the habitats have been classified and mapped through several projects, e.g. the Marine Environment Classification (Snelder et al. 2007), the Oceans 20/20 work (e.g. on the Chatham rise), and BOMEC (Leathwick et al. 2009). Precision of the classifications generally improves with the amount of biological information included (Bowden et al. 2011). Habitat mapping data, combined with the results of specimen collections from known trawl locations by fisheries observers (Tracey et al. 2011), allow the nature, distribution and vulnerability of main habitat types to be known in the fishery, at a level of detail relevant to the scale and intensity of the fishery. Beyond areas offishing activity, the degree of habitat knowledge at sub-regional scales is patchier.
	b	**Y**	Sufficient data are available to allow the nature of the impacts of the fishery on habitat types to be identified and there is reliable information on the spatial extent of interaction, and the timing and location of use of the fishing gear.
			Observers record detailed information on tow positions and gear, and fishers are also obliged to record some tow level information on their catch reporting returns. The nature of the fishery impacts on habitats can be determined through knowledge of gear types and deployment. Thus, data collected are both sufficient to allow the nature of the impacts of the fishery on habitat types to be identified and reliable, in terms of the spatial extent of interaction, and the timing and location of use of the fishing gear.
	c	**Y**	Sufficient data continue to be collected to detect any increase in risk to habitat (e.g. due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of the measures).
			Through observer data collection and fisher reporting, changes in the fishery can be monitored, including, for example changes in areas fished, benthos brought to the surface, fishing practices, etc). Thus, information collected is sufficient to detect changed in risks to habitats.

100	**a**	**N**	The distribution of habitat types is known over their range, with particular attention to the occurrence of vulnerable habitat types.
			As noted above, habitats have been mapped and classified at various scales through a number of projects (Snelder et al. 2007; Leathwick et al. 2009 Bowden et al. 2011; Tracey et al. 2011). However, the extent of habitat knowledge at sub-regional scalesis patchier, including for vulnerable habitat types.
	b	**N**	The physical impacts of the gear on the habitat types have been quantified fully.
			Demersal trawling is a fishing method that typically destroys habitat features and complexity (e.g. NRC 2002; Thrush et al. 2002; FAO 2008; Fuller et al. 2008; NEFMC 2010). In the hoki fishery, gear types in use, trawl locations and overlap with BOMEC habitat classes are known. The impacts of gear on the benthos and sea floor are known to a degree through sampling and identification of benthos landed in trawls. Thus, some information exists from this fishery, and a body of information on trawl impacts exists from other fisheries. However, the physical impacts of the gear on the habitat types have not been quantified fully in this fishery.
	c	**N**	Changes in habitat distributions over time are measured.
			Currently no regular sampling regimes exist that are designed to measure changes in habitat distributions over time.
References			Black J and R Wood. 2011. Analysis of New Zealand's trawl ground by the hoki fishery. Unpublished GNS Science Consultancy Excel Worksheets (2011a-o). Prepared for the Deepwater Group Ltd. Bowden D, Compton TJ, Snelder TH and JE Hewitt. 2011. Evaluation of the New Zealand Marine Environment Classifications using Ocean Survey 20/20 data from Chatham Rise and Challenger Plateau. New Zealand Aquatic Environment and Biodiversity Report No. 77. FAO. 2008. Report of the FAO Workshop on Vulnerable Ecosystems and Destructive Fishing in Deep-sea Fisheries. Rome, 26–29 June 2007. FAO Fisheries Report. No. 829. FAO, Rome. Fuller SD, C Picco, J Ford, C-F Tsao, LE Morgan, D Hangaard and R Chuenpagdee. 2008. How we fish matters: addressing the ecological impacts of Canadian fishing gear. Ecology Action Centre, Living Oceans Society, and Marine Conservation Biology Institute Leathwick JR, Rowden A, Nodder S, Gorman R, Bardsley S, Pinkerton M, Baird SJ, Hadfield M, Currie K and A Goh. 2009. Benthic-optimised marine environment classification for New Zealand waters. Final Research Report for BEN2006-01. Ministry of Fisheries. NEFMC 2010. Essential fish habitat (EFH) omnibus amendment "The swept area seabed impact (SASI) model: a tool for analyzing the effects of fishing on essential fish habitat. Part 1: Literature review and vulnerability assessment. NEFMC. NRC 2002. Effects of trawling and dredging on seafloor habitat. National Research Council. National Academy Press, Washington, DC. Snelder TH, Leathwick JR, Dey KL, Rowden AA, Weatherhead MA, Fenwick D, Francis MP, Gorman RM, Grieve JM, Hadfield MG, Hewitt JE, Richardson KM, Uddstrom MJ and JR Zeldis. 2007. Development of an ecologic marine classification in the New Zealand region. Environmental Management 39: 12–29. Thrush, S.F. and Dayton, P.K. 2002. Disturbance to marine benthic habitats by trawling and dredging:implications for marine biodiversity Annual Review of Ecology and Systematics 33: 449-473. Tracey D, Baird SJ, Sanders B and MH Smith. 2011. Identification of

	Protected Corals: distribution in relation to fishing effort and accuracy of observer identifications. Draft Final Report prepared for Marine Conservation Services (MCS), Department of Conservation. Project: MCSINT 2010/03 / DOC11302 (Objective 1, Milestones 3 & 4)
OVERALL PERFORMANCE INDICATOR SCORE: All of the scoring issues of the 80 scoring guidepost are met as is one of the three scoring issues of the 100 scoring guidepost. Consequently, the score for this PI is 85.	**80**
CONDITION NUMBER (if relevant):	**N/A**

Evaluation Table: PI 2.5.1

PI 2.5.1		The fishery does not cause serious or irreversible harm to the key elements of ecosystem structure and function	
SG	**Issue**	**Met? (Y/P/ N)**	**Justification/Rationale**
60	**a**	**Y**	The fishery is **unlikely** to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.
			At an EEZ level, New Zealand fisheries have been preliminarily assessed to be sustainablein an energetic context. Further, the reduction in hoki TACC (2002/03 cf 2008/09) has reduced the energetic demands of this fishery on the ecosystem (Knight et al. 2011). However, Knight et al. (2011) note that this energetic-based sustainability assessment is not a replacement for a food web-based analysis, and that their frameworks are appropriately deployed as a high-level guide for monitoring cumulative effects of multiple fisheries, rather than considering removals at a species-specific level. Beyond energetic demands, high volume removals of the target species (hoki) are expected to result in some level of ecosystem effects especially in non-spawning fisheries, given the dominance of hoki in these systems. The Chatham Rise fishery is best understood in this respect. Change is ongoing in this ecosystem; the ecosystem has not stabilised at an alternative state. However, studies of the Chatham Rise (Tuck et al. 2009) show: - no evidence of loss of community constituents, although the mean trophic level of commercial and trawl survey catches is declining, i.e. fishing is affecting higher trophic levels. There is also evidence for changes in species abundance. - no evidence of loss of ecosystem function. - no evidence of loss of species over time. Relationships between the abundances of hoki and their prey are variable.Based on acoustic data from the Chatham Rise (2001-2003) McClatchie et al. (2005) concluded that hoki abundance, and that of their mesopelagic prey, were correlated. From 2001-2007 on the Chatham Rise, O'Driscoll et al. (2009) found that there was variability, but no statistically significant trend, in abundance of mesopelagic fish. O'Driscoll et al. (2011) proposed that while prey availability influences the distribution of hoki, it does not determine their abundance (which is instead determined by factors such as recruitment variability and fishing). The ERA Expert Panel considered that it was unlikely that changes in the Chatham Rise fish community were due to ocean warming on the Rise or the El Nino Southern Oscillation (Boyd 2011). However, as the Chatham Rise hosts other fisheries, in addition to hoki, the effects of the hoki fishery alone cannot be distinguished. The ecosystem supporting the sub-Antarctic hoki fishery is less well studied than the Chatham Rise ecosystem. However, ongoing change is also reported from that system, including declining mean trophic level (Tuck et al. 2009, Pinkerton 2011). Similar to the Chatham Rise, the Sub-Antarctic region also host other fisheries, and the effects of the hoki fishery alone cannot be distinguished. In spawning fisheries, hoki are a much less significant ecosystem component. The ecosystem effects of these fisheries are considered to be less significant than in the non-spawning fisheries, given the constrained timeframe during which hoki are present and the reduced feeding activity they display (Boyd 2011). Delivery of key ecosystem services,e.g. biogeochemical cycles, has been reported to be disrupted by bottom trawling (Thrush and Dayton 2002). With no direct information available on these, presence and dynamics of organisms over time are pragmatic proxies.

PI 2.5.1		The fishery does not cause serious or irreversible harm to the key elements of ecosystem structure and function	
SG	**Issue**	**Met? (Y/P/ N)**	**Justification/Rationale**
			Change is occurring in two of the key hoki fishery areas, which is expected given the volume of hoki biomass deliberately removed through fishing. Further work is necessary to improve understanding of these changes, for example, effects on ecosystem resilience over time. However, currently the fishery is deemed unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm. Ensuring the ecosystem maintains sufficient resilience to sustain both fisheries impacts and cumulative environment impacts and changes over time is a key issue for management.
80	**a**	**Y**	The fishery is **highly unlikely**to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.
			A significant body of work is underway on ecosystem characteristics and fishing effects. Over time, this is expected to clarify the nature and extent of fishing effects on ecosystem structure and function. The Chatham Rise and Sub-Antarctic fisheries show some ecosystem change, for which the long-term impacts are not understood. However, based on the majority of indicators assessed to date (see references above), and the recovery of the target stock that followed reductions in catch limits, the fishery has not disrupted the key elements underlying ecosystem structure and function to a point where there would be serious or irreversible harm. However, the lack of understanding of what some indicators mean for the ecosystem, such as mean trophic level, demonstrate the need for further work to ensure impacts are effectively managed and the resilience of the system to perturbations is maintained.
100	**a**	**P**	There is **evidence** that the fishery is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.
			As above, data suggesting that the fishery has not disrupted key elements underlying ecosystemstructureand function to the point of serious or irreversible harm is provided by research from the Chatham Rise (Tuck et al. 2009). Similarities in key ecosystem characteristics support extrapolation of this conclusion to the sub-Antarctic areas in which the fishery operates (Pinkerton 2011). In terms of the potential for ecosystem impacts, spawning fisheries were considered less significant than the non-spawning fisheries, given the constrained timeframe during which hoki are present and the reduced feeding activity they display (Boyd 2011). However, developing understanding of relationships between ecosystem components (e.g. functional groups), indicators and fishery characteristics would effectively contribute to improving management. "Evidence" in this SG requires a 20% probability that the true status of thecomponent is within the range where there is risk of serious or irreversible harm. Current knowledge strongly suggests this. However, sufficient uncertainty exists such that further work on ecosystem effects of the fishery is warranted, and recommended. **Recommendation:** Continue work to increase understanding of the ecosystem impacts of the hoki fishery and support more effective management of those effects.

PI 2.5.1		The fishery does not cause serious or irreversible harm to the key elements of ecosystem structure and function	
SG	**Issue**	**Met? (Y/P/ N)**	**Justification/Rationale**
			Particular uncertainty exists around the meaning of indicators. Clarifying this uncertainty will improve ability to manage ecosystem effects of the fishery.
References			Boyd RO. 2011. Ecological risk assessment of the New Zealand hoki fisheries. Report for the Deepwater Group Limited, Nelson. Knight B, Sinner J and Jiang W. 2011. Sustainability of NZ's deepwater fisheries from an energetic perspective – an update. Prepared for Deepwater Group Ltd. Cawthron Institute Report No. 2044. McClatchie S, Pinkerton M, and Livingston, ME. 2005. Relating the distribution of a semi-demersal fish, *Macruronusnovaezelandiae*, to their pelagic food supply. Deep-Sea Research Part I 52: 1489–1501. O'Driscoll RL, Gauthier S, Devine J. 2009. Acoustic surveys of mesopelagic fish: as clear as dayand night? ICES Journal of Marine Science 66: 1310–1317. O'Driscoll RL, Hurst RJ, Dunn MR, Gauthier S, andBallara SL.2011.Trends in relative mesopelagic biomass using time series of acoustic backscatter data from trawl surveys.New Zealand Aquatic Environment and Biodiversity Report No. 76. Pinkerton MH. 2011. Hoki ecological risk assessment: ecosystem and food-web effects. NIWA unpublished report. Tuck I, Cole R and J Devine. 2009. Ecosystem indicators for New Zealand fisheries. Aquatic Environment and Biodiversity report No. 42. Ministry of Fisheries.
OVERALL PERFORMANCE INDICATOR SCORE: The scoring issues for the 60 and 80 scoring guideposts are met, and the scoring issue for the 100 scoring guidepost is partially met. Consequently, the score for this PI is 90.			**90**
CONDITION NUMBER (if relevant):			**N/A**

Evaluation Table: PI 2.5.2

PI 2.5.2		There are measures in place to ensure the fishery does not pose a risk of serious or irreversible harm to ecosystem structure and function	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
60	**a**	**Y**	There are **measures** in place, if necessary.
			There are numerous measures in place to reduce impacts of the fishery on individual ecosystem components (and thereby structure), e.g., for ETP species as described above (PI 2.3.2), and the target (e.g. PI 1.1.1, 1.1.2), retained (PI 2.1.2) and bycatch (PI 2.2.2) species. There are no measures in place relating to ecosystem function specifically. There is, however, a legislative, policy and operational framework to manage ecosystem impacts, and address knowledge gaps relevant to fishery management. This includes components such as: - The Fisheries Act and Wildlife Act - The Annual Operational Plan for Deepwater Fisheries (Ministry of Fisheries 2011) - The National Fisheries Plan for Deepwater and Middle-depth Fisheries: Part 1B, Hoki chapter (Ministry of Fisheries 2010b) - Research specifications for the 10 year research programme for deepwater fisheries. DFR2010-02: Appendix One. (Ministry of Fisheries 2010a). Linking knowledge of ecosystem indicators to management measures would be informative, and assist detection of potential issues with ecosystem functions/services. Such linkage would need to account for the fact that changes in ecosystem indicators could be caused by factors unrelated to the size of the hoki fishery.
	b	**Y**	The **measures** take into account potential impacts of the fishery on key elements of the ecosystem.
			The measures listed above either require some consideration of impacts (e.g. the Fisheries Act), or take account of them with the intent of delivering better management (e.g. fisheries management objectives, Ministry of Fisheries 2010b), or seek to manage them to reduce the environmental effects of fishing (e.g. ETP bycatch reduction measures in PI 2.3.2).
	c	**Y**	The measures are considered likely to work, based on **plausible argument** (e.g., general experience, theory or comparison with similar fisheries/ecosystems).
			The measures are considered likely to work when implemented successfully, based on experience in this and other New Zealand fisheries.
80	**a**	**Y**	There is a **partial strategy** in place, if necessary.
			The legislative and policy framework described above provides a partial strategy for ensuring the fishery does not pose a risk of serious or irreversible harm to ecosystem structure and function. The focus of this strategy is on management of individual ecosystem components, rather than functions/services more broadly.
	b	**Y**	The partial strategy takes into account **available information and is expected to restrain impacts** of the fishery on the ecosystem so as to **achieve** the Ecosystem Outcome 80 level of performance.
			Research outcomes are fed back into management, although in the areas of ecosystem structure and function, links would benefit from being stronger. Where unacceptable impacts are detected, the strategic framework provides for these to be addressed, including through fishery management measures.

PI 2.5.2		There are measures in place to ensure the fishery does not pose a risk of serious or irreversible harm to ecosystem structure and function	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
			To date, this response has focussed on individual ecosystem components, rather than broader effects (e.g. target stock status, seabird bycatch levels).
	c	**Y**	The partial strategy is considered likely to work, based on **plausible argument** (e.g., general experience, theory or comparison with similar fisheries/ecosystems).
			The partial strategy is considered likely to work, based on experience in this and other New Zealand fisheries.
	d	**Y**	There is **some evidence** that the measures comprising the partial strategy are being **implemented successfully.**
			Again, with particular reference to individual ecosystem components (rather than functions), there is evidence that the partial strategy is being implemented successfully. For example, stock assessments of the target and retained species (Ministry of Fisheries 2011) and monitoring of incidental mortalities of ETP species (e.g. Abraham and Thompson 2011) are ongoing.
100	**a**	**Y**	There is a **strategy** that consists of a **plan**, in place.
			An extensive management framework including strategic elements exists. In addition, Plans form some of the basis for implementing this strategy to reduce impacts on components of the ecosystem (e.g. fur seals, seabirds). There is not an explicit singular ecosystem management strategy or plan in place. However, the legislative, policy and operational framework to manage ecosystem impacts, includes components such as: - The Fisheries Act and Wildlife Act - The Annual Operational Plan for Deepwater Fisheries (Ministry of Fisheries 2011) - The National Fisheries Plan for Deepwater and Middle-depth Fisheries: Part 1B, Hoki chapter (Ministry of Fisheries 2010b) - Research specifications for the 10 year research programme for deepwater fisheries. DFR2010-02: Appendix One. (Ministry of Fisheries 2010a).
	b	**N**	The **strategy**, which consists of a **plan**, contains measures to **address all main impacts of the fishery** on the ecosystem, and at least some of these measures are in place. The plan and measures are **based on well-understood** functional relationships between the fishery and the Components and elements of the ecosystem. This plan provides for **development of a full strategy that restrains impacts** on the ecosystem to ensure the fishery does not cause serious or irreversible harm.
			As at SG100(a), strategic and some planning elements exist, but are currently not developed across ecosystem components/functions to the level required for this scoring guidepost.
	c	**Y**	The measures are considered likely to work based on **prior experience**, plausible argument or **information** directly from the fishery/ecosystems involved.

PI 2.5.2		There are measures in place to ensure the fishery does not pose a risk of serious or irreversible harm to ecosystem structure and function	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
			Strategic and operational measures that are in place are considered likely to work, based on information about the fishery and ecosystem components involved (e.g. target and retained species, some ETP species). For example, target species stocks have been actively managed (Ministry of Fisheries 2008), fish species brought under the QMS structure (Ministry of Fisheries 2010 c), and seabird bycatch mitigation measures introduced (Anonymous 2010), to address sustainability concerns. Annual review of the Annual Operational Plan for Deepwater Fisheries (Ministry of Fisheries 2011) provides a natural forum for reviewing the efficacy of measures, and identification of ongoing and new issues. Detailed monitoring of many aspects of the fishery (e.g. catches of target, retained species, and bycatch) provides a rich source of information through which to investigate the efficacy of strategies and plans in place.
	d	**Y**	There is evidence that the measures are being **implemented successfully**.
			As in (c), measures in place are considered to be implemented successfully. Detailed monitoring of many aspects of the fishery provides a rich source of information through which to investigate the success of implementation of the strategies and plans in place.
References			Abraham, ER and FN Thompson. 2011. Estimated capture of seabirds in New Zealand trawl and longline fisheries, 2002-03 to 2008-09. New Zealand Aquatic Environment and Biodiversity Report No. 79. Anonymous 2010. New Zealand Gazette No. 29. 11 March 2010. New Zealand Government. Ministry of Fisheries. 2008. Harvest Strategy Standard for New Zealand Fisheries. Ministry of Fisheries. 2010a. Research specifications for the 10 year research programme for deepwater fisheries. DFR2010-02: Appendix One. Ministry of Fisheries. 2010b. National Fisheries Plan for Deepwater and Middle-depth Fisheries. Ministry of Fisheries. 2010c. Introduction of Patagonian Toothfish (PTO) into the Quota Management System on 1 October 2010: Final Advice Paper. Document dated 15 February 2010. Ministry of Fisheries. 2011. Report from the Fisheries Assessment Plenary, May 2011: stock assessments and yield estimates.	
OVERALL PERFORMANCE INDICATOR SCORE: All of the scoring issues of the 80 scoring guidepost are met, as are three of the four scoring issues of the 100 scoring guidepost. Consequently, the score for this PI is 95.			**95**
CONDITION NUMBER (if relevant):			**N/A**

Evaluation Table: PI 2.5.3

PI 2.5.3		There is adequate knowledge of the impacts of the fishery on the ecosystem	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
60	**a**	**Y**	Information is adequate to **identify** the key elements of the ecosystem (e.g., trophic structure and function, community composition, productivity pattern and biodiversity).
			Information has been collected from a variety of sources, including from fishing vessels, research trawls, and camera sampling, and information collection is often followed by further analysis. Therefore, information is adequate to identify the key elements of the ecosystem (e.g. Pinkerton 2011a; Tuck et al. 2009; Horn and Dunn 2010; Knight et al. 2011; O'Driscoll et al. 2011).
	b	**Y**	Main impacts of the fishery on these key ecosystem elements can be inferred from existing information, and **have not been investigated in detail**.
			Existing information provides a basis for inferring fishing impacts on ecosystem elements (e.g. Tuck et al. 2009, Pinkerton 2011a), although a cohesive understanding has not been achieved.
80	**a**	**Y**	Information is adequate to **broadly understand** the key elements of the ecosystem.
			Existing information is adequate to broadly understand the key elements of the ecosystem, including trophic structure, community composition, productivity and biodiversity (Pinkerton 2011a; Tuck et al. 2009; Horn and Dunn 2010, O'Driscoll et al. 2011).
	b	**Y**	Main impacts of the fishery on these key ecosystem elements can be inferred from existing information and **some have been investigated in detail**.
			Correlations between fishery activity and changes in ecosystem characteristics have been investigated over a number of years. Investigations have been particularly detailed on the Chatham Rise (Pinkerton 2011a; Tuck et al. 2009; Horn and Dunn 2010, O'Driscoll et al. 2011).
	c	**Y**	The main functions of the Components (i.e., target, Bycatch, Retained and ETP species and Habitats) in the ecosystem are **known**.
			The main functions of ecosystem components are known, though not in detail for some species. Diet studies have been integral to the development of this knowledge (e.g. Sagar and Thompson 2008; Horn and Dunn 2010; Baird 2011; Pinkerton 2011a).
	d	**Y**	Sufficient information is available on the impacts of the fishery on these Components to allow some of the main consequences for the ecosystem to be inferred.
			Fishery impacts on ecosystem components are sufficiently known to allow the inference of some ecosystem consequences. For example, fishery removals of the target, retained and bycatch species are monitored annually, and by location (e.g. Ministry of Fisheries 2011). Incidental captures of ETP species are also monitored, and ecosystem consequences of these removals can be inferred (Abraham and Thompson 2011). While fishery impacts on benthos are monitored (e.g. Tracey et al. 2011), ecosystem-level effects of fishery impacts on benthic invertebrates are not well understood.

PI 2.5.3		There is adequate knowledge of the impacts of the fishery on the ecosystem	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
	e	**Y**	Sufficient data continue to be collected to detect any increase in risk level (e.g., due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of the measures).
			Monitoring of hoki catch (including target catch, retained species, bycatch, and ETP species) by fisheries observers, as well as vessel-based reporting of main species caught continue as part of the fishery management regime. Monitoring of ETP species captures is also part of ongoing management. Fishing practices are also documented to varying degrees of detail (e.g. tow location, date, gear type). Annual research trawl surveys (unrelated to fishing vessel activities) continue. Together, these data are expected to be sufficient to detect increased risks of fishing to ecosystem components. The ongoing research priorities relevant to the hoki fishery are reported in Ministry of Fisheries (2010) and DOC (2011).
100	**b**	**Y**	Main interactions between the fishery and these ecosystem elements can be inferred from existing information, and **have been investigated**.
			Monitoring of hoki catch (including target catch, retained species, bycatch, and ETP species) by fisheries observers, as well as vessel-based reporting of main species caught continue as part of the fishery management regime. The hoki fishery overlaps spatially with other trawl fisheries, which complicates the investigation of linkages between ecosystem elements and this fishery per se. As noted above however, the main impacts of the hoki fishery on key ecosystem elements can be inferred from existing information, for example, that collected by observers at sea (e.g. Ramm 2011), data collected through trawl surveys (O'Driscoll et al. 2011), land-based studies of seabird and marine mammal populations, etc. (e.g. DOC 2011). These ecosystem components have been investigated over time, through periods of varying fishing intensity (for hoki, and other trawled species caught in the hoki fishery area). Pinkerton (2008, 2011b) described a trophic model for the Chatham Rise. Currently, the model is under development and publications on this are expected in the near future.
	c	**N**	The impacts of the fishery on target, Bycatch and ETP species are **identified** and the main functions of these Components in the ecosystem are **understood**.
			The impacts of the fishery on target, bycatch, and ETP species are identified through ongoing monitoring that is a core component of the fishery management regime. The main functions of some of these species can be understood from existing information. However, for some bycatch species and protected benthic species, knowledge of ecosystem functions is minimal, or absent. Ecosystem modelling approaches are expected to enhance this understanding (e.g. Pinkerton 2011b).
	d	**Y**	Sufficient information is available on the impacts of the fishery on the Components **and elements**to allow the main consequences for the ecosystem to be inferred.
			As noted above, there is considerable knowledge about the ecosystem components, and some elements that the fishery coexists with. While the consequences of fishery impacts on some ecosystem characteristics are not well understood, e.g. ecosystem resilience (Pinkerton 2011a), sufficient information is available on the components and elements of the ecosystem to allow the main consequences of the fishery to be inferred.

PI 2.5.3		There is adequate knowledge of the impacts of the fishery on the ecosystem	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
	e	**Y**	Information is sufficient to support the development of strategies to manage ecosystem impacts.
			There is a significant body of information available (see references above) on components of the ecosystem in which hoki occur. Linkages between all ecosystem components and characteristics and the hoki fishery cannot be quantified, making the scale of responses to changes in fishing patterns may be difficult to predict. However, sufficient information is available to support the development of strategies to manage ecosystem impacts.
References			Abraham, ER and FN Thompson. 2011. Estimated capture of seabirds in New Zealand trawl and longline fisheries, 2002-03 to 2008-09. New Zealand Aquatic Environment and Biodiversity Report No. 79. Ministry of Fisheries. Baird SJ. 2011. New Zealand Fur Seals – Summary of our Current Knowledge. New Zealand Aquatic Environment and Biodiversity Report (AEBR) No. 72. Department of Conservation. 2011. Marine Conservation Services Annual Plan 2011/12. Marine Conservation Services, Department of Conservation. Horn PL and MR Dunn. 2010. Inter-annual variability in the diets of hoki, hake, and ling on the Chatham Rise from 1990 to 2009. New Zealand Aquatic Environment and Biodiversity Report No. 54. Knight BR, Jiang WM and J Sinner. 2011. Sustainability of New Zealand' deepwater fisheries from an energetic perspective. Cawthron report no. 1834. Prepared for the Deepwater Group Ltd. Ministry of Fisheries. 2010. Research specifications for the 10 year research programme for deepwater fisheries. DFR2010-02: Appendix One. Ministry of Fisheries. 2011. Report from the Fisheries Assessment Plenary, May 2011: stock assessments and yield estimates. O'Driscoll RL, MacGibbon D, Fu D, Lyon W and DW Stevens. 2011. A review of hoki and middle depth trawl surveys of the Chatham Rise,January 1992–2010. New Zealand Fisheries Assessment Report 2011/47. Pinkerton MH 2008. Ecosystem modelling of the Chatham Rise, New Zealand. Accessed at: http://www.deepwater.co.nz/f2111,104491/104491_131_Pinkerton_2008.pdf Pinkerton MH. 2011a. Hoki ecological risk assessment: ecosystem and food-web effects. NIWA unpublished report. Pinkerton MH 2011b. A balanced trophic model of the Chatahm Rise, New Zeland. Accessed at: http://www.niwa.co.nz/sites/default/files/chatham-model_32.pdf Ramm K. 2011. Conservation Services Programme Observer Report: 1st July 2009 to 30 June 2010. Marine Conservation Services, Department of Conservation. Sagar P and D Thompson. 2008. Data collection of demographic, distributional, and trophic information on selected petrels. New Zealand Aquatic Environment and Biodiversity Report No. 17. Tracey D, Baird SJ, Sanders B and MH Smith. 2011. Identification of Protected Corals: distribution in relation to fishing effort and accuracy of observer identifications. Draft Final Report prepared for Marine Conservation Services (MCS), Department of Conservation. Project: MCSINT 2010/03 / DOC11302 (Objective 1, Milestones 3 & 4) Tuck I, Cole R and J Devine. 2009. Ecosystem indicators for New Zealand

PI 2.5.3		There is adequate knowledge of the impacts of the fishery on the ecosystem	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
			fisheries. Aquatic Environment and Biodiversity report No. 42. Ministry of Fisheries.
OVERALL PERFORMANCE INDICATOR SCORE: All of the scoring issues of the 80 scoring guidepost are met, and three of the four scoring issues of the 100 scoring guidepost. The final score is 95.			**95**
CONDITION NUMBER (if relevant):			**N/A**

Evaluation Table: PI 3.1.1

PI 3.1.1			**The management system exists within an appropriate legal and/or customary framework which ensures that it:** • **Is capable of delivering sustainable fisheries in accordance with MSC Principles 1 and 2;** • **Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood; and** • **Incorporates an appropriate dispute resolution framework.**
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
60	**a**	**Y**	The management system is generally consistent with local, national or international laws or standards that are aimed at achieving sustainable fisheries in accordance with MSC Principles 1 and 2.
			New Zealand is signatory to several international agreements that apply to this fishery (Convention on Biodiversity, UNCLOS, MARPOL, CITES, etc.) These agreements are implemented in the management of the New Zealand deepwater fisheries, and are complied with by DWG member companies. There is a thorough briefing document for skippers used by the various DWG's member companies that focus in part on fisheries law. Requirements resulting from international conventions and agreements are reflected in this document. The Ministry operates within the framework of a range of laws, most notably the Fisheries Act 1996. The purpose of this Act is to provide for utilization of fisheries resources, while ensuring sustainability. The Ministry is also responsible for the administration of the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992, which implements the 1992 Fisheries Deed of Settlement under which all historical Treaty of Waitangi claims relating to commercial fisheries have been fully and finally settled as well as the Maori Fisheries Act 2004, which provides that the Crown allocates 20% of quota for any new quota management stocks brought into the QMS to the Treaty Of Waitangi Fisheries Commission. The management system has a mechanism for the timely resolution of disputes that is open to all stakeholders. The management system is therefore consistent with appropriate local, national and international legislation that are aimed at achieving sustainable fisheries in accordance with Principles 1 and 2.
	b	**Y**	The management system incorporates or is subject by law to a **mechanism** for the resolution of legal disputes arising within the system.
			The Fisheries Act binds the Crown. Decisions made under power given by the Act are judicially reviewable by the Courts in the event of disputes. The New Zealand legal system also provides opportunity to negotiate and resolve disputes. The Minister may appoint a dispute's Commissioner and the Minister makes the final determination. This mechanism has been tested and proven to be effective. The management system therefore is subject by law to a mechanism for the resolution of legal disputes arising within the system.
	c	**Y**	Although the management authority or fishery may be subject to continuing court challenges, it is not indicating a disrespect or defiance of the law by repeatedly violating the same law or regulation necessary for the sustainability of the fishery.
			There are procedures and processes under Part 7 of the Fisheries Act that apply to disputes about the effects of fishing on the fishing activities of any person that has a current fishing interest provided for under the Act. The Act provides opportunities to negotiate and resolve disputes.The 'inform and assist' compliance model as well as the co-operation and partnership

PI 3.1.1		The management system exists within an appropriate legal and/or customary framework which ensures that it: • Is capable of delivering sustainable fisheries in accordance with MSC Principles 1 and 2; • Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood; and • Incorporates an appropriate dispute resolution framework.	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
			between the Ministry and Industry have been successful in pre-empting disputes. However, there have been occasions e.g. Snapper 1 and Kahawai, when the Ministry and the industry have gone to court to resolve a dispute Nevertheless, there is no evidence to suggest that Industry is indicating a disrespect or defiance of the law by repeatedly violating the same law or regulation necessary for the sustainability of the fishery.
	d	**Y**	The management system has a mechanism to generally respect the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.
			The Ministry of Fisheries is responsible for the administration of the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992, which implements the 1992 Fisheries Deed of Settlement under which historic Treaty of Waitangiclaims relating to commercial fisheries have been fully and finally settled. The Ministry is also responsible for the Maori Fisheries Act 2004, which provides that Crown allocates 20% of quota for any new stocks brought into the QMS to the Treaty of Waitangi Fisheries Commission. For non-commercial fisheries, the Kaimoana Customary Fishing Regulations 1998 and the Fisheries (South Island Customary Fishing) Regulations 1998 strengthen some of the rights of TangataWhenua to manage their fisheries. The management system therefore has a mechanism to respect the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.
80	**b**	**Y**	The management system incorporates or is subject by law to a **transparentmechanism** for the resolution of legal disputes which is **considered to be effective** in dealing with most issues and that is appropriate to the context of the fishery.
			There are procedures and processes under Part 7 of the Fisheries Act that apply to disputes about the effects of fishing on the fishing activities of any person that has a current fishing interest provided for under the Act. The Act provides opportunities to negotiate and resolve disputes. The Minister may appoint a Dispute's Commissioner and the Minister makes the final determination. However, this mechanism does not seem to be widely used. Rather, the consultation process is an attempt to avoid unresolved disputes by ensuring all interested parties have an opportunity to participate and have an input into decisions. There have been occasions when there has not been a satisfactory outcome and then this has gone to litigation andthe Court has made a decision. The Memorandum of Understandings between the Deepwater Group Ltd and the Ministry of Fisheries should encourage better working relationships, and avoid the need for litigation between the Ministry and industry. The management system is therefore subject by law to a transparent mechanism for the resolution of legal disputes which is considered to be effective in dealing with most issues and that is appropriate to the context of the fishery.

PI 3.1.1		The management system exists within an appropriate legal and/or customary framework which ensures that it: • Is capable of delivering sustainable fisheries in accordance with MSC Principles 1 and 2; • Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood; and • Incorporates an appropriate dispute resolution framework.	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
	c	**Y**	The management system or fishery is attempting to comply in a timely fashion within binding judicial decisions arising from any legal challenges.
			There are procedures and processes under Part 7 of the Fisheries Act that apply to disputes about the effects of fishing on the fishing activities of any person that has a current fishing interest provided for under the Act. The Act provides opportunities to negotiate and resolve disputes. Co-operation and partnership between the Ministry and Industry has been successful in pre-empting disputes. The management system is therefore attempting to comply in a timely fashion within binding judicial decisions arising from any legal challenges.
	d	**Y**	The management system has a mechanism to **observe**the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.
			The Ministry of Fisheries is responsible for the administration of the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992, which implements the 1992 Fisheries Deed of Settlement under which historical Treaty of Waitangi claims relating to commercial fisheries have been fully and finally settled. The Ministry is also responsible for the Maori Fisheries Act 2004, which provides that the Crown allocates 20% of quota for any new quota management stocks brought into the QMS to the Treaty of Waitangi Fisheries commission. For non-commercial fisheries, the Kaimoana Customary Fishing Regulations 1998 and the Fisheries (South Island Customary Fishing) Regulations 1998 strengthen some of the rights of TangataWhenua to manage their fisheries. The management system therefore has a mechanism to observe the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.
100	**b**	**Y**	The management system incorporates or subject by law to a **transparent** mechanism for the resolution of legal disputes that is appropriate to the context of the fishery and has been **tested and proven to be effective**.
			The Fisheries Act binds the Crown. Decisions made under power given by the Act are judicially reviewable by the Courts in the event of disputes. The New Zealand legal system also provides ample opportunity to negotiate and resolve disputes. The Minister may appoint a dispute's Commissioner and make the final determination. This mechanism has been tested and proven to be effective.
	c	**Y**	The management system or fishery acts proactively to avoid legal disputes or rapidly implements binding judicial decisions arising from legal challenges.
			There are procedures and processes under Part 7 of the Fisheries Act that apply to disputes about the effects of fishing on the fishing activities of any person that has a current fishing interest provided for under the Act. The Act provides opportunities to negotiate and resolve disputes. The 'inform and assist' compliance model, as well as the co-operation and partnership

PI 3.1.1		The management system exists within an appropriate legal and/or customary framework which ensures that it: • Is capable of delivering sustainable fisheries in accordance with MSC Principles 1 and 2; • Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood; and • Incorporates an appropriate dispute resolution framework.	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
			between the Ministry and Industry have been successful in pre-empting disputes.MFish Compliance acts proactively in providing education and awareness programmes, fact sheets and meetings with management and industry. MFish Compliance also works collegiately with the fishing industry to proactively avoid legal disputes.
	d	**Y**	The management system has a mechanism to **formally commit** to the legal rights created explicitly or established by custom of people dependent on fishing for food and livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.
			The Ministry of Fisheries is responsible for the administration of the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992, which implements the 1992 Fisheries Deed of Settlement under which historical Treaty of Waitangi claims relating to commercial fisheries have been fully and finally settled. The Ministry is also responsible for the Maori Fisheries Act 2004, which provides that the Crown allocates 20% of quota for any new quota management stocks brought into the QMS to the Treaty of Waitangi Fisheries commission. For non-commercial fisheries, the Kaimoana Customary Fishing Regulations 1998 and the Fisheries (South Island Customary Fishing) Regulations 1998 strengthen some of the rights of TangataWhenua to manage their fisheries. These regulations let iwi and hapü manage their non-commercial fishing in a way that best fits their local practices, without having a major effect on the fishing rights of others. When the government sets the total catch limits for fisheries each year, it allows for this customary use of fisheries. The management system therefore has a mechanism to formally commit to the legal rights created explicitly or established by custom of people dependent on fishing for food and livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.
References			Deed of Settlement 1992. Her Majesty the Queen in Right of New Zealand & Maori Deepwater Group Ltd (2011a). NZ Deepwater Fisheries Operational Procedures Vessel Manual 2011/12 Fisheries Commercial Fishing Amendment Regulations No 2. 2009 Fisheries (Benthic Protection Areas) Regulations 2007 (SR 2007/308) Fisheries (Reporting) Regulations 2001 (SR 2001/188) Fisheries (Commercial Fishing) Regulations 2001 (SR 2001/ 253) Fisheries (Satellite Vessel Monitoring) Regulations 1993 (SR 1993/354) DWG. 2010. Memorandum of Understanding between the Ministry of Fisheries and the Deepwater Group Lock K and S Leslie. 2007. New Zealand's Quota Management System: A History of the First 20 Years, Motu Working Paper 07-02. Motu Economic and Public Policy Research (April 2007). Maori Fisheries Act 2004. Ministry of Fisheries. 2011c. Review of Sustainability Measures and Other management Controls for Deepwater Fisheries – Final Advice Paper. Ministry of Fisheries, Wellington, New Zealand. (September 2011). Ministry of Fisheries. 2011f Submissions received on the Review of

PI 3.1.1		**The management system exists within an appropriate legal and/or customary framework which ensures that it:** • **Is capable of delivering sustainable fisheries in accordance with MSC Principles 1 and 2;** • **Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood; and** • **Incorporates an appropriate dispute resolution framework.**	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
			Sustainability Measures and other management Controls for Deepwater Fisheries. Ministry of Fisheries, Wellington, New Zealand. September 2011.
OVERALL PERFORMANCE INDICATOR SCORE: The score is 100 because all of the scoring issues of the 100 scoring guidepost are met.			**100**
CONDITION NUMBER (if relevant):			**N/A**

Evaluation Table: PI 3.1.2

PI 3.1.2		The management system has effective consultation processes that are open to interested and affected parties. The roles and responsibilities of organisations and individuals who are involved in the management process are clear and understood by all relevant parties	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
60	**a**	**Y**	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are **generally understood.**
			The Ministry of fisheries, the Department of Conservation and DWG are identified as those involved in the management process. Their functions and roles are well described and documented
	b	**Y**	The management system includes consultation processes that obtain **relevant information** from the main affected parties, including local knowledge, to inform the management system.
			The Ministry of Fisheries is required to consult with those having an interest in the fisheries. MFish has a consultation policy and process which is documented. Information is provided by government agencies, fishing industry, Maori and eNGOs. The management system therefore includes consultation processes that obtain relevant information from the main affected parties, including local knowledge, to inform the management system.
80	**a**	**Y**	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are **explicitly defined and well understood for key areas** of responsibility and interaction.
			The Ministry of Fisheries is the Government's principal adviser on fisheries management, and has the role to maintain the effective management of New Zealand's fisheries. All Ministry staff have their functions, roles and responsibilities explicitly defined through, for example, job descriptions, performance standards, The Department of Conservationis responsible for marine reserves, seabirds, and for marine mammals such as dolphins, whales, sea lions and fur seals. The Deepwater Group Ltd is an amalgamation of EEZ fisheries quota owners in New Zealand. A non-profit Organisation, Deepwater Group Ltd is working in partnership with the Ministry of Fisheries and other interest groups to ensure New Zealand gains the maximum economic yields from its deepwater fisheries resources within a long-term, sustainable management framework. The organisations and individuals involved in the management process have been identified. Their functions, roles and responsibilities are explicitly defined and well understood for key areas of responsibility and interaction.
	b	**Y**	The management system includes consultation processes that **regularly seek and accept relevant** information, including local knowledge. The management system demonstrates consideration of the information obtained.
			Section 12 of the 1996 Act includes a range of specific consultation requirements. The Minister of Fisheries is required to consult with those classes of persons having an interest (including, but not limited to, Maori, environmental, commercial and recreational interests) in the stock or the effects of fishing on the aquatic environment in the area concerned. Although Section 12 only relates to certain sections of the 1996 Act, there are other sections of the 1996 Act that require the Minister or the MFish Chief Executive to consult with stakeholders before making a decision.

PI 3.1.2		The management system has effective consultation processes that are open to interested and affected parties. The roles and responsibilities of organisations and individuals who are involved in the management process are clear and understood by all relevant parties	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
			There is evidence of the Ministry of Fisheries seeking stakeholder views throughout the year using, for example, the Initial Position process, the Working group forums, and fisheries planning meetings. The management system therefore includes consultation processes that regularly seek and accept relevant information, including local knowledge. It also demonstrates consideration of the information obtained.
	c	**Y**	The consultation process **provides opportunity** for all interested and affected parties to be involved.
			The Ministry of Fisheries has a well-defined process for stakeholder consultation. The consultation process: - sets out best practice process for how MFish will meet its obligations under Section 12 of the Fisheries Act 1996 and for other decisions requiring consultation with fisheries stakeholders; - helps to ensure a consistent approach across all MFish business groups when consulting with fisheries stakeholders; and - sets out minimum performance measures where appropriate, e.g., a minimum period for stakeholder consultation. The consultation process standard includes the following: • identification of stakeholders "having an "interest" for consultation purposes; • a time frame for consultation; • notification of decision to stakeholders; and • monitoring, review and oversight. There is evidence of the Ministry of Fisheries seeking stakeholder views throughout the year using, for example, the Initial Position process, the Working group forums, and fisheries planning meetings. The consultation process therefore provides opportunity for all interested and affected parties to be involved
100	**a**	**Y**	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are **explicitly defined and well understood for key areas** of responsibility and interaction.
			The Ministry of Fisheries (MFish) is the Government agency responsible for the conservation and management of fisheries. The role of the MFish, working with other government agencies, is to advise on and implement government policy in the following areas of core responsibility: • ensuring sustainability of fish stocks and the protection of the aquatic environment; • meeting international and Deed of Settlement obligations; • providing for maximum value to be realised; • facilitating sustainable development; and • ensuring integrity of management systems. MFish is charged with consistently monitoring the fishery resource, and making timely and appropriate policy advice on all aspects of fisheries management to the Government. The Ministry is also responsible for carrying out the Government's policies to manage and conserve fisheries, and to actively encourage compliance of fisheries regulations by all fishers. The Department of Conservation is the central government organisation charged with conserving the natural and historical heritage of New Zealand.

PI 3.1.2		The management system has effective consultation processes that are open to interested and affected parties. The roles and responsibilities of organisations and individuals who are involved in the management process are clear and understood by all relevant parties	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
			The department is responsible for marine reserves, seabirds, and for marine mammals such as dolphins, whales, sea lions and fur seals. The Deepwater Group Ltd is an amalgamation of EEZ fisheries quota owners in New Zealand. Deepwater Group Ltd is a non-profit organisation, and is the commercial stakeholder organisation responsible for the majority of deepwater and middle-depth fisheries. It is working in partnership with the Ministry of Fisheries and other interest groups to ensure New Zealand gains the maximum economic yields from its deepwater fisheries resources managed within a long-term, sustainable framework. The vast majority (95%) of hoki quota owners are represented through the DWG. The Ministry of Fisheries and DWG signed a Memorandum of Understanding (MOU) In 2006 which sets out how DWG and MFish would work collaboratively to improve the management of deepwater fisheries (including hoki). eNGOs and other stakeholders have an important role in participating and contributing to management processes, but are not "managers" of the fishery. Therefore, organisations and individuals involved in the management process have been identified and their functions, roles and responsibilities are explicitly defined and well understood for key areas of responsibility and interaction.
	b	**Y**	The management system includes consultation processes that **regularly seek and accept relevant** information, including local knowledge. The management system demonstrates consideration of the information and **explains how it is used or not used**.
			Section 12 of the 1996 Act includes a range of specific consultation requirements. The Minister of Fisheries is required to consult with those classes of persons having an interest (including, but not limited to, Maori, environmental, commercial and recreational interests) in the stock or the effects of fishing on the aquatic environment in the area concerned; Section 12 only relates to certain sections of the 1996 Act. However there are other sections of the 1996 Act that require the Minister or MFish Chief Executive to consult with stakeholders before making a decision. The Ministry of Fisheries has a well-defined process for stakeholder consultation. The consultation process: - sets out best practice process for how MFish will meet its obligations under Section 12 of the Fisheries Act 1996 and for other decisions requiring consultation with fisheries stakeholders; - helps to ensure a consistent approach across all MFish business groups when consulting with fisheries stakeholders; and - sets out minimum performance measures where appropriate, e.g., a minimum period for stakeholder consultation. The consultation process standard includes the following: • identification of stakeholders "having an "interest" for consultation purposes; • a time frame for consultation; • notification of decision to stakeholders; and • monitoring, review and oversight. There is evidence that consultation occurs on a regular basis and that

PI 3.1.2		The management system has effective consultation processes that are open to interested and affected parties. The roles and responsibilities of organisations and individuals who are involved in the management process are clear and understood by all relevant parties	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
			information provided by stakeholders is often taken into account. Explanations on how information is used or not used are conveyed by letters, emails and in the Final Advice paper. The management system therefore includes consultation processes that regularly seek and accept relevant information, including local knowledge. The management system demonstrates consideration of the information and explains how it is used or not used.
	c	**Y**	The consultation process **provides opportunity and encouragement** for all interested and affected parties to be involved, and **facilitates** their effective engagement.
			As part of the consultation process, stakeholders are given the opportunity to provide feedback on the delivery of the process itself. The feedback is evaluated and used to fine tune future consultation processes. Stakeholders are encouraged to be involved. A safe and neutral meeting place and Chair is provided by the Ministry of Fisheries. However stakeholders are not paid to attend meetings.
References			Fisheries Act 1996 Department of Conservation. 2011. Marine Conservation Services Annual Plan 2011/12. Marine Conservation Services. Department of Conservation. Wellington. . Ministry of Fisheries. 2011f. Submissions received on the Review of Sustainability Measures and other management Controls for Deepwater Fisheries. Ministry of Fisheries, Wellington, New Zealand. September 2011. Ministry of Fisheries. 2011g. Review of Sustainability Measures and Other management Controls for Deepwater Fisheries – Final Advice Paper. Ministry of Fisheries, Wellington, New Zealand. (September 2011). Ministry of Fisheries. 2011. Sustainability and Regulation Advice Papers. Ministry of Fisheries, Wellington, New Zealand. www.fish.govt.nz/en-nz/Consultations/default.htm Ministry of Fisheries. 2009a. Stakeholder Consultation Process Standard. Executive Summary. Ministry of Fisheries, Wellington, New Zealand. Ministry of Fisheries 2011i. Hon. Phil Heatley. 2011. Minister's Decision Letter on Sustainable Measures. Office of Hon Phil Heatley. Minister of Fisheries. September 2011 Ministry of Fisheries. 2010g. Statement of Intent, for the period 1 July 2010 to 30 June 2015. Ministry of Fisheries, Wellington, New Zealand (May 2010)
OVERALL PERFORMANCE INDICATOR SCORE: The score is 100 because all of the scoring issues of the 100 scoring guidepost are met.			**100**
CONDITION NUMBER (if relevant):			**N/A**

Evaluation Table: PI 3.1.3

PI 3.1.3		The management policy has clear long-term objectives to guide decision-making that are consistent with MSC Principles and Criteria, and incorporates the precautionary approach	
SG	**Issue**	**Met? (Y/P/N)**	**Justification/Rationale**
60	**a**	**Y**	Long-term objectives to guide decision-making, consistent with the MSC Principles and Criteria and the precautionary approach, are **implicit** within management policy
			Long-term objectives to guide decision making are set out in the Fisheries Act, in Fisheries 2030, and in the National Fisheries Plan for Deepwater and Middle-depth Fisheries.These documents are all explicit in their requirements for management policy. The Annual Operational Plan outlines the management policy, and the actions required for the current fishing year.
80	**a**	**Y**	**Clear** long-term objectives that guide decision-making, consistent with MSC Principles and Criteria and the precautionary approach are **explicit** within management policy.
			Long-term objectives to guide decision making are set out in the Fisheries Act, in Fisheries 2030, in the National Fisheries Plan for Deepwater and Middle-depth Fisheries. These are explicit in requirements and management policy. The Annual Operational Plan outlines the management policy, and the actions required for the currently fishing year. **Precautionary Approach** – in regarding information principles, Section10 of Fisheries Act states: "*All persons exercising or performing functions, duties, or powers under this Act, in relation to the utilisation of fisheries resources or ensuring sustainability, shall take into account the following information principles:* *(a) Decisions should be based on the best available information:* *(b) Decision makers should consider any uncertainty in the information available in any case:* *(c) Decision makers should be cautious when information is uncertain, unreliable, or inadequate:* (d) *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 this Act*." Thus, there are clear long-term objectives that guide decision-making, consistent with MSC Principles and Criteria and the precautionary approach is explicit within management policy.
100	**a**	**Y**	**Clear** long-term objectives that guide decision-making, consistent with MSC Principles and Criteria and the precautionary approach, are **explicit** within **and required by**management policy.
			Long-term fishery and environmental objectives are included within both NZ fisheries and environmental legislation and these guide decision making. in regarding information principles, Section10 of Fisheries Act states: "*All persons exercising or performing functions, duties, or powers under this Act, in relation to the utilisation of fisheries resources or ensuring sustainability, shall take into account the following information principles:* *(a) Decisions should be based on the best available information:* *(b) Decision makers should consider any uncertainty in the information available in any case:* *(c) Decision makers should be cautious when information is uncertain, unreliable, or inadequate:* (d) *The absence of, or any uncertainty in, any information should not be*

PI 3.1.3		The management policy has clear long-term objectives to guide decision-making that are consistent with MSC Principles and Criteria, and incorporates the precautionary approach	
SG	**Issue**	**Met? (Y/P/N)**	**Justification/Rationale**
			used as a reason for postponing or failing to take any measure to achieve the purpose of this Act." Fisheries 2030 sets the strategic direction for the management and use of New Zealand's fisheries resources. One of the principles guiding Fisheries 2030 is "*Precautionary approach: particular care will be taken to ensure environmental sustainability where information is uncertain unreliable or inadequate*." The National Fisheries Plan for Deepwater and Middle-depth Fisheries (the National Deepwater Plan) establishes the 5-year enabling framework for the management of New Zealand's deepwater fisheries. It is further divided into two parts – Part 1A and Part 1B. Part 1A details the overall strategic direction for New Zealand's deepwater fisheries. Specifically it describes: (a) the wider strategic context that Fisheries Plans are part of, including Fisheries 2030; (b) the nature and status of the management objectives that will apply across all deepwater fisheries; and (c) how the National Deepwater Plan will be implemented and how stakeholders will be engaged during the implementation phase. Part 1A of the National Deepwater Plan has been approved by the Minister of Fisheries under Section 11A of the Fisheries Act 1996. This means that it must be considered each time the Minister makes decisions or recommendations concerning regulation or control of fishing or any sustainability measures relating to the stocks managed through this plan. Part 1B of the National Deepwater Plan comprises the fishery-specific chapters of the National Deepwater Plan which provide greater detail on how deepwater fisheries will be managed at the fishery level, in line with the management objectives. To date, fishery-specific chapters have been completed for the hoki, orange roughy, southern blue whiting, and ling fisheries. The fishery-specific chapters describe the operational objectives for each target fishery and their key bycatch species, as well as how performance against both the management and operational objectives will be assessed at the fishery level. These chapters also describe any agreed harvest strategy for the relevant species. On an annual basis the National Deepwater Plan is delivered through the Annual Operational Plan which describes management actions scheduled for delivery during the financial year for which the Operational Plan applies, and the management services required to deliver the management actions. The Annual Operational Plan also clearly demonstrates how these management actions contribute to the long-term objectives in the National Deepwater Plan. Clear long-term objectives that guide decision-making, consistent with MSC Principles and Criteria and the precautionary approach, are therefore explicit within and required by management policy.
References			Department of Conservation 2011. Marine Conservation Services Annual Plan 2011/12. Marine Conservation Services. Department of Conservation. Wellington. 70p Deepwater Group. 2011a. NZ Deepwater Fisheries Operational Procedures Vessel Manual 2011/12: Deepwater Group Ltd. Nelson, New Zealand.. Fisheries Act 1996 Ministry of Fisheries. 2011h. Annual Operational Plan for Deepwater

PI 3.1.3		The management policy has clear long-term objectives to guide decision-making that are consistent with MSC Principles and Criteria, and incorporates the precautionary approach	
SG	**Issue**	**Met? (Y/P/ N)**	**Justification/Rationale**
			Fisheries for 2011/12. Ministry of Fisheries. Wellington, New Zealand. (July 2011). Ministry of Fisheries. 2011m. Research Specifications for the 10-Year Research Programme for Deepwater Fisheries. Ministry of Fisheries. 2010a. National Fisheries Plan for Deepwater and Middle-depth Fisheries. Part 1A. Ministry of Fisheries, Wellington, New Zealand. September 2010. Ministry of Fisheries. 2010b. National Fisheries Plan for Deepwater and Middle-depth Fisheries. Part 1B Fishery-specific chapters: Hoki. Ministry of Fisheries, Wellington, New Zealand. September 2010. Ministry of Fisheries. 2010f. Fisheries 2030. Ministry of Fisheries, Wellington, Ministry of Fisheries, Wellington, New Zealand. September 2010.
OVERALL PERFORMANCE INDICATOR SCORE: The score is 100 because all of the scoring issues of the 100 scoring guidepost are met.			**100**
CONDITION NUMBER (if relevant):			**N/A**

Evaluation Table: PI 3.1.4

PI 3.1.4		The management system provides economic and social incentives for sustainable fishing and does not operate with subsidies that contribute to unsustainable fishing	
SG	**Issue**	**Met? (Y/P/ N)**	**Justification/Rationale**
60	**a**	**Y**	The management system provides for incentives that are consistent with achieving the outcomes expressed by MSC Principles 1 and 2.
			Incentives: The QMS and the use of ITQs provides stability and security for quota owners and hence incentives for sustainable utilisation (see Fisheries Act). The management system also includes customary provisions (e.g., Maori Fisheries Act 2004 and Treaty of Waitangi (Fisheries Claims) Settlement Act 1992). **Subsidies**: There are no subsidies in the New Zealand hoki fishery. The management system has explicit mechanisms that facilitate regular review of management policy or procedures (see Fisheries Act). The management system therefore provides for incentives that are consistent with achieving the outcomes expressed by MSC Principles 1 and 2.
80	**a**	**Y**	The management system provides for incentives that are consistent with achieving the outcomes expressed by MSC Principles 1 and 2, and seeks to ensure **that perverse incentives** do not arise.
			Incentives: The QMS and the use of ITQs provides stability and security for quota owners and hence incentives for sustainable utilisation (see Fisheries Act). The management system also includes customary provisions (e.g., Maori Fisheries Act 2004 and Treaty of Waitangi (Fisheries Claims) Settlement Act 1992). **Perverse Incentives**: such as not reporting catches, exceeding quotas, high grading are dealt with in various ways such as compliance mechanisms, the deemed value system, and Annual Catch Entitlements. **Subsidies**: There are no subsidies in the New Zealand hoki fisheries. The management system has explicit mechanisms that facilitate regular review of management policy or procedures (see Fisheries Act). The management system therefore provides for incentives that are consistent with achieving the outcomes expressed by MSC Principles 1 and 2, and seeks to ensure that perverse incentives do not arise.
100	**a**	**P**	The management system provides for incentives that are consistent with achieving the outcomes expressed by MSC Principles 1 and 2, and **explicitly considers** incentives in a **regular review** of management policy or procedures to ensure they not contribute to unsustainable fishing practices.
			Incentives: The QMS and the use of ITQs provides stability and security for quota owners and hence incentives for sustainable utilisation (see Fisheries Act). The management system also includes customary provisions (e.g., Maori Fisheries Act 2004 and Treaty of Waitangi (Fisheries Claims) Settlement Act 1992). **Subsidies**: There are no subsidies in the New Zealand hoki fishery. The management system has explicit mechanisms that facilitate regular review of management policy or procedures (see Fisheries Act). Under Section 13 of the Fisheries Act 1996the Minister of Fisheries needs to takesocial, cultural and economic factors into account as well as the status of the stocks and all environmental considerations when setting a TAC for a fishery. There are regular reviews of the Quota Management System and

PI 3.1.4		The management system provides economic and social incentives for sustainable fishing and does not operate with subsidies that contribute to unsustainable fishing	
SG	**Issue**	**Met? (Y/P/ N)**	**Justification/Rationale**
			Ministry of Fisheries management policy and procedures to ensure they contribute to sustainable fishing. Other strategies that contribute to sustainable fishing are also regularly reviewed e.g. deemed values and the harvest strategy. There do not appear to be explicit incentives and encouragement not to catch marine mammals and protected species, i.e. there no positive feedback for those not catching these species.
References			Fisheries Act 1996 Lock K and Leslie S.2007. New Zealand's Quota Management System: A History of the First 20 Years, Motu Working Paper 07-02. Motu Economic and Public Policy Research (April 2007). Maori Fisheries Act 2004 Treaty of Waitangi (Fisheries Claims) Settlement Act 1992 No 121. Ministry of Fisheries. 2011c. Review of Sustainability Measures and Other Management Controls for Hoki (HOK1) Initial Position Paper July 2011. Ministry of Fisheries. 2011g. Review of Sustainability Measures and Other Management Controls for Hoki (HOK1) Final Position Paper - September 20112009 Hoki Stock Assessment Results. Ministry of Fisheries, Wellington, New Zealand
OVERALL PERFORMANCE INDICATOR SCORE: The score is 90 because some, but not all, of the scoring issues within the 100 scoring guidepost are met.			**90**
CONDITION NUMBER (if relevant):			**N/A**

Evaluation Table: PI 3.2.1

PI 3.2.1		The fishery has clear, specific objectives designed to achieve the outcomes expressed by MSC's Principles 1 and 2	
SG	**Issue**	**Met? (Y/PN)**	**Justification/Rationale**
60	**a**	**Y**	**Objectives**, which are broadly consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are **implicit** within the fishery's management system.
			The management system has explicit short- and long-term objectives which are set out in long-term plans e.g., Fisheries 2030, National Fisheries Plan and Annual Operational Plans and Initial Position Papers and Final Advice Papers. Objectives are subject to an annual review report. Therefore, objectives which are broadly consistent with achieving the outcomes expressed by MSC's Principles 1 and 2 are included within the fishery's management system.
80	**a**	**Y**	**Short and long-term objectives**, which are consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are explicit within the fishery's management system.
			The management system has explicit short- and long-term objectives which are set out in long-term plans e.g., Fisheries 2030, National Fisheries Plan and Annual Operational Plans. Objectives are subject to an annual review report and are explicit within the fishery's management system.
100	**a**	**P**	**Well defined and measurable short and long-term objectives**, which are demonstrably consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are explicit within the fishery's management system.
			The management system has explicit short and long-term objectives which are set out in long-term plans e.g., Fisheries 2030, National Fisheries Plan and Annual Operational. Objectives are subject to an annual review report. However, the objectives tend to be high-level and not measurable. Therefore, while the fishery has well-defined short- and long-term objectives which are demonstrably consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, within the fishery's management system, they are not all measurable.
References			Department of Conservation. 2011. Marine Conservation Services Annual Plan 2011/12. Marine Conservation Services. Department of Conservation. Wellington. 70p Ministry of Fisheries 2011i. Hon. Phil Heatley. 2011. Minister's Decision Letter on Sustainable Measures. Office of Hon Phil Heatley. Minister of Fisheries. September 2011. Ministry of Fisheries. 2011g. Review of Sustainability Measures and Other management Controls for Deepwater Fisheries – Final Advice Paper. Ministry of Fisheries, Wellington, New Zealand. (September 2011). Ministry of Fisheries. 2011c. Review of Sustainability Measures and Other management Controls for Hoki (HOK1) – Initial Position Paper. Ministry of Fisheries, Wellington, New Zealand. (July 2011). Ministry of Fisheries. 2011f. Submissions received on the Review of Sustainability Measures and other management Controls for Deepwater Fisheries. Ministry of Fisheries, Wellington, New Zealand. September 2011. Ministry of Fisheries. 2011h. Annual Operational Plan for Deepwater Fisheries for 2011/12. Ministry of Fisheries. Wellington, New Zealand. (July 2011). Ministry of Fisheries. 2011. Sustainability and Regulation Advice Papers.

PI 3.2.1		The fishery has clear, specific objectives designed to achieve the outcomes expressed by MSC's Principles 1 and 2	
SG	**Issue**	**Met? (Y/PN)**	**Justification/Rationale**
			Ministry of Fisheries, Wellington, New Zealand. www.fish.govt.nz/en-nz/Consultations/default.htm Ministry of Fisheries. 2010a. National Fisheries Plan for Deepwater and Middle-depth Fisheries. Part 1A. Ministry of Fisheries, Wellington, New Zealand. September 2010. Ministry of Fisheries. 2010b. National Fisheries Plan for Deepwater and Middle-depth Fisheries. Part 1B Fishery-specific chapters: Hoki. Ministry of Fisheries, Wellington, New Zealand. September 2010. Ministry of Fisheries. 2010f. Fisheries 2030. Ministry of Fisheries, Wellington, New Zealand. (September 2009). Ministry of Fisheries. 2009a. Stakeholder Consultation Process Standard. Executive Summary. Ministry of Fisheries, Wellington, New Zealand.
OVERALL PERFORMANCE INDICATOR SCORE: The score is 90 because some, but not all, of the scoring issuesofthe 100 scoring guidepost are met.			**90**
CONDITION NUMBER (if relevant):			**N/A**

Evaluation Table: PI 3.2.2

PI 3.2.2		The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
60	**a**	**Y**	There are **some** decision-making processes in place that result in measures and strategies to achieve the fishery-specific objectives.
			The decision-making process is clearly outlined in the Fisheries Act (specifically Sections 10,11&12). The Ministry of Fisheries ensures that the Minister is provided with analysed alternatives for consideration before she/he makes any decisions (information is from both within and outside the Ministry (Stakeholders, Science)).The decisions result in measures and strategies to achieve the identified fishery-specific objectives. Thus, there are decision-making processes in place that result in measures and strategies to achieve the fishery-specific objectives.
	b	**Y**	Decision-making processes respond to **serious issues**identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take **some** account of the wider implications of decisions.
			The decision-making process is clearly outlined in the Fisheries Act (specifically Sections 10,11&12). The Ministry of Fisheries ensures that the Minister is provided with analysed alternatives for consideration before she/he makes any decisions (information is from both within and outside the Ministry (Stakeholders, Science). The decisions result in measures and strategies to achieve the identified fishery-specific objectives. There is evidence that serious issues, such as changes in stock status (hoki and others), have led to changesin the Total Allowable Catch in a timely and adaptive manner. Information on the social and economic impacts was taken into account. Thus, decision-making processes respond to serious issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner, and take at least some account of the wider implications of decisions.
80	**a**	**Y**	There are **established** decision-making processes that result in measures and strategies to achieve the fishery-specific objectives.
			The decision-making process is clearly outlined in the Fisheries Act (specifically Sections 10,11&12). Section 10 of the Fisheries Act requires that alldecisions to be based on the best available information. The management of fisheries to achieve these goals is based upon the scientific evaluation of: • the sustainable yield from fisheries resources; • the effects of fishing on the aquatic environment, including on the viability of associated or dependent species, and on biological diversity; • alternative strategies for achieving the desired level of yield while avoiding, remedying, or mitigating adverse effects of fishing on the aquatic environment; • relevant cultural, economic, and social factors that may need to be included in the management decision process; and • the specific measures needed to implement the preferred strategy. There are therefore establisheddecision-making processes that result in measures and strategies to achieve the fishery-specific objectives.
	b	**Y**	Decision-making processes respond to **serious and other important issues** identified in relevant research, monitoring, evaluation and

PI 3.2.2		The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
			consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions. Section 10 of the Fisheries Ac requires **all** decisions to be based on the best available information. The management of fisheries to achieve these goals is based upon the scientific evaluation of: • the sustainable yield from fisheries resources; • the effects of fishing on the aquatic environment, including on the viability of associated or dependent species, and on biological diversity; • alternative strategies for achieving the desired level of yield while avoiding, remedying, or mitigating adverse effects of fishing on the aquatic environment; • relevant cultural, economic, and social factors that may need to be included in the management decision process; and • the specific measures needed to implement the preferred strategy. Consultation is a central component of the management decision making process (Fisheries Act Section 12, Stakeholder Consultation Process Standard). The Minister makesthe final decision based on advice received other parties (Section 12 - *the Minister shall consult with such persons or organisations as the Minister considers are representative of those classes of persons having an interest in the stock or the effects of fishing on the aquatic environment in the area concerned including Maori, environmental, commercial, and recreational interests*). The Ministry of Fisheries ensures that the Minister is provided with analysed alternatives for consideration before making any decisions (information is both from within and outside the Ministry (Stakeholders, Science)). The feedback process is formalised, involving planning, consultation, project development, and scientific enquiry. The IPP/FAP process highlights the extent of consultation, engagement and transparency of the decision making process; see the following: • Hon. Phil Heatley (2011). Minister's Decision Letter on Sustainable Measures. • Ministry of Fisheries (2011) Review of Sustainability Measures and Other management Controls for Deepwater Fisheries – Final Advice Paper. • Ministry of Fisheries (2011) Submissions received on the Review of Sustainability Measures and other management Controls for Deepwater Fisheries. • Ministry of Fisheries (2011). Review of Sustainability Measures and Other management Controls for Hoki (HOK1) – Initial Position Paper Thus, decision-making processes respond to serious and other important issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.
	c	**Y**	Decision-making processes use the precautionary approach and are based on best available information. The FAO technical consultation on the precautionary approach to capture fisheries took place in Sweden in 1995. One outcome of this consultation was a set of guidelines which set out principles for the precautionary approach for capture fisheries The precautionary approach must befollowed by the Ministry of

PI 3.2.2		The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
			Fisheries. Section 10 of the Fisheries Act Information principles states:" *All persons exercising or performing functions, duties, or powers under this Act, in relation to the utilisation of fisheries resources or ensuring sustainability, shall take into account the following information principles:* *(a) Decisions should be based on the best available information:* *(b) Decision makers should consider any uncertainty in the information available in any case:* *(c) Decision makers should be cautious when information is uncertain, unreliable, or inadequate:* *(d) 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 this Act.* Evidence of the application of the precautionary approach is seen in the Ministry of Fisheries (2011) Review of Sustainability Measures and Other management Controls for Deepwater Fisheries – Final Advice Paper Thus, decision-making processes use the precautionary approach and are based on best available information.
	d	**Y**	**Explanations** are provided for any actions or lack of action associated with findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.
			Management decision-making processes are clearly outlined in the Fisheries Act 1996. Intentions are shared through a transparent process, which includes long- and short-term goals and objectives that are publically available (e.g., National Fisheries Plan, Annual Operational Plan, Statements of Intent, Initial Position Papers, press releases and reports). These publications are considered to be responses or invitations to respond to findings and relevant recommendations emerging from research, monitoring, evaluation and review activity. These reports also include cultural/social issues as well as fisheries management issues. Thus, explanations are provided for any actions or lack of action associated with findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.
100	**b**	**N**	Decision-making processes respond to **all issues** identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.
			Although management decision-making can be shown to respond to serious and important issues, a very large number of 'issues' are identified during research and monitoring. Management does not respond formally to all of these.However, response may be informal or through discussion at variousfora, such as working groups. All issues are addressed through such mechanisms, although this may not be to the satisfaction of all stakeholders.
	d	**Y**	**Formal reporting** to all interested stakeholders describes how the management system responded to findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.
			Formal responses on management decisions research, monitoring and evaluation are provided. Formal responses consistent with formalised reporting and consultation processes such as the IPP/FAP process, the Stakeholder Consultation Process Standard or the National Fisheries Plan

PI 3.2.2		The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
			for Deepwater and Middle- Depth Fisheries and the annual Operating Plan for Deepwater Fisheries are always provided to stakeholders
References			Department of Conservation. 2011. Marine Conservation Services Annual Plan 2011/12. Marine Conservation Services. Department of Conservation. Wellington. 70p Fisheries Act 1996 No 88. Ministry of Fisheries 2011i. Hon. Phil Heatley. 2011. Minister's Decision Letter on Sustainable Measures. Office of Hon Phil Heatley. Minister of Fisheries. September 2011 Ministry of Fisheries. 2011g. Review of Sustainability Measures and Other management Controls for Deepwater Fisheries – Final Advice Paper. Ministry of Fisheries, Wellington, New Zealand. (September 2011). Ministry of Fisheries. 2011c. Review of Sustainability Measures and Other management Controls for Hoki (HOK1) – Initial Position Paper. Ministry of Fisheries, Wellington, New Zealand. (July 2011). Ministry of Fisheries. 2011f. Submissions received on the Review of Sustainability Measures and other management Controls for Deepwater Fisheries. Ministry of Fisheries, Wellington, New Zealand. September 2011. Ministry of Fisheries. 2011m. Research Specifications for the 10-Year Research Programme for Deepwater Fisheries. DFR2010-02 Appendix One: (July 2011) Ministry of Fisheries. 2011j. Statement of Intent, 2011-14. Ministry of Fisheries, Wellington, New Zealand. Part B Ministry of Fisheries. Ministry of Fisheries. 2011h. Annual Operational Plan for Deepwater Fisheries for 2011/12. Ministry of Fisheries. Wellington, New Zealand. (July 2011). Ministry of Fisheries. 2010g. Statement of Intent, for the period 1 July 2010 to 30 June 2015. Ministry of Fisheries, Wellington, New Zealand (May 2010) Ministry of Fisheries. 2009a. Stakeholder Consultation Process Standard. Executive Summary. Ministry of Fisheries, Wellington, New Zealand.
OVERALL PERFORMANCE INDICATOR SCORE: The score is 90 because all of the scoring issues for the 80 scoring guidepost are met and one of thescoring issues for the 100 scoring guidepost.			**90**
CONDITION NUMBER (if relevant):			**N/A**

Evaluation Table: PI 3.2.3

PI 3.2.3		Monitoring, control and surveillance mechanisms ensure the fishery's management measures are enforced and complied with	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
60	**a**	**Y**	Monitoring, control and surveillance mechanisms exist are implemented in the fishery under assessment and there is a reasonable expectation that they are effective.
			The Hoki management system has a comprehensive and effective monitoring, control and surveillance system. It includes, for example: (a) a satellite Vessel Monitoring System; (b) government observers; and (c) reporting and recordkeeping. These measures have been used in this and other fisheries, and there is an expectation that they are effective.
	b	**Y**	Sanctions to deal with non-compliance exist and there is some evidence that they are applied.
			Offences - The majority of offences against the Fisheries Act 1996 or any of the Fisheries Regulations are strict liability offences (s 240). **Defences** – for offences against the Fisheries Act 1996 or any of the Fisheries Regulations, the offender has to satisfy a reverse onus and establish that the offence was outside their control, that they took reasonable precautions and exercised due diligence to avoid the contravention, and, where applicable, they returned fish that was unlawfully taken and complied with all recording and reporting requirements. **Penalties** - Penalties are very severe. They include: monetary penalties and Imprisonment; forfeiture of property; and prohibition. There have been prosecutions resulting in monetary penalties, forfeiture of quota, fish and vessels which provides evidence that the sanctions are applied.
	c	**Y**	Fishers are **generally thought** to comply with the management system for the fishery under assessment, including, when required, providing information of importance to the effective management of the fishery.
			The combination of rigorous legal requirements, traceable documentation, effective surveillance, landing and reconciliation of catch against ACE, catch documentation audits, and checks against past catch all lead to a very high degree of confidence in compliance. An external report of fisher compliance and perceptions of compliance found that compliance with the management system is good (Kazmierow et al. 2010). Thus, clearly, fishers are generally thought to comply with the management system, including, when required, providing information of importance to the effective management of the fishery.
80	**a**	**Y**	A monitoring, control and surveillance **system** has been implemented in the fishery under assessment and has demonstrated an ability to enforce relevant management measures, strategies and/or rules.
			The Hoki management system has a comprehensive and effective monitoring, control and surveillance system. 1. **Satellite Vessel Monitoring System**. All New Zealand fishing vessels exceeding 28 m in overall length must participate in the compulsory satellite Vessel Monitoring System (VMS) and carry and operate on board an automatic location communicator (ALC) (see Fisheries (Satellite Vessel Monitoring) Regulations). Both the vessel operator and the vessel master must ensure that the ALC on board is in working order and is transmitting information. It is an offence to

PI 3.2.3		Monitoring, control and surveillance mechanisms ensure the fishery's management measures are enforced and complied with	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
			not have a working ALC on board, and the person in breach can be liable to a fine not exceeding $100,000 unless they can show that the breach occurred due to accidental mechanical or technical failure. 2. **Government observers** may be placed on board any vessel for the purpose of collecting information for fisheries research, fisheries management, and fisheries enforcement (Fisheries Act, ss 223-224). Observers may be placed on board to observe fishing and as well as any transhipment, and transportation, and collect any information on hoki fisheries resources (including catch and effort information), and the effect of hoki fishing on the aquatic environment (ss 223-224). Any person on board a fishing vessel who fails to provide reasonable assistance or hinders the observer in anyway is committing an offence (s225). 3. **Accurate Reporting and Recordkeeping**. The Fisheries Act and Fisheries Regulations impose on all persons operating in the hoki fisheries (including: fishers, masters and owners of vessels, and owners of premises, vessels or vehicles where fish is received, purchased, stored, transported, processed, or sold) recordkeeping and recording requirements (Fisheries Act ss 187-195; also see Fisheries Regulations). The purpose of these requirements is to establish auditable and traceable records to ensure all catches are counted and do not exceed the ACE held by each operator (Fisheries Act s 190; also see Fisheries Regulations). Accurate reporting and recordkeeping also demonstrates effectiveness. Compliance with recordkeeping and recording requirements is essential to fulfil the fishers legal obligations in relation to the commercial fishing for hoki (Fisheries Act ss 189-190; also see Fisheries Regulations).The required returns include: (a) catch, effort, and landing returns (CELR); (b) catch landing returns (CLR); (c) trawl catch, effort, and processing returns (TCEPR); and (d) non-fish and protected species catch return (NF-PSCR). Other measures include: • fishing permit requirements; • requirement to hold ACE to cover all target and bycatch species caught, or alternatively, to pay deemed values; • fishing permit and fishing vessel registers; • vessel and gear marking requirements; • fishing gear and method restrictions; • vessel inspections; • control of landings (e.g. requirement to land only to licensed fish receivers); • auditing of licensed fish receivers; • control of transhipment; • monitored unloads of fish; • information management and intelligence analysis; • analysis of catch and effort reporting and comparison with VMS, observer, landing and trade data to confirm accuracy; • boarding and inspection by fishery officers at sea; and • aerial and surface surveillance.

PI 3.2.3		Monitoring, control and surveillance mechanisms ensure the fishery's management measures are enforced and complied with	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
			Thus, a monitoring, control and surveillance system has been implemented in the fishery under assessment and has demonstrated an ability to enforce relevant management measures, strategies and/or rules.
	b	**Y**	Sanctions to deal with non-compliance exist, **are consistently applied** and thought to provide effective deterrence.
			Offences. The majority of offences against the Fisheries Act 1996 or any of the Fisheries Regulations are strict liability offences (s 240). **Defences**. For offences against the Fisheries Act 1996 or any of the Fisheries Regulations, the offender has to satisfy a reverse onus and establish that the offence was outside their control, that they took reasonable precautions and exercised due diligence to avoid the contravention, and, where applicable, they returned fish that was unlawfully taken and complied with all recording and reporting requirements. **Penalties** - Penalties are very severe. They include: - **Monetary penalties and Imprisonment** - Fines range $250 and $750 (for infringement-type offences)to more serious intentional offences that in addition to imprisonment for up to five years, include a fine up to $500,000 (ss 231, 233 & 252, also see Fisheries (Infringement Offences) Regulations 2001). - **Forfeiture of property**. Upon conviction, any vessel and other property used in the commission of any of the more serious fisheries offences will automatically be forfeited to the Crown. This is subject of course to the existence of 'special reasons' (s 255 A-E).Forfeiture is in addition to other penalties imposed by the Court (s 256). - **Prohibition**. Upon conviction of two or more separate fisheries offences the court shall, in addition to any other penalty imposed, prohibit, for a period of three years, from holding any licence or permit, engaging in fishing or fishing related activity and deriving any beneficial income from activities associated with the taking of fish (s 257). Sanctions are consistently applied if necessarily. However, the preferred approach is to work collaboratively with industry to prevent non-compliance.
	c	**y**	**Some evidence exists** to demonstrate fishers comply with the management system under assessment, including, when required, providing information of importance to the effective management of the fishery.
			The combination of rigorous legal requirements, traceable documentation, effective surveillance, landing and reconciliation of catch against ACE, catch documentation audits, and checks against past catch all lead to a very high degree of confidence in compliance. An external report of fisher compliance and perceptions of compliance found that compliance with the management system is good (Kazmierow et al. 2010). Thus, some evidence exists to demonstrate that fishers comply with the management system under assessment, including, when required, providing information of importance to the effective management of the fishery.
	d	**Y**	There is no evidence of systematic non-compliance.
			Although there has been evidence, in the past, of non-compliance in the hoki fishery; e.g. 'trucking" and highgrading, this has been investigated by MFish compliance. This is not considered to be systematic, and has been dealt with by MFish. Those vessels now have high levels of observer coverage.

PI 3.2.3		Monitoring, control and surveillance mechanisms ensure the fishery's management measures are enforced and complied with	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
100	**a**	**Y**	A **comprehensive** monitoring, control and surveillance system has been implemented in the fishery under assessment and has demonstrated a consistent ability to enforce relevant management measures, strategies and/or rules.
			The hoki management system has a comprehensive and effective monitoring, control and surveillance system. 1. **Satellite Vessel Monitoring System**. All New Zealand fishing vessels exceeding 28 metres in overall length must participate in the compulsory satellite Vessel Monitoring System (VMS) and carry and operate on board an automatic location communicator (ALC) (see Fisheries (Satellite Vessel Monitoring) Regulations). Both the vessel operator and the vessel master must ensure that the ALC on board is in working order and is transmitting information. It is an offence to not have a working ALC on board, and the person in breach can be liable to a fine not exceeding $100,000 unless they can show that the breach occurred due to accidental mechanical or technical failure. 2. **Government observers** may be placed on board any vessel for the purpose of collecting information for fisheries research, fisheries management, and fisheries enforcement (Fisheries Act, ss 223-224). Observers may be placed on board to observe fishing and as well as any transhipment, and transportation, and collect any information on hoki fisheries resources (including catch and effort information), and the effect of hoki fishing on the aquatic environment (ss 223-224). Any person on board a fishing vessel who fails to provide reasonable assistance or hinders the observer in anyway is committing an offence (s225). 3. **Accurate Reporting and Recordkeeping**. The Fisheries Act and Fisheries Regulations impose on all persons operating in the hoki fisheries (including: fishers, masters and owners of vessels, and owners of premises, vessels or vehicles where fish is received, purchased, stored, transported, processed, or sold) recordkeeping and recording requirements (Fisheries Act ss 187-195; also see Fisheries Regulations). The purpose of these requirements is to establish auditable and traceable records to ensure all catches are counted and do not exceed the ACE held by each operator (Fisheries Act s 190; also see Fisheries Regulations). Accurate reporting and recordkeeping also demonstrates effectiveness. Compliance with recordkeeping and recording requirements is essential to fulfil the fishers legal obligations in relation to the commercial fishing for hoki (Fisheries Act ss 189-190; also see Fisheries Regulations).The required returns include: (e) catch, effort, and landing returns (CELR); (f) catch landing returns (CLR); (g) trawl catch, effort, and processing returns (TCEPR); and (h) non-fish and protected species catch return (NF-PSCR). Other measures include: • fishing permit requirements; • requirement to hold ACE to cover all target and bycatch species caught, or alternatively, to pay deemed values; • fishing permit and fishing vessel registers; • vessel and gear marking requirements; • fishing gear and method restrictions; • vessel inspections;

PI 3.2.3		Monitoring, control and surveillance mechanisms ensure the fishery's management measures are enforced and complied with	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
			• control of landings (e.g. requirement to land only to licensed fish receivers); • auditing of licensed fish receivers; • control of transhipment; • monitored unloads of fish; • information management and intelligence analysis; • analysis of catch and effort reporting and comparison with VMS, observer, landing and trade data to confirm accuracy; • boarding and inspection by fishery officers at sea; and • aerial and surface surveillance. Thus, comprehensive monitoring, control and surveillance system has been implemented in the fishery under assessment and has demonstrated a consistent ability to enforce relevant management measures, strategies and/or rules.
	b	**Y**	Sanctions to deal with non-compliance exist, are consistently applied and **demonstrably** provide effective deterrence.
			Sanctions to deal with non-compliance exist, and are consistently applied. The Ministry of Fisheries Compliance group report that they do demonstrably provide effective deterrence. Major noncompliance is rare and, if detected, the penalties are very severe including fines, loss of vessel, and loss of quota. Vessels don't reoffend.
	c	**Y**	There is a **high degree of confidence** that fishers comply with the management system under assessment, including, providing information of importance to the effective management of the fishery.
			The combination of rigorous legal requirements, traceable documentation, effective surveillance, landing and reconciliation of catch against ACE, catch documentation audits, and checks against past catch all lead to a very high degree of confidence in compliance. An external report of fisher compliance and perceptions of compliance found that compliance with the management system is good (Kazmierow et al. 2010). The Ministry is currently working in collaboration with Industry on the Observer Programme and there is an acknowledgement that observers will play a greater monitoring role into the future in New Zealand Deepwater fisheries, with observers not just conducting scientific and biological sampling, but also used in mitigating risks. Currently, the MFish Compliance Business Group has 100 dedicated sea days. However, the MFish Observer Business coming back into the Field Services Business Group, coupled with enhanced maritime surveillance planning, use of defence assets and the six new navy vessels for domestic use, will see a substantiallyincreased surveillance and monitoring effort in the deepwater fisheries, including a greater utilisation of observers. There is a designated liaison person acting between MFish and industry. Fishers cooperate, where necessary, with management authorities in the collection of catch, discard and other information that is of importance to the effective management of the resources and the fishery.
References			Deepwater Group Ltd. 2011. NZ Deepwater Fisheries Operational Procedures Vessel Manual 2011/12: Deepwater Group Ltd. Nelson, New Zealand. Fisheries Act 1996 No 88. Fisheries Commercial Fishing Amendment Regulations No 2. 2009

PI 3.2.3		Monitoring, control and surveillance mechanisms ensure the fishery's management measures are enforced and complied with	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
			Fisheries (Benthic Protection Areas) Regulations 2007 (SR 2007/308) Fisheries (Reporting) Regulations 2001 (SR 2001/188) Fisheries (Commercial Fishing) Regulations 2001 (SR 2001/ 253) Fisheries (Satellite Vessel Monitoring) Regulations 1993 (SR 1993/354) Kazmierow B, Booth K andMossman E. 2010. Commercial Fishers' compliance Decision making: Perceptions, experiences and factor influencing regulatory compliance. Report prepared for the Ministry of Fisheries by Lindis Consulting. (19 July 2010). Ministry of Fisheries. 2011k. Compliance Information Sheet No. 8 - Non-fish and Protected Species. May 2011 Ministry of Fisheries. 20h. Compliance Information Sheet No. 3 - Monitor the accuracy of your reporting. July 2010 Ministry of Fisheries. 2010i. Compliance Information Sheet No. 4 – ConversionFactors. July 2010 Ministry of Fisheries. 201j. Compliance Information Sheet No. 5 - Vessel Marking. (June 2010). Ministry of Fisheries. 2010k. Compliance Information Sheet No. 6 - Seabird mitigation devices. (December 2010). Ministry of Fisheries. 2010l. Compliance Information Sheet No. 7 - Benthic protection areas and seamount closures. (December 2010). Ministry of Fisheries. 2010m. Summary of Commercial Inspections – Deepwater for 2010 calendar year. Ministry of Fisheries, Wellington, New Zealand Ministry of Fisheries. 2009b. Compliance Information Sheet No. 1 - Misreporting (Trucking). (July 2009).
OVERALL PERFORMANCE INDICATOR SCORE: The score is 100 because all of the scoring issues of the 100 scoring guidepost are met.			**100**
CONDITION NUMBER (if relevant):			**N/A**

Evaluation Table: PI 3.2.4

PI 3.2.4		The fishery has a research plan that addresses the information needs of management	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
60	**a**	**Y**	**Research** is undertaken, as required, to achieve the objectives consistent with MSC's Principles 1 and 2.
			The Ministry has a planning process in place to establish future directions and priorities for fisheries research. This planning process involves consultation, planning and project development. The Research Co-ordinating Committee meets annually with fisheries stakeholders to discuss, evaluate, and make recommendations on the direction of research. The recommendations come from Research Planning Groups who contribute to the process in regards to specific research areas. Research is therefore undertaken, as required, to achieve the objectives consistent with MSC's Principles 1 and 2.
	b	**Y**	Research results are **available** to interested parties.
			Research results are available to interested parties, for example through their participation in MFish working groups. Most research is published in the Ministry of Fisheries' Fisheries Assessment Research (FAR) series. MFish working groups are open to anyone that wants to join them. Also, preliminary research is often made available and discussed.
80	**a**	**Y**	A **research plan** provides the management system with a strategic approach to research and **reliable and timely information** sufficient to achieve the objectives consistent with MSC's Principles 1 and 2.
			There is a Ministry of Fisheries Hoki and Aquatic Environment medium term research plan that provides a strategic approach to research, and includes timelines and priorities. A Research Co-ordinating Committee meets fisheries stakeholders annually to discuss, evaluate, and make recommendations on the direction of research that is to be conducted, that is based on the goals and objectives of Fisheries 2030, Statements of Intention, the National Fisheries Plan, and the Annual Operational Plan. The recommendations come from Research Planning Groups who contribute to the process in regards to specific research areas. The Ministry of Fisheries, in collaboration with the DWG, has developed and implemented a 10-Year Research Program for deepwater fisheries. The research programme focuses on research to monitor and assess stock status, and research to monitor interactions with the marine environment. The research programme also has the flexibility to deliver one-off specific research projects to address particular management needs. The hoki fishery is included in this programme, and research has been planned and contracted for delivery for the ten-year period starting in 2010-11.
	b	**Y**	Research results are **disseminated** to all interested parties in a **timely**fashion.
			The Middle Depths and Aquatic Environment Medium Term Plans are readily available, and stakeholders provide input into these plans. The Working Group meetings where research results are discussed are scheduled at the start of the year so that all can be aware of upcoming timeframes.
100	**a**	**Y**	A **comprehensive research plan** provides the management system with a coherent and strategic approach to research across P1, P2 and P3, and **reliable and timely information** sufficient to achieve the objectives

			consistent with MSC's Principles 1 and 2.
			There is a Ministry of Fisheries Hoki and Aquatic Environment medium term research plan that provides a strategic approach to research, and includes timelines and priorities. A Research Co-ordinating Committee meets fisheries stakeholders annually to discuss, evaluate, and make recommendations on the direction of research that is to be conducted, that is based on the goals and objectives of Fisheries 2030, Statements of Intention, the National Fisheries Plan, and the Annual Operational Plan. The recommendations come from Research Planning Groups who contribute to the process in regards to specific research areas. The Ministry of Fisheries, in collaboration with the DWG, has developed and implemented a 10-Year Research Program for deepwater fisheries. The research programme focuses on research to monitor and assess stock status, and research to monitor interactions with the marine environment. The research programme also has the flexibility to deliver one-off specific research projects to address particular management needs. The hoki fishery is included in this programme, and the research has been planned and contracted for delivery for the ten year period starting in 2010-11. Fisheries research falls into six key areas, each of which has its own specific goal. These research areas and associated goals are: (a) Fisheries Resources - to provide the information on sustainable yields and stock status required for the sustainable utilisation of New Zealand's fisheries resources; (b) Harvest Levels - to determine the nature and extent of commercial and recreational catch, Maori customary take, illegal catch, and fishery induced mortality; (c) Cultural, Economic, and Social Research - to provide information on cultural, economic, and social factors that may need to be considered in the management decision-making process to enable people to provide for their social, economic and cultural well-being; and (d) Traditional and Customary Research - to provide information on the traditional and customary factors that may need to be considered in the management decision making-process to enable the Minister to discharge his/her obligations to tangatawhenua under the Deed of Settlement and the Treaty of Waitangi (Fisheries Claims) Settlement Act to enable Maori to provide for their traditional and customary well-being. The research programme also has the flexibility to deliver one-off specific research projects to address particular management requirements. The hoki fisheries are included in this programme and the following research has been planned and contracted for delivery for the ten year period starting in 2010-11. • Hoki trawl surveys (Chatham Rise, Sub-Antarctic, WCSI); • Acoustic surveys for hoki (WCSI & Cook Strait); • Hoki stock assessment; • ETP monitoring &quantification for hoki; • By-catch monitoring &quantification for hoki; • Taxonomic ID of benthic samples; • Trawl ground assessments; and • ERA for deepwater fisheries Reports are released into the public domain.
	b	**Y**	Research **plan** and results are **disseminated** to all interested parties in a **timely** fashion and are **widely and publicly available**.

			There is a Ministry of Fisheries Hoki and Aquatic Environment medium term research plan that provides a strategic approach to research, and includes timelines and priorities. A Research Co-ordinating Committee meets fisheries stakeholders annually to discuss, evaluate, and make recommendations on the direction of research that is to be conducted, that is based on the goals and objectives of Fisheries 2030, Statements of Intention, the National Fisheries Plan, and the Annual Operational Plan. The recommendations come from Research Planning Groups who contribute to the process in regards to specific research areas. Regular research projects are planned and contracted to monitor the environmental effects of deepwater fishing activity on the marine environment. The MFish research planning process ensures that results are disseminated to all interested parties in a timely fashion. Research is planned, discussed and evaluated in the Hoki Working Group and Aquatic Environment Working Group (which are results focused) in a timely fashion. Plans and results are widely disseminated – all Plans from goals and objectives of Fisheries 2030, Statements of Intention, the National Fisheries Plan, & the Annual Operational Plan, are readily available and stakeholders provide input into these plans. Research results are reported in publically available reports and articles, press statements to media.
References			Department of Conservation. 2011. Marine Conservation Services Annual Plan 2011/12. Marine Conservation Services. Department of Conservation. Wellington. 70p Fisheries Act 1996 No 88. Ministry of Fisheries. 2011f. Submissions received on the Review of Sustainability Measures and other management Controls for Deepwater Fisheries. Ministry of Fisheries, Wellington, New Zealand. September 2011. Ministry of Fisheries. 2011m. Research Specifications for the 10-Year Research Programme for Deepwater Fisheries. DFR2010-02 Appendix One: (July 2011) Ministry of Fisheries. 2011j. Statement of Intent, 2011-14. Ministry of Fisheries, Wellington, New Zealand. Part B Ministry of Fisheries. Ministry of Fisheries. 2011. Annual Operational Plan for Deepwater Fisheries for 2011/12. Ministry of Fisheries. Wellington, New Zealand. (July 2011). Ministry of Fisheries. 2011a. Report from the Fisheries Assessment Plenary, May 2011: stock assessments and yield estimates. Ministry of Fisheries Science Group, Ministry of Fisheries. Wellington, New Zealand. 1178p. Ministry of Fisheries. 2011b. Research and Science Information Standard for New Zealand Fisheries. Ministry of Fisheries, Wellington, New Zealand (May2011). Ministry of Fisheries. 2011e. Terms of Reference for Fisheries Assessment Working Groups (FAWGs) in 2011. Ministry of Fisheries, Wellington, New Zealand Ministry of Fisheries. 2010a. National Fisheries Plan for Deepwater and Middle-depth Fisheries. Part 1A. Ministry of Fisheries, Wellington, New Zealand. September.
OVERALL PERFORMANCE INDICATOR SCORE: The score is 100 because all of the scoring issues of the 100 scoring guidepost are met.			**100**
CONDITION NUMBER (if relevant):			**N/A**

Evaluation Table: PI 3.2.5

PI 3.2.5		There is a system of monitoring and evaluating the performance of the fishery-specific management system against its objectives There is effective and timely review of the fishery-specific management system	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
60	**a**	**Y**	The fishery has in place mechanisms to evaluate **some** parts of the management system.
			The management system has internal processes to evaluate management performance. These include evaluations of policy, research, operations, compliance and enforcement. The Ministry is currently undergoing a major review of its structure and functions. The stock assessment process is rigorously reviewed both internally and externally. Thus mechanisms are in place to some at least some part of the management system.
	b	**Y**	The fishery-specific management system is subject to **occasional internal** review.
			The management system has internal processes to evaluate management performance. These include evaluations of policy, research, operations, compliance and enforcement. The stock assessment process (including for hoki) is rigorously reviewed internally. The development and implementation of the Fisheries Plan framework – National Deepwater Plan, fishery specific chapters, Annual Operational Plan and Annual Review Report – guarantees there is a structured process to monitor the performance of the fishery specific management system against its objectives. There is full stakeholder engagement on the development of all components of the Fisheries Plan framework and all documents are publicly available.
80	**a**	**Y**	The fishery has in place mechanisms to evaluate **key** parts of the management system
			The management system has internal processes to evaluate management performance. These include evaluations of policy, research, operations, compliance and enforcement. The Ministry is currently undergoing a major review of its structure and functions. The stock assessment process is rigorously reviewed both internally and externally The development and implementation of the Fisheries Plan framework – National Deepwater Plan, fishery specific chapters, Annual Operational Plan and Annual Review Report – ensures there is a structured process to ensure the performance of the fishery specific management system against its objectives. There is full stakeholder engagement on the development of all components of the Fisheries Plan framework and all documents are publicly available. The Ministry implements a comprehensive peer-review process for all science research that is used to inform fisheries management decisions. In addition to the recently-released Research Standard it also includes: (a) a range of science working groups which include members of the scientific community, research providers, commercial fishers, fisheries managers and environmental stakeholders (b) the availability of all peer-reviewed and accepted research papers to the wider public; and (c) options for independent and external peer-review of novel or contentious research. Thus, mechanisms are in place to evaluate key parts of the

			management system.
	b	**Y**	The fishery-specific management system is subject to **regular internal** and **occasional external**review.
			The Ministry of Fisheries completes annual external audits whereby the performance of the Ministry's fisheries management regime is assessed against the outcomes specified in the Statement of Intent. The results of this audit are publicly available through the Ministry's Annual Report. Previous versions of both documents can be found at the Ministry of Fisheries website www.fish.govt.nz. The management system has internal processes to evaluate many aspects of management performance. These include evaluations of policy, research, operations, compliance and enforcement (see MFish (2011) Statement of Intent, 2011-14; MFish (2010) Statement of Intent, for the period 1 July 2010 to 30 June 2015; MFish (2010) National Fisheries Plan for Deepwater and Middle-depth Fisheries. Part 1A & 1B). In addition, the planning process, which includes both the development and implementation of fisheries plans (Fisheries 2030, Statements of Intention, the National Deepwater Plan, the Annual Operational Plan & and Annual Review Report) is not only driven by goals and objectives, it also monitors the performance of the fishery specific management system conforms to its goals and objectives. DWG also have mechanisms in place to evaluate all parts of the management system and is subject to regular internal and external review
100	**a**	**N**	The fishery has in place mechanisms to evaluate **all** parts of the management system.
			The management system has internal processes to evaluate many, but not all, aspects of management performance. These include evaluations of policy, research, operations; compliance and enforcement (see MFish (2011) Statement of Intent, 2011-14; MFish (2010) Statement of Intent, for the period 1 July 2010 to 30 June 2015; MFish (2010) National Fisheries Plan for Deepwater and Middle-depth Fisheries. Part 1A & 1B). In addition, the planning process, which includes both the development and implementation of fisheries plans (Fisheries 2030, Statements of Intention, the National Deepwater Plan, the Annual Operational Plan & and Annual Review Report) is not only driven by Goals and objectives, it also ensures the performance of the fishery specific management system conforms to its goals and objectives. DWG have mechanisms in place to evaluate all parts of the management system and is subject to regular internal and external review
	b	**N**	The fishery-specific management system is subject to **regular internal and external review.**
			Deepwater Group Ltd management have mechanisms in place to evaluate all parts of the management system, and is subject to regular internal and external review. Specifically, the successful implementation of the quality management system for the hoki fishery has been designed to cover all DWG activities and includes: (a) A Quality Management Manual (Deepwater Group Ltd 2010), which covers company structure; mission and the quality management system, which includes document; and (b) control, project management, internal audits, corrective action and staff training, etc.; The stock assessment process is rigorously reviewed both internally and externally to the Ministry of Fisheries. The Ministry of Fisheries also completes annual external audits whereby the performance of the Ministry's fisheries management regime is assessed

			against the outcomes specified in the Statement of Intent. The result of this audit is publicly available through the Ministry's Annual Report. The Ministry implements a comprehensive peer-review process for all science research that is used to inform fisheries management decisions. In addition to the recently released Research Standard it also includes: (a) a range of science working groups which include members of the scientific community, research providers, commercial fishers, fisheries managers and environmental stakeholders (b) the availability of all peer-reviewed and accepted research papers to the wider public; and (c) options for independent and external peer-review of novel or contentious research The harvest strategy was subject to external review. However there has not been a review of the hoki stock assessment since 1999. This is considered to be significant amount of time and cannot be consideed 'regular" so the SG is not met.
References			Department of Conservation 2011. Marine Conservation Services Annual Plan 2011/12. Marine Conservation Services. Department of Conservation. Wellington. 70p DWG. 2010a. Memorandum of Understanding between the Ministry of Fisheries and the Deepwater Group. Deepwater Group Ltd. Nelson, New Zealand (December 2010). 12p. DWG. 2010b. Management System: Quality Manual. Version 2. Deepwater Group Ltd. March 2010. Fisheries Act 1996 No 88. Ministry of Fisheries. 2011j. Statement of Intent, 2011-14. Ministry of Fisheries, Wellington, New Zealand. Part B Ministry of Fisheries. Ministry of Fisheries. 2011h. Annual Operational Plan for Deepwater Fisheries for 2011/12. Ministry of Fisheries. Wellington, New Zealand. (July 2011). Ministry of Fisheries. 2011n. Annual Report 2010/11. Ministry of Fisheries, Wellington, New Zealand. (September 2011). Ministry of Fisheries. 2011g. Review of Sustainability Measures and Other Management Controls for Hoki (HOK1) Final Position Paper - September 2011. . Ministry of Fisheries. 2011e. Terms of Reference for Fisheries Assessment Working Groups (FAWGs) in 2011. Ministry of Fisheries, Wellington, New Zealand Ministry of Fisheries. 2010a. National Fisheries Plan for Deepwater and Middle-depth Fisheries. Part 1A. Ministry of Fisheries, Wellington, New Zealand. September 2010. Ministry of Fisheries. 2010b. National Fisheries Plan for Deepwater and Middle-depth Fisheries. Part 1B Fishery-specific chapters: Hoki. Ministry of Fisheries, Wellington, New Zealand. September 2010. Ministry of Fisheries. 2010n. Overview of New Zealand's Fisheries Science Peer Review Processes. Ministry of Fisheries, Wellington, New Zealand (10 June 2010). Ministry of Fisheries 2010g Statement of Intent, for the period 1 July 2010 to 30 June 2015. Ministry of Fisheries, Wellington, New Zealand (May 2010) Ministry of Fisheries. 2008b. QMS Introduction Process Standard. Executive Summary. Ministry of Fisheries, Wellington, New Zealand
OVERALL PERFORMANCE INDICATOR SCORE: The score is 80 because all of the scoring issues of the 80 scoring guidepost are met, but none of those for the 100 scoring guidepost.			**80**
CONDITION NUMBER (if relevant):			**N/A**

Appendix 1.2 Conditions

Condition 1

Performance Indicator	PI 2.4.1The fishery does not cause serious or irreversible harm to habitat structure, considered on a regional or bioregional basis and function
Score	75
Rationale	Given that the hoki fishery operates in part through demersal trawling, impacts on benthic habitats are inevitable. Spatial overlays of trawl tracks and habitat classes are a highly informative way to start identifying these impacts. The 20-year spatial extent of the hoki fishery does not reflect the present fishery. However, the ERA considered the risks of the hoki fishery activity on some habitat classes (BOMEC 7, 8, 9; Boyd 2011a, b) could be "major", highlighting the need for further work to ensure that the fishery is highly unlikely to cause serious or irreversible harm to the structure and function of the habitats it affects, at the regional and bioregional scales. Further, due to the sensitivity, lack of resilience, and required regeneration times for some habitat-forming organisms when disturbed, the effects of the current fishery are cumulative and require consideration over a greater than annual timescale to increase the confidence that the fishery is achieving this outcome. Currently, the fishery satisfies the requirements for the 60 scoring guidepost, and part of the 80, but not the 100 scoring guidepost. Consequently, a score of 75 is assigned. Refer to Page 116. References Boyd RO. 2011a. Ecological risk assessment of the New Zealand hoki fisheries. Report for the Deepwater Group Limited, Nelson. Boyd RO. 2011b. Updated benthic risk assessment of the New Zealand hoki fisheries. Unpublished report for the Deepwater Group Ltd, Nelson.
Condition	**Improve management of habitat impacts of the hoki fishery, such that by the end of third surveillance audit, it can be shown that the fishery is highly unlikely (i.e. there should be no more than a 30% probability) to reduce habitat structure and function to a point where there would be serious or irreversible harm.** (Note: **MSC requirements CB3.14.2**: CB3.14.2.1 Serious harm means gross change in habitat types or abundances, and disruption of the role of the habitats; CB 3.14.2.2: Irreversibility means changes that are expected to take much longer to recover than the dynamics in un-fished situations would imply, some sort of regime change is implied from which recovery may not automatically occur.

	MSC Guidance GCB3.2.3: For the Habitats and Ecosystemcomponents, the concept of 'serious or irreversible harm' refers to change caused by the fishery that fundamentally alters the capacity of the component to maintain its function or to recover from the impact a. This may also be interpreted as seriously reducing the ecosystem services provided by the component to the fishery, to other fisheries and human uses. b. Irreversible harm from fishing includes very slowly reversible harm that is effectively irreversible on time-scales of natural ecological processes (e.g. natural perturbation, recovery and generation times in the absence of fishing, normally one or two decades but may be shorter or longer depending on the species and ecosystem concerned). c. Examples of serious or irreversible harm include local or global extinction, serious recruitment overfishing, habitat loss on scales that have widespread detrimental consequences for the ecosystem services provided by the habitat (e.g. gross change in species composition of dependent species), and loss of resilience resulting in trophic cascades, fishery mediated regime shifts, etc. Explicit targets may not be appropriate or available for all of the components, in some cases because there is no scientific or general consensus on appropriate targets. d. While performance in relation to targets can be introduced where appropriate, the generic performance requirements relate to increasing confidence and safety margins with which serious or irreversible harm is avoided, including through the management tools, measures and strategies that are in place.)
Milestones	**Year 1:** By the first annual surveillance audit the client must provide evidence of a programme of work that will manage fishery impacts on habitat structure and function across the hoki fishery. **Year 2:** By the second annual audit, the client will have developed a strategy to avoid/reduce impacts, linking objectives, impacts, and actions. **Year 3:** By the third annual audit, the client will haveimplemented actions as identified in the strategy, such that that the fishery is highly unlikely (i.e. there should be no more than a 30% probability) to reduce habitat structure and function to a point where there would be serious or irreversible harm, and this can be demonstrated on an ongoing basis.
Client action plan	**Management Objective** To define the nature and extent of impacts of the hoki fishery on habitats in a bio-regional context, focussing especially on the Benthic Optimised Marine Environment Classification (BOMEC) categories 7, 8 and 9 so as to enable appropriate sustainable fisheries management. The work programme will initially focus on demonstrating that the hoki fishery is not causing serious or irreversible harm to the benthic habitats as defined as BOMEC categories 7, 8 and 9 at a 30% level of probability (i.e. serious or irreversible harm is *highly unlikely*).

In the event that the initial work programme fails to demonstrate that the hoki fishery is *highly unlikely* to reduce habitat structure and function to a point where serious or irreversible harm would occur, a review of the strategic and operational approaches available to manage possible impacts will be conducted. This review would focus on identifying measures that could be applied to address identified ecosystem risks. Appropriate strategies and/or measures would then be implemented by managers (DWG and MPI) to avoid, reduce and/or mitigate risk of unacceptable adverse effects on habitat structure and function within the three year timeframe stipulated in the condition. Implementation of any selected approach would aim to increase the probability that fishery impacts on the benthic habitats are *highly unlikely* to reduce habitat structure and function to a point where there would be serious or irreversible harm.

Operational Tasks and Milestones

A review of existing research will be conducted to ascertain the likelihood of the hoki fishery causing serious or irreversible harm to habitat structure or function in identified high risk bioregional areas (BOMEC categories 7, 8 and 9). One scenario for this review would involve analysing the BOMEC shape files with other pre-existing data on temporal patterns of trawl extent and intensity to quantify a proxy for benthic harm that will enable a probabilistic test to be applied, as required by the current MSC Standard.

Should this review show the likelihood of serious or irreversible or harm cannot be shown to be <30% or that adverse effects are sufficiently serious and not reversible as defined within the MSC methodology, an agreed strategy to reduce adverse effects on habitat structure and function will be developed and adopted in Year 2 and implemented in Year 3.

Year 1:

- Conduct a detailed review and a quantitative spatial analysis of existing information to ascertain the likelihood that the fishery could be causing serious or irreversible harm to habitat structure or function. This review will address only BOMEC categories 7, 8 and 9 on a bioregional basis.
- Continue to monitor the trawl footprint in accordance with MO 2.7 of the National Fisheries Plan (MFish, 2010a. pp 38-39).
- Continue investigation into 'habitats of particular significance' in accordance with MO 2.3 of the National Fisheries Plan (MFish 2010a, pp 34-35), and continue developing programmes that ensure the suitability and effectiveness of protection measures on the stated 5 year timescale:
    - Identify what further levels of habitat protection are required to be implemented by 2013 (MFish 2010b. OO 2.9. p41).
    - Define the meaning of 'habitats of particular significance for fisheries management purposes' for the hoki fishery; identify the range of habitats that are significant and review current levels of protection by 2013 (MFish 2010b.OO2.8. p 41).
    - Ensure that all research used to inform the management of the hoki fishery continues to be peer reviewed and meets the requirement of the research standard (MFish 2010b.OO1.5. p 42).

	Year 2: If the additional research undertaken in Year 1 fails to demonstrate that the benthic impacts of the hoki fishery are not *highly unlikely* to be causing serious or irreversible harm in all bio-regions for BOMEC 7, 8 and 9: then: • Develop an agreed strategy that will reduce or mitigate the impacts to the 30% probability level. • Deliver a desktop literature review[1] on what constitutes international best practice and establish the extent to which such approaches are cohesive (i.e. fully interconnected), organised and consistent. This study will also take into account the context in which this 'best practice' was applied and the relevance in the context of New Zealand. **Year 3:** • Implement and adopt agreed actions (research, management and monitoring) where these have been determined to be required and that will reduce or maintain impacts on habitat structure and function below the 30% probability threshold. • Include habitat as a component of the proposed MPI spatial ERAs.[2] o As the ERA methodology project is expected to report its findings during 2013, the first deepwater ERA should commence during the first year of certification. **Desired Outcomes** Provide "evidence that the fishery is *highly unlikely* to reduce habitat structure and function to a point where there would be serious or irreversible harm at a 30% level of probability." (PI 2.4.1 - SG100). *[1] This literature review will be consistent with the SG100 rationale for PI 2.4.1 which states "A cohesive spatial management approach is best practice for reducing fishery impacts on habitat structure and function."* *2 Note that these ERAs may be progressed prior to Year 3.*
Consultation on condition	The Ministry of Fisheries has been involved with the client in writing the CAP to address the condition. They will provide support and commitment.

Appendix 2. Peer Review Reports

Peer Reviewer 1

Overall Opinion

Has the assessment team arrived at an appropriate conclusion based on the evidence presented in the assessment report?	Yes/No YES	Conformity Assessment Body Response
Justification: The assessment team has reasonably described the fishery in terms of MSC context and requirements, although I note below some PIs where more information is required, particularly at the SG100 level. I have also suggested slightly amended text for one set of conditions. Overall, I concur with the assessment team that the appropriate conclusion is to recommend the fishery described for MSC certification.		We have expanded the text where appropriate to provide additional information in response to the reviewer's queries. As reflected below, we concur with the suggestion made to improve the conditions, and consequently, we have amended text in the Milestones.

Do you think the condition(s) raised are appropriately written to achieve the SG80 outcome within the specified timeframe?	Yes/No YES	Conformity Assessment Body Response
Justification: The condition raised on habitat impacts is appropriate and should raise the fishery to the SG80 level. However, consideration should be given to putting in place continued monitoring following the implementation of any necessary mitigation actions, to ensure that they are effective.		We concur that ongoing monitoring is desirable and should be a part of any set of actions implemented to mitigate habitat impacts. The revised text of the Condition milestones now includes provision for monitoring of a form appropriate to the actions implemented.

If included:

Do you think the client action plan is sufficient to close the conditions raised?	Yes/No YES	Conformity Assessment Body Response
Justification: The actions described in the CAP meet the requirements of the condition.		

For reports using the Risk-Based Framework please follow the link.

For reports assessing enhanced fisheries please follow the link.

General Comments on the Assessment Report (optional)

This is a mature assessment of a fishery that has progressed through addressing of the first assessment certification conditions and the continued development of the NZ fisheries

science and management. The auditors have done a good job collating all the necessary information in a clear and concise way.

I therefore have only a few comments to raise on the main body of the report.

Under P2, there is considerable detail on the retained and bycatch species within the fishery, as well as the interactions with designated ETP species. Details of the percentage of trips/hauls monitored by observers would be welcome to judge the precision of observations. This is raised in the PI-specific comments as necessary, but may be most easily addressed by adding a section on this in the main text.

The sections covering habitat and ecosystem interactions (PI2.4, PI2.5) are much less comprehensive. The recent work on coral distributions for DOC (e.g. Tracey et al., 2011; other DOC Project MCSINT2010/03 reports) could be discussed further. Observer estimates of the weight of any coral brought on board would be welcome. The ecosystem section is also quite limited, which may reflect the absence of ecosystem models for New Zealand waters (e.g. Bradford-Grieve et al, 2003), which belies some of the scores given for PI2.5.

On bird interactions (section 3.4.2.3) the conclusion arising from the Level 2 risk assessment for the hoki fishery is not particularly clear. Given that the hoki fishery accounts for 15% of the seabirds caught in NZ offshore trawl fisheries in recent years, did the analysis discussed provide an indication of whether the level of interactions was a problem? The current text could be clarified.

With regard to sharks (3.2.4.4), can the level of interactions with basking sharks in the hoki fishery be calculated from observer records? If so they should be included to allow the reader to gauge the level of interactions.

IMM response:

- We have added figures on observer coverage achieved in the hoki fishery in recent years, in the rationale for particular scoring issues.
- Additional rationale and references have been incorporated in the text in line with the reviewer's suggestions (including PI2.4, PI2.5).
- The level 2 risk assessment did not analyse seabird interactions on a fishery by fishery basis. However, experts agree that ongoing implementation of management measures is required to manage seabird captures in this fishery. Careful monitoring of potentially at risk species is conducted through observer deployments and population assessments. These data are expected to clarify sustainability issues around these captures in the hoki fishery and other New Zealand fisheries.
- We have included information on the number of basking shark captures.

Performance Indicator Review

Please complete the table below for each Performance Indicator which are listed in the Conformity Assessment Body's Public Certification Draft Report.

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
1.1.1	Yes	Yes	NA		NA
1.1.2	Yes	Yes	NA		NA
1.1.3				Not applicable given current stock status	
1.2.1	Yes	Yes	NA		NA
1.2.2	Yes	Partially	NA	I support the score given, However, the justifying text at SG80c notes there is 'some evidence' that the tools used are appropriate and effective (which is SG60 language). In turn, further brief evidence/examples of how the HCR takes a wide range of uncertainty into account would be welcome.	The first point relates to SC80c. The text has been adjusted to reflect the wording of the PI. The evidence provided indicates that exploitation rates are kept within the levels indicated by HCR. The second point relates to SC100a. The PI here relates to the design of the HCR rather than its implementation. Text under SC80b lists a variety of uncertainty factors accounted for when applying the HCR.

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
1.2.3	Yes	Partially	NA	In SG100b is there information on whether the surveys will restart in 2012, or is the single survey considered sufficient to support the HCR? Does ALL the data reach a high degree of certainty (rather than there being knowledge of the uncertainties), and has testing shown that the uncertainties in the data are not affecting the performance of the HCR? I feel this is needed for the score given.	1. The re-assessment was conducted during 2011 and surveys were planned for several areas at that time (Table 2). We contacted MFish in May 2012 and they indicated that the surveys planned for late 2011 have taken place as planned. 2. The data needed to apply the control rule (catches, biomass indices, catches-at-age) are collected with a high degree of certainty (relatively low CVs and high sample sizes). A sentence has been added to the justification which summarizes the sample sizes and CVs for the key model inputs. 3. The testing of the HCR is not covered under this PI, but rather under SG100d of PI 1.2.4 where we did not see sufficient evidence to conclude that full testing has occurred, even though some MSE work has been undertaken.
1.2.4	Yes	Yes	NA		NA

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
2.1.1	Yes	Partially	NA	The status of the GSP7 pale ghost shark is noted as unknown, but it is felt that the stock is likely within biologically based limits. Is this because the catch of this species in this area is particulalry low, or do analyses provide some further justification for this view? This needs clarification for the score given. The SG100a text currently suggests a score of 100 could be given for this element. Clarification of what was considered lacking should be given.	This text has now been amended to clarify the rationale around GSP7, with reference to the amount of landed catch. Under the 80 Scoring Guidance,at Scoring Issue (a), we recommend that knowledge of GSP7 be evaluated more comprehensively, for example using a fisheries characterization, to maintain confidence in this assessment.
2.1.2	Yes	Partially	NA	I note the uncertainty over the status of the third pale ghost shark stock, and some clarification may be needed in SG80c based on the comment under 2.1.1. As noted above, some details of the percentage of observer coverage would be welcome to judge the clear evidence for the implementation of the strategy for ALL species.	We have clarified that the text on ghost sharks refers to two of three stocks relevant to the hoki fishery. Under Scoring Guidepost 100 Issue (c), we have added text on recent levels of observer coverage.

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
2.1.3	Yes	No	NA	As noted above, confirm that the information is sufficient to judge the status of all pale ghost shark stocks with respect to biological limits for both 80b and 80d. I also note the similarity in the SG text for 80c and 80d, which I suspect is a copy-paste error? For SG100c, while the HSS might provide a basis for a comprehensive strategy, can more justification be provided, including observer coverage, on how this and other data provides a high degree of certainty for all species.	We have expanded the text in Scoring Guidepost 80, Issues (b) and (d), and 100 Issue (c) to address the reviewer's comments.

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
2.2.1	Yes	Partially	NA	In SG80a, for shovelnose dogfish, what is the pattern of catches of this species across the range of the fishery, and can the results of the Chatham Rise trawl surveys be viewed as indicative of the stocks across their range, given the patterns seen in Figure 5? In turn, how regular are these surveys?	No clear trends in shovelnose dogfish abundance have been detected by trawl surveys conducted over the Chatham Rise or in the sub-Antarctic, which are the two main areas in which the non-spawning hoki fishery occurs. Trawl surveys have been conducted annually on the Chatham Rise, and over 5 years in the sub-Antarctic. Surveys will continue in five of the next six years (2011/12-2016/17) on the Chatham Rise, and four of the next six years in the sub-Antarctic. These issues are now clarified in the text.
2.2.2	Yes	Yes	NA		NA

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
2.2.3	Yes	Partially	NA	In SG80b, the monitoring of the Chatham Rise through trawl surveys is noted. As for 2.2.1, can the results of this survey be said to be indicative of status across the range of the fishery? How regular are these surveys? This consideration also affects the scoring of SG100d, which would also benefit from information on observer coverage. SG100c needs further justification and evidence in the text to explain why it meets the scoring guidepost text.	We have clarified text as sugested in 80b (re the frequency of surveys) and 100d (re observer coverage levels). We have expanded the rationale for the scoring in SG 100c.
2.3.1	Yes	No	NA	For SG80a, can more information be given on how the effects of the fishery are highly likely to be within limits – the current text details the data collection processes but not the status of the ETP against limits. For SG100a, information on the observer coverage would be welcome to justify the scoring given.	We have expanded this text as suggested.
2.3.2	Yes	Yes	NA		NA

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
2.3.3	Yes	Yes	NA	Note the work done by NIWA on cold water coral distribution based on observer records mentioned in the main text above.	We have included this reference and expanded the text relating to corals under this Scoring Guidepost.
2.4.1	Yes	Yes	Yes	The condition is justified based on the evidence provided, and should raise the fishery to the SG80 level. However, the comment made earlier on continued monitoring should be considered.	We concur that continued monitoring is required to ensure the efficacy of any measures put in place to mitigate habitat impacts. We have added text to the Condition milestones to provide for this.
2.4.2	Yes	Yes	NA	I note that the score for SG80b/SG100b may change with information resulting from the condition.	Agreed.

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
2.4.3	Yes	Partially	NA	The score for SG100b seems generous, given the uncertainties in the habitat data, the demersal/semi-pelagic nature of the gear and its variable benthic interactions, and the condition raised against 2.4.1. Have trials been run on the fishery in question, in the habitats in question? The reference given to justify the observations are from a Canadian study.	To our knowledge, detailed trials have not been run in this fishery. However, observers record gear characteristics, and mode of fishing. Gear types in use, trawl locations and overlap with BOMEC habitat classes are known. We assume that the results of gear contacting and travelling along the bottom follow global patterns, e.g. destruction of the benthos and soft sediments (where these occur), etc, as recorded in other locales. However, the physical impacts of the gear on the habitat types have not been quantified fully in this fishery. The final score has been revised to 'No' for SG100b.

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
2.5.1	Yes	Partially	NA	The study by Tuck et al. (2009) is used to justify the partial achievement of the SG100 score. However, this focuses on the Chatham Rise region over the period 1992-2007, and does not appear to provide information throughout the range of the fishery. Stronger justification is needed to warrant the score given.	We have expanded the text to address the issues raised here. In brief, the part of the hoki fishery occurring over the Chatham Rise is the best known ecologically. However, the sub-Antarctic is considered very similar in key ecosystem characteristics. In other areas, the hoki fishery targets spawning animals and the ecosystem impacts of the removing these animals are considered less likely to be significant.
2.5.2	Yes	Partially	NA	More justification is needed for the SG100 scores given. Does the management plan specifically take ecosystem interactions into account? Can the various elements really be called a plan that explicitly (rather than implicitly) takes ecosystem considerations into account? What is the justification for considering them likely to work, and where is the evidence to say they are being implemented successfully?	We have expanded the text in the report to better convey information relevant to the points raised.

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
2.5.3	Yes	Partially	NA	More evidence is needed to justify the SG100a (currently labelled b) scoring. E.g. have these interactions been directly investigated in ecosystem models? If so, where?	We have exapnded sections justifying the SG100b score, including additional references.
3.1.1	Yes	Yes	NA		NA
3.1.2	Yes	Yes	NA	For SG80b, can an example be given where the information obtained was considered to further support the scoring?	Sustainability and Regulation Advice Papers. Ministry of Fisheries, Wellington, New Zealand. www.fish.govt.nz/en-nz/Consultations/default.htm
3.1.3	Yes	Yes	NA		NA
3.1.4	Yes	Yes	NA		NA
3.2.1	Yes	Yes	NA	Please check the wording of the SG100a justification for typos.	We have amended typos.

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
3.2.2	Yes	Yes	NA	Can an example be given of the explanations for action/lack of action resulting from research, to further support the SG80d score?	Ministry of Fisheries (2011). Review of Sustainability Measures and Other management Controls for Hoki (HOK1) – Initial Position Paper. Ministry of Fisheries, Wellington, New Zealand. (July 2011). Ministry of Fisheries (2011) Review of Sustainability Measures and Other management Controls for Deepwater Fisheries – Final Advice Paper. Ministry of Fisheries, Wellington, New Zealand. (September 2011).
3.2.3	Yes	Yes	NA		NA
3.2.4	Yes	Yes	NA		NA
3.2.5	Yes	Yes	NA	Note that the SG100b text as currently written seems to justify a score at this level, bar the fact that the stock assessment has not been reviewed since 1999. Is this why the score is not given? If so I concur, but the reasoning could be more clearly explained.	Yes this is correct. More explanation has been provided in the text

Peer Reviewer 2

Overall Opinion

Has the assessment team arrived at an appropriate conclusion based on the evidence presented in the assessment report?	**No**	**Conformity Assessment Body Response**
Justification: There are questions in relation to the assessed status of the pale ghost shark population for PI 2.1.1, and the score calculation made for PI 2.3.2.		We have expanded the text relating to the pale ghost shark in PI 2.1.1, and provide a recommendation that knowledge of the GSP7 stock is improved. The scoring miscalculation in 2.3.2 has now been corrected.

Do you think the condition(s) raised are appropriately written to achieve the SG80 outcome within the specified timeframe?	**Yes**	**Conformity Assessment Body Response**
Justification: The proposed actions and milestones for Condition 1 are well targeted to address uncertainties in relation to PI 2.4.1. Specifically the DWG and MAF should review existing information to ascertain whether it is highly unlikely that the hoki fishery is causing serious or irreversible harm to the structure and function of the Benthic Optimised Marine Environment Classification Categories 7, 8 and 9 habitats. If this is not demonstrated, then the DWG and MAF will develop an agreed strategy to avoid or to mitigate unacceptable impacts on habitat structure within three years.		

Do you think the client action plan is sufficient to close the conditions raised?	**Yes**	**Conformity Assessment Body Response**
Justification: The client action plan follows the process recommended in the condition.		

For reports using the Risk-Based Framework please follow the link.

For reports assessing enhanced fisheries please follow the link.

General Comments on the Assessment Report (optional)

Performance Indicator Review

Please complete the table below for each Performance Indicator which are listed in the Conformity Assessment Body's Public Certification Draft Report.

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
1.1.1	Yes	Yes	NA	The only scoring issue failed by either the eastern or western stocks is at the SG100 level whether there is a high degree of certainty that stock has been fluctuating about the target over recent years. Figure 2 of the Draft Report clearly shows that the eastern stock meets this indicator while the western does not.	NA

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
1.1.2	Yes	Yes	NA	As default hard and soft limits were used there is no evidence of consideration of precautionary issues when they were implemented. Subsequent management strategy evaluation (MSE) testing by Langley did include the risk of breaching hard and soft limits for various targets and therefore examined precaution.	NA
1.1.3	NA	NA	NA		NA
1.2.1	Yes	Yes	NA	A number of improvements to the MSE testing have been identified (e.g. including the actual stock assessment in simulations, examination of a wider range of uncertainties), so the hoki harvest strategy can not be described as fully evaluated. All other scoring issues for this performance indicator are met.	NA

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
1.2.2	Yes	Yes	NA	Interpretation of what "well defined harvest control rules" (HCRs) means under this PI for the hoki fishery may be a source of contention. The hoki harvest control rule is not a precise mathematical function as implemented in some fisheries. There is flexibility for the Minister to select from a range of options, which primarily indicate risks from the stock sustainability perspective. As TAC decisions ultimately consider the harvest strategy standard (HSS) that the soft limit should not be breached with a probability greater than 10%, the HCR has therefore been demonstrated by the certifier as able to reduce the exploitation rate as the stock moves from the target to the limit. This interpretation is justified, but MSE testing and MSC certification would be simplified if the HCR was more precisely defined.	NA

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
1.2.3	Yes	Yes	NA	A number of deficiencies have been identified in the range of information available from the fishery including: further work required on stock structure, ageing issues, possible environmental effects on recruitment, additional unobserved fishing mortality, and updating of the proportion spawning estimates. Cohort-specific growth is an issue that has been shown to be an important aspect of the Australian hoki fishery that may be worth investigating for the NZ assessment. These indicate that the available information could not be called comprehensive. The hoki assessment accounts for spatial structure of sub-stocks, putting it among the more complex assessments globally, with consequent reliance on catch and abundance information that is also disaggregated by region. Such an assessment provides more ability to investigate uncertainties in assumptions that are commonly not investigated at all. High quality data are regularly collected in support of the assessment and HCR.	NA

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
1.2.4	Yes	Yes	NA	Alternative assessment approaches (other than CASAL) have not been extensively explored, and the assessment has not been externally peer reviewed for 10 years. Otherwise the assessment adequately accounts for the biology of the species and nature of the fishery, and provides a probabilistic evaluation of stock status.	NA

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
2.1.1	No	No	A new condition may be required for collection of additional information or improved assessment of the status of pale ghost shark.	Main retained other species that are within the quota management system (QMS) are ling, spiny dogfish and pale ghost shark. It is reasonably clear that ling and spiny dogfish are highly likely to be within biologically based limits, but it is less clear whether that is the case for pale ghost shark. To be specific, it is difficult to decide if there is greater than a 70% chance that pale ghost shark are within biological limits from the information available in the Draft Report (which says that 2 of the 3 stocks are unlikely to be below the soft limit).	There are three stocks of pale ghost shark which could interact with the hoki fishery. Survey data are available for two of these stocks, but there are no biological data available with which to assess the status of the third stock (GSP7). For GSP1 and GSP5, biomass data are available that show the species is unlikely (P<40%) and very unlikely (P<10%) to be below the soft ($0.2B_0$) and hard ($0.1B_0$) limits, respectively. It is reasonable to conclude the probability of the two stocks combined being below soft limit is < 30%. Harvests in GSP7 are an order of magnitude lower than in GSP1 and GSP5. We recognise the lack of knowledge of this stock, and have made the recommendation that biological understanding of GSP7 is improved (perhaps using a fisheries charaterization), in order to confirm that overall, the species is being harvested within biological limits.

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
2.1.2	Yes	Yes	NA	The status of retained species in the QMS is reviewed by the Stock Assessment Plenary and total allowable commercial catches (TACCs) are set with the intention of maintaining the species within biologically based limits. There is some evidence that this strategy is achieving objectives, but formal MSE testing has not been carried out for the main retained species caught with hoki.	NA
2.1.3	Yes	Yes	NA	Quantitative data (catch removals, catch rates, length composition, survey abundance) are available for the retained species and have been used to assess the status of those species with respect to biological limits. The data continue to be collected, so should allow the detection of increased risks. Lack of knowledge of population parameters for some retained species does not allow full quantitative assessment.	NA

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
2.2.1	Yes	Yes	NA	Guidelines allow "main bycatch species" to be defined as those that that constitute more than 5% of the fishery catch (unless the species is particularly vulnerable or that fishery catch is large). Under the 5% guideline, there are no main bycatch species. However, the catch of the fishery is large, and there are species caught that probably have low productivity. The certifier made a reasonable case that even for these species the limited available data suggests moderate to low fishery impact.	NA
2.2.2	Yes	Yes	NA	As for 2.2.1, there are no main bycatch species under the 5% guideline. If data suggests a sustainability issue with a minor species, it can be added to the QMS. Once in the QMS, the high standards of that framework apply to this PI.	

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
2.2.3	Yes	Yes	NA	As information on catches of bycatch species is from observer sampling, those catches are estimates and can not be considered as accurate and verified for all of those species. Some of the species are not well monitored by survey either. Quantitative assessment are not available for most, if not all, of the the bycatch species.	NA

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
2.3.1	Yes	Yes	NA	Known effects of the fishery are highly likely to be within the requirements of national (Ministry of Fisheries, [fur seals, seabirds, corals, protected fish]) and international (CITES [basking shark], ACAP [albatross and petrels]) requirements for the protection of ETP species due to reporting requirements, mitigation measures employed, and observer monitoring. Recent risk assessments have indicated that the hoki fishery is highly unlikely to be creating unacceptable impacts on ETP species, although it has been accepted that the data onfishery impacts are of low quality for many ETP species, and that the species are subject to cumulated effects from the various fisheries. Due to the uncertainty about populations for many of the ETP species, it was not possible to say with a high degree of confidence that there was no significant direct or indirect detrimental effects of the fishery on ETP species.	NA

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
2.3.2	Yes	No	NA	Precautionary management measures are in place such as operating procedures to minimise marine mammal bycatch, deployment of seabird bycatch mitigation devices, vessel waste management, closed areas, and standard reporting processes. There is clear evidence from compliance monitoring that the measures are implemented in the fishery. Thesemeasures are highly likely to meet national and internation requirements for the protection of ETP species, and there is an objective basis for confidence that these strategies will work based on results elsewhere. However, most measures have not been quantitatively evaluated within the hoki fishery. At present it is not possible to evaluate whether management objectives are being achieved for all ETP species. The summary scoring says that none of the SG100 guideposts were met, but SG100c was.	The report text and scoring has been amended to address the numeric inconsistency in 2.3.2. The correct scoring for this item is 85 (i.e. all issues are addressed for scoring guideposts 60 and 80. One scoring issue is met at the 100 scoring guidepost).

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
2.3.3	Yes	Yes	NA	Data collected from vessels (observers, vessel reporting) and other sources are sufficient to support quantitative assessments of ETP species with variable accuracy and precision. The data are sufficient to determine whether the fishery poses a threat, and to support the management strategies (e.g. seabird bycatch reduction). However, data collected are not of sufficient quality to support highly certain quantitative assessments of ETP species population status, fishery impacts on ETP species, or the effectiveness of management measures.	NA

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
2.4.1	Yes	Yes	Yes	Overlays of trawl tracks and habitat types have enabled examination of the amount of major habitat types in the NZ EEZ that have been trawled over the last 20 years. The habitat type considered by the Ecological Risk Assessment Expert Panel to be most affected by hoki trawling was BOMEC 9 on the Chatham Rise. The 20 year spatial extent of the hoki fishery was assessed near a point likely to cause local extinctions in BOMEC 9 if continued in the longer term.The certifier judged that the annual extent of the current fishery is unlikely to result in serious or irreverersible harm to the habitat, which is somewhat justified. There were some habitat types where it is justified to say that the fishery is highly unlikely to result in serious or irreversible harm based on the extent of unfished habitat. The proposed actions and milestones for Condition 1 are well targeted to address uncertainties in relation to this PI. The certifier recognised that long-term impact of trawl fishing on benthic communitiesis poorly understood generally.	NA

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
2.4.2	Yes	Yes	NA	Measures are in place that should work and should be expected to achieve the HO80 level of performance. There are management strategies in place, but not an integrated one that links objectives, impacts and actions, as recommended under Condition 1.	NA
2.4.3	Yes	Yes	NA	Existing studies provide a basic understanding of the distribution of different habitats, and the overlap of those with hoki trawling activity. Data are available and continue to be collected to allow evaluation of the nature of fishery impacts and the vulnerability of main habitat types. While the physical impact of trawling has been quantified, there is little information about the nature of habitats at a sub-regional scale, or what changes occur through time.	NA

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
2.5.1	Yes	Yes	NA	Ecosystem studies on the areas of the hoki non-spawning fishery (Chatham rise and to a lesser extent the sub-Antarctic) show no evidence of loss of community constituents, ecosystem function, or loss of species through time. These areas additionally affected by other fisheries, so the ecosystem impact of the hoki fishery is not examined in isolation. Ecosystem impacts of the hoki fishery in spawning areas are considered to be less significant than the non-spawning fishery mainly because the fish are less likely to be feeding, and the constrained timing of spawning. The majority of indicators currently assessed show that the fishery has not disrupted key elements underlying ecosystem structure and function. As there is already considerable effort underway to clarify the nature of ecosystem characteristics and ecosystem effects, uncertainty related to this PI should be reduced in future.	NA

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
2.5.2	Yes	Yes	NA	Measures are in place that are well specified and implemented for certain ecosytstem components (target, retained, bycatch and ETP species). There is also legislation, policy and management frameworks to manage ecosystem impacts. However there are no measures in place to specifically address ecosystem function, and the separate component plans are not integrated within an overall plan that is designed to addresses all main ecosystem effects of fishing.	NA
2.5.3	Yes	Yes	NA	Existing and ongoing data collection is sufficient to support the findings of ecostem effects of fishing for some components as listed in 2.5.2. For some bycatch and ETP species, existing data on their function within the ecosystem are poor.	

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
3.1.1	Yes	Yes	NA	Management of the NZ hoki fishery operates within a legal framework determined by various international agreements, Fisheries Act, and Treaty of Waitangi. Disputes may be resolved by the Minister or through the courts. Cooperative arrangements between the Ministry and Industry also provide a dispute resolution process, and there has been no evidence so far of fishing activities that continuously violate the law. The dispute resolution system has been tested and shown to be effectine. Maori people are allocated a proportion of the TAC for quota-managed fisheries under the Treaty of Waitangi and the Maori Fisheries Act 2004.	NA

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
3.1.2	Yes	Yes	NA	Organisations involved in management of the hoki fishery are the Ministry of Fisheries, Department of Conservation, and the Deep Water Group. Their functions and roles are well described and understood. The Ministry of Fisheries seeks the views of stakeholders throughout the year including the Initial Position process, the Working group forums, and fishery planning meetings. The consultation process is formalised and thorough.	NA
3.1.3	Yes	Yes	NA	Management policy is guided by the the Fisheries Act, strategic directions in Fisheries 2030 and the National Deepwater Plan that explicitly incorporate a precautionary approach, and are consistent with MSC Principles and Criteria.	NA

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
3.1.4	Yes	Yes	NA	ITQs provide stability and security for quota owners, and therefore an incentive for sustainable utilisation consistent with MSC Principles 1 and 2. Compliance mechanisms, deemed values and Annual Catch Entitlements help to support this incentive. There are no explicit incentives (positive feedback) for marine mammals or ETP species.	NA
3.2.1	Yes	Yes	NA	Objectives for the fishery are given in long-term plans such as Fisheries 2030 that are consistent with achieving the outcomes expressed by MSC Principles 1 and 2.However, many objectives are not quantitatively evaluated.	NA

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
3.2.2	Yes	Yes	NA	There are some decision-making processes in place that results in measures and strategies to achieve fishery objectives. The decision-making process and the precautionary approach are specified in the Fisheries Act. Consultation with and feedback to stakeholders is also formalised.	NA
3.2.3	Yes	Yes	NA	Monitoring and surveillance systems for the hoki fishery inlude a satellite Vessel Monitoring System, government observers and required reporting and record keeping. Non-compliance as evidenced through monitoring has resulted in prosecutions, which can be severe. An external report found that compliance with the management system is good.	NA

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
3.2.4	Yes	Yes	NA	A Ministry of Fisheries Hoki and Aquatic Environment medium term research planprovides strategic research priorities for the fishery. An annual Research Coordinating Committee steers the direction of research according to the goals of fishery management. A 10-year Research Program for deepwater fisheries has also been developed by the Ministry of Fisheries in consultation with the DWG. The Hoki Working Group and Aquatic Environment Working Group plan, discuss and evaluate research. Plans and results are widely disseminated.	NA

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
3.2.5	Yes	Yes	NA	The DWG has mechanisms in place to examine all aspects of the management system, and is subject to regular internal and external review. Annual external audits of the Ministry of Fisheries management system against the Statement of Intent are published as part of the Ministry's annual report. Internal processes evaluate many, but not all aspects of the Ministry of Fisheries management system. There has not been an external review of the hoki stock assessment since 1999.	NA

Any Other Comments

Comments	Conformity Assessment Body Response

Appendix 3. Stakeholder submissions

Appendix 3-1

MSC Interview Record NZ Hoki Reassessment

IMM Attendees
Lead Auditor/Coordinator: Jo Akroyd
Team Members: Andre Punt, Johanna Pierre

Stakeholders:

Affiliation	Representatives
1. WWF-NZ	Rebecca Bird, Bob Zuur
2. RoyalForest and Bird Protection Society	Kevin Hackwell, Katrina Subedar
ASI auditor	Wetjens Dimmlich

Location: WWF offices, Wellington, NZ

Date: 14 November 2011

1. Introduction. MML Lead Auditor to introduce MSC assessment to Stakeholders, including

- Fishery Unit of Certification (and client)
- Assessment Team
- Intertek Moody Marine as independent CB accredited to carry out MSC assessments
- Purpose of meeting – information collection and identification of issues relevant to fishery assessment
- MSC Principles & Criteria and Assessment Process being followed; FAM Assessment Tree
- That stakeholder comments may be non-attributable if required

Comments:
Thanked the NGOs for their participation and encouraged NGOs input into process.
Meeting Attendance record signed and confidentiality arrangements explained.
Outlined timetable for reassessment process – this may take 12 months.

2. Status
What is the nature of the organisations interest in the fishery (e.g. client / science / management / industry / eNGOetc)

eNGOs

3. eNGO process issues
Assessment team questions for stakeholder response

1. Communication between the client group (DWG) and eNGOs still remains to be an issue. Although a large number of documents had been supplied to all stakeholders this occurred VERY late, not allowing enough time for due consideration prior to site visit. There were continuing problems with formal and informal meetings with DWG and often the eNGOs felt any invitations were of a "have to" nature rather than " we value your input" nature. ENGOs would like to be involved in an at least quarterly engagement with DWG on progress with conditions rather than a 1 * per year invitation.
2. The eNGOs considered the relationship with DWG had become more "adversary". WWF believe that they have tried to encourage better communication with DWG but this hasn't been the result. MFish Working Group meetings, although NGOs participated, and were open and transparent and provided useful information, the processes were unsatisfactory mostly due to in efficient and ineffective chairing.
3. The Working Groups are open and transparent. The documents which are discussed within the Working Group appear impartial. Effective chairing of meetings would make the groups more efficient.

4. Stakeholder Key Issues

What, if any, specific substantive issues or concerns are identified regarding the fishery? (P1 – P2 – P3)

What information is available to allow us to determine the status of the fishery in relation to each issue?

P1: The status of the target fish resource is better with the western stock having increased. The fishery has changed substantially over the last ten years, in particular major reductions in catch have taken place. The Harvest Strategy Standard is focused on reference points. A harvest strategy limited to reference points may, however, not be ideal for stocks with considerable variation in recruitment – effective management is more than setting reference points. Factors affecting recruitment, such as climate, should be studied. Increased TACCs could lead to the need for rapid and substantial reductions in TACC and possibly to a boom-and-bust fishery. This leads to the question of whether companies will remain compliant if the stock declines. Increases in TACC will lead to increased effort levels and hence increased impacts on ecosystems, habitats, and ETP species. Why is the split between the east and west not mandatory? The Harvest Strategy Standard, HSS, is likely to only achieve MSY, although there may be response lags. However, the benefits of having a transparent process for decision making cannot be over-emphasized. WWF will include comments on the limitations of the HSS in its submissions

P2: - Hoki fishery involves a broader complex of fish species including retained bycatch, etc. The monitoring of fish caught is pretty good, through observer data collection. Observer coverage is at acceptable levels generally (but note issue with less than adequate Cook Strait coverage in context of fur seal discussion later in notes). Meaning of catch statistics in the context of vulnerability is not clear, e.g. deepwater skates, pale ghost sharks. Trawl surveys don't catch all species representatively. Ideally, eNGOs would like see a research response to capture of species with low fecundity.

- Basking sharks now not targeted in NZ waters to their knowledge. Less frequent sightings than previous years though.

- TAC increase: This is expected to induce an increase in fishing effort, which will have flow on effects to retained bycatch, and ETP species, as well as habitat and ecosystem impacts. Problematic in our view that seabird bycatch rates (i.e. seabird captures per unit fishing effort) are essentially stable over recent years and not a declining trend. Consequently, an increase in TAC will most likely cause an increase in effort, which is expected to result in increased bycatch. May also see return of ling overcatch (LIN7) noted in previous years.
- Cryptic mortality: Note that seabird warp strike observations no longer occur. Need to be reinstated as cryptic mortality still a key issue – mortality levels are not well defined in this area.
- Former NPOA – Seabirds comprised two objectives, one around population maintenance and second around minimizing mortalities/captures. Status of the NPOA in relation to the ineffective" Seabird Policy is unclear. This needs to be reinstated to effectively manage hoki fishery impacts on seabirds.
- Lack of clarity re indirect and direct effects, e.g. Buller's albatross. Feeding on offal discharged has been argued by some to be increasing population size. However, fishery is taking large quantities of food from the ocean system.
- Important questions to consider: Has there been reduction in bycatch rates? Has there been continual improvement in practices relating to ETP species? What about the issues around foreign charter vessels having offal management practices that are not as good as e.g. domestic vessels? What about the ongoing issue of cryptic mortality and where is the management response including monitoring?

With the closure of the Condition related to seabirds on the second MSC certification of hoki, the issue appears to be closed for industry, but not for WWF. An increasing TAC is expected to lead to an increased seabird kill.

- Increases in observer coverage also provide greater opportunities for collection of information relating to ETP species.
- Fur seals: may be some cryptic mortality with this species too (study in Australian blue grenadier fishery where bodies of already moribund seals washed out of trawl nets during tows). Kills of this species have also declined with reductions in fishing effort. There may be a slight absolute decline but this not statistically significant. Issue of Seal Exclusion Devices not resolved. Large numbers of seals still being killed. With the closure of the Condition related to seals on the second MSC certification of hoki, the issue appears to be closed for industry, but not for WWF. An increasing TAC is expected to lead to an increased fur seal kill.
- Marine Mammal Operation Procedure: Assumes captures are not occurring during towing, but largely e.g. during hauling. Has the efficacy of this OP been assessed? We note it is problematic that it is only voluntary
- Fur seal population trends: West Coast South Island – unpublished data at DOC which suggests decline, but this cannot be substantiated unless data are made available. Barry Baker has been involved with some attempted abundance estimations but there are technical issues with the work.
- Benthic issues: Substantial trawl impacts on BOMEC habitat class 9. But, it is as yet undefined in this context what an 'acceptable impact' is. Therefore, it is not possible to assess against that. WWF not opposed to bottom trawling per se, but appropriate management is critical. There is scope to manage benthic effects and impacts on corals.

Unfortunately, monitoring coral bycatch has become a surrogate for management of impacts on corals. Spatial management is a way to manage the effects of trawling on benthos.
- Benthic Protected Areas: must consider the extent to which these are appropriate to manage habitat impacts. Encourage a holistic and collaborative approach to managing benthic impacts in the EEZ, e.g. fisheries, mining, etc. On the Chatham Rise, a mining proposal is co-located with a current BPA, which is problematic to this BPA's future. Overall, BPAs are not representative, and Leathwick has published work showing how BPAs could be adjusted to better protect biodiversity. There are no BPAs on the northern and southern slopes of the Chatham Rise, but there is a lot of fishing (e.g. BOMEC 9).
- Ecosystem effects of fishing: Hoki is an extremely important species in the Chatham Rise ecosystem. It may be a keystone species. Reducing biomass of this species is likely to have significant impacts on the ecosystem. This is a challenging area of fisheries management, but new ecosystem modeling tools provide better opportunities to investigate ecosystem effects. Fisheries managers should be paying attention to the results of Pinkerton's work on long term indicators of ecosystem condition.
- Level 2 seabird risk assessment (Richard et al., included in document list) – This document frames risk in terms of estimated potential mortalities to PBR, which is a first approach to actually defining a limit at the level of the population. There are two aspects:
- Technical issues associated with the calculations revealing possible/likely risks
- Management issues in terms of a benchmark to assess the significance of the estimated impacts
.

P3: issues
- Fisheries 2030: much of this is framed "within environmental limits", but these limits are not defined anywhere. The Research Standard and Harvest Strategy Standard are the only standards completed. The Research Standard does not relate specifically to environmental effects. Formerly the Seabird Standard was a document linked to the NPOA – Seabirds. Further, development of a benthic impact standard was promised. WWF supported the (previous) revision of the NPOA – work occurred with industry and other stakeholders over more than14 months. WWF and RF&BPS made joint submissions with industry. A significant amount of resource was committed to this process, which was subsequently abandoned. Now, the draft Seabird Policy has been produced. This document does use a flawed risk-based approach, and is weak overall. There is still not clear standard re what is 'sufficient' in terms of reductions in mortalities, or mechanisms applied. Fisheries Plans also have no provision to consider seabird mortalities 'within biological limits' yet defer to the missing standards to set benchmarks for management
- The role of precaution in decision-making is not clear. Decisions must be made/are being made without information at times and without input from eNGOs and without genuine consultation on the process
- The 10 year Research Plan was produced before the Fishery Plan was produced, and yet the latter must be linked to the former. There was no initial assessment of what information was needed for management. WWF made a detailed submission, but most points were not taken up.
- eNGOs need to be involved in the consultation at the beginning of a process, i.e., not come in at the end when they consider most decisions have been made.
-MFish has discussed an Environmental Advisory group for some time but as yet nothing has eventuated. There would need to be very clear Terms of Reference and eNGOs would like to

be involved in their development. There also needs to be another forum for consultation involving a small committee like group representing the various interests including eNGOs and industry that are involved in identifying key issues and their management.
- ENGOs continue to be concerned about the MoU between the DWG and MFish and consider that this relationship often means eNGOs are left out

5. Other issues
(e.g. any other stakeholders we should contact, any written submissions to follow?)

The reassessment interview process was discussed and the NGO concerns that the client fishery not be present at any stakeholder meetings has been taken up by IMM and that this will not occur.

Written submission to follow within 3 weeks

6. Closing

IMM Lead Auditor:

- Summary of key points – stakeholder to confirm in writing (by email orsign if hard copy)
- Are comments to be attributed?
- Timescale for completion, including further opportunities for stakeholder input

Confirmed  BY EMAIL

IMM Lead Auditor Stakeholders

MSC Interview Record Hoki Reassessment

IMM Attendees
Lead Auditor/Coordinator: Jo Akroyd
Team Members: Johanna Pierre

Stakeholders:

Affiliation	**Representatives**
1.DOC	Ian Angus, Kris Ramm, Russell Harding, Clinton Duffy (phone), Sean Cooper (phone), Don Neale (phone), Laura Boren (phone)

Location:DOC Head Office, Wellington, NZ

Date: 17 November 2011

1. Introduction. MML Lead Auditor to introduce MSC assessment to Stakeholders, including

- Fishery Unit of Certification (and client)
- Assessment Team
- Intertek Moody Marine as independent CB accredited to carry out MSC assessments
- Purpose of meeting – information collection and identification of issues relevant to fishery assessment
- MSC Principles & Criteria and Assessment Process being followed; FAM Assessment Tree
- RBF (if applicable)
- That stakeholder comments may be non-attributable if required

Comments:
Explained reassessment process
Use of new MSC requirements
Timeline for reassessment

2. Status
What is the nature of the organisations interest in the fishery (e.g. client / science / management / industry / eNGOetc)

Government Department

3. IMM Questions
Assessment team questions for stakeholder response

4. Stakeholder Key Issues

What, if any, specific substantive issues or concerns are identified regarding the fishery? (P1 – P2 – P3)

What information is available to allow us to determine the status of the fishery in relation to each issue?

- Benthic Protected Areas (BPAs) and Marine Protected Areas (MPAs): Ecological value of BPAs has not been assessed, and this is essential to ascertain their protection value. BPAs are not classified as MPAs under the NZ MPA Policy. An inventory and gap analysis of MPAs, as described under the MPAP, has been conducted and submitted to the Ministers of Conservation and Fisheries. Better representation of habitat areas would be valuable, notably within fishable depths (and beyond rough ground in fishable depths). Reviewing the potential ecological value of BPAs, using available information, is flagged as a potential worthwhile exercise.

- Indirect effects: work initiated, through Marine Conservation Services programme, to examine for effects. Starting with a literature review. After will consider outcomes with stakeholders before planning for any further work..

- Fur seals: Long-term pup count data being compiled and will be usable/available on request. In addition to the WCSI, the Cook Strait is viewed as a hotspot for captures. Mechanical/technological improvements view as a limited solution to avoiding further captures – operational practices seen as more effective solution. Regional bycatch is planned to be examined through a genetic study, described in Marine Conservation Services Annual Plan. This project is currently being developed. Fur seal pup production annual estimates continue at three locations on the West Coast of the South Island. Current work includes a 3-yr post-doc project on female fur seal foraging. Work is also underway on genetics and tourism impacts. Some concerns exist over the design and implementation of some recent surveys on WCSI. A cohesive plan of fur seal work would be valuable to ensure research was maximally efficient and useful/appropriate.

- Shovelnose dogfish: This is a species complex rather than a single species, and identification of species within the complex is extremely difficult. Most indicators seem to show that the complex is resilient to bycatch at recent levels. Deepwater sharks in general are of conservation interest due to their vulnerability. One particular species of bycatch interest is Plunket's shark, as its distribution overlaps almost entirely with midwater trawl fisheries. It is suggested that the NPOA-Sharks reviews biological information available on shark species. Currently landing data are reflected in the NPOA. These data do not provide information on biological status. The review of the NPOA-Sharks will be a good opportunity to improve this document.

- Warp strike monitoring: Ongoing monitoring of the effectiveness of warp strike mitigation devices and offal management is useful, and has been raised in the Observer Optimisation review (OOR). Is it not decided as yet whether data collection around warp strikes will be a standard part of monitoring, or conducted as a targeted project. However, the OOR is progressing well.

- Protected species observer coverage is purchased as part of MFish Observer coverage (around 15% of observers' time). Observers are all trained in protected species identification and the fisheries/protected species context. The briefing/debriefing process for DOC is based around particular areas of interest and following up on protected species incidents at sea. All observers are briefed/debriefed by MFish with both raw and summarised information being passed on to DOC.

- Paying close attention to basking sharks and developments with this species (See Marine Conservation Services Annual Plan). This is a follow on and expansion of previous work by Malcolm Francis. There is also work underway reviewing population information of protected fish species and the nature and extent of fisheries interactions.

- DOC aims to have representation at MFish Aquatic Environment Working Group meetings. This is a dynamic discussion with good opportunities for input. The process is open with frank discussion. DOC and MFish Science communicate well.

- Is a level of reporting of unobserved captures (i.e. fisher reporting, as required by law under the Wildlife Act). The level is highly variable, but there is some reporting occurring across most fisheries now.

5. Other issues
(e.g. any other stakeholders we should contact, any written submissions to follow?)

6. Closing

IMM Lead Auditor:

- Summary of key points – stakeholder to confirm in writing (sign if hard copy)
- Are comments to be attributed?
- Timescale for completion, including further opportunities for stakeholder input

Confirmed by email

IMM Lead Auditor Stakeholders

MSC Interview Record SeaFIC reassessment

IMM Attendees
Lead Auditor/Coordinator: Jo Akroyd
Team Members: Andre Punt, Johanna Pierre

Stakeholders:

Affiliation	Representatives
1. New Zealand Seafood Industry Council	David Middleton, Alastair Macfarlane

Location:

Date: 15 November 2011

1. Introduction. MML Lead Auditor to introduce MSC assessment to Stakeholders, including

- Fishery Unit of Certification (and client)
- Assessment Team
- Intertek Moody Marine as independent CB accredited to carry out MSC assessments
- Purpose of meeting – information collection and identification of issues relevant to fishery assessment
- MSC Principles & Criteria and Assessment Process being followed; FAM Assessment Tree
- That stakeholder comments may be non-attributable if required

Comments:
Explained reassessment process
Use of new MSC requirements
Timeline for reassessment

2. Status
What is the nature of the organisations interest in the fishery (e.g. client / science / management / industry / eNGOetc)

Sea Food Industry representatives

3. IMM Questions
Assessment team questions for stakeholder response

P1, P2, P3

4. Stakeholder Key Issues

What, if any, specific substantive issues or concerns are identified regarding the fishery? (P1 – P2 – P3)

What information is available to allow us to determine the status of the fishery in relation to each issue?

-The Harvest Strategy Standard, HSS, appears to be working well for hoki and helped to define a target biomass range and to allow reference to be made to B_{MSY}. However, there is some inconsistency among species in how, for example, default reference points such as $0.4B_0$ and B_{MSY} are related.

-In relation to the use of MSE, Adam Langley used a plausible decision rule which attempts to mimic how decision making for hoki takes place. -NIWA is conducting analyses to examine the implications of conducting surveys in the sub-Antarctic less frequently. The work involves the assumption that TACCs will increase in some way to a plateau of 150,000t. The management system does not have a set of fully-specified decision rules, and the Minister continues to have a key role in all decision making. There are discussions among industry regarding a move to a more rule-based system.

- Industry continue to support the Minister, and not scientists, as the final decision maker.

- Would reiterate the comments made for the 4thSurveilliance audit. That is:

- Splitting fish species into the MFish's Tier 1, 2, and 3 makes sense from a research planning perspective. Work on Tier 2 species

comprises regular fishery characterization and collecting data to establish an index of abundance. Once the information is collected,

MFish is less clear about what to do with it, including how to interpret it.

- The Trident project has been proposed, and funding is currently being sought from quota holders. This initiative is focused on inshore

finfish fisheries, and has three prongs: efficient sampling of inshore fisheries, evaluating management procedures for lower information

stocks, and realizing greater value from fisheries data.

- Also, consider that other Tier 1 species lag behind where hoki is at (in terms of the understanding of status, and use of quantitative tools to do this).

- 10-year Research Plan will always be incomplete with respect to ETP species, because it is intended to be for fishery management, not management of these species (which are affected by many factors other than fisheries, e.g. climate, human impacts, international status). It is appropriate to look, case by case, for gaps in ETP data and address these, rather than expecting the 10-year Research Plan to be a catch-all. For example, for NZ fur seals, there is no (evident) clear research plan, but DOC has been attempting to rationalize the information that they hold, including making these data available for others to use.

- Ecosystem effects of fishing: it is not clear currently what research is planned in this area, or the timescale of that research. There is an issue of undefined targets/limits in this area.

- Benthic Protected Areas: What it means to review these is not clear. Had thought the 'review' was more intended to be a review of Marine Protected Areas in the non-territorial sea, rather than a review of BPAs themselves.

- Indirect effects: The ERA workshop did a reasonably good job considering these and concluded that the issues here weren't particularly concerning.

- The seabird standard process has been held up by the MFish restructure, has involved problematic consultation, and has also been the focus of some unfortunate media coverage.
- Uptake of science by management – Not a hoki-specific comment, but general improvement could be made in undertaking research that is relevant to management. For example, with respect to ecosystem indicators – what are the links between these and fishery management? What should be considered and why?
-SeaFIC have a role in upholding legislative decisions egTomyMaru case
-Foreign charter vessels are causing much interest and concern. There is currently an investigation underway as to living conditions for crew. The controversy has caused discontent amongst major industry players, i.e.m between those that are all NZ crewed and operated and those that use foreign charters.
- There are 'rumors" concerning the way foreign charters disregard fisheries law – however these have not been substantiated.
- Issues concerning – origin of catch and flagging of vessels is currently under discussion and depending on the outcome this could have consequences for eth hoki fishery

5. Other issues
(e.g. any other stakeholders we should contact, any written submissions to follow?)

6. Closing

IMM Lead Auditor:

- Summary of key points – stakeholder to confirm in writing (sign if hard copy)
- Are comments to be attributed?
- Timescale for completion, including further opportunities for stakeholder input

Confirmed BY EMAIL

IMM Lead Auditor Stakeholders

MSC Interview Record NIWA (1) hoki reassessment

IMM Attendees
Lead Auditor/Coordinator: Jo Akroyd
Team Members: Andre Punt, Johanna Pierre

Stakeholders:

Affiliation	Representatives
1. National Institute for Water and Atmospheric Research	Neil Bagley, Peter Horn, Ian Tuck, Andy Mackenzie
	Ian Tuck (by video link)

Location:

Date: 15 November 2011

1. Introduction. MML Lead Auditor to introduce MSC assessment to Stakeholders, including

- Fishery Unit of Certification (and client)
- Assessment Team
- Intertek Moody Marine as independent CB accredited to carry out MSC assessments
- Purpose of meeting – information collection and identification of issues relevant to fishery assessment
- MSC Principles & Criteria and Assessment Process being followed; FAM Assessment Tree
- That stakeholder comments may be non-attributable if required

Comments:
Explained MSC principles and criteria.for sustainable fishing- P1, P2, P3 assessment scoring guideposts etc
MSC process for assessment including timeline

2. Status
What is the nature of the organisations interest in the fishery (e.g. client / science / management / industry / eNGOetc)

NIWA – independent research provider

3. IMM Questions
Assessment team questions for stakeholder response

P1, P2, P3

4. Stakeholder Key Comments

What, if any, specific substantive issues or concerns are identified regarding the fishery? (P1 – P2 – P3)

What information is available to allow us to determine the status of the fishery in relation to each issue?

- The analysis of the time series of biomass indices for the summer Sub-Antarctic trawl survey has been completed, but the report is not yet available.
- Fisheries characterizations are available for some Tier 2 species i.e., for silver warehou, ribald, lookdown dory (barracouta and squid are almost submitted). These provide additional information for lesser species and involve analysing all available data including: (a) survey data, (b) catch-effort information, and (c) observer data, as well as reviewing stock structure. Characterisations provide detailed summaries of temporal and spatial pattern in the fisheries..
- Observer data programme is being optimised to provide better biological data for Tier 2 species such as length and perhaps age compositions (if enough samples). In principle, changes in the age-compositions over time can be used to estimate changes in recruitment and fishing mortality.
- MFish also contracts targeted work on species, e.g. comparisons of age distributions 5 years apart, to examine what has changed and consider why it has changed. ??? not sure what this is referring to?? Middle depth species are either done annually or there is no structured programme in place yet. Waiting on results of characterization studies.
- Recent discussion with MFish re a Deepwater Research Plan project to identify a suite of ecosystem indicators for fisheries. NIWA seeking direction from MFish re what information they're seeking to gain from ecosystem indicators, which will facilitate the selection of the indicators.
- Benthic Protected Areas: Leathwick's paper reflects valuable information on these. Areas are protected, but don't reflect the full range of habitats present, in a representative way. For example, there is considerable coverage in deep areas, while shallower areas are not protected, e.g. BOMEC 9: heavily fished, but not well protected. If one is seeking to optimize BPA design, one could seek to modify their design to be more representative. Also, BPAs only protect from fishing, not other industry (e.g. mining). There is work currently being carried out on the Chatham Rise (current survey) on benthic communities, including BPAs
- Disappointed that the benthic impact standard process was not completed by MFish. Some monitoring of overall benthic disturbance would be valuable. Current deepwater plan project to develop benthic indicators (Malcolm Clark)
-Stock assessments are reviewed throughout the process, at the Working Group stage, by other NIWA staff and by MFish scientists. There has not been an independent external review of the hoki assessment since 1999. Concern that reasons for the period of poor recruitment for hoki and the significant apparent change in catchability of the SubAntarctic surveys (i.e., 4 low years in mid 2000s) are not being further investigated. They both have important implcations for stock status and could occur again in the future. Also concern that the change in Code of Practice has resulted in more small fish being caught in 2009-10 (e.g., proportion <55cm doubled in SubAntarctic and Chatham Rise)

5. Closing

IMM Lead Auditor:

- Summary of key points – stakeholder to confirm in writing (sign if hard copy)
- Are comments to be attributed?
- Timescale for completion, including further opportunities for stakeholder input

Confirmed BY EMAIL

IMM Lead Auditor Stakeholders

MSC Interview Record

IMM Attendees
Lead Auditor/Coordinator: Jo Akroyd
Team Members: Andre Punt, Johanna Pierre

Stakeholders:

Affiliation	Representatives
1. MFish	Aoife Martin, Vicky Reeve
2.	

Location:

Date: 14 November 2011

1. Introduction. MML Lead Auditor to introduce MSC assessment to Stakeholders, including

- Fishery Unit of Certification (and client)
- Assessment Team
- Intertek Moody Marine as independent CB accredited to carry out MSC assessments
- Purpose of meeting – information collection and identification of issues relevant to fishery assessment
- MSC Principles & Criteria and Assessment Process being followed; FAM Assessment Tree
- That stakeholder comments may be non-attributable if required

Comments:
Thanked the MFish for their participation and encouraged input into process.
Meeting Attendance record signed and confidentiality arrangements explained.
Outline timing schedule for re assessment

2. Status
What is the nature of the organisations interest in the fishery (e.g. client / science / management / industry / eNGOetc)

MFish Deepwater Operations

3. IMM Questions
Assessment team questions for stakeholder response

P1, P2, P3

4. Stakeholder Key Issues

What, if any, specific substantive issues or concerns are identified regarding the fishery? (P1 – P2 – P3)

What information is available to allow us to determine the status of the fishery in relation to each issue?

- There are currently no plans to contract an external review of the stock assessment, although if needed this could be funded using supplementary funds.
-In relation to Tier 2 species (key bycatch species), it will not always be possible to implement specific harvest strategies.
-Management Action 28 in Annual Operational Plan aims to develop management procedures for silver warehou and white warehou. These species were selected to go through this process first, due to the size and extent of the fisheries these stocks support. This process will then be continued to include all the Tier 2 species through the course of the 10 Year Research Programme.
-In relation to Tier 3 species, if a problem is detected, a species can be added to the QMS and/or the species managed under Section 11 of the Act. However, it is difficult to detect whether there is a sustainability concern. However, a synthesis of the 20 year time series of trawl surveys on the Chatham Rise has not highlighted sustainability concerns with any Tier 3 species, and a project has also been contracted to synthesize the results of the trawl surveys for the sub-Antarctic. A project has also been funded to conduct Level 1 risk assessments for Tier 3 species which could lead to additional research being conducted.
- Benthic Protection Areas – in place until 2013. Towards the end of 2012, a review process on these will start. The focus of the review is maintaining the relevance of BPAs. Terms of reference are not yet developed for this review.
- The 10-year Fisheries Research Plan is being implemented. Several 5 year projects are underway, a full list of which will be provided to the team.
- The Deepwater Plan and Hoki Fisheries plan are being implemented. Clear objectives for the fishery are explicit and performance indicators are in place to test their effectiveness.
- The DWG and MFish Memorandum of Understanding has been renewed

5. Closing

IMM Lead Auditor:

- Summary of key points – stakeholder to confirm in writing (sign if hard copy)
- Are comments to be attributed?
- Timescale for completion, including further opportunities for stakeholder input

Confirmed

IMM Lead Auditor

Stakeholder

By email

MSC Interview Record MFish Science Reassessment

IMM Attendees
Lead Auditor/Coordinator: Jo Akroyd
Team Members: Andre Punt, Johanna Pierre

Stakeholders:

Affiliation	Representatives
1. MFish: FM Science Mary Livingston, Kevin Sullivan, RohanCurrey, 2. MFish FM Deepwater	Martin Cryer, Pamela Mace, Geoff Tingley Vicky Reeve

Location: Level 4, ASB House, 101-103 The Terrace, Wellington

Date: 14 November 2011

1. Introduction. MML Lead Auditor to introduce MSC assessment to Stakeholders, including

- Fishery Unit of Certification (and client)
- Assessment Team
- Intertek Moody Marine as independent CB accredited to carry out MSC assessments
- Purpose of meeting – information collection and identification of issues relevant to fishery assessment
- MSC Principles & Criteria and Assessment Process being followed; FAM Assessment Tree
- That stakeholder comments may be non-attributable if required

Comments: Thanked MFish for their participation and input into the process
Meeting Attendance record signed and confidentiality arrangements explained.
.Outlined reassessment timing schedule

2. Status
What is the nature of the organisation's interest in the fishery (e.g. client / science / management / industry / eNGOetc)

Ministry of Fisheries FM Science

3. IMM Questions
Assessment team questions for stakeholder response

P1, P2, P3

4. Stakeholder Key Issues
What, if any, specific substantive issues or concerns are identified regarding the fishery? (P1 – P2 – P3)
What information is available to allow us to determine the status of the fishery in relation to each issue?

- An external review of the hoki assessment may take place during 2011-12, which could consider the biology of hoki in addition to the assessment *per se*, as much of the biological information is based on work conducted 15-20 years ago.
- The Operational Guidelines for the Harvest Strategy Standard, HSS, have been updated. The major changes to the document relate to metrics for quantifying fishing intensity as well as to the roles and responsibilities of Science Working Groups and fisheries managers.
-Formal retrospective analyses have not been conducted for the hoki assessment in recent years, but a retrospective analysis has been conducted in the past. At the time, it was considered by some to be not particularly useful in understanding stock status or interpreting the assessment results.
-The Ministry is planning to revise the format and content of the Status of Stocks tables used to summarise the results of stock assessments for an increasing number of species. It is also planning to do other things – e.g. status in relation to targets, status in relation to other relevant reference points, recent trends, etc. Under the HSS, management needs to implement controls to allow the stock to fluctuate about the management target. However, how that is achieved for stocks between the target and soft limit is not prescribed in the HSS, although the mechanisms for achieving it are listed. The recent management decision for scampi illustrates management actions for a stock projected to drop below the soft limit.
- Assessment procedures for Tier 2 and Tier 3 species: Assessment for Tier 2 and 3 species are not considered on the basis of Tier categorisation. There are 286 stocks in the QMS for which there is no evidence of commercial or non-commercial potential (out of a total of 636 stocks).
- Observer data generate fleet-wide catch estimates of retained and ETP species. There is no process for detection of emerging issues, but where there is an issue, the observer programme is flexible and can respond by, for example, collecting additional data or through increased coverage.
- There has been some work on indirect effects relevant to hoki, A paper has been produced arguing that commercial fishing is an indirect cause of population decline in sealions but some feel its findings are not well-supported and, even if they were, hoki would only form a (relatively small?) part of the indirect effect.
- Benthic Protected Areas: These are not representative of the range of ecological habitat types (as defined by, for example, BOMEC); depth discontinuities may cause connectivity issues; they don't overlap much with the hoki fishery; and they are probably more protective of orange roughy habitat. The BPAs set aside a large area of seabed free from bottom trawling in areas where there has been only a limited history of fishing, most of which is in very deep waters.
- Habitat-related research underway includes "habitats of particular significance to fisheries management", defining ecosystem approaches to fisheries (which will be followed by a workshop process to develop a plan for the science needed to support an ecosystem approach), genetic assessment of connectivity, and a revision of BOMEC.
- Research planning: AIt's a nested question and scoring approach is used for prioritising projects, which works well on some, but not for other projects. Martin Cryer agreed to provide the spreadsheet and associated documentation to the team.

5. Closing

IMM Lead Auditor:

- Summary of key points – stakeholder to confirm in writing (email or sign if hard copy)
- Are comments to be attributed?
- Timescale for completion, including further opportunities for stakeholder input

Confirmed BY EMAIL

IMM Lead Auditor Stakeholders by email

MSC Interview Record

IMM Attendees
Lead Auditor/Coordinator: Jo Akroyd
Team Members: Andre Punt, Johanna Pierre

Stakeholders:

Affiliation	Representatives
1. National Institute for Water and Atmospheric Research	Neil Bagley, Peter Horn, Ian Tuck, Andy Mackenzie
	Ian Tuck (by video link)

Location:

Date: 15 November 2011

1. Introduction. MML Lead Auditor to introduce MSC assessment to Stakeholders, including

- Fishery Unit of Certification (and client)
- Assessment Team
- Intertek Moody Marine as independent CB accredited to carry out MSC assessments
- Purpose of meeting – information collection and identification of issues relevant to fishery assessment
- MSC Principles & Criteria and Assessment Process being followed; FAM Assessment Tree
- That stakeholder comments may be non-attributable if required

Comments:
Explained MSC principles and criteria.for sustainable fishing- P1, P2, P3 assessment scoring guideposts etc
MSC process for assessment including timeline

2. Status
What is the nature of the organisations interest in the fishery (e.g. client / science / management / industry / eNGOetc)

NIWA – independent research provider

3. IMM Questions
Assessment team questions for stakeholder response

P1, P2, P3

4. Stakeholder Key Comments

What, if any, specific substantive issues or concerns are identified regarding the fishery? (P1 – P2 – P3)
What information is available to allow us to determine the status of the fishery in relation to each issue?

- The analysis of the biomass indices for the summer Sub-Antarctic trawl survey has been completed, but the report is not yet available.
- Fisheries characterizations are available for some Tier 2 species e.g. for silver warehou. These, could provide additional information for lesser species and involve analysing all available data including: (a) survey data, (b) catch-effort information, and (c) observer data. Catch-effort data can be used to inform spatial distribution as well as how and when a species is caught.
- Observer data provide better biological data such as length and perhaps age compositions. In principle, changes in the age-compositions among years can be used to estimate changes in fishing mortality over time.
- MFish also contracts targeted work on species, e.g. comparisons of age distributions 5 years apart, to examine what has changed and consider why it has changed.

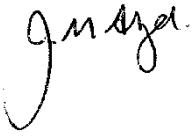
- Recent discussion with MFish re a Deepwater Research Plan project to identify a suite of ecosystem indicators for fisheries. This is a while away for now, and MFish not expected to settle on particular indicators any time soon. However, there is interest from MFish in trends. NIWA seeking direction from MFish re what information they're seeking to gain from ecosystem indicators, which will facilitate the selection of the indicators.
- Benthic Protected Areas: Leathwick's paper reflects valuable information on these. Areas are protected, but don't reflect the full range of habitats present, in a representative way. For example, there is considerable coverage in deep areas, while shallower areas are not protected, e.g. BOMEC 9: heavily fished, but not well protected. If one is seeking to optimize BPA design, one could seek to modify their design to be more representative. Also, BPAs only protect from fishing, not other industry (e.g. mining).
- Disappointed that the benthic impact standard process was not completed by MFish. Some monitoring of overall benthic disturbance would be valuable.
-Stock assessments are reviewed throughout the process, at the Working Group stage, by other NIWA staff, by fishing industry and NGO representatives, and by MFish scientists. There has not been an independent external review of the hoki assessment since 1999.

5. Other issues
(e.g. any other stakeholders we should contact, any written submissions to follow?)

6. Closing

IMM Lead Auditor:

- Summary of key points – stakeholder to confirm in writing (sign if hard copy)
- Are comments to be attributed?
- Timescale for completion, including further opportunities for stakeholder input

Confirmed 

IMM Lead Auditor

Stakeholders By email

MSC Interview Record (NIWA hoki reassessment)

IMM Attendees
Lead Auditor/Coordinator: Jo Akroyd
Team Members: Andre Punt, Johanna Pierre

Stakeholders:

Affiliation	**Representatives**
1. NIWA	Matt Dunn, Matt Pinkerton

Location:

Date: 16 November 2011

1. Introduction. MML Lead Auditor to introduce MSC assessment to Stakeholders, including

- Fishery Unit of Certification (and client)
- Assessment Team
- Intertek Moody Marine as independent CB accredited to carry out MSC assessments
- Purpose of meeting – information collection and identification of issues relevant to fishery assessment
- MSC Principles & Criteria and Assessment Process being followed; FAM Assessment Tree
- RBF (if applicable)
- That stakeholder comments may be non-attributable if required

2. Status
What is the nature of the organisations interest in the fishery (e.g. client / science / management / industry / eNGOetc)

NIWA research provider

3. IMM Questions
Assessment team questions for stakeholder response

Trophic and benthic issues

4. Stakeholder Key Issues
What, if any, specific substantive issues or concerns are identified regarding the fishery? (P1 – P2 – P3)
What information is available to allow us to determine the status of the fishery in relation to each issue?

- Significant information has already been collected through work to date on ecosystem indicators, and this has not yet been visibly incorporated into management. Clear links to management strategies would help focus data collection initiatives. It is difficult to describe

a risk quantitatively, and will be for some time. However, better use of the information already available would be informative for management.

- Key information missing on the system includes hoki recruitment. This is assumed to be to be deterministic, with different levels of mean hoki recruitment assumed in projections. The factors determining recruitment variability and the mean level of future recruitment are poorly understood..

- Data collection in the ecosystem and benthic areas has been sporadic - temporal and spatial variability are significant and not well understood. Data often take the form of temporal snapshots, which may look quite different a few months later.

- Ecosystem effects of fishing for hoki cannot be considered without also considering other fish and invertebrate species in the ecosystem, or managed in isolation from other fisheries

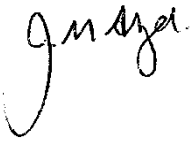
- Benthic Protected Areas could be more representative and a better compromise between habitats and fishing patterns. This issue could be addressed using bioregional maps, identifying important fishing, ecological and oceanographic areas, etc, and trying to pick win-win areas for both biodiversity conservation and fishing. Information about connectivity over different time scales is lacking (for just about all fauna), which will make the evaluation of the benefits of BPAs tricky

- Use of a suite of well chosen headline ecosystem indicators could highlight changes occurring in the ecosystem and identify where further investigation and/or management action is required

6. Closing

IMM Lead Auditor:

- Summary of key points – stakeholder to confirm in writing (sign if hard copy)
- Are comments to be attributed?
- Timescale for completion, including further opportunities for stakeholder input

Confirmed  BY EMAIL

IMM Lead Auditor Stakeholders by email

MSC Interview Record Hoki reassessment

IMM Attendees
Lead Auditor/Coordinator: Jo Akroyd
Team Members: Johanna Pierre

Stakeholders:	
Affiliation	**Representatives**
1. Dragonfly Ltd	Edward Abraham, Finlay Thompson, Yvan Richard

Location: Dragonfly Office, Wellington, NZ

Date: 17 November 2011

1. Introduction. MML Lead Auditor to introduce MSC assessment to Stakeholders, including

- Fishery Unit of Certification (and client)
- Assessment Team
- Intertek Moody Marine as independent CB accredited to carry out MSC assessments
- Purpose of meeting – information collection and identification of issues relevant to fishery assessment
- MSC Principles & Criteria and Assessment Process being followed; FAM Assessment Tree
- RBF (if applicable)
- That stakeholder comments may be non-attributable if required

Comments:
Explained reassessment process
Use of new MSC requirements
Timeline for reassessment

2. Status

What is the nature of the organisations interest in the fishery (e.g. client / science / management / industry / eNGOetc)

Research provider

3. Stakeholder Key Issues

What, if any, specific substantive issues or concerns are identified regarding the fishery? (P1 – P2 – P3)
What information is available to allow us to determine the status of the fishery in relation to each issue?

- Warp strikes (WS): WS observations were very valuable in the SQU fishery for investigating and demonstrating the efficacy of WS mitigation devices. In other fisheries, before/after mitigation comparisons have not been done. Resumption of monitoring supported – must be done consistently and for a reasonable period though to be worthwhile.

- There continues to be an issue with net captures in trawl fisheries, which obviously warp strike mitigation does not reduce.

- Fur seals: No clear trend in the capture rate of fur seals over recent years. The fishery areas are variable in terms of bycatch patterns for fur seals. With increased TAC, would expect captures to increase. Fur seal catch per ton of hoki catch would be an interesting metric in

this respect. Fur seal catch rates are highest in August. This could be because pups mature and go to sea around then. Seals are the most captured protected species overall. Knowledge of the population is poor.

- Information on tow by tow management measures employed (such as controlling offal discharge, or limiting net surface time) would be helpful in understanding protected species captures. This would also provide good feedback for operators on efficacy of management measures.

- Increased observer resourcing would be helpful for fisheries monitoring of protected species. The independence of (government) observers is critical, and needs to be maintained in future.
- Fisher reporting of protected species captures: A mechanism for verifying this information is needed to increase its utility, for example, photos to help confirm species identification.

- The working group process generally works well. The composition of the group influences the scope of discussions, but the group is open to all interested stakeholders. Working groups are the first time contractors present their work to the contracting organization (MFish). Other than the working group attendees and the MFish Science team, there is limited opportunity to communicate research results (e.g. to policy teams).

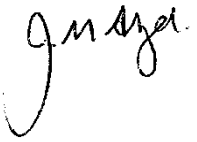
- NZ's Cabinet introduced the goal of open release of government information, including the use of a Creative Commons licence. This means that information can be utilized by others without permission, but with appropriate attribution. Currently, Ministry of Fisheries information can be requested, but there are often significant delays and process required before information is released/received. A strength of processes such as MSC is the encouragement of transparency/openness of information. Progress in government in this area would be valuable.

- Dragonfly are independent research providers. As such, they regularly meet with MFish, DOC, WWF, DWG, and others.

5. Closing

IMM Lead Auditor:

- Summary of key points – stakeholder to confirm in writing (sign if hard copy)
- Are comments to be attributed?
- Timescale for completion, including further opportunities for stakeholder input



Confirmed BY EMAIL

IMM Lead Auditor Stakeholders

Appendix 3-2

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16 December 2011

To: Jo Akroyd
Intertek Moody Marine Ltd
By email: jakroyd@xtra.co.nz

Copied to: Patrick Caleo (Patrick.Caleo@msc.org)
Alfred Schumm (Alfred.Schumm@wwf.de)

Dear Jo

WWF SUBMISSION REGARDING THE RECERTIFICATION OF THE NEW ZEALAND HOKI FISHERY

Thank you for the opportunity for WWF-New Zealand to provide comment to Intertek Moody Marine Limited regarding the assessment of the New Zealand hoki fishery for MSC recertification.

Please find attached WWF's submission for your and the assessment team's consideration. The submission examines the hoki fishery in terms of each of the performance indicators.

This reassessment process comes at a critical time for the hoki fishery, the MSC and WWF. We are all well aware of the history related to the certification of this fishery. The initial certification was seen to be crucial to the MSC's success and efforts were made to successfully navigate this. However, we believe that this process undermined the integrity of the MSC standard. We acknowledge MSC policy improvements, including the improved fishery assessment methodology, which have improved the MSC standard.

We consider that a robust assessment of the fishery is critical for the fishery's success, and New Zealand's clean green image, in prime export markets. New Zealand did have world leading fisheries management in the eighties and for much of the nineties. However, government and industry have rested on their laurels and New Zealand has surrendered its leadership as other countries adopt ecosystem-based management and leave us behind. WWF's market partners, especially in European and North American markets, are increasingly scrutinising the details of fisheries claiming sustainability, MSC certified or not. This is translating into pressure along the supply chain and upon WWF to question the sustainability assumptions being made in individual assessments.

This submission has recognised areas of good performance in the hoki fishery. However, it has also identified many limitations in the management of this fishery. With improved environmental performance and commitment these can be addressed to put this fishery on a far more sustainable footing. It is time for the hoki fishery to meet and deliver the sustainability expectations clearly specified in the performance indicators, especially in relation to Principle 2, in order for WWF to be able to support this certification.

We look forward to working with you in this important process and appreciate the opportunity to comment. If you would like to discuss these comments further, please contact me (on +64 4 815 8523 or email rbird@wwf.org.nz) or Bob Zuur (on +64 4 815 8522 or email bzuur@wwf.org.nz).

Yours sincerely

Rebecca Bird
Marine Programme Manager

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WWF-New Zealand Submission

New Zealand Hoki Fishery

MSC Recertification 2012

16 December 2011

Rebecca Bird
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WWF-New Zealand
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Introduction

Purpose

WWF-New Zealand has prepared this submission as a contribution to the recertification of the New Zealand hoki fishery. The submission focuses on the performance indicators specified in MSC guidance[5] ("MSC guidance").

WWF-New Zealand

WWF-New Zealand (WWF) is part of a global network, using a science-based approach to encourage government, business and communities to conserve and manage our environment more sustainably. WWF's mission is to stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature, by:

- Conserving the world's biological diversity;
- Ensuring that the use of renewable natural resources is sustainable;
- Promoting the reduction of pollution and wasteful consumption.

Hoki ecological risk assessment

DWG convened an "ecological risk assessment" (ERA) workshop in December 2010[6]. While the process and method left much to be desired, such as the adoption of many of the approaches in the Australian ERAEF methodology[7], WWF participated in good faith in this exercise. Despite its flaws, the ERA did provide a useful compilation of information, for example, providing new information on the trawl footprint and trophic impacts, both of which the "Expert Panel" noted as risks. The absence of clear management objectives limited the value of the ERA process, because it was not possible for the Panel to assess risk in terms of the probability of failing to reach certain (specified) outcomes. It could be better described as an "ecological impact assessment". While membership of the Panel could have been improved, some of the Panel's conclusions are relevant to the MSC audit and recertification.

Information presented at the workshop and the findings of the Panel[8] are included in parts of this submission.

[5] MSC (2011) Guidance to the MSC Certification Requirements. Version 1.0, August 2011. Marine Stewardship Council.

[6] Boyd, R.O. (2011a) Ecological risk assessment of the New Zealand hoki fisheries. Report for Deepwater Group Limited, Nelson. March 2011.
The benthic risk assessment was later updated – see: Boyd, R.O. (2011b). Updated hoki fisheries benthic risk assessment – October 2011.

[7] Hobday A., J., Smith A., Webb H., Daley R., Wayte S., Bulman C., Dowdney J., Williams P., Sporcic M., Dambacher J., Fuller M., Walker T., 2006. Ecological Risk Assessment for the Effects of Fishing (ERAEF).CSIRO.

[8] Reference in this submission to "Expert Panel" refers to this Panel.

Summary of key points

- The fishery currently complies with many of the performance indicators for Principle 1 (sustainable fish stocks). However, fish stocks declined dramatically in recent years and fisheries management targets and limits should:
  - Take into account factors affecting recruitment;
  - Take into account the ecological role of hoki;
  - Take into account the proportion of juvenile fish caught in the Chatham Rise fishery;
  - Also be defined in relation to fishing pressure.
- In contrast, performance under Principle 2 (minimising environmental impact) is less satisfactory.
- The fishery does not comply with requirements for the protection of endangered, threatened and protected (ETP) species.
  - Moderate proportions (almost 8%) of a high risk seabird species (Salvins albatross) and higher proportions (14% and 29%) of two moderate risk seabird species (northern and southern Buller's albatross) are caught in the fishery.
  - Capture rates of seabirds have not declined.
  - High numbers of fur seals continue to be caught.
  - Biologically based limits are needed for the main deepwater dogfish species and ghost sharks caught in the hoki fishery .
  - Biologically based limits are needed for the main ETP species caught in the hoki fishery;
  - Environmental standards for seabirds and fur seals need to specify best practicable options (best practice) to minimise bycatch
- Information is needed on:
  - Impacts on fur seal populations along the West coast and Cook Strait.
  - Capture rates of seabirds and fur seals bench-marked against similar fisheries world-wide.
  - Ways to further reduce fur seal bycatch rates.
  - Cryptic mortality, such as through warp strike monitoring
  - The indirect effects on seabirds.
  - Fur seal population data on the west coast of the South Island and in Cook Strait (existing data should be analysed, peer reviewed and published).
  - The population status of deepwater dogfish species and ghost sharks should be monitored.
  - The spatial pattern of basking shark captures, the influence of sea temperature on captures, and whether changing hoki fishing practices have affected capture rates.
- The fishery does not meet the standard in terms of impacts on the benthic habitat, given that:
  - More than 50% of three BOMEC classes (7, 8, and 9) within the hoki fishery have been trawled
  - Ten fishery/BOMEC class combinations have been trawled over more than 20%.
  - There is no benthic impact standard specifying limits on habitat damage.
- Information is needed on:
  - The relationship between BOMEC classes and habitat types.
  - Habitats in BOMEC classes 9 (Chatham Rise) and 7 and 8 (Cook Strait).
  - The benthic impacts on BOMEC Classes 7, 8 and 9 to help determine the need for further management measures;
- The fishery complies with requirements for ecosystem impacts, but subject to conditions, including:

- More information on the trophic impacts of the hoki fishery, especially on the Chatham Rise.
- If the trophic impacts are shown to be inconsistent with this PI, certification should be reviewed

- The New Zealand government and the fishing industry pride themselves on the "world-leading" status of the fisheries management regime. However, assessment against MSC criteria demonstrates that the system is wanting in several respects.
  - The transparency and openness of decision-making processes
  - The absence of an environmental advisory group for deepwater (and other) fisheries
  - Ecosystem- based management
  - The need to amend the Fisheries Act to more explicitly provide for the precautionary approach.
- Poor labour conditions on foreign chartered hoki fishing vessels damage the reputation of the MSC and WWF.

Principle 1: Sustainable fish stocks

PI 1.1.1: The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing

Stocks assessments were run for both stocks in 2011. The Ministry of Agriculture and Forestry[9] ("the Ministry") produces an annual review of the status of management of key fish stocks. The 2011 document for hoki ("the plenary report") is particularly valuable source of information about the hoki fishery and many of its environmental effects[10]. The plenary document describes current stock status as:

- Eastern stock: B2011 was estimated to be 53% B_0; Virtually Certain (> 99%) to be above the lower end of the Management Target
- Western stock: B2011 was estimated to be 41% B_0; Very Likely (> 90%) to be above the lower end of the Management Target.

Stock projections in the plenary report are:

- The biomass of the eastern hoki stock is expected to stay steady over the next 5 years at assumed 2010-11 eastern fishery catch levels.
- The biomass of the western hoki stock is expected to increase over the next 5 years at assumed 2010-11 western fishery catch levels.

This is, of course, dependent on existing catch rates, noting that the TACC has increased very significantly in recent years.

In WWF's view, the fishery currently meets the standard:

a. *It is highly likely that the stock is above the point where recruitment would be impaired.*
b. *The stock is at or fluctuating around its target reference point.*[11]

For the fishery to be scored 100, there must a "high degree of certainty that the stock has been fluctuating around its target reference point, or has been above its target reference

[9] Previously the Ministry of Fisheries
[10] Document 31_HOK_2011.pdf, available at: https://fs.fish.govt.nz/Page.aspx?pk=113&dk=22734
[11] Direct quotations from MSC guidance documents are italicised for clarity.

point, over recent years". The key issue is the highly variable recruitment that, when combined with excessive fishing pressure, led to dramatic declines in biomass only a few years ago. While the status of the fishery has improved significantly in recent times, it was only four years ago that the western stock was at or below the soft limit.

PI 1.1.2: Limit and target reference points are appropriate for the stock

The following reference points have been defined for the hoki fishery in the National Fisheries Plan for Deepwater and Middle-depth Fisheries[12]:

- BMSY: 24% B_0
- Target reference point: 35-50% B_0
- Limit reference points:
  Soft Limit: 20% B_0
  Hard Limit: 10% B_0

In WWF's view, the fishery warrants a conditional pass as:

a. *Generic limit and target reference points are based on justifiable and reasonable practice appropriate for the species category.*

For the fishery to receive an unconditional pass:

a. *Reference points are appropriate for the stock and can be estimated.*

   Reference points for the hoki fishery have only been established in relation to biomass. The plenary report reiterates previous caution that the use *of* B_{MSY}, as calculated in report, is not a suitable target for management of the hoki fishery:

   - It assumes a harvest strategy that is unrealistic in that it involves perfect knowledge
   - It assumes perfect knowledge of the stock-recruit relationship, which is actually very poorly known
   - It makes no allowance for extended periods of low recruitment, such as that observed in 1995–2001 for the western stock.
   - It would be very difficult with such a low biomass target to avoid the biomass occasionally falling below 20% B_0 so the actual target probably needs to be considerably above this theoretical optimum

   We suggest that the direct management of fishing pressure (F) is also required.

b. *The limit reference point is set above the level at which there is an appreciable risk of impairing reproductive capacity.*

   Recruitment is a key driver of this fishery. The decline in hoki stocks was due in large part to a decline in recruitment, as well as a delayed response to reduce fishing pressure. Factors affecting hoki recruitment, such as climate and predation are poorly understood.

   A significant proportion of the catch on the Chatham Rise consists of juvenile hoki, as this is the main nursery ground for young fish from both stocks. While a voluntary industry Code of Practice[13] exists to protect juvenile hoki, this is not effective and a large proportion of the catch is composed of fish that have not yet matured enough to

[12] Available here: http://www.fish.govt.nz/en-nz/Consultations/Archive/2010/National+Fisheries+Plan+for+Deepwater+and+Middle-Depth+Fisheries/default.htm

[13] Areas where there are thought to be high abundance of juvenile hoki (Narrows Basin of Cook Strait, Canterbury Banks, Mernoo, and Puysegur) are closed to hoki target trawling by vessels greater than 28 m, with increased monitoring when targeting species other than hoki. There is also a general recommendation that vessels move from areas where catches of juvenile hoki (now defined as less than 55 cm total length) comprise more than 20% of the hoki catch by number.

reproduce. The plenary report notes that 52% of the catch by number was of fish less than 65 cm in length.

d. *Key low trophic level species, the target reference point takes into account the ecological role of the stock.*

While not a low trophic level species, hoki is the fourth most important species in the Chatham Rise ecosystem and the most important fish species. It is therefore not surprising that the reduction of hoki to below a third of unfished biomass will have impacts on the ecosystem. This is discussed further under PI2.5.3. For this reason, the target reference point should take into account the ecological role of the stock for this to be passed unconditionally.

Recommendations:

1. The fishery receives a conditional pass for this PI.
2. A condition is imposed that requires fisheries management targets and limits:
   - take into account the ecological role of hoki;
   - take into account the proportion of juvenile fish caught in the Chatham Rise fishery;
   - are also defined in relation to fishing pressure.

PI 1.2.1: There is a robust and precautionary harvest strategy in place

In WWF's view, the fishery currently meets the standard:

a. *The harvest strategy is responsive to the state of the stock and the elements of the harvest strategy work together towards achieving management objectives reflected in the target and limit reference points.*

b. *The harvest strategy may not have been fully tested but monitoring is in place and evidence exists that it is achieving its objectives.*

These scores are subject to the concern noted earlier (under PI 1.2.1) about the need for reference points related to fishing pressure.

For the fishery to score 100, the performance of the harvest strategy must have been fully evaluated and evidence exists to show that it is achieving its objectives including being clearly able to maintain stocks at target levels. While the stocks are currently within the target range, this has been the case for the western stock for only two years.

PI 1.2.2: There are well defined and effective harvest control rules in place

In WWF's view, the fishery currently meets the standard:

a. *Well defined harvest control rules are in place that are consistent with the harvest strategy and ensure that the exploitation rate is reduced as limit reference points are approached.*

b. *The selection of the harvest control rules takes into account the main uncertainties.*

c. *Available evidence indicates that the tools in use are appropriate and effective in achieving the exploitation levels required under the harvest control rules.*

Earlier we noted concern about the reference points being limited to biomass, rather than fishing pressure and to the lack of knowledge of factors affecting recruitment. Hence the score for this PI should be restrained, consistent with these limitations.

PI 1.2.3: Relevant information is collected to support the harvest strategy

In WWF's view, the fishery currently meets the standard:

a. Sufficient relevant information related to stock structure, stock productivity, fleet composition and other data is available to support the harvest strategy.

b. Stock abundance and fishery removals are regularly monitored at a level of accuracy and coverage consistent with the harvest control rule, and one or more indicators are available and monitored with sufficient frequency to support the harvest control rule.

c. There is good information on all other fishery removals from the stock.

Most non-target hoki is caught in the associated hake and ling trawl fisheries. The plenary report notes that in the 1980s high catch rates on the west coast South Island spawning fishery probably resulted in burst bags, loss of catch and some mortality. However, fish lost from the net during landing now (2000-01 to 2006-07) accounted for only a small fraction (0 - 14.5%) of the total fish discards each year in the hoki, hake and ling fishery. While there have been prosecutions for misreporting the source of caught hoki ("trucking") and for high-grading, this is probably not a significant limitation in terms of the harvest strategy – the plenary report notes that "no information is available about illegal catch".

As noted earlier, there are limitations in understanding the factors that affect hoki recruitment – this is being addressed, at least in part, through research specified in the Deepwater Research Programme.

PI 1.2.4: There is an adequate assessment of the stock status

In WWF's view, the fishery currently meets the standard:

a. The assessment is appropriate for the stock and for the harvest control rule.

c. The assessment takes uncertainty into account.

e. The assessment of stock status is subject to peer review.

There is regular, good monitoring of stock status including evaluating stock status relative to reference points in a probabilistic way. However, the plenary report notes that:

- The base case model deals with the lack of older fish in commercial catches and surveys by estimating natural mortality at age which results in older fish suffering high natural mortality. However, there is no evidence to validate this outside the model estimates.
- Aside from natural mortality, other major sources of uncertainty include stock structure and migration patterns, stock-recruit steepness and natal fidelity assumptions.
- Uncertainty about the size of recent year classes affects the reliability of stock projections.

Principle 2: Minimising environmental impact

PI 2.1.1: The fishery does not pose a risk of serious or irreversible harm to the retained species and does not hinder recovery of depleted retained species

Requirements for conditional and unconditional passes (SGs for 60 and 80) are:

60a: Main retained [fish] species are likely to be within biologically based limits

80a: Main retained species are highly likely to be within biologically based limits.

The hoki ERA suggested the following risks to bycaught fish species, noting that several were subject to "moderate" (i.e. greater than "minor") risk:

Species	Chatham Rise	Sub-Antarctic	WCSI	Cook Strait
Ling	Moderate	Minor	Moderate	Moderate
Hake	Moderate	Moderate	Moderate	Minor
Silver warehou	Moderate	Moderate	Moderate	Negligible
Rattails & other macrourids	Moderate	Moderate	Moderate	Minor
Deepwater dogfish	Moderate	Moderate	Minor	Negligible
Pale ghost shark	Moderate	Moderate	Negligible	Negligible

An average of 0.03 kg of observed species other than hoki, hake and ling are discarded per kilogram of observed hoki, hake, and ling caught – this is low for a trawl fishery. Spiny dogfish was the main QMS species discarded. Discarded hoki, hake, and ling made up 9.7% of total observed discards.[14] WWF notes that self-reporting of retained species is unreliable – a stuffy found that unobserved vessels' reported catches were significantly different to observed vessels' catches.[15]

The main species are actively managed under the QMS. However, WWF is concerned that in the past when the TACC for hoki was in the order of 250,000 tonnes and fishing effort was much greater, ling was regularly overcaught as a significant bycatch species in the hoki fishery. WWF considered suggesting a conditional pass ("main retained species are highly likely to be within biologically based limits"), but we note that New Zealand ling is currently being assessed for MSC certification. We expect that this issue will be addressed as part of the ling certification process and note our disappointment with the significant delay in the certification process.

Hence, in WWF's view, the fishery currently meets the standard.

[14]Ballara, S.L.; O'Driscoll, R.L.; Anderson, O.F. (2010). Fish discards and non-target fish catch in the trawl fisheries for hoki, hake, and ling in New Zealand waters. New Zealand Aquatic Environment and Biodiversity Report No. 48.

[15]Bremner G, Johnstone P, Batson T, Clarke P (2009). Unreported bycatch in the New Zealand West Coast South Island hoki fishery. Marine Policy 33: 504–12

PI 2.1.2: There is a strategy in place for managing retained species that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to retained species

MSC guidance defines:

- Strategyasa cohesive and strategic arrangement which may comprise one or more measures, an understanding of how it/they work to achieve an outcome and which should be designed to manage impact on that component specifically.
- Partial strategy as a cohesive arrangement which may comprise one or more measures, an understanding of how it/they work to achieve an outcome and an awareness of the need to change the measures should they cease to be effective. It may not have been designed to manage the impact on that component specifically.

As noted for the previous PI, the main retained fish species are managed under the QMS. This has generally been successful, but this has been insufficient to address overfishing of bycaught ling in the past. As TACCs for hoki are trending up, there is no explicit upper constraint to the fishing effort, and as management systems do not appear to have changed since the past overfishing of ling, there is no confidence that any current "strategy" will prevent future overfishing of ling.

Nevertheless, in WWF's view, the fishery currently meets the standard:

a. *There is a partial strategy in place, if necessary that is expected to maintain the main retained species at levels which are highly likely to be within biologically based limits, or to ensure the fishery does not hinder their recovery and rebuilding.*

b. *There is some objective basis for confidence that the partial strategy will work, based on some information directly about the fishery and/or species involved.*

c. *There is some evidence that the partial strategy is being implemented successfully.*

Hence, WWF suggests that a score of 100 is not appropriate given the requirements that:

b. *Testing supports high confidence that the strategy will work, based on information directly about the fishery and/or species involved.*

c. *There is clear evidence that the strategy is being implemented successfully.*

Past over-fishing of ling sheds doubt on the ability to meet these criteria.

PI 2.1.3: Information on the nature and extent of retained species is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage retained species

Good information is collected on retained species and there is good understanding about the biology of the main retained species.

In WWF's view, the fishery currently meets the standard:

a. *Qualitative information and some quantitative information are available on the amount of main retained species taken by the fishery.*

b. *Information is sufficient to estimate outcome status with respect to biologically based limits.*

c. *Information is adequate to support a partial strategy to manage main retained species.*

d. *Sufficient data continue to be collected to detect any increase in risk level.*

WWF believes that while the fishery meets the standard, the SG for a score of 100 is high. Such a score requires that "accurate and verifiable information is available on the catch of all retained species and the consequences for the status of affected populations". This is an ambitious outcome and clearly does not apply to the "tier 2" species (as identified in the Deepwater Fisheries Plan). There are also significant issues with self-reporting of retained species, at least in the west coast South Island fishery.

PI 2.2.1: The fishery does not pose a risk of serious or irreversible harm to the bycatch species or species groups and does not hinder recovery of depleted bycatch species or species groups

Deepwater dogfish

Several species of deepwater dogfish are taken as bycatch in the hoki fishery. Although data from the Chatham Rise and Sub-Antarctic trawl surveys may provide some indications of abundance, the surveys only sample to 800m depth, and the depth range of most deepwater dogfish species extends considerably further. Trawl surveys therefore only index the shallower portion of the distribution of these species.

The Expert Panel proposed scores of 2 (moderate risk) recognising the modest overlap between deepwater dogfish distribution and the hoki fishery, as well as the relatively low productivity of deepwater dogfish species, increasing their vulnerability.

Deepwater dogfish are not caught in Cook Strait, and are infrequently caught on the WCSI, unless the vessels fish in deeper water. Through its qualitative assessment, the Expert Panel agreed the WCSI fishery had a minor impact on deepwater dogfish.

Deepwater skates and rays

The ERA Expert Panel found that "negligible" quantities of deepwater skates are caught in the hoki fishery. The Chatham Rise and Sub-Antarctic trawl surveys catch small volumes of approximately a dozen species of deepwater skate. The trawl survey data from the Chatham Rise did not indicate any trends in abundance, although it is unlikely that the trawl gear used in the survey is effective for catching skates.

Pale ghost shark

The Expert Panel considered this species warranted assessment given it is caught in significant volumes by the hoki fishery. It is mainly caught on the Chatham Rise and the sub-Antarctic where trawl surveys showed abundance indices to be flat (note that this conflicts with the plenary report). Although the time series show no trends, there is little information to indicate whether the effects of the hoki fisheries are on pale ghost sharks or whether catches are sustainable. The Panel concluded that confidence scores for pale ghost shark are therefore low[16].

The plenary report notes that pale ghost shark was introduced into the QMS from the beginning of the 1999-00 fishing year. Ghost sharks have been dumped and not reported in the past by commercial fishers in QMAs 1 and 2. Similar behaviour is believed to occur in all other QMAs. The extent of the unreported dumping is unknown in all areas.

No published information is available on the age or growth rate of any ghost shark species. No assessment of any stocks of ghost shark has been completed. The trawl series fluctuates over time and decreases in 2010 and 2011 on the Chatham Rise. In the Sub-Antarctic the trawl biomass indices have increased since 2005. The GSP 1 and 5 stocks are unlikely (<

[16] This conflicts with scores of "high" in the summary table.

40%) to be below soft limit (20%) and this is unlikely (< 40%) to be breached at recent catch levels, but is unknown at the TACC.

In WWF's view, the Expert Panel underestimated the risk the hoki fishery presents to ghost sharks, but WWF agrees that the risk should be scored as "moderate". The fact that it is a QMS species ameliorates the risk to some degree.

Other elasmobranchs

The following protected species were discussed by the Expert Panel and the decision was taken that the impact of the target hoki fishery to these species was negligible in all of the four areas (a consequence score of 0):

- Deepwater nurse shark or small tooth sand tiger shark (*Odontaspisferox*)
- White pointer shark (*Carcharodoncarcharias*)
- Whale shark (*Rhincodontypus*)
- Manta ray (*Manta birostris*)
- Spinetail devil ray (*Mobulajapanica*)

Conclusions

It is difficult to assess the hoki fishery against this PI as the fishery catches a wide variety of fish species. MSC guidance defines "bycatch species" as "organisms that have been taken incidentally and are not retained (usually because they have no commercial value)". There is potential overlap with endangered, threatened and protected species. MSC guidance suggests that when considering species taken as bycatch that are also listed as threatened under relevant national legislation, the species should be primarily managed as an ETP (endangered, threatened or protected) species and should only be considered when scoring the ETP species' PIs, and not in the scoring of bycatch species' PI.

The PI refers to "main" bycatch species. MSC guidance provides that a bycaught species can be considered to be "main" if:

- *It comprises less than 5% of the total catch by weight, or*
- *It is of particular vulnerability, or*
- *If the total catch of the fishery is large.*

The ERA Expert Panel noted the modest overlap between deepwater dogfish distribution and the hoki fishery, as well as the relatively low productivity of deepwater dogfish species, increasing their vulnerability. It suggested that the hoki fishery presented a "moderate risk" to these species. Hence, while these species make up less than 5% of the total catch by weight, they are vulnerable species and the hoki fishery is large and currently increasing, meaning that potentially significant quantities of these species are being caught in the hoki fishery.

The SGs refer to being within "biologically based limits". MSC suggests that these limits "may take many forms and may be expressed as upper or lower limits in relation to the index that is being measured". MSC goes to note that "B_{LIM} and F_{LIM} are common single-species biologically based limits, but proxies are acceptable, depending on the information that is available and nature of the ecosystem feature of concern". Such limits have not been defined for these species.

Monitoring of bycatch is the main measure employed, but without a management response has limited value.

In WWF's view, the fishery currently warrants a conditional pass:

c. *If the status is poorly known, there are measures or practices in place that are expected to result in the fishery not causing the bycatch species to be outside biologically based limits or hindering recovery.*

Recommendation:

1. The fishery receives a conditional pass for this PI.
2. A condition is imposed that requires the development of biologically based limits for the main deepwater dogfish species and ghost sharks caught in the hoki fishery.

PI 2.2.2: There is a strategy in place for managing bycatch that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to bycatch populations

In WWF's view, the fishery currently warrants a conditional pass:

a. *There are measures in place, if necessary, which are expected to maintain main bycatch species at levels which are highly likely to be within biologically based limits or to ensure that the fishery does not hinder their recovery.*

b. *The measures are considered likely to work, based on plausible argument (e.g. general experience, theory or comparison with similar fisheries/species).*

WWF considers this guidepost to overstate reality, given that biologically based limits have not been specified for deepwater dogfishes and monitoring of bycatch is the main measure to manage risks. An unconditional pass is not warranted, given that there is no "partial strategy in place … for managing bycatch species at levels which are highly likely to be within biologically based limits or to ensure that the fishery does not hinder their recovery".

As noted above for PI 2.2.1, WWF suggests a condition requiring the development of biologically based limits for the main deepwater dogfish species caught in the hoki fishery.

Recommendations:

1. The fishery receives a conditional pass for this PI.
2. A condition is imposed that requires the development of biologically based limits for the main deepwater dogfish species and ghost sharks caught in the hoki fishery.

PI 2.2.3: Information on the nature and the amount of bycatch is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage bycatch

In WWF's view, the fishery currently warrants a conditional pass:

a. *Qualitative information is available on the main bycatch species affected by the fishery.*

b. *Information is adequate to broadly understand outcome status with respect to biologically based limits*

c. *Information is adequate to support measures to manage bycatch.*

WWF considers this guidepost to overstate reality given that biologically based limits have not been specified for deepwater dogfishes. An unconditional pass is not warranted, given that this requires "sufficient data continue to be collected to detect any increase in risk to main bycatch species". Information provided under PI 2.2.1 demonstrates that this is clearly not the case.

Recommendations:

1. The fishery receives a conditional pass for this PI.
2. Conditions are imposed that
   a. Requires the development of biologically based limits for the main deepwater dogfish species and ghost sharks caught in the hoki fishery;
   b. Require the population status of the main bycaught dogfish and ghost shark species be monitored.

PI 2.3.1: The fishery meets national and international requirements for the protection of ETP species
The fishery does not pose a risk of serious or irreversible harm to ETP species and does not hinder recovery of ETP species

Fur seals[17]

- West coast South Island (WCSI)

  The fur seal population estimate on the WCSI is uncertain. There are two sets of information, neither of which has completed a peer review process. Baker & Hamilton (2010)[18] concluded that the estimated captures of New Zealand fur seals on the WCSI do not exceed the PBR (potential biological removal)[19]. Unpublished Department of Conservation New Zealand fur seal pup count estimates from three WCSI rookeries show annual variation with an overall declining trend in population size since 1991.

  There are indications that overall impacts on the WCSI seal population are below PBR, but the likelihood of impacts on local populations has not been excluded.

- Cook Strait

  There are no reliable fur seal population estimates for this area and a reverse PBR is not possible due to the relatively low observer coverage in Cook Strait. This fishery has one of the highest fur seal capture rates per 100 tows of the four hoki fisheries, according to the estimation of fur seal bycatch to the 2008-09 fishing year. This, combined with the lack of information on New Zealand fur seals from this region, suggests an even greater risk than on the WCSI.

- Chatham Rise

  Very little information is available on fur seal population estimates on the east coast South Island – according to the hoki ERA report, these are limited to annual pup counts at 2 colonies, one of which appears to be stable, and the other appears to be increasing in size.

[17] Information from hoki ERA (Boyd, 2011).

[18] Baker, B.; Hamilton, S. (2010).Assessment of the impact of selected fisheries mortality on New Zealand fur seal populations using the Potential Biological Removal (PBR) approach. 37p. (Draft report prepared by Latitude42 Environmental Consultancy Pty Ltd for Deepwater Group Ltd, Nelson, November 2010.)

[19] http://www.nmfs.noaa.gov/pr/glossary.htm

- Sub-antarctic

  Population estimates are available from one fur seal colony on SolanderIsland, although these data have not been published. Anecdotal evidence from TitiIsland suggests an increasing population impacting on customary mutton-bird harvesting. There is thought to be a wide distribution of the New Zealand fur seals across this area and there are a large number of colonies. The capture rate of New Zealand fur seals per 100 tows is relatively low for this fishery.

On the basis of relatively limited information, it appears that hoki may not be having a substantial impact on the mainland fur seal population, but it is possible that there is depletion of local populations on the West coast of the South Island and in Cook Strait. Little information is available on offshore island populations. There is also an expectation under both the Fisheries Act and MSC processes that adverse effects will be avoided, remedied or mitigated. This is discussed under PI 2.3.2.

Seabirds[20]

Risks to seabirds were not considered in the hoki ERA. The best information is available in the seabird risk assessment conducted by Dragonfly[21]. The report states that:

> Annual potential fatalities significantly exceeded the PBR for eight species (the black petrel, the grey-headed albatross, the Westland petrel, the Chatham albatross, the flesh-footed shearwater, the Salvin's albatross, the light-mantled albatross, and the Stewart Island shag), suggesting that the viability of these species may be threatened by commercial fishing activities. The 95% confidence interval of the risk ratio of a further 12 species encompassed one, which indicates that the number of fatalities for these species might exceed the PBR. These species included the northern giant petrel, the northern royal albatross, the New Zealand king shag, the Campbell albatross, the southern Buller's albatross, the Gibson's albatross, the Antipodean albatross, the white-capped albatross, the white-chinned petrel, the northern Buller's albatross, the Cape petrel, and the southern royal albatross.

This report concluded:

> In trawl fisheries, the only fisheries where the mean number of potential fatalities was higher than than 50% of the PBR were inshore and flatfish fisheries. Although there were high numbers of potential fatalities of some species in other fisheries, e.g., white-capped albatross in squid trawl, the PBRs of these species were also higher.

This is not directly helpful for this assessment as it includes all trawl fisheries[22], including inshore trawls which present significant risks for seabirds. The report (see Table A-6) lists the estimated annual potential mortalities of seabirds in six trawl fisheries. However, it is unclear which of these fleets fish for hoki. WWF assumes that the bulk of hoki are caught by the "large processer trawl" and "large meal trawl" fleets. Table A-6 shows that no seabird species were caught in numbers greater than 50% of the calculated PBR in these fleets[23]. These fleets catch the following seabirds at numbers between 1 and 50% of the PBR[24]:

[20] Note that this analysis of seabird interactions has been provided to Deepwater Group.

[21] Yvan Richard, Edward R. Abraham & Dominique Filippi (2011). Assessment of the risk to seabirdpopulations from New Zealand commercial fisheries.Final Research Report for Ministry of Fisheriesprojects IPA2009/19 and IPA2009/20.66 pages.

[22] Small inshore trawl,large processer trawl, large meal trawl, large fresher trawl, SBW trawl, and SCI trawl.

[23] There is some overestimate in these figures, given that these vessels catch other species, such as hake and ling. However, it is possible that other fleets catch quantities of hoki.

[24] Compiled from Richard, et al 2011. Note that this analysis has been provided to Deepwater Group.

Species	Potential annual fatalities			% of processor and meal trawl of all fisheries
	Large processor trawl	Large meal trawl	All fisheries	
Southern royal albatross	5	5	227	4.4
Northern royal albatross	4	3	286	2.4
Light-mantled albatross	11	5	534	3.0
Grey-headed albatross	12	5	525	3.2
Campbell albatross	40	12	855	6.1
Northern Buller's albatross	31	41	531	13.6
Southern Buller's albatross	137	185	1100	29.3
White-capped albatross	303	182	5120	9.5
Chatham albatross	16	6	980	2.2
Salvin's albatross	102	161	3330	7.9
Northern giant petrel	12	16	567	4.9
Cape petrel	13	46	684	8.6
White-chinned petrel	68	88	1640	9.5
Westland petrel	19	7	539	4.8
Black petrel	13	3	1060	1.5
Flesh-footed shearwater	15	[25]	1380	1.1

Notes:

- The annual potential mortalities of all the listed seabirds in the large processor or large meal trawler fleets exceed 1% of the PBR for the species concerned.
- Annual potential fatalities in all fisheries exceeds the PBR[26] of the species listed in red (high risk). For all other species, the 95% confidence interval of the risk ratio[27] of a further 12 species encompassed one (moderate risk).
- Percentages in orange represent species where the annual potential fatalities in the large processor and large meal trawl fleets are greater than 10% of the total potential fatalities. Similarly, figures in yellow are between 5 and 10%.

Potential annual seabird fatalities in the large processor and large meal trawl fleets are between 1 and 50% of the PBR of sixteen species listed in the table above. The range of 1-50% of PBR is unhelpfully broad, given that 1% of PBR would represent a very low risk.

It is the overall impact on seabird populations that is of primary importance for seabird conservation, not the impact of individual fleets. The potential impact of the hoki fishery can be indicated through further analysis – it can be seen that these fleets catch over 5% of seven of the sixteen most at-risk seabird species. Of particular concern is the 8% of the Salvins albatross caught (high risk species) and the 30% and 14% of the moderate risk northern and southern Buller's albatross.

[25] Less than 1% of PBR

[26] Potential biological removal.

[27] Ratio of the annual potential fatalities to the PBR.

Elasmobranchs[28]

Basking sharks are extremely vulnerable to exploitation[29]. Recent research shows an estimated 922 basking shark captures have occurred in New Zealand's deepwater and middle-depth trawl fisheries in the 14 years to 2007-08[30].

Anecdotal evidence suggests captures and sightings of basking sharks around New Zealand have become less frequent in recent years. Hectors dolphin aerial surveys, flown annually around BanksPeninsula from 1990 to 1997 sighted schools of up to 100 basking sharks. The same aerial transects were re-flown in January and February 2010 and no basking sharks were sighted.

The hoki fishery contributed 50 of the total 99 observed captures since 1994-95. More than 40% of observed basking shark captures from the target hoki fisheries occurred in 1997-98 and 1998-99 when it was suggested that some targeting of basking shark may have occurred.[30]

The ERA Expert Panel agreed that further information is needed on the spatial pattern of the captures, the influence of sea temperature on captures, and whether the risks to basking sharks during the late 1990's have been ameliorated in any way by changing hoki fishing practices, or the nationality of the boats in the current fleet. Future monitoring of basking shark capture by the target hoki fisheries was recommended.

The Panel agreed on a consequence score of 2 (moderate) for the interactions of basking sharks with all hoki fishery areas except Cook Strait, where no catches of basking shark have been reported.

Conclusions

For the fishery to receive a conditional pass for this PI:

a. *Known effects of the fishery are likely to be within limits of national and international requirements for protection of ETP species.*

b. Known direct effects are unlikely to create unacceptable impacts to ETP species.

National requirements, in the form of environmental standards (such as maximum fishing-related mortality limits), have not been defined for the main ETP species affected by the hoki fishery.

WWF is not aware of studies that have demonstrated unsustainable impacts on fur seals. However, there are indications of impacts on some WCSI populations and the catch rate in Cook Strait is high. Further to this, there is no evidence that bycatch rates are as low as they could be and there has been insufficient research into mechanisms to sufficiently reduce capture rates.

What is the overall risk of the hoki fishery to seabird populations? Fully objective analysis is compromised by the lack of an agreed environmental standard, such as the proposed seabird standard. The Dragonfly risk assessment has provided very useful information on which we can assess the risks imposed on seabird species by commercial fishing. The analysis earlier in this submission shows that the hoki fishery in isolation is not likely to result in potential annual fatalities of any seabird species exceeding the PBR for those species. However, the

[28]Uncited information from hoki ERA.

[29]http://www.doc.govt.nz/getting-involved/consultations/closed/basking-shark-protection/

[30]Francis, M.P. andSmith, (2010) M.H. Basking shark (Cetorhinusmaximus) bycatch in New Zealand fisheries, 1994–95 to 2007–08. New Zealand Aquatic Environment and Biodiversity Report No. 49.

analysis earlier in this submission shows that the hoki fishery makes a significant contribution to the potential annual mortalities faced by seabird species that exceeds their PBR values. It appears that the fishing fleets which target hoki catch:

- Moderate proportions (almost 8%) of a high risk seabird species (Salvins albatross);
- Higher proportions (14% and 29%) of two moderate risk seabird species (northern and southern Buller's albatross).

There does not appear to have been a significant decline in seabird capture rates (see comments on PI 2.3.2), but further analysis is required into the factors that affect seabird capture rates. This is important given that some of the captured seabirds are at risk and because hoki fishing effort (TACC) is currently increasing.

The indirect effects of the hoki fishery on seabird populations have not been considered in managing the fishery. Although some research has examined the trophic effects of the hoki fishery on the Chatham Rise ecosystem, this has not focused specifically on seabirds and does not cover all of the hoki fisheries. General trophic effects are discussed later in this submission.

Finally, the fishery does not comply with "international requirements for protection of ETP species" as specified through ACAP – this is discussed further under PI 2.3.2.

Hence, WWF suggests that the fishery does not meet the standard for this PI.

Recommendations:

1. WWF recommends that the fishery does not meet the standard for this PI.
2. Should the fishery be certified, conditions are imposed to:

a. Develop biologically based limits for the main ETP species caught in the hoki fishery;

b. Investigate impacts on fur seal populations along the West coast and Cook Strait. This should include[31]:

(i) Consolidate and analyse the WCSI pup count data to determine whether population trends are occurring in this region.

(ii) Reduce existing uncertainty of data from Cook Strait, both in terms of the understanding of incidental capture and mortality rates and of current sub-population size estimates.

c. Bench-mark capture rates of seabirds and fur seals against similar fisheries world-wide.

d. Investigate and implement ways to further reduce fur seal bycatch rates.

e. Investigate the indirect effects of the hoki fishery on seabirds.

[31] As recommended by the ERA Expert Panel.

PI 2.3.2: The fishery has in place precautionary management strategies designed to:
- Meet national and international requirements;
- Ensure the fishery does not pose a risk of serious harm to ETP species;
- Ensure the fishery does not hinder recovery of ETP species; and
- Minimise mortality of ETP species.

A conditional pass requires that:

a. *There are measures in place that minimise mortality, and are expected to be highly likely to achieve national and international requirements for the protection of ETP species.*

b. *The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/species).*

New Zealand is subject to a range of international obligations under the Agreement on the Conservation of Albatrosses and Petrels (ACAP). ACAP's General Conservation Measure 1 specifies that Parties shall

c. develop and implement measures to prevent, remove, minimize or mitigate the adverse effects of activities that may influence the conservation status of albatrosses and petrels;

h. support the implementation of the actions elaborated in the FAO International Plan of Action for Reducing Incidental Catch of Seabirds in Longline Fisheries which complement the objectives of this Agreement

Annex 2, which clarifies expectations regarding Action Plans, states:

3.2.1 The Parties shall take appropriate operational, management and other measures to reduce or eliminate the mortality of albatrosses and petrels resulting incidentally from fishing activities. Where possible, the measures applied should follow best current practice.

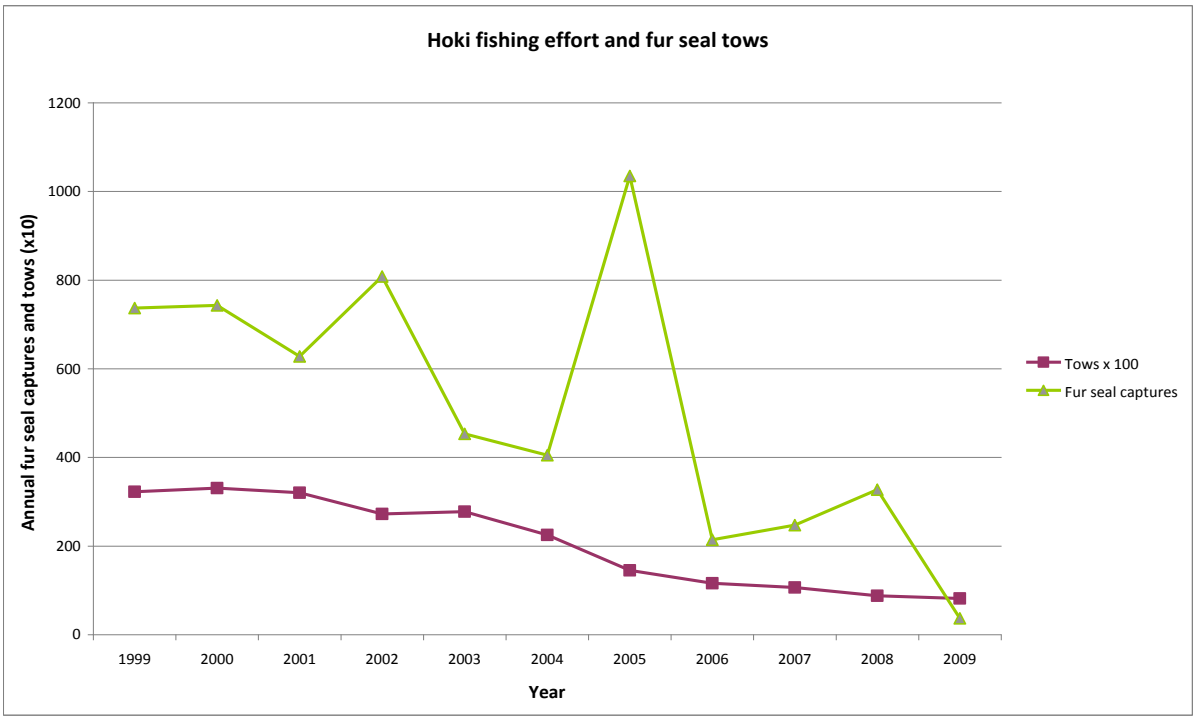
WWF notes that a number of measures have been developed to reduce the mortality of ETP species:

- Regulations were passed in 2005 that require trawlers to deploy bird mitigation devices, such as tori lines, to scare birds away from the danger zone around the stern of the vessel.
- All trawlers over 28 metres in length have to follow a vessel management plan specifying the measures that must be followed onboard the vessel to reduce the risk of incidental seabird captures. These measures include storing offal while shooting and hauling fishing gear, and making sure all fish are removed from the net before it is put back in the water.
- The industry developed marine mammal operating procedures that describe a range of procedures that a vessel should follow to reduce the risk of marine mammal captures. These measures include managing offal discharge and refraining from shooting and hauling the gear when fur seals are congregating around the vessel.

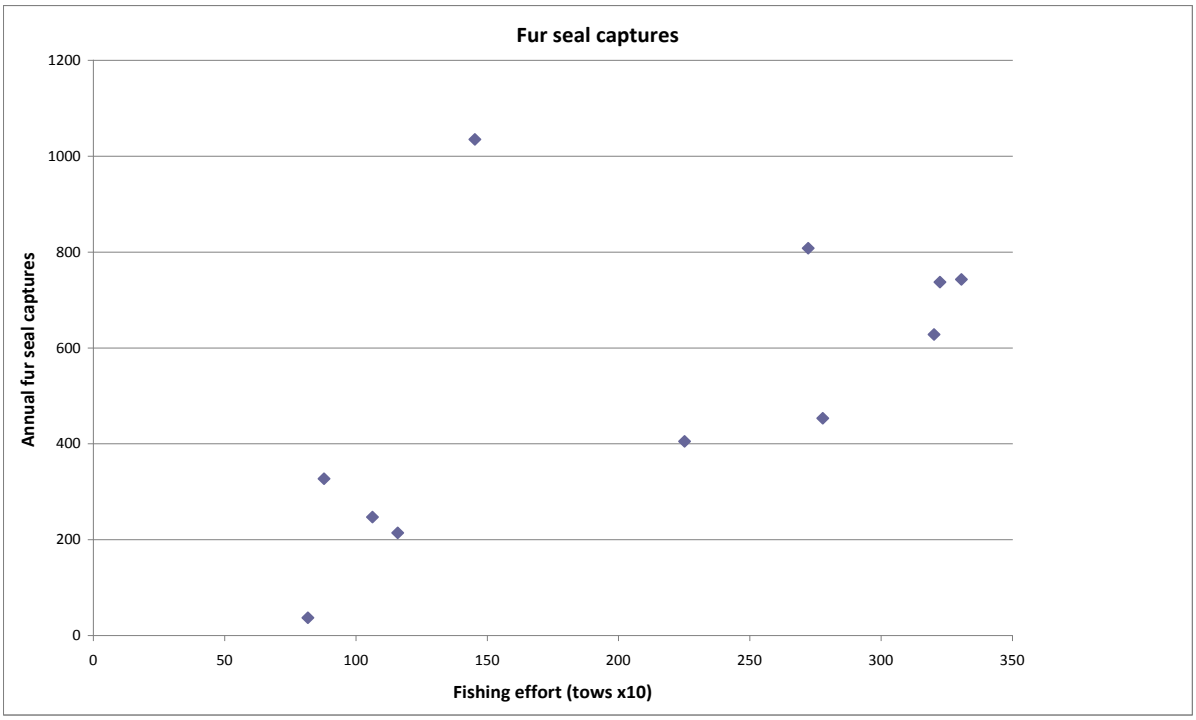
Have these measures reduced the mortality of ETP species, but more importantly have "minimised" mortality? The following graphs have been produced from data provided by the most recent assessment of captures of protected species in New Zealand fisheries[32].

[32]Abraham, E.R. and Thompson, F.N. (2011).Summary of the capture of seabirs, marine mammals and turtles in New Zealand commercial fisheries 1998-99 to 2008-09. Final research report produced for the Ministry of Fisheries project PRO2007/01.

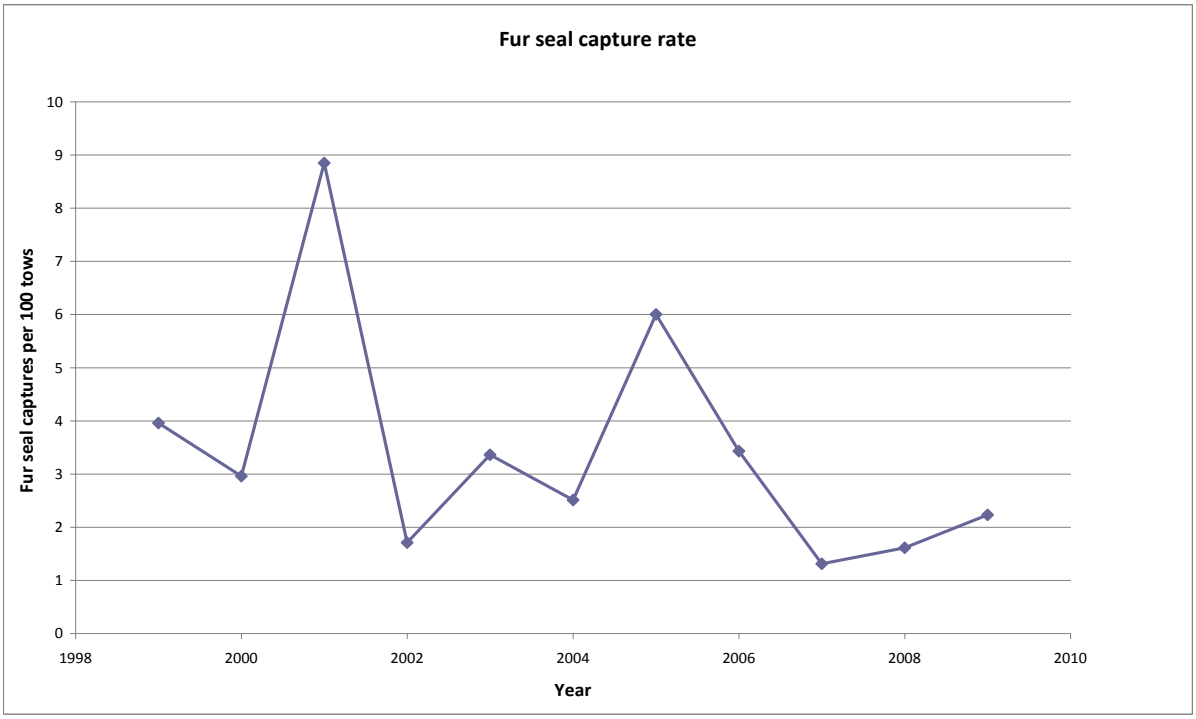
The graph below shows the change in annual estimated fur seal captures over the last decade with the changes in fishing effort (tows).



There has been a clear decline in the number of fur seal captures alongside a decline in fishing effort. The relationship between fishing effort (tows) and annual estimated captures can be seen in the graph below:

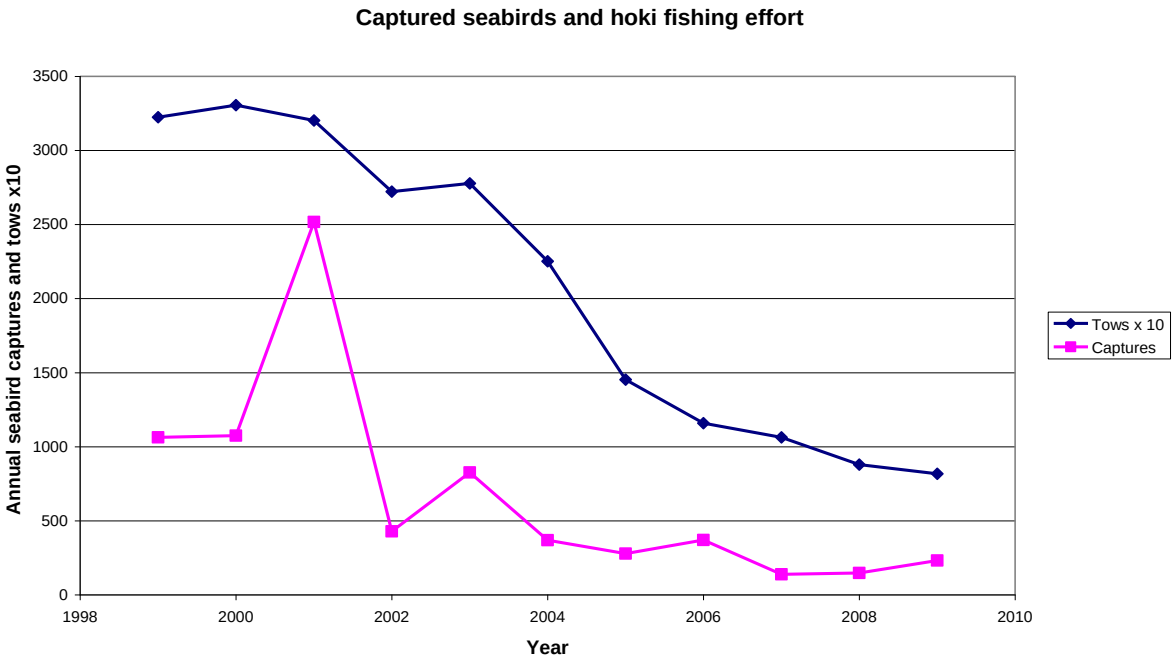


With the exception of the outlier of the high number of captures in 2004/05, it can be seen that fishing effort is a significant driver of fur seal captures. The graph below shows capture rates over time.

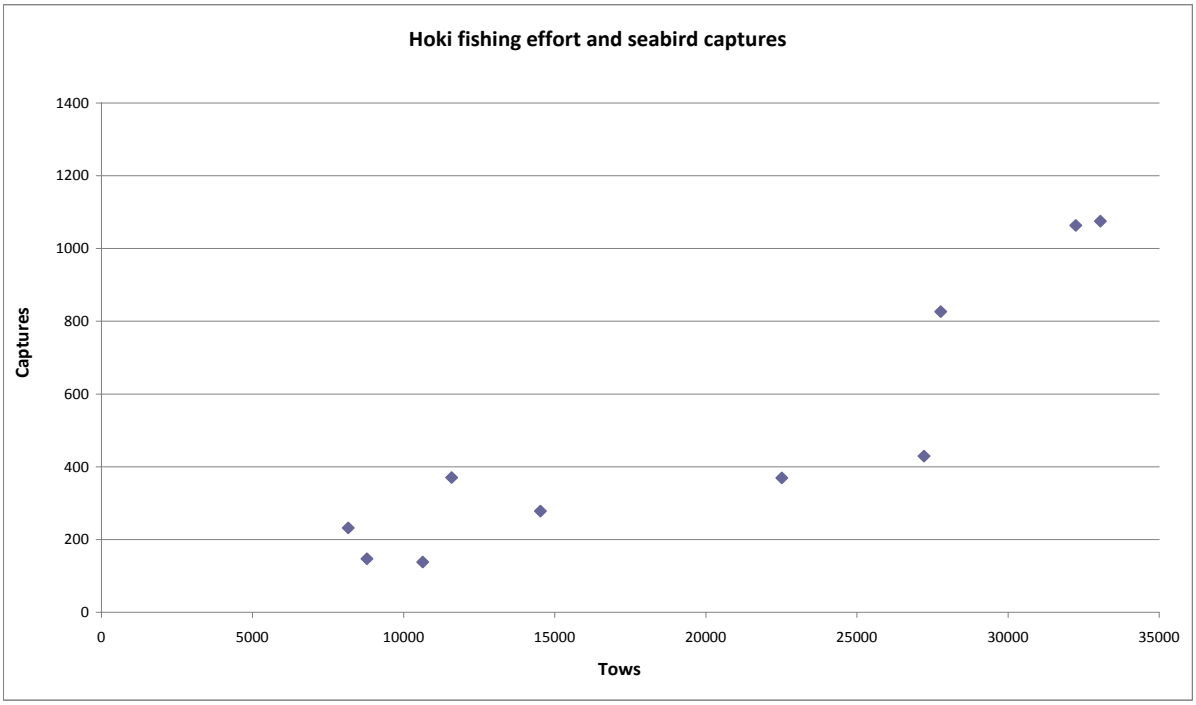


It can be seen that the capture rate has declined over the last decade, although there has been an increasing trend over the last couple of years. There is no evidence that mortality has been minimised or that best practice has been followed.

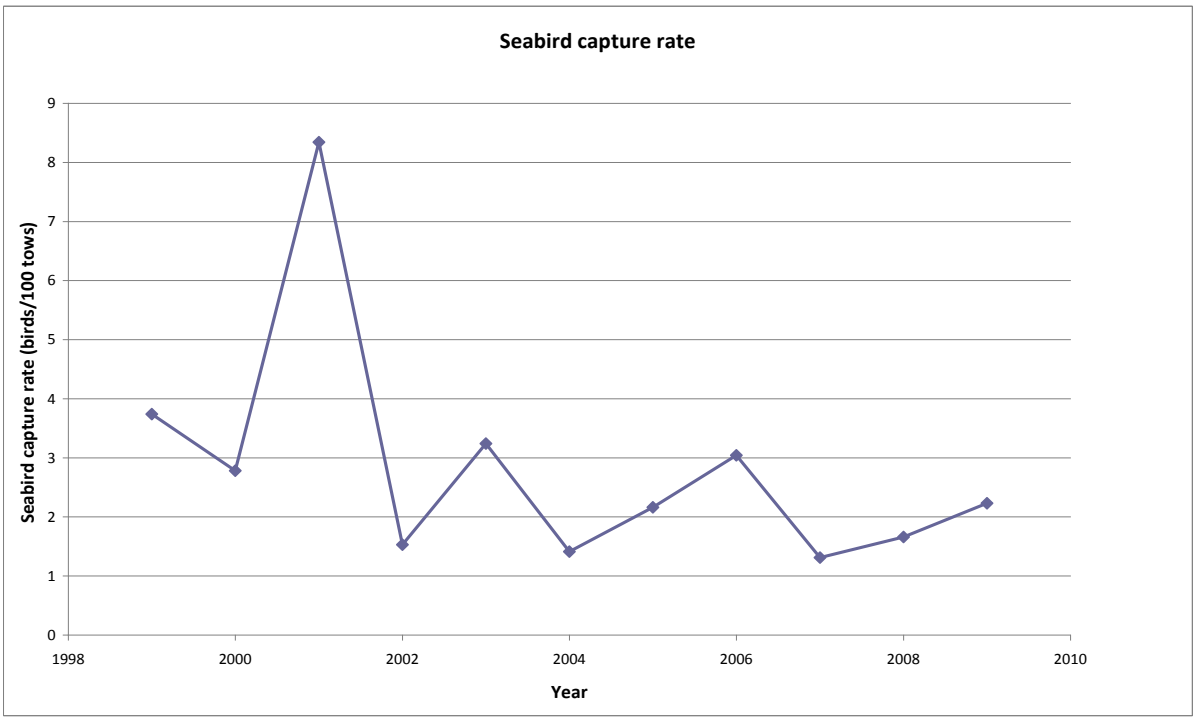
How has mitigation of seabird mortality fared? The graph below shows the change in seabird captures estimated from observer records over the last decade with the changes in fishing effort (tows).



This graph shows that total captures have declined with declining fishing effort. As with fur seals, the relationship is clearer when annual captures are plotted against fishing effort, and the high value of 2500 birds in 2000/01 is removed.



Clearly, fishing effort (as measured by TAC) is the main driver for seabird mortality. Is any trend in capture rate visible over time?



It can be seen from the graph above that there has been little reduction in the rate by which seabirds have been captured, particularly if the high capture rate in 2000/01 is treated as an outlier. There is no evidence that capture rates have been minimised or that best practice has been followed.

The hoki fishery has been driven strongly by recruitment fluctuations in recent years. Significant TACC reductions and declines in fishing effort led to noticeable declines in the total numbers of seabird mortalities calculated from observer records – this is driven

strongly by reductions in fishing effort. Reductions in bycatch rates are much more limited. Therefore it is probable that seabird (and other ETP) mortality has increased with recent increases in the TAC.

There are some limitations in this analysis.

1. There are significant differences in the mechanisms by which seabirds are captured. "Small birds" (petrels) tend to be caught in the net, whereas "large birds" tend to be struck by trawl warps. A small proportion of the birds killed by trawl warps will be captured contributing to an underestimate of "cryptic" mortality.
2. The Department of Conservation increased observer effort and information collected in trawl fisheries from about 2003.
3. Deepwater Group staff advise that particular effort was invested in mitigation from about 2003.

This suggests that this analysis should be repeated:

- For different groups of birds.
- For a fishery such as squid where observer effort has been more constant over the above timeframe.

In spite of these potential limitations, the data show that, while estimated seabird mortality based on observed bird capture have declined significantly, the major driver of this is fishing effort, rather than fishing practices or mitigation. However, no information has been presented that these practices minimise the mortality of ETP species. Indeed the analysis provided earlier in this submission suggests that bycatch rates have plateaued.

There is limited assessment of the significance of "cryptic" mortality, where seabird deaths are not seen. This is discussed further in relation to the next PI.

The Fisheries Plan for Deepwater Fisheries states that:

> Work is currently underway to develop an environmental standard for seabirds, which will apply across all fisheries. Once this standard is in place, the performance of vessels operating in the hoki fishery will be assessed annually. If the extent of hoki fishing activity means that the standard is not being met then further management intervention, including increased mitigation, will likely be required.

In May 2010, the Ministry committed to:

> The Ministry aims to have the seabird standard approved by the Minister with implementation occurring within the next 12 months. [33]

However, the revision of the National Plan of Action for Seabirds and the production of a seabird environmental standard have subsequently been stopped. In their place the Ministry prepared a draft Seabird Policy. WWF-NZ provided a critical submission of the draft Policy including the following points:

- The Ministry should demonstrate that the Draft Policy is a more effective way of achieving the stated policy goals than the NPOA and Seabird Standard.
- The Ministry should demonstrate that the objective of "optimum sustainable population" is consistent with legal obligations under the Wildlife and Fisheries Acts.

[33] http://www.fish.govt.nz/en-nz/Publications/Statements+of+Intent/SOI+2010+-+2015/Operating+Intentions/Better+manage+the+adverse+impacts+of+fishing+on+the+aquatic+environment.htm

- The requirement to protect the viability of seabird populations should not be subject to "fair" costs.
- The Draft Policy should provide guidance as to when population management plans will be developed.
- The Policy should adopt a precautionary approach to managing impacts on seabirds where there is complexity and uncertainty.
- The Policy should specify the acceptable level of risk for key species and the timeframe when it will be achieved by, through a Seabird Standard.
- The Seabird Action Plan provides a very limited collation of existing seabird-related activities without any assessment as to effectiveness.
- The description of mitigation measures should assess the effectiveness of the measures and make recommendations for research and policy.

A copy of the full submission is attached.

A conditional pass for this PI requires that:

a. *There are measures in place that minimise mortality, and are expected to be highly likely to achieve national and international requirements for the protection of ETP species.*

b. *The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/species).*

As long as there is no agreement between industry, stakeholders and government as to what constitutes "national requirements" under the Marine Mammal Protection Act and the Wildlife Act, it is not possible for the fishery to meet this indicator at the level of the 60 scoring guidepost. Furthermore, it is not clear that ACAP's best practice guidelines are being deployed and used correctly. There is also a huge gap in information on cryptic mortality of seabirds and of the indirect effects of the hoki fishery on seabirds.

Recommendations:

1. WWF recommends that the fishery does not meet the standard for this PI.
2. Should the fishery be certified, conditions are imposed to:
    a. The development and implementation of environmental standards for seabirds and fur seals related to population viability and best practicable options (best practice) to minimise bycatch;
    b. The indirect effects of the hoki fishery on seabirds should be assessed.

PI 2.3.3: Relevant information is collected to support the management of fishery impacts on ETP species including:
- Information for the development of the management strategy;
- Information to assess the effectiveness of the management strategy; and
- Information to determine the outcome status of ETP species.

For the fishery to warrant a conditional pass for this PI:

a. *Information is sufficient to qualitatively estimate the fishery related mortality of ETP species.*

b. *Information is adequate to broadly understand the impact of the fishery on ETP species.*

c. *Information is adequate to support measures to manage the impacts on ETP species.*

In contrast, an unconditional pass requires impacts of fishing to be assessed quantitatively. SG100 requires "accurate and verifiable information … on the magnitude of all impacts, mortalities and injuries and the consequences for the status of ETP species".

There is good information on ETP captures in the hoki fishery. When such species are landed, there is generally sufficient observer coverage for reasonable quantitative assessment of most of the fleet (with some limitations on smaller inshore vessels and in Cook Strait).

The Dragonfly report goes on to note:

> Observed fatalities during fishing events underestimate the actual number of fatalities. Fatalities may be unobservable (cryptic mortality) as birds can be killed by trawl warp strikes … . Although we included cryptic mortality to estimate the potential number of annual fatalities, the multipliers we used were derived from limited data … . Unfortunately, there was no information available from New Zealand fisheries that could be used to quantify the degree of cryptic mortality and the multipliers relied on studies from other countries. These might not be accurate for New Zealand. For some of the parameters, such as aerial warp strikes of large birds, there was no available data.

There is insufficient monitoring of warp strikes – indeed warp strike monitoring stopped two or three years ago after occurring for only a limited time. This means that the major source of potential direct mortality of large seabirds is not monitored. WWF raised this issue with the certification body for the previous (current) certification.

Risk assessments have assumed a relationship between landed birds and cryptic mortality (those that are killed and not captured, e.g. albatrosses striking trawl warps) but this relationship has not been investigated. Hence, total mortality can at best be assessed qualitatively. As noted previously, there is very limited information on non-fatal (indirect) impacts on ETP species.

There is little robust information on fur seal populations, especially on offshore islands. Key risks identified above relate to local west coast South Island populations and to those in Cook Strait. The unpublished fur seal population data in these areas should be analysed, peer reviewed and published.

Basking sharks are extremely vulnerable to over-harvesting and there is limited information on the nature of interactions with the hoki fishery.

WWF suggests that the fishery currently warrants a conditional pass for this PI.

Recommendations

1. The fishery receives a conditional pass for this PI.
2. Conditions are imposed that
   a. Seabird capture rates be examined in more detail, including:
      - Separating different groups of birds.
      - For a fishery such as squid where observer effort has been more constant over the above timeframe.
   b. Cryptic mortality to be monitored, such as through warp strike monitoring.
   c. The indirect effects of the hoki fishery on seabirds to be assessed.

d. The unpublished fur seal population data on the west coast of the South Island and in Cook Strait should be analysed, peer reviewed and published

e. Information to be collected on the spatial pattern of basking shark captures, the influence of sea temperature on captures, and whether the risks to basking sharks during the late 1990's have been ameliorated in any way by changing hoki fishing practices, or the nationality of the boats in the current fleet.

PI 2.4.1: The fishery does not cause serious or irreversible harm to habitat structure, considered on a regional or bioregional basis and function

MSC guidance notes that "it is the ecological role of the habitat and the ecosystem services that it provides that is the intent of assessment" under this PI. The New Zealand EEZ in general and hoki fishing grounds in particular, are not homogenous and that different areas are more vulnerable to trawling impacts than others. Given the size and complexity of our EEZ, relatively little direct spatial information is available on the nature of the benthos. Defining different benthic habitats in relation to their physical and biological characteristics provides an opportunity to assist the assessment of the impact of trawling on the benthos.

The benthic optimised marine environment classification (BOMEC) was developed as an environmental classification system in response to this paucity of information[34]. There was considerable discussion at the ERA about the merits of BOMEC, as well as about its limitations. Nevertheless, the Panel concluded that:

> Overall, there were conflicting views on how well the classification represents benthic communities in the EEZ, but the Expert Panel agreed that the BOMEC is the best benthic classification currently available for the hoki ERA.

The SGs focus on the probability that the fishery will reduce habitat structure and function to a point where there would be "serious or irreversible harm". MSC guidance includes the following as "serious or irreversible harm":

- *Loss (extinction) of habitat types*
- *Depletion of key habitat forming species or associated species to the extent that they meet criteria for a high risk of extinction*
- *Significant alteration of habitat cover/mosaic that causes major change in the structure or diversity of the associated species assemblages.*

Hoki are caught with bottom or mid-water trawls. Most bottom trawling for hoki on the Chatham Rise and in the Sub-Antarctic occurs over medium grain sediments (sandy silt Chatham Rise, silty clay Sub-Antarctic) although there are some areas of rocky outcrops and foul ground in both areas. Hotspots of more intense effort have been identified, but the impact of hoki bottom trawls on the benthic communities is unknown.[35] Most research on fishing / seabed interactions in New Zealand has focussed on mapping the footprint of trawl fisheries relative to habitat classes estimated using statistical classification schemes[36], and in relation to the preferred depth range of given species.[37]

[34]Leathwick, J, Dey, K, and Julian, K. (2006) Development of a marine environmental classification optimised for demersal fish. National Institute of Water and Atmosphere client report HAM-2006-063. Available at: http://www.biodiversity.govt.nz/pdfs/seas/DOC06213_env_classification%20final.pdf

[35]From the 2009 Ministry of Fisheries hoki plenary.http://fs.fish.govt.nz/Doc/21734/37_HOK_09.pdf.ashx

[36]Baird S.J., Wood, BA., Bagley NW. (2009). Nature and extent of commercial fishing effort on or near the seafloor within the New Zealand 200 n. mile Exclusive Economic Zone, 1989-90 to 2004-05.New Zealand Aquatic Environment and Biodiversity Report 2009

Baird S.J., Wood, B. (2010).Extent of coverage of 15 environmental classes within the New Zealand EEZ by commercial trawling with seafloor contact. Draft Final Research Report prepared as part completion of

Trawl footprint information[38] has been analysed both in terms of the hoki footprint and the footprint of the fisheries for all Tier 1 deepwater and middle-depth species[39]. The seabed area impacted by trawling was determined by[40]:

- The distance between trawl doors was used, which may overestimate the seabed area that is impacted by the trawl gear.
- Trawl tows were assumed to be straight lines between start/end points which is not always true and will therefore underestimate the size of the area that is impacted.
- All bottom trawls were included, along with all mid-water trawls which occurred within 50m of the seabed. This will overestimate the seabed area impacted.

These assumptions mean that the method used to calculate the trawl footprint is likely to overestimate the area directly impacted by contact from the trawl gear. However, as the trawl footprint analyses do not consider the indirect impacts of trawling on the seabed, such as sediment disturbance and drift, the trawl footprint analysis may underestimate the total area that is affected, although indirect impacts are difficult to quantify.[40]

Trawling occurs on a range of different habitats, and these habitats may also be represented in areas that have not been trawled – the proportion of trawled areas in each BOMEC[41] class is therefore an important criterion. Analysis of the hoki footprint data and BOMEC classes[42] shows that some hoki trawling has occurred in all 15 BOMEC classes in the past 20 years. The majority of hoki trawling has taken place in a few BOMEC classes.[40]

The Expert Panel requested a more detailed analysis of the hoki trawl footprint in each of the four hoki fisheries in order to confirm its assessments. In particular it requested this to confirm its risk assessments for hoki fishery benthic impacts in BOMEC class 9 in the Chatham Rise and Sub-Antarctic hoki fisheries. This information was provided to Panel members for their comments and is currently (December 2011) subject to review.

The percentage of the area in each BOMEC class not trawled within the four hoki fisheries is provided below[43]:

BOMEC Class	Chatham Rise		Subantarctic		West coast South Island		Cook Strait	
	1989-2010	2009-10	1989-2010	2009-10	1989-2010	2009-10	1989-2010	2009-10

Objective 5 of BEN200601 for the Ministry of Fisheries. 33p.
Snelder , T.; Leathwick, J.; Dey, K,; Weatherhead, M.; Fenwick, G.; Francis, M.; Gorman, R.; Grieve, J.; Hadfield, M.; Hewitt, J.; Hume, T.; Richardson, K.; Rowden, A.; Uddstrom, M.; Wild, M.; Zeldis, J. (2005). The New Zealand Marine Environment Classification, Ministry for the Environment, Wellington. 70p

[37] From MFish 2011 hoki plenary.

[38] Black, J.; Wood, R. 2010.Analysis of New Zealand's Trawl Grounds for the Tier 1 Species, GNS Science Consultancy Report 2010/167.31p
Wood, R. (2010).Analysis of hoki trawl footprint and BOMEC areas. (Report to Deepwater Group Limited, 15 September 2010)

[39] The nine Tier 1 deepwater and middle depth species are hake, ling, hoki, southern blue whiting, oreo, jack mackerel, orange roughy, squid and scampi.

[40] From hoki ERA final report.

[41] Benthic Optimised Marine Environment Classification.

[42] Wood (2010)

[43] From Boyd, R. (2011).Updated hoki fisheries benthic risk assessment – October 2011. Note that this includes corrections to the 21-year footprint for west coast South Island.

1	100.00%	100.00%	100.00%	100.00%	99.80%	100.00%	98.01%	100.00%
2	100.00%	100.00%	100.00%	100.00%	98.66%	99.93%	87.96%	99.31%
3	83.05%	100.00%	100.00%	100.00%	98.57%	99.97%	69.73%	99.17%
4	97.96%	99.90%	99.62%	100.00%	100.00%	100.00%	80.19%	99.95%
5	90.13%	99.96%	93.65%	99.74%	N/A	N/A	N/A	N/A
6	N/A	N/A	99.21%	100.00%	N/A	N/A	N/A	N/A
7	69.11%	94.69%	99.97%	100.00%	94.19%	99.94%	45.22%	92.59%
8	66.40%	97.05%	78.36%	99.49%	76.62%	97.03%	29.85%	81.08%
9	11.30%	72.44%	52.87%	92.85%	100.00%	100.00%	N/A	N/A
10	81.17%	97.51%	80.74%	99.79%	90.68%	98.63%	59.65%	95.28%
11	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
12	89.37%	100.00%	82.73%	99.50%	N/A	N/A	N/A	N/A
13	98.38%	100.00%	95.17%	99.90%	N/A	N/A	N/A	N/A
14	99.21%	99.96%	99.92%	100.00%	100.00%	100.00%	91.08%	99.89%
15	99.90%	100.00%	99.97%	100.00%	100.00%	100.00%	99.23%	100.00%
Total	85.40%	97.63%	92.73%	99.62%	92.48%	98.96%	76.64%	97.49%

Notes

- Cells in the table recording:
  - Less than 50% not trawled (i.e. more than 50% trawled) are highlighted in red,
  - Between 20% and 50% are highlighted in orange,
  - Between 5% and 20% are highlighted in yellow.
- Note that these are the criteria used by the ERA for "severe", "Major", "Moderate" and "Minor" risks, although no "Severe" categories were allocated (this was inconsistent with the agreed scoring approach).

The differences between the 21 year and 2009-10 figures are because catch is currently (TACC is 150,000 t) below the peak catch of 269,000 t in 1997-8, but above the 2008-9 catch of 88,800[44]. It is also because vessels tend to operate only where they know hoki are likely to present in commercial quantities.

While the trawl footprint in 2009-10 is significantly less than that of the 21-year footprint, it is the 21-year footprint that should be considered because:

- The fishing effort may well increase again – indeed, the TACC has increased significantly over the last few years which would imply an increased area trawled.
- Just because the trawl footprint in individual years is much less than the footprint in a 20 year period, does not mean that the trawl footprint in two successive years is coincident.
- The ability of trawled habitat to recover from trawling is unknown although much deep sea science predicts the recovery is likely to be very slow. It is therefore possible that habitats have yet to recover from trawling 20 years ago. So while the annual footprint may be reduced, the legacy of historical footprints is likely to remain.

The hoki fishery does not impact most BOMEC classes, either because hoki are not found in sufficient quantities there or because the habitat is unfishable (e.g. too deep or rocky). However, it is clear that significant proportions of classes 7, 8 and 9 have been trawled in the last 21 years, but we do not know the actual nature of the impacts in this area and, in particular, whether particular important or sensitive areas have been affected.

One of the main challenges for the hoki ERA was the absence of any standards of acceptable impact on the benthos, such as the maximum percentage of a habitat or environmental class

[44] From 2011 Plenary.

that could be trawled. The government decision to "pause" the development of the benthic impact standard effectively compromised this exercise.

Nevertheless, it is clear that the hoki fishery has had significant benthic impacts:

- More than 50% of three BOMEC classes (7, 8, and 9) within a hoki fishery have been trawled
- Ten fishery/BOMEC class combinations have been trawled over more than 20%.

The focus of the ERA was on hoki. However, the management issue really is the total trawl footprint, of which hoki is a part. It is likely that the total untrawled area is less than 11% of BOMEC class 9, which further elevates concern.

Further work is needed to better understand the relationship between BOMEC class and habitat, with a view to possibly improving BOMEC. Further work is also needed to assess impacts at scales below that of a BOMEC class. For example, the "graveyard" seamounts on the northern slopes of the Chatham Rise have been significantly impacted[45] by trawling and may fall within BOMEC class 9.

For the hoki fishery to receive an unconditional pass for this PI:

a. *The fishery is unlikely to reduce habitat structure and function to a point where there would be serious or irreversible harm.*

An unconditional pass requires that the probability of this occurrence is "highly unlikely".

WWF suggests that the hoki fishery does not meet the standard for this PI. This is not to say that the performance of the fishery is worse than when it was last certified, but that more recent information has demonstrated the pervasive and often acute impacts of trawling on benthic habitat.

Recommendations:

1. The hoki fishery does not meet the standard for this PI.
2. Should this not be the result and the fishery is certified, the following conditions should be imposed:
    a. The Ministry follows an open process and defines a scientifically robust benthic impact standard specifying the maximum proportion of each habitat class that can be fished with bottom-impacting trawl gear[46];
    b. The benthic impacts be assessed – this work should help assess what benthic assemblages are found within BOMEC Classes 7, 8 and 9 and help determine the need for further management measures;
    c. If the impacts are shown to be inconsistent with the standard, certification be reviewed;
    d. Fishing effort shall remain within the boundaries of the 21 year hoki footprint until the previous actions have been completed.

PI 2.4.2: There is a strategy in place that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to habitat types

[45] E.g. see: Clark, M.R. and Rowden, A.A. (2009) Effect of deepwater trawling on the macro-invertebrate assemblages of seamounts on the Chatham Rise, New Zealand. DeepSea Research Part I: Oceanographic Research Papers Volume 56, Issue 9, September 2009, Pages 1540-1554.

[46] Bottom trawls and mid-water trawls fished hard on the bottom.

For the hoki fishery to receive a conditional pass for this PI:

a. *There are measures in place, if necessary, that are expected to achieve the Habitat Outcome 80 level of performance.*

The analysis in this submission has clearly shown that measures are necessary to achieve the expected level of performance. However, there are no measures that directly limit the hoki trawl footprint to comply with these requirements.

The deepwater fishing industry proposed to government that about 30% of the EEZ be set aside from bottom fishing activities – known as Benthic Protected Areas. However:

- WWF has previously criticised this initiative and the processes leading to its implementation.
- Objective analysis of the effectiveness of BPAs47 has shown that more objective analysis would deliver conservation benefits nearly 2.5 times greater than those from equivalent-sized BPAs at lower cost to fishing.
- Analysis of the trawl footprint in the ERA and in this submission have considered existing BPAs and found them insufficient to protect sufficient habitat.

The Ministry has "paused" the development of a benthic impact environmental standard – the need for this standard has been identified in many government documents.

- 2007: The Benthic Impacts Strategy sets out the government's process for setting limits around the effects of fishing on sea-bed habitats. The limits are called Habitat Standards. A Habitat Standard will define how much of each sea-bed habitat must remain free of damage, including from fishing. This will ensure that the effects of fishing do not stop sea-bed habitats functioning and contributing effectively to fish production and the marine ecosystem.[48]
- 2010: The Benthic Impact Standard will provide clarity on determining when there is an adverse effect on the benthic environment from fishing and whether the level of protection currently in place in New Zealand's EEZ is sufficient.[49]
- 2010: The benthic impact standard is expected to be completed and approved for implementation in 2011.[50]

WWF participated in this process and was frustrated at the decision, without consultation, to pause this process. This appears to have been at the request of the industry.

WWF suggests that the hoki fishery does not meet the standard for this PI.

Recommendations:

1. The hoki fishery does not meet the standard for this PI.
2. Should this not be the result and the fishery is certified, the following conditions should be imposed:

[47]Leathwick, J., Moilanen, A., Francis, M., Elith, J., Taylor, P., Julian, K., Hastie, T., and Duffy, C. (2008).Novel methods for the design and evaluation of marine protected areas in offshore waters.*Conservation Letters*1(2):91–102.

[48]http://www.fish.govt.nz/en-nz/Environmental/Seabed+Protection+and+Research/default.htm

[49]http://fs.fish.govt.nz/Page.aspx?pk=52&tk=176

[50]http://www.fish.govt.nz/en-nz/Publications/Statements+of+Intent/SOI+2010+-+2015/Operating+Intentions/Better+manage+the+adverse+impacts+of+fishing+on+the+aquatic+environment.htm

a. The Ministry follows an open process and defines a a scientifically robust benthic impact standard specifying the maximum proportion of each habitat class that can be fished with bottom-impacting trawl gear[51];

b. The benthic impacts be assessed – this work should help assess what benthic assemblages are found within BOMEC Classes 7, 8 and 9 and help determine the need for further management measures;

c. If the impacts are shown to be inconsistent with the standard, certification be reviewed;

d. Fishing effort shall remain within the boundaries of the 21 year hoki footprint until the previous actions have been completed.

PI 2.4.3: Information is adequate to determine the risk posed to habitat types by the fishery and the effectiveness of the strategy to manage impacts on habitat types

A conditional pass requires that:

a. There is basic understanding of the types and distribution of main habitats in the area of the fishery.

b. Information is adequate to broadly understand the nature of the main impacts of gear use on the main habitats, including spatial overlap of habitat with fishing gear.

An impressive amount of work has been conducted into the nature of the trawl footprint on benthic habitats, especially considering the large area of seabed involved. The trawl footprint has been determined from the analysis of individual trawls. The BOMEC has modelled a range of benthic environmental classes.

While WWF supports this work, the level of information is insufficient to achieve an unconditional pass. An unconditional requires that:

a. The nature, distribution and vulnerability of all main habitat types in the fishery are known at a level of detail relevant to the scale and intensity of the fishery.

b. Sufficient data are available to allow the nature of the impacts of the fishery on habitat types to be identified and there is reliable information on the spatial extent of interaction, and the timing and location of use of the fishing gear.

c. Sufficient data continue to be collected to detect any increase in risk to habitat (e.g. due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of the measures).

The main issue relates to establishing the relationship between BOMEC classes and habitat types. Further work is also needed to assess impacts at scales below that of a BOMEC class, such as in relation to the "graveyard" seamounts on the Chatham Rise, as noted earlier. The development of a benthic impact standard would facilitate the assessment of (c).

Recommendations:

1. The fishery warrants a conditional pass for this PI.
2. The following conditions should be imposed:
    a. The relationship between BOMEC classes and habitat types be established.
    b. Habitats in BOMEC classes 9 (Chatham Rise) and 7 and 8 (Cook Strait) be examined in more detail.

[51] Bottom trawls and mid-water trawls fished hard on the bottom.

c. The Ministry defines a benthic impact standard specifying the maximum proportion of each habitat class that can be fished with bottom-impacting trawl gear.

PI 2.5.1: The fishery does not cause serious or irreversible harm to the key elements of ecosystem structure and function

MSC guidance notes that the ecosystem component addresses system-wide issues, primarily impacted indirectly by the fishery, including ecosystem structure, trophic relationships and biodiversity. The criteria refer to "serious or irreversible harm" which MSC defines (in relation to the capacity of the ecosystem to deliver ecosystem services) to include:

a. *Trophic cascade (i.e. significantly increased abundance, and especially decreased diversity, of species low in the food-web) caused by depletion of predators and especially "keystone" predators.*

b. *Depletion of top predators and trophic cascade through lower trophic levels caused by depletion of key prey species in "wasp-waist" food webs.*

c. *Severely truncated size composition of the ecological community (e.g. greatly elevated intercept and steepened gradient in the community size spectrum) to the extent that recovery would be very slow due to the increased predation of intermediate-sized predators.*

d. *Gross changes in the species biodiversity of the ecological community (e.g. loss of species, major changes in species evenness and dominance) caused by direct or indirect effects of fishing (e.g., discarding which provides food for scavenging species).*

e. *Change in genetic diversity of species caused by selective fishing and resulting in genetically determined change in demographic parameters (e.g. growth, reproductive output).*

MSC recognises that "relatively few fisheries would have the information needed to address ecosystem issues quantitatively, and usually they will be assessed using surrogates, analogy, general observations, qualitative assessment and expert judgement". MSC suggests that:

- *Harm to ecosystem structure is normally inferred from impacts on populations, species, functional groups, which can often be measured directly.*
- *Harm to ecosystem functions is normally inferred from impacts on ecosystem processes and properties such as trophic relationships, community resilience, etc, and often have to be inferred from conceptual or analytical models or analyses*

Hoki is the dominant species in the bottom fish community of the upper slope (200-800 m), particularly around the South Island[52], and as such are considered to be a key biological component of the slope ecosystem. Understanding the predator-prey relationships between hoki and other species in the slope community is important, particularly since substantial changes in the biomass of hoki have taken place since the fishery began.[53]

At the hoki ERA workshop there was disagreement about the trophic risks posed by the hoki fishery. The sole expert Matt Pinkerton (NIWA) highlighted the risks and was challenged by industry representatives. In particular, he noted[54]:

- Major changes in the Chatham Rise have occurred in terms of the biomass of ecologically important species, but there is no evidence of loss of species composition, community constituents or changes in ecosystem function.

[52] Francis MP.,Hurst RJ., McArdle B., Bagley NW., Anderson OF. 2002. New Zealanddemersal fish assemblages. Environmental Biology of Fishes 62(2): 215-234 (cited in plenary report.

[53] 2011 hoki plenary .

[54] From the ERA final report.

- Research has shown that the mean trophic level (MTL) of both the trawl survey and commercial catch is declining, and the decline is faster in the trawl survey data. Fishing appears to be affecting the higher trophic levels.
- Some properties of the Chatham Rise ecosystem have definitely changed, and determining how this change is likely to continue is important. The decline in MTL is continuing, which could be a cause for concern.
- Although there is no evidence of species disappearing from the time series, because the decline in MTL is ongoing it is unclear if or when the ecosystem will reach a new, steady state or continue to a state which is unsuitable for some species.
- It is unclear at this point whether these observed changes are predominantly the result of the hoki fishery on the Chatham Rise. There is no way of separating out the effects of each of the main fisheries. However, hoki is the most ecologically important fish species on the Chatham Rise, and therefore any changes in hoki abundance are likely to be important.
- A study of hoki diet concluded that it appears that the importance of myctophids to hoki has increased and euphausids had declined, but the importance of hoki to the hake and ling diets haven't changed.

The assigned scores were:

Ecosystem		**Chatham Rise**	**Sub-Antarctic**	**WCSI**	**Cook Strait**
Ecosystem/trophic impacts	Consequence	Major or moderate	Major or moderate[55]	Minor	Minor
	Confidence	Low (disagreement between experts)[56]	Low (disagreement between experts)	Low (no data exists)	Low (no data)

A conditional pass requires that:

a. *The fishery is unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.*

Whereas an unconditional pass requires that:

a. *The fishery is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.*

The key question that arose out of the ERA was the significance of the observed changes in ecosystem indicators. Given the low level of confidence in any answer to this question, WWF suggests that while this is insufficient to fail this PI, a strong condition needs to be placed on certification requiring that the trophic impacts be assessed through independent research and if shown to be inconsistent with this PI, that certification be reviewed. The research should determine the importance of the changes in mean trophic level and the ecosystem effects of removing significant volumes of a keystone species.

Recommendations:

1. The fishery warrants a conditional pass for this PI.
2. The following conditions should be imposed:

[55] Dr Pinkerton suggested a score of "major", while industry representatives and Ministry staff suggested "moderate".

[56] Note earlier comments about disagreement between "experts".

a. The trophic impacts of the hoki fishery should be assessed, especially on the Chatham Rise.
   The research should determine the importance of the changes in mean trophic level and the ecosystem effects of removing significant volumes of a keystone species.

b. If the trophic impacts are shown to be inconsistent with this PI, certification should be reviewed.

PI 2.5.2: There are measures in place to ensure the fishery does not pose a risk of serious or irreversible harm to ecosystem structure and function

A conditional pass requires that:

a. There are measures in place, if necessary.

b. The measures take into account potential impacts of the fishery on key elements of the ecosystem.

c. The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/ecosystems).

The key phrase for scoring this PI is "if necessary". Discussion under the previous PI shows that there are changes in some ecosystem parameters, but the significance of these changes is unclear. WWF is not aware of how the Ministry and the Deepwater Group propose to address the risks identified in the hoki ERA.

WWF considers that, given the significance of hoki in the Chatham Rise ecosystem, the quantity of hoki removed from the ecosystem, and the extent to which the biomass has been depressed compared to pre-fishing levels, ecosystem impacts need to be investigated as a matter of priority. In the meantime it would be desirable to maintain the biomass of hoki at least above the lower level of the management target (35%), preferably closer to 50%, until robust parameters are defined. Depending on the outcomes of this investigation, a management strategy may be required.

We note that an unconditional pass requires that:

b. The partial strategy takes into account available information and is expected to restrain impacts of the fishery on the ecosystem so as to achieve the Ecosystem Outcome 80 level of performance

There is clearly no strategy in place that restrains the impacts of the fishery on the ecosystem. Hence WWF suggests that the fishery warrants a conditional pass for this PI.

Recommendations:

1. The fishery warrants a conditional pass for this PI.
2. The following condition should be imposed:
   a. If, following the completion of research recommended under PI 2.5.1, the trophic impacts are shown to be inconsistent with this PI, certification should be reviewed.

PI 2.5.3: There is adequate knowledge of the impacts of the fishery on the ecosystem

MSC recognises that "relatively few fisheries would have the information needed to address ecosystem issues quantitatively, and usually they will be assessed using surrogates, analogy, general observations, qualitative assessment and expert judgement".

MSC's expectations for a conditional pass are not high:

a. *Information is adequate to identify the key elements of the ecosystem (e.g., trophic structure and function, community composition, productivity pattern and biodiversity).*

b. *Main impacts of the fishery on these key ecosystem elements can be inferred from existing information, and have not been investigated in detail.*

WWF considers that these criteria sufficiently describe knowledge about the ecosystem impacts of the hoki fishery. Some information is available on the impacts of the hoki fishery on the Chatham Rise ecosystem and also on the effects of fishing in subantarctic waters. The information on the Chatham Rise is sufficient to raise concerns that there may be significant ecosystem impacts. Main impacts of the fishery on these key ecosystem elements can be inferred from existing information and some have been investigated in detail.

For this reason it is important that these potential impacts be investigated further.

Recommendations:

1. The fishery warrants a conditional pass for this PI.
2. The following condition should be imposed:
    a. The trophic impacts of the hoki fishery should be assessed, especially on the Chatham Rise.
    The research should determine the importance of the changes in mean trophic level and the ecosystem effects of removing significant volumes of a keystone species.

Principle 3: Effective management

PI 3.1.1: The management system exists within an appropriate legal and/or customary framework which ensures that it:
- Is capable of delivering sustainable fisheries in accordance with MSC Principles 1 and 2;
- Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood; and
- Incorporates an appropriate dispute resolution framework.

New Zealand has one of the better fisheries management regimes, although there is clearly room for improvement. A University of British Columbia / WWF review of fishery management regimes against the FAO Code of Conduct[57] showed that:

- New Zealand was eighth among the 53 countries reviewed
- Not one country achieved a "good" score of 70% or more.

While New Zealand led much of the world in the management of fishing effort through the introduction of the quota management system, we are rapidly falling behind in the management of the environmental externalities of fishing. Hence, this submission has recognised generally good performance in relation to MSC Principle 1, but has identified several concerns in relation to Principle 2.

In terms of the key aspects of this PI, WWF considers that the following criteria apply:

a. *Consistency with local national or international laws*

[57] Pitcher, T.J., Pramod, G., and Short, K. (2008) Safe Conduct? Twelve years fishing under the UN Code. WWF-International and the University of British Columbia's Fisheries Ecosystem Restoration Research Group.

The fisheries management is consistent with national laws. In particular, the system specifies:

- When and where people can fish.
- Who can fish;
- How they may fish.
- How much they can catch;
- What they can catch;
- How they catch, sanction or penalise wrongdoers.

The important issue of compliance with labour laws is discussed below.

b. Resolution of legal disputes

This criterion assesses the extent to which there may be other or higher authorities to whom fishers or other stakeholders may appeal if they are dissatisfied with fishery rules or their implementation in the fishery by local managers. The New Zealand system does provide for appeals to the Courts, however, the financial barriers to this mechanism are such that they are only available to those who would receive a financial benefit from participation, i.e. the industry. Environmental groups are effectively unable to appeal government decisions.

c. Legal challenge

The New Zealand fisheries management system was once subject to frequent legal challenges, particularly from the deepwater sector. However, legal challenges have been substantially reduced since the Ministry and DWG signed, in 2006, a Memorandum of Understanding (MOU) which set out how DWG and the Ministry would work collaboratively to improve the management of deepwater fisheries (including hoki). WWF has previously expressed concerned about the nature of this relationship, particularly that between regulator and the regulated. This relationship is unbalanced compared to that with other stakeholders.

d. Legal rights of those dependent on fishing for food

The New Zealand fisheries management system specifically provides for (Maori) customary rights when allocating the total allowable catch among commercial, recreational and customary fishers.

It can be argued that, unlike Forest Stewardship Council certification of forest products, MSC does not address social aspects such as crew working conditions. This has recently come to light as a significant issue of concern for some New Zealand fisheries – including hoki. A report by AucklandUniversity highlighted working conditions on foreign charter fishing vessels catching MSC certified hoki[58]. The significance of the potential breaches of on-board labour conditions led the Government to commission a Ministerial Inquiry into the use and operation of foreign charter vessels fishing in New Zealand waters. The principal objective of the Inquiry is to ensure that the operation of foreign owned and flagged vessels chartered by New Zealand fishing companies supports the following government objectives:

1. To protect New Zealand's international reputation and trade access.
2. To maximise the economic return to New Zealand from our fisheries resources.
3. To ensure acceptable and equitable New Zealand labour standards (including safe working environments) on all fishing vessels operating in New Zealand's fisheries waters within the Exclusive Economic Zone.

[58]Stringer, C., Simmons, G., and Coulston, D. (2011). Not in New Zealand's waters, surely? University of Auckland Business School.Available at: http://docs.business.auckland.ac.nz/Doc/11-01-Not-in-New-Zealand-waters-surely-NZAI-Working-Paper-Sept-2011.pdf

This situation damages the reputation and integrity of the MSC brand and, by implication, that of WWF. Whilst this has yet to reach the attention of the discerning European and North American markets that seek MSC certified product, the next potential opportunity for this is when the Ministerial Inquiry concludes. This is a further risk to New Zealand's clean green brand as the social element is seen very clearly to be linked to environmental sustainability in these premium markets.

The compliance with this fishery to this PI is very mixed. In some cases, performance is very good (e.g. customary rights of Maori), whereas in others (ability for legal challenge) it is unsatisfactory. WWF suggests that, overall, the fishery meets the standard for this PI.

PI 3.1.2: The management system has effective consultation processes that are open to interested and affected parties.
The roles and responsibilities of organisations and individuals who are involved in the management process are clear and understood by all relevant parties

New Zealand appears to have a transparent and open fisheries management system, with draft papers provided for public consultation, and with systems for open dialogue between stakeholders. In reality it is tokenistic, unbalanced and open to undue influence from the resource users. This contrasts greatly with the situation in Australia where the Management Advisory Committees have a statutory obligation to include environmental NGO representatives – and that they're resourced to do so.

Specific issues experienced by WWF include:

- WWF-NZ has experienced limited change in policy through submissions on interim position papers produced by the Ministry. Other processes, such as the development of the seabird policy failed to provide for any input until a late draft was circulated "for comment"[59], in spite of WWF contributing substantial resources to the redrafting of the seabird National Plan of Action.

  As an example from the related squid trawl fishery, the Ministry released an initial position paper on a plan to manage impacts on critically endangered sea lions at 6.00 pm on a Friday, with submissions due on 23 December. The notification was buried in the Ministry's website[60] and was not emailed to environmental groups on the Ministry's email list.

  However, WWF has accepted invitations by the Ministry to participate at an early stage of the development of the southern blue whiting and ling fisheries chapters of the Deepwater Fisheries Plan. Although we have been constrained by the pre-determined structure of the plan, we have been afforded the ability to suggest changes to the documents at points where the Ministry was able to make changes. WWF is also involved in projects relating to the Observer Programme.
- The frequency meetings between the Ministry's Chief Executive and those of the main environmental groups has declined over time and have not occurred for well over a year.
- While the Ministry has talked about forming an Environmental Advisory Group, there has been little progress over the last year.

In contrast, as a result of the MOU with the Deepwater Group, regular meetings occur between senior management and technical staff on a range of fisheries management matters, and industry staff are generally able to contribute to public discussion documents before these are made public.

[59] Initially the document was circulated for information, but subsequently "comments" were requested, contrasting with other "consultative" processes.

[60] In other words, not readily visible with other "news" on the front page.

WWF concludes that while the functions and roles of organisations are defined and the Ministry follows many good processes to obtain information, the ability to influence critical processes and outcomes tends to follow informal processes. This depends, in part, on individuals concerned. Once public consultation papers are produced, there is limited opportunity for change. WWF considers this situation to be quite unsatisfactory. The consultation process does not "facilitates [the] effective engagement [of] all interested and affected parties" as required for SG100.

WWF suggests that the fishery receives a conditional pass for this PI.

Recommendations:

1. The fishery warrants a conditional pass for this PI.
2. The following conditions should be imposed:
    a. The Ministry shall convene an environmental advisory group for deepwater (and other) fisheries;
    b. The Ministry shall seek input from all key stakeholders prior to the drafting of initial position papers.

PI 3.1.3: The management policy has clear long-term objectives to guide decision-making that are consistent with MSC Principles and Criteria, and incorporates the precautionary approach

The Ministry of Fisheries released in 2009 *Fisheries 2030* providing "a strategic direction and goal for the New Zealand fisheries sector". Fisheries 2030's vision is

> New Zealanders maximising benefits from the use of fisheries within environmental limits

Two sets of outcome statements elaborate on the goal by describing more specific results desired for fisheries management:

> Use – Fisheries resources are used in a manner that provides greatest overall economic, social, and cultural benefit
>
> The capacity and integrity of the aquatic environment, habitats and species are sustained at levels that provide for current and future use

WWF notes the anthropocentric nature of this vision and the goals, but recognises that they are largely consistent with P1 and P2. Our concern is more about the implementation of the Strategy. The "environmental limits" constraint becomes rather hollow in the virtual absence of standards specifying what these limits are.

The quota management system provides good incentives for quota owners to consider the long-term benefits of sustainable fishing practices. However, quota (or annual catch entitlements) are often leased to those who catch the fish, significantly reducing the incentive to act in the long-term interests of the fishery. There are also arguments that the Ministry's focus on fish stocks and quota management insufficiently considers the environmental externalities of fishing.

The Fisheries Act 1996, section 10, specifies four information principles, which encompass the precautionary principle, that must be taken into account in relation to the utilisation of fisheries resources or ensuring sustainability:

- Decisions should be based on the best available information.

- Decision-makers should consider any uncertainty in the information available in any case.
- Decision-makers should be cautious when information is uncertain, unreliable or inadequate.
- 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 this Act.

While these principles, on face value, are laudable, they have been interpreted by the Courts to limit environmental controls in the absence of definitive information. This was recognised by a previous Minister of Fisheries. The Hon Jim Anderton holds the view that "the Act requires the Minister to keep allowing fishing to continue until he/she can PROVE that sustainability is threatened"[61]. His reasoning was:

> The reference in this section to the purpose of the Act creates ambiguity. Because the purpose includes two objectives—providing for utilisation, on the one hand, and ensuring sustainability, on the other—the current wording of section 10 does not provide the decision maker with clear directions on which of the two objectives they should favour in situations of uncertainty.[62]

In response to "recent successful High Court action initiated by fishing industry interests [that] have frustrated my decision to reduce the total allowable catch limit (TAC) in a North Island orange roughy fishery"[63], the Minister introduced a Bill in 2007 to amend the Fisheries Act:

> The amendment bill will ensure that where information is uncertain or lacking, decision makers can take measures they judge necessary to ensure sustainability in fisheries resources, and protection of the marine environment. ...
>
> Although the impacts on both utilisation and sustainability will continue to be considered in situations of uncertainty, the amendment will indicate a clear preference that measures taken should favour sustainability. This is consistent with the international interpretation of the precautionary approach and good fisheries management.[62]

This was supported by Phil Heatley, the previous Minister of Fisheries under the the National government:

> We agree with the Minister that the Fisheries Act 1996 Amendment Bill needs due consideration. The National Party will certainly be supporting the bill going to select committee. The bill clarifies the law by providing a clearer direction to the Minister of Fisheries that where there is inadequate information on fish stock health, it will take a cautious approach and set annual catch levels lower rather than higher. [62]

In spite of cross-party support the Bill disappeared and the flaws in the Fisheries Act remain.

In WWF's view, the fishery would currently meet the standard, as "clear long-term objectives that guide decision-making, consistent with MSC Principles and Criteria ..., are explicit within and required by management policy". However, these principles are not consistent with the precautionary approach. Hence, WWF suggests that the fishery warrants a conditional pass for this PI.

[61] http://www.otago.ac.nz/law/nrl/marine/index.html. Emphasis in the original.
[62] http://theyworkforyou.co.nz/bills/fisheries_act_1996_amendment/2007/mar/01/first_reading
[63] From the Cabinet paper: http://www.fish.govt.nz/NR/rdonlyres/EAF7A72F-A55C-44EF-9CD4-6FB3DB9D354A/0/cab_paper_precautionary_approach.pdf

Recommendations:

1. The fishery warrants a conditional pass for this PI.
2. The following condition should be imposed:
    a. The Fisheries Act be amended to more explicitly provide for the precautionary approach as provided in the 2007 Cabinet (cited above).

PI 3.2.1: The fishery has clear, specific objectives designed to achieve the outcomes expressed by MSC's Principles 1 and 2

As noted above, the New Zealand fishery management system is, in theory, a robust hierarchical arrangement cascading down from the Fisheries Act, the Fisheries 2030 Strategy, environmental standards, fisheries plans, research strategies and annual operating plans and reports. However, the implementation has been somewhat less effective, with limited specification of objective standards and with lower order documents being produced before the higher order strategies and fisheries providing less strategic direction, leaving excessive decision-making at the level of annual operational plans. There is insufficient cooperation between the Ministry and the Department of Conservation. WWF, through our submissions, has encouraged the Ministry to specify clearer management objectives and outcomes in its fisheries plans – the plans tend to focus on outputs, rather than outcomes. Nevertheless, WWF suggests that the fishery meets the standard for this PI.

PI 3.2.2: The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives

An unconditional pass requires that:

a. There are established decision-making processes that result in measures and strategies to achieve the fishery-specific objectives.

While such processes exist, they are often over-ridden by informal arrangements and the Deepwater Group / Ministry MOU, excluding other stakeholders and the Department of Conservation.

b. Decision-making processes respond to serious and other important issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.

The Ministry did respond to the rapid decline in hoki fish stocks by reducing the TAC, but this response was reactionary and tended to follow the decline, rather than prevent it in the face of clear science.

c. Decision-making processes use the precautionary approach and are based on best available information.

Comments on the previous PI criticised the application of the precautionary principle.

d. Explanations are provided for any actions or lack of action associated with findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.

Limited explanation is provided about decisions (largely contained within the Minister's decisions), but detailed submissions analyses, such as those produced by other government departments, are produced only sporadically.

WWF suggests that the fishery receives a conditional pass for this PI.

Recommendations:

1. The fishery warrants a conditional pass for this PI.
2. The following conditions should be imposed:
    a. The Ministry shall seek input from all key stakeholders prior to the drafting of initial position papers.
    b. The Ministry shall produce submissions analyses explaining the relationships between key issues raised and decisions made.

PI 3.2.3: Monitoring, control and surveillance mechanisms ensure the fishery's management measures are enforced and complied with

An unconditional pass requires that:

a. A monitoring, control and surveillance system has been implemented in the fishery under assessment and has demonstrated an ability to enforce relevant management measures, strategies and/or rules.

Such a system exists.

b. Sanctions to deal with non-compliance exist, are consistently applied and thought to provide effective deterrence.

While such sanctions exist, the collaboration obliged by the DWG / Ministry MOU leads to some questions as to how consistently these sanctions are applied.

c. Some evidence exists to demonstrate fishers comply with the management system under assessment, including, when required, providing information of importance to the effective management of the fishery.

Fishers provide quite a lot of information to management agencies, but consistently under-report captures of protected species.

d. There is no evidence of systematic non-compliance.

While there have been prosecutions for misreporting the source of caught hoki ("trucking") and for high-grading[64], this is probably not a significant limitation in terms of the harvest strategy – the plenary report notes that "no information is available about illegal catch".

WWF suggests that the fishery meets the standard for this PI.

PI 3.2.4: The fishery has a research plan that addresses the information needs of management

The Ministry has prepared a 10-year research programme for deepwater fisheries[65]. Information produced as part of this programme is considered by science working groups which provide for good participation by all stakeholders. SG100 requires:

a. A comprehensive research plan provides the management system with a coherent and strategic approach to research across P1, P2 and P3, and reliable and timely information sufficient to achieve the objectives consistent with MSC's Principles 1 and 2.

b. Research plan and results are disseminated to all interested parties in a timely fashion and are widely and publicly available

WWF considers that the fishery currently complies with the standard for this PI.

[64] E.g. see: http://www.stuff.co.nz/the-press/news/press-communities/1396606/Sudden-shift-in-hoki-fishing-trial

[65] http://www.fish.govt.nz/en-nz/Press/Press+Releases+2010/May10/Fisheries+research+programme+will+give+more+information.htm

PI 3.2.5: There is a system of monitoring and evaluating the performance of the fishery-specific management system against its objectives
There is effective and timely review of the fishery-specific management system

There is good observer coverage of the fishery, with a plan to implement "100% coverage" – in reality this is at least one observer on each fishing vessel, rather than coverage of 100% of the effort. Nevertheless, this provides general adequate coverage for most aspects. The Ministry plans to publish annual reports on the operation of the fishery. Currently there is no monitoring of interactions between seabirds and trawl warps, which is an important source of mortality for large seabirds, such as albatrosses. Hence the fishery does not have in place "mechanisms to evaluate all parts of the management system" as required by SG100, instead focusing. Hence, in WWF's view, the fishery currently meets the standard.

Appendix 3-3

IMM Response to WWF Submission

The Intertek Moody Marine CAB team would like to thank WWF for their professional, detailed, and through submission. We have responded to all the points raised by WWF and in many cases changed the text of the report to incorporate the matters raised.

In this appendix, we indicate responses to the WWF comments because the scoring table and associated text do not explicitly refer to where the information from WWF was used. Note that in several cases, the CAB evaluation of the situation is identical to that of WWF. In such cases, the IMM response is necessarily short. Note that Conditions related to a Performance Indicator can only be raised when the fishery does not achieve a score of 80 for that Performance Indicator. In such situations, the WWF-recommended conditions reflect activities / additional information which would move the fishery further towards a score of 100 for the PI.

Principle 1
Performance Indicator 1.1.1.
WWF and IMM agree that the fishery meets the 80 scoring guidepost for this PI.

Performance Indicator 1.1.2
WWF state that the fishery achieves the 60 scoring guidepost for this PI and identify a condition to modify the management targets and limits. IMM conclude that the fishery meets all of the requirements of the 80 scoring guidepost for this PI, but not all of the requirements of the 100 scoring guidepost. The suggested changes to the reference points include reference points based on fishing mortality, as well as allowance for the ecological role of hoki and the proportion of juvenile fish caught on the Chatham Rise when defining reference points.

(a) In relation to the first suggestion, IMM notes that the stock assessment plenary already reports fishing intensity for hoki (defined as the maximum over age of the catch-at-age divided by the numbers-at-age) relative to two target fishing intensities. IMM does not see the need for the formal adoption of a fishing intensity target given the constraints already imposed though the HSS. Given the HSS, and the outputs from the assessment, specifically projected biomass under current and alternative TACCs, exploitation rates should remain within levels which should lead to the stock fluctuating within the target range.
(b) In relation to the second suggestion, the need to take the ecological role of hoki into account when defining reference points, while desirable, is only required if the CB concludes the target species is LTL. IMM document the reasons why it does not draw this conclusion.
(c) In relation to the third suggestion, the proportion of juveniles caught is accounted for when conducting the stock assessment. Thus, this factor is implicitly accounted for when the fishery is evaluated against the reference points.

Performance Indicator 1.2.1.
WWF and IMM agree that the fishery meets the 80 scoring guidepost for this PI. IMM also agrees with WWF that there is currently insufficient evidence to conclude that all the requirements of the 100 scoring guidepost have been satisfied.

Performance Indicator 1.2.2
WWF and IMM agree that the fishery meets the 80 scoring guidepost for this PI.

Performance Indicator 1.2.3
WWF and IMM agree that the fishery meets the 80 scoring guidepost for this PI. IMM agrees with WWF that the performance of the harvest strategy is not invalidated due to uncertainty regarding historical catches and likely low level of infringement.

Performance Indicator 1.2.4
WWF and IMM agree that the fishery meets the 80 scoring guidepost for this PI. IMM notes some of aspects of uncertainty highlighted by WWF are included in the summary text for the stock assessment. That the assessment and projections consider sensitivity tests to examine some of the impacts of these uncertainties was taken into account in the scoring.

Principle 2
Performance Indicator 2.1.1
WWF and IMM agree that the fishery meets the 80 scoring guidepost for this PI.

Performance Indicator 2.1.2
WWF and IMM agree that the fishery meets the 80 scoring guidepost for this PI. IMM considers that three of the 100 scoring guidepost issues were also addressed, relating to the strategy for managing retained species.

Performance Indicator 2.1.3
WWF and IMM agree that the fishery meets the 80 scoring guidepost for this PI. IMM considers that two of the scoring issues were also addressed at the 100 scoring guidepost, given the quality of information available through catch reporting.

Performance Indicator 2.2.1
WWF suggests that the fishery receives a conditional pass for this PI, and that a condition is imposed that requires the development of biologically based limits for the main deepwater dogfish species and ghost sharks caught in the hoki fishery.

IMM considers the fishery satisfies the 80 scoring guidepost for this PI. None of non-QMS species are considered to be main bycatch species, as defined in the MSC Certification Requirements, as no species constituted more than 5% of the observed catch during 2006-07 to 2008-09 (Ministry of Fisheries 2010). One shark species (the shovelnose dogfish) is caught in reasonable numbers, and probably shares the tendency of sharks in having low productivity. This species comprised >0.25% of the total catch reported by observers in 2006-07 to 2008-09. This species is monitored on the Chatham Rise though trawl surveys (O'Driscoll et al. 2011), which are relatively precise and suggest that abundance has not changed significantly from 1992 onwards.

As noted by WWF, ghost sharks are currently managed under the QMS. Consequently, they would be considered under PI 2.1.1 for retained species.

On this basis, the IMM team concluded that the main vulnerable species is highly likely ($P > 0.7$) to be within biologically based limits, and the fishery achieves SG80.

Performance Indicator 2.2.2
In WWF's view, the fishery currently warrants a conditional pass for this PI, and suggests that a condition requires the development of biologically based limits for the main deepwater dogfish species and ghost sharks caught in the hoki fishery.

IMM has scored the fishery at SG100, given species caught in the fishery that would be managed and the strategic framework within which bycatch is managed. The shovelnose dogfish becomes the focal species here, due to vulnerability caused by its probable low productivity. As well as the availability of ongoing trawl survey data reflecting the abundance of this species, there is a multi-faceted and strategic management framework around ensuring sustainability of bycatch. This includes:

- Legislation: the Fisheries Act, which contains provisions for sustainability,
- The National Plan of Action – Sharks (Ministry of Fisheries 2008)
- The Annual Operational Plan for Deepwater Fisheries (Ministry of Fisheries 2011a)
- The National Fisheries Plan for Deepwater and Middle-depth Fisheries: Part 1B, Hoki chapter (Ministry of Fisheries 2010)
- The QMS Introduction Process Standard

Consequently, IMM considers that there is a strategy in place, sufficient to satisfy the requirements of the 100 scoring guidepost for PI2.2.2.

The basis for confidence in the strategy is found in the stable abundances since trawl surveys began, the Fisheries Act sustainability provisions, and past introductions of species into the QMS due to sustainability concerns. Observer reporting provides data on the fishery that is relevant to strategy implementation.

As above, ghost sharks would be considered as retained species rather than as bycatch species.

Performance Indicator 2.2.3

In WWF's view, the fishery currently warrants a conditional pass for this PI. WWF suggests that a condition requires the development of biologically based limits for the main deepwater dogfish species and ghost sharks caught in the hoki fishery, and that population status of the main bycaught dogfish and ghost shark species be monitored.

IMM considers that the fishery satisfies the 80 scoring guidepost for this PI, and two elements of the 100 scoring guidepost, noting that this PI focuses on information available to determine bycatch risk and the efficacy of the bycatch management strategy. Qualitative and quantitative information is available on all bycatch species, from observer data collection. Ongoing trawl surveys and observer data collection are expected to be sufficient to detect changes in risk to the vulnerable bycatch species focussed on in this PI (shovelnose dogfish). Information is adequate to support a partial strategy for this species.

As above, ghost sharks would be considered as a retained species.

Performance Indicator 2.3.1

WWF recommends that the fishery does not meet the standard for this PI. Should the fishery be certified, WWF suggests conditions are imposed to:

(a) Develop biologically based limits for the main ETP species caught in the hoki fishery

(b) Investigate impacts on fur seal populations along the West coast and Cook Strait.

This should include:

(i) Consolidate and analyse the WCSI pup count data to determine whether population trends are occurring in this region.

(ii) Reduce existing uncertainty of data from Cook Strait, both in terms of the understanding of incidental capture and mortality rates and of current subpopulation size estimates.

(c) Bench-mark capture rates of seabirds and fur seals against similar fisheries worldwide.

(d) Investigate and implement ways to further reduce fur seal bycatch rates.

(e) Investigate the indirect effects of the hoki fishery on seabirds.

IMM considers that the fishery meets the requirements of the 60 and 80 scoring guideposts, and one of the elements in the 100 scoring guidepost, bringing the final score to 85. In response to WWF's points, IMM:

(a) notes that assessments of main ETP species conducted to date have used the Potential Biological Removal approach (Wade 1998). While designed for relatively information-poor situations, this approach captures some biologically-based species information e.g. population size and productivity. The precautionary nature of the PBR approach renders it particularly appropriate for fisheries assessments under MSC.

(b) notes that DOC has consolidated the WCSI data, and it is available on request (L. Boren, pers. comm.). While IMM agrees this information would usefully be considered, a cautionary approach to any conclusions generated is warranted given the nature of the dataset. IMM is pleased to note the increased observer effort to be directed to Cook Strait (DOC 2011), which will improve information about fishery mortalities of fur seals occurring there.

(c) notes that keeping global contexts in mind is essential when developing management approaches and strategies. However, IMM suggests that bench-marking in isolation from the wider management structure is perhaps less useful than, for example, setting quantitative management goals relevant to specific fisheries' operating and ecological contexts.

(d) expects that fishery managers would welcome new mitigation measures shown to be effective in reducing fur seal captures. However, the formerly most promising device available to date (seal exclusion device) has been found to be problematic for deployment in the hoki fishery in New Zealand (Clement and Associates 2009). In the global absence of other promising new ideas, IMM considers that focussing on operational approaches to reducing seal bycatch is probably more likely to yield immediate benefit in terms of fur seal bycatch reduction.

(e) notes that the Marine Conservation Services Team, Department of Conservation have indicated their intent to investigate indirect effects of fishing on protected species over the next year. However, currently, indirect effects are not deemed of major concern.

IMM also notes, in relation to this PI, that while there are legislative and policy measures relating to protected species, these are not in the form of capture limits. Instead, deployment of bycatch reduction measures and reporting of protected species captures are required. Ongoing monitoring of captures and populations, and risk assessments, provide some confidence that ETP species are not impacted to unacceptable levels by the hoki fishery.

Performance Indicator 2.3.2

WWF recommends that the fishery does not meet the standard for this PI. Should the fishery be certified, WWF recommends that conditions are imposed to:
a. The development and implementation of environmental standards for seabirdsandfur seals related to population viability and best practicable options (best practice) tominimise bycatch;
b. The indirect effects of the hoki fishery on seabirds should be assessed.

IMM considers that for this PI, the fishery meets the requirements of the 60 and 80 scoring guideposts. Scoring issues relate to measures and strategies for minimising mortalities and achieving national and international requirements. IMM notes that quantitative environmental standards are not currently in place for ETP species. However, IMM considers that assessing captures against such standards would be one way (of many) to quantitatively assess fishery impacts, but is not required to meet this PI. Best practice guidelines are followed in the hoki fishery, for example, in the area of seabird bycatch mitigation when tori lines are used, and advanced offal management practices are applied.

As above, IMM notes that the Marine Conservation Services (MCS) Team, Department of Conservation (DOC), have indicated their intent to investigate indirect effects of fishing on protected species over the next year. However, currently, indirect effects are not deemed of major concern.

In summary, IMM considers that this PI is met at the 80 level because there are effective measures and a strategic framework in place to reduce ETP mortalities.

Performance Indicator 2.3.3

WWF recommends that the fishery receives a conditional pass for this PI, and that conditions are imposed as follows:
a. Seabird capture rates be examined in more detail, including:
- Separating different groups of birds.

- For a fishery such as squid where observer effort has been more constant over the above timeframe.
b. Cryptic mortality to be monitored, such as through warp strike monitoring.
c. The indirect effects of the hoki fishery on seabirds to be assessed.
d. The unpublished fur seal population data on the west coast of the South Island and in Cook Strait should be analysed, peer reviewed and published
e. Information to be collected on the spatial pattern of basking shark captures, the influence of sea temperature on captures, and whether the risks to basking sharks during the late 1990's have been ameliorated in any way by changing hoki fishing practices, or the nationality of the boats in the current fleet.

IMM considers that the fishery meets the requirements of the 60 and 80 scoring guideposts. In response to WWF's points, IMM notes that:

(a) sometimes the number of captures precludes the useful separation of seabird species or species groups in analyses, and notes the Richard *et al.* (2011) level 2 risk assessment that considered seabirds by species (albeit across fisheries). IMM agrees that comparing between fisheries can be extremely informative, but notes the different nature of the squid and hoki fishery. Warp strike monitoring is to recommence, following consideration of the objectives and utility of this data collection for management (K. Ramm pers. comm.).
(b) as above, the MCS team at DOC are to investigate indirect effects on ETP in house,
(c) the unpublished data on New Zealand fur seals collected from the West Coast of the South Island is being made available by DOC (L. Boren, pers.comm.), and
(d) work is currently underway on basking sharks (Project POP2011-04, DOC 2011).

IMM scored this PI at the 80 level given the excellent quality data available from fisheries observers, and population-level data for many protected species.

Performance Indicator 2.4.1

WWF suggests that the hoki fishery does not meet the standard for this PI and should the fishery is certified, the following conditions are imposed:
a. The Ministry follows an open process and defines a scientifically robust benthic impact standard specifying the maximum proportion of each habitat class that can be fished with bottom-impacting trawl gear;
b. The benthic impacts be assessed – this work should help assess what benthic assemblages are found within BOMEC Classes 7, 8 and 9 and help determine the need for further management measures;
c. If the impacts are shown to be inconsistent with the standard, certification be reviewed;
d. Fishing effort shall remain within the boundaries of the 21 year hoki footprint until the previous actions have been completed.

IMM concurs that the management of habitat impacts of this fishery should be improved, for better alignment with MSC principles and criteria. However, IMM considered that the fishery satisfied the requirements of the 60 scoring guidepost, and scored the fishery at 75 due to negligible or minor impacts on most habitat types. The scope of the Condition raised reflects IMM's assessment of the fishery against the PI. Key points raised by WWF are aligned with the Condition raised.

Performance Indicator 2.4.2

IMM notes that WWF's recommendations under this PI are as for PI 2.4.1. Consequently, IMM refers to the points made above. Additionally, under this PI, IMM raises issues around determining the efficacy of measures and strategies applied for the management of habitat impacts.

Performance Indicator 2.4.3
WWF considered that the fishery warrants a conditional pass for this PI, and suggests that the following conditions are imposed:
a. The relationship between BOMEC classes and habitat types be established.
b. Habitats in BOMEC classes 9 (Chatham Rise) and 7 and 8 (Cook Strait) be examined in more detail.
c. The Ministry defines a benthic impact standard specifying the maximum proportion of each habitat class that can be fished with bottom-impacting trawl gear.

IMM concurs with WWF in that the fishery meets the requirements of the 60 scoring guidepost. However, IMM concludes that the fishery also meets the requirements of the 80 scoring guidepost and one of those for the 100 scoring guidepost. IMM suggests that the condition raised under PI 2.4.1 will address the substantive components of WWF's submission made under PI 2.4.3.

Performance Indicator 2.5.1
WWF considers that the fishery warrants a conditional pass for this PI, and suggests that the following conditions are imposed:
a. The trophic impacts of the hoki fishery should be assessed, especially on the Chatham Rise.
The research should determine the importance of the changes in mean trophic level and the ecosystem effects of removing significant volumes of a keystone species.
b. If the trophic impacts are shown to be inconsistent with this PI, certification should be reviewed.

IMM considers that while all the requirements of the 60 and 80 scoring guideposts have been satisfied, those for the 100 scoring guidepost have not. Consequently, a recommendation has been made to continue developing understanding of ecosystem impacts relating to the fishery, and particularly the meaning of ecosystem indicators.

Performance Indicator 2.5.2
WWF considers that the fishery warrants a conditional pass for this PI, and suggests the following condition is imposed:
a. If, following the completion of research recommended under PI 2.5.1, the trophic impacts are shown to be inconsistent with this PI, certification should be reviewed.

IMM considers that the fishery meets the requirements of the 60 and 80 scoring guideposts, and three of the 100 scoring guideposts. IMM suggests that the Recommendation raised under PI 2.5.1 shouldaddress WWF's substantive concerns in this area.

Performance Indicator 2.5.3
WWF considers that the fishery warrants a conditional pass for this PI, and suggests the following condition is imposed:
a. The trophic impacts of the hoki fishery should be assessed, especially on the Chatham Rise.
The research should determine the importance of the changes in mean trophic level and the ecosystem effects of removing significant volumes of a keystone species.

IMM considers that the fishery meets the requirements of the 60 and 80 scoring guideposts, and three of the 100 scoring guidepost issues. IMM suggests that the Recommendation raised under PI 2.5.1 will address WWF's substantive concerns in this area.

Principle 3
Performance Indicator 3.1.1

WWF and IMM agree that the fishery meets the standard. Some of the issues raised by WWF cannot be addressed under this MSC assessment, such as social issues. Other matters such as the Memorandum of Understanding between the Ministry of Fisheries and DWG and the financial barriers are matters probably best addressed in another forum.

Performance Indicator 3.1.2
WWF have suggested a conditional pass for this PI. They say "New Zealand appears to have a transparent and open fisheries management system, with draft papers provided for public consultation, and with systems for open dialogue between stakeholders. In reality it is tokenistic, unbalanced and open to undue influence from the resource users."

The SG 80 requires *(a) Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are explicitly defined and well understood for key areas of responsibility and interaction, (b) The management system includes consultation processes that regularly seek and accept relevant information, including local knowledge. The management system demonstrates consideration of the information obtained and (c)The consultation process provides opportunity for all interested and affected parties and affected parties to be involved.*

WWF doesn't seem to argue with any of this rather that the input into the process is "unbalanced and open to undue influence from the resource users".

IMM agrees that it would be a good idea for the Ministry to convene an environmental advisory group for deepwater (and other) fisheries (indeed the Ministry have told us that they are in the process of doing so) and that the Ministry seek input from all key stakeholders prior to the drafting of initial position papers. However, it is not the CABs role to tell the Ministry what to do rather it is a matter that the eNGOs should be taking up with the Ministry.

Performance Indicator 3.1.3
WWF recommends a conditional pass for this PI. The 80 guidepost requires clear long-term objectives that guide decision-making, consistent with MSC Principles and Criteria and that the precautionary approach isexplicit within management policy. WWF agrees that there are clear long-term objectives that guide decision-making, consistent with MSC Principles and Criteria, but that these principles are not consistent with the precautionary approach.

IMM has looked at the Precautionary Approach– in regarding information principles, Section10 of Fisheries Act states: "*All persons exercising or performing functions, duties, or powers under this Act, in relation to the utilisation of fisheries resources or ensuring sustainability, shall take into account the following information principles (a) Decisions should be based on the best available information, (b) Decision makers should consider any uncertainty in the information available in any case, (c) Decision makers should be cautious when information is uncertain, unreliable, or inadequate, (d) 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 this Act*."

Also the Ministry of fisheries document "Fisheries 2030" sets the strategic direction for the management and use of New Zealand's fisheries resources. It states that one of the principles guiding Fisheries 2030 is "*Precautionary approach: particular care will be taken to ensure environmental sustainability where information is uncertain unreliable or inadequate*.", Although IMM agrees that an amendment to the Fisheries Act would strengthen the commitment to the precautionary approach, the current Fisheries Act is sufficient for the purposes of satisfying this PI.

Performance Indicator 3.1.4
No comment from WWF

Performance Indicator 3.2.1
WWF and IMM agree that the fishery meets the 80 scoring guidepost for this PI.

Performance Indicator 3.2.2
WWF suggest a conditional pass for this PI. There are several components in the SG 80 for this PI.

a) *There are established decision-making processes that result in measures and strategies to achieve the fishery-specific objectives*.

WWF state that while such processes exist, they are often over-ridden by informal arrangements and the Deepwater Group / Ministry MOU, excluding other stakeholders and the Department of Conservation. IMMnotes that the decision-making process is clearly outlined in the Fisheries Act (specifically Sections 10,11&12). Section 10 of the Fisheries Act requires that alldecisions be based on the best available information and that these have resulted in strategies to achieve the fishery-specific objectives. WWF's concern about "informal" relationships that the Ministry has should be taken up with the Ministry

b). *Decision-making processes respond to serious and other important issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.*

WWF state that the Ministry did respond to the rapid decline in hoki fish stocks by reducing the TAC, but this response was reactionary and tended to follow the decline, rather than prevent it in the face of clear science. IMM has reviewed the process the Ministry undertook to response to the decline in hoki stocks and believe it was a responsible approach given the legal requirements.

c) *Decision-making processes use the precautionary approach and are based on best available information.*

WWF state that their comments on the previous PI criticised the application of the precautionary principle. IMM have responded above.

d). *Explanations are provided for any actions or lack of action associated with findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.*

WWF are concerned that only limited explanation is provided about decisions (largely contained within the Minister's decisions), but detailed submissions analyses, such as those produced by other government departments, are produced only sporadically. IMM agree that communication can always and should be improved. However, we found evidence that explanations are provided as required for the scoring guidepost.

Performance Indicator 3.2.3
WWF and IMM agree that the fishery meets the 80 scoring guidepost for this PI.

Performance Indicator 3.2.4
WWF and IMM agree that the fishery meets the 80 scoring guidepost for this PI.

Performance Indicator 3.2.5
WWF and IMM agree that the fishery meets the 80 scoring guidepost for this PI.

References:
Clement and Associates. 2009. Mitigating incidental captures of fur seals in trawl fisheries. Report prepared for the Department of Conservation. Project MIT2006/09. Available at: http://www.doc.govt.nz/upload/documents/conservation/marine-and-coastal/fishing/mit2006-09-fur-seal-mitigation-trawl-fisheries.pdf

Department of Conservation. 2011. Marine Conservation Services Annual Plan 2011/12. Marine Conservation Services, Department of Conservation.

Ministry of Fisheries. 2010. The National Fisheries Plan for Deepwater and Middle-depth Fisheries: Part 1B, Hoki chapter.

O'Driscoll RL, MacGibbon D, Fu S, Lyon W and DW Stevens. 2011. A review of hoki and middle-depth trawl surveys of the Chatham Rise, January 1992-2010. New Zealand Fisheries Assessment Report 2011/47.

Richard Y, Abraham ER and D Filippi. 2011. Assessment of the risk to seabird populations from New Zealand commercial fisheries. Final Research Report for Ministry of Fisheries projects IPA2009/19 and IPA2009/20.

Wade PR. 1998. Calculating limits to the allowable human-caused mortality of cetaceans and pinnipeds. Marine Mammal Science 14: 1–37.

Appendix 3-4 MSC review and report on compliance with scheme requirements including IMM response.

MSC Review and Report on Compliance with the scheme requirements

Sub Reference	Page	Type	Requirement	Reference	Details	PI	CAB Comment
TO.0473	58	Guidance	CR-V1.1-27.12.1	The CAB shall determine if the systems of tracking and tracing in the fishery are sufficient to make sure all fish and fish products identified and sold as certified by the fishery originate from the certified fishery. The CAB shall consider the following points and their associated risk for the integrity of certified products.	The report describes current traceability systems in place to identify non certified product during processing, but does not clearly state how these systems (i.e. the excerpt from the Quality Manual) work in practice to ensure separation of certified and non -certified products		The report has been updated to clearly state how the system works. Section 5.2.1

TO.0474	58	Guidance	CR-V1.1-27.12.1.4	The CAB shall determine if the systems of tracking and tracing in the fishery are sufficient to make sure all fish and fish products identified and sold as certified by the fishery originate from the certified fishery. The CAB shall consider the following and their associated risk for the integrity of certified products: At-sea processing activities.	The report outlines the at-sea processing activities conducted but does not describe the risks of substitution between certified and non -certified product or the traceability systems in place used for at-sea processing. This point should be covered under section 5.2 of the Full Assessment Reporting Template v1.2, which asks for 'an evaluation of the opportunity for substitution of certified fish with non-certified fish prior to and at the point of landing.' Evaluation of the opportunity for substitution of certified fish with non-certified fish prior to and		The report has been amended to address the risk of substitution. As all NZ hoki is certified this is seen as a negligible risk. Section 5.2.3

					at the point of landing.'		
TO.0475	59	Guidance	CR-V1.1-27.12.1.5	The CAB shall determine if the systems of tracking and tracing in the fishery are sufficient to make sure all fish and fish products identified and sold as certified by the fishery originate from the certified fishery. The CAB shall consider the following points and their associated risk	The report mentions that transhipping is rare in the hoki industry but does not attempt to quantify the likelihood of occurrence or the potential traceability risks associated with this transhipping		

				for the integrity of certified products: Any transhipment activities taking place.			
TO.0476	59	Major	CR-V1.1-27.12.2.1	If the CAB determines the systems are sufficient, fish and fish products from the fishery may enter into further certified chains of custody and be eligible to carry the MSC ecolabel. The CAB shall determine: The scope of the fishery certificate, including the parties and categories of parties eligible to use the certificate and the point (s) at which chain of custody is needed	The report does not clarify the eligible points of landing, or list of parties eligible to use the fisheries certificate. There is no clear statement on the conclusion and determination of whether the product will be eligible to enter further certified chains of custody, although this is currently implied. This is required to be included in section 5.3 of the Full Assessment Reporting Template		Section 5.3 5.3 "Eligibility to enter further chains of custody" has been added to the report.

					v1.2		
TO.0480	58	Guidance	CR-V1.2-27.12.1.6	The CAB shall determine if the systems of tracking and tracing in the fishery are sufficient to make sure all fish and fish products identified and sold as certified by the fishery originate from the certified fishery. The CAB shall consider the following points and their associated risk for the integrity of certified products: The number and/or location of points of landing.	Typographical error- In section 5.2.1: Assume "No hoki caught outside NZ EEZ is processed in New Zealand." is meant to read "...outside NZ EEZ is…" and there is no period at the end of the section.		This has been corrected in the report. The section is also now 5.2.2
TO.0481	59	Guidance	CR-V1.2-27.12.1.6	The CAB shall determine if the systems of tracking and tracing in the fishery are sufficient to make sure all fish and fish products identified and sold as certified by the fishery originate from the certified fishery. The CAB shall consider the following the parties and	Typographical errors- In section 5.2.4: "If transhipment takes place then CoC is not compromised due to checks including records and labelling, that is in place"		These have been corrected in the report

				categories of parties eligible to use the certificate and the point (s) at which chain of custody is needed			
TO.0491	116	Major	CR-V1.1-27.10.6.1	Rationale shall be presented to support the team's conclusion.	Rationale does not justify The rationale does not justify the score where SG80 is stated to be partially met. Further details needed to explain how the scoring issue was partially scored to a 75.	2.4.1	The fishery is deemed highly unlikely to reduce pelagic habitat structure and function to a point where there would be serious or irreversible harm. However, the same cannot be said for all benthic habitat classes (in accordance with the rationale outlined in the report text). To reflect this, a partial score of 75 is assigned.
TO 492	Guidance	9			Space missing in scientific names		These have been corrected in the report

TO 493	Guidance	58			Incorrect Expiry Date		This has been corrected to read October 2011

Appendix 4. Surveillance Frequency

Criteria to determine surveillance score (CR 27.22.1. Table C3)

Criteria		**Score**
Default Assessment Tree	No	0
Number of Conditions	1	1
Principle level scores	>85	0
Conditions on outcome PIs	2.4.1	2

Fishery Surveillance Plan (Table A4,CR 27.22.1

Score from CR Table C3	**Surveillance Category**	**Year 1**	**Year 2**	**Year 3**	**Year 4**
3	Normal Surveillance	. On-site surveillance audit	On-site surveillance audit	On-site surveillance audit	On-site surveillance audit &recertification site visit

Appendix 5. Client Agreement

IMM confirms that the Client has accepted the PCR.

Appendix 5.1 Objections Process

(REQUIRED FOR THE PCR IN ASSESSMENTS WHERE AN OBJECTION WAS RAISED AND ACCEPTED BY AN INDEPENDENT ADJUDICATOR)

The report shall include all written decisions arising from an objection. *(Reference: CR 27.19.1)*

[i] 'Serious or irreversible harm' is interpreted as in CB3.14.2 of the MSC Certification Requirements 24 Oct 2011.