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INTERTEK FISHERIES CERTIFICATION

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New Zealand Ling Trawl and Longline Fishery

PUBLIC CERTIFICATION REPORT
V5

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Conformity Assessment Body:

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Glossary of Acronyms and Abbreviations

ACE	Annual Catch Entitlement
B_0	Unfished Equilibrium Biomass
BPA	Benthic Protection Area
CAB	Conformance Assessment Body
CAY	Current Annual Yield
CITES	Convention on International Trade in Endangered Species
CPUE	Catch per Unit Effort
CR	Certification Requirements
DOC	New Zealand Department of Conservation
DWG	Deep Water Group Ltd
EEZ	Exclusive Economic Zone
ETP	Endangered, Threatened, Protected Species
EU	European Union
F	Fishing Mortality
FAO	Food and Agriculture Organisation of the United Nations
FCV	Foreign Charter Vessels
FAM	Fisheries Assessment Methodology
HAK	Hake
HOK	Hoki
INMARC	Interim Nearshore Marine Classification
IFC	Intertek Fisheries Certification
IMM	Intertek Moody Marine
IPI	Inseparable or Practically Inseparable
LFR	Licensed Fish Receivers
LIN	Ling
LTL	Low Trophic Level
MCMC	Markov Chain Monte Carlo Method
MCS	Monitor, Control and Surveillance
MCY	Maximum Constant Yield
MFish	New Zealand Ministry of Fisheries
MHR	Monthly Harvest Returns
MPD	Maximum Posterior Density
MPI	Ministry of Primary Industries
MSY	Maximum Sustainable Yields
NIWA	National Institute of Water and Atmospheric Research
NPA	National Plan of Actions
NZ	New Zealand
OS	Ocean Survey
PSA	Productivity Sensitivity Analysis
QMA	Quota Management Area
QMS	Quota Management System
RFMO	Regional Fisheries Management Organisations
SPRFMO	South Pacific Regional Fisheries Management Organisations
TAC	Total Allowable Catch
TACC	Total Allowable Commercial Catch
TCEPR	Trawl Catch, Effort and Processing Return
TL	Total Length
VME	Vulnerable Marine Ecosystem
VMP	Vessel Management Plans
VMS	Vessel Monitoring System
WWF	World Wildlife Fund

1. Executive Summary

1.1 The Intertek Fisheries Certification assessment team

An assessment of the New Zealand ling longline and trawl fisheries using Marine Stewardship Council (MSC) Principles and Criteria was carried out in 2009 by a team of three Intertek Fisheries Certification assessors: Dr Paul Medley (Principle 1), Dr Graham Pilling (Principle 2) and Jo Akroyd (Principle 3) with Andrew Hough as Lead Assessor. At the client's request the assessment process was put on hold and then recommenced in 2013, with two of the original assessors: Jo Akroyd (Lead and P3) and Graham Pilling (P1 and P2). Paul Knapman joined as Project Director. In the course of this assessment Intertek Moody Marine changed its name to Intertek Fisheries Certification (IFC).

1.2 Process used

A site visit was made to Nelson and Wellington, New Zealand (NZ) in June 2009. An evaluation was carried out, for the NZ ling fisheries, against the Marine Stewardship Council's (MSC) Principles and criteria for sustainable fishing (November 2002). Information gathered during this site visit was then used in conjunction with other available literature to produce a draft report and score the fishery against the MSC Performance Indicators. The MSC Fisheries assessment Methodology (FAM) v1 (January 2008) was used. The draft report and scores of the fishery were then presented to the client, Deepwater Group (DWG), for review. The client determined that it would delay the assessment process until particular issues within the fishery had been addressed. In August 2013 the client requested that the assessment be resumed. To ensure the assessment was brought up to date with current information and to give stakeholders a further opportunity to participate in the assessment process, a second site visit to Wellington took place in September 2013. Two of the original assessors from IFC (Jo Akroyd and Graham Pilling) formed the IFC conformity assessment body (CAB). During this site visit the assessment team made themselves available to stakeholders and reviewed all additional information relevant to the ling fishery before preparing this version (v2), the preliminary client draft assessment report. For this assessment, the recent assessment team used Part C of the MSC Certification Requirements V1.3 January 2013 and the default assessment tree contained within.

As a result, this report contains the findings and recommendations of the assessment team for ten units of certification (UoCs) for the NZ ling longline (5 UoCs) and trawl fisheries (5 UoCs) assessed against the MSC Principles and criteria.

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

The NZ ling fishery has been managed under the NZ Quota Management System (QMS) since its introduction in 1986. Since then 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 NZ hoki fishery has been MSC certified since 2001. Many of the operators and managers are same for both fisheries.

There is a partnership approach to fisheries management between the DWG and the Ministry of Primary Industries[1] (MPI), underpinned by a Memorandum of Understanding. The two parties have developed a single joint-management framework with agreed strategic and operational priorities and workplans.

[1] On July 1, 2011 the Ministry of Fisheries (MFish) merged with the Ministry of Agriculture and Forestry. The new Ministry became the Ministry for Primary Industries (MPI) on 30 April 2012.

The strong communication and ongoing liaison between 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.

Given the reliance on observer information to identify and monitor non-retained (non-QMS) species and ETP interactions within the fishery, a further weakness is the level and consistency of observer coverage within particular Units of Certification (UoC) of both the trawl and (inshore/offshore) longline fisheries. Coverage in particular UoCs was occasionally absent, or low and lacked year-on-year coverage to identify temporal trends. It is also noted that available analyses of bycatch and ETP interactions tended to combine fisheries (e.g. into the hoki/hake/ling trawl fishery complex, or longliners as a group), which means that the trends and impacts within the specific UoC was harder to identify.

1.4 The determination reached

It has been determined by Intertek Fisheries Certification that this fishery should be certified in accordance to the MSC principles and criteria.

There are three conditions.

1.5 Scores for each Principle

Ling trawl fisheries

UoC 1 LIN2	UoC 2 LIN3	UoC 3 LIN4	UoC 4 LIN5	UoC 5 LIN6	UoC 6 LIN7
To be assessed at a later date	Principle 1: 91.9	Principle 1: 91.9	Principle 1: 91.9	Principle 1: 91.9	Principle 1: 91.9
	Principle 2: 84.7	Principle 2: 84.7	Principle 2: 84.7	Principle 2: 84.7	Principle 2: 83.3
	Principle 3: 96.3	Principle 3: 96.3	Principle 3: 96.3	Principle 3: 96.3	Principle 3: 96.3

Ling longline fisheries

UoC 7 LIN2	UoC 8 LIN3	UoC 9 LIN4	UoC 10 LIN5	UoC 11 LIN6	UoC 12 LIN7
To be assessed at a later date	Principle 1: 91.9	Principle 1: 91.9	Principle 1: 91.9	Principle 1:89.4	Principle 1: 88.1
	Principle 2: 81.3	Principle 2: 81.3	Principle 2: 81.3	Principle 2: 81.3	Principle 2: 81.0
	Principle 3: 96.3	Principle 3: 96.3	Principle 3: 96.3	Principle 3: 96.3	Principle 3:96.3

1.6 Conditions and timescales

Three conditions of certification have been identified. Refer to Section 6.4 and Appendix 1.2 for details.

Condition 1: Status ETP species PI 2.3.1
The client is required to demonstrate that the direct effects of <34 m longline vessels (not targeting bluenose or snapper) are highly unlikely to create unacceptable impacts to ETP bird species.

Timescale: By the first annual audit, the client will provide evidence in the form of a report on the work it has undertaken to demonstrate that the direct effects of <34 m longline vessels (not targeting bluenose or snapper) are highly unlikely to create unacceptable impacts to ETP bird species.

By the second annual surveillance audit the client will provide evidence in the form of a report to show that the direct effects of <34 m longline vessels (not targeting bluenose or snapper) are highly unlikely to create unacceptable impacts to ETP bird species.

Condition 2: Management Strategy ETP species. P 2.3.2
The client is required to demonstrate that there is a strategy in place for managing the inshore longline fishery component's impact on ETP species, including measures to minimise mortality, which is designed to be highly likely to achieve national and international requirements for the protection of ETP species.

Timescale: By the first annual audit, the client will provide evidence in the form of a report on the work it has undertaken to develop a strategy for managing the inshore longline fishery component's impact on ETP species, including measures to minimise mortality.

By the second annual surveillance audit the client will provide evidence in the form of a report on the further work it has undertaken to develop and implement a strategy for managing the inshore longline fishery component's impact on ETP species, including measures to minimise mortality.

By the third annual surveillance audit the client will provide evidence in the form of a report on the further work it has undertaken to develop and implement a strategy for managing the inshore longline fishery component's impact on ETP species, including measures to minimise mortality which is designed to be highly likely to achieve national and international requirements for the protection of ETP species

Condition 3: Information/monitoring ETP species PI 2.3.3
The client is required to demonstrate that information is sufficient to measure trends and support a full strategy to manage impacts on ETP species.

Timescale: By the first annual audit, the client will provide evidence in the form of a report on the work it has undertaken to demonstrate that information is sufficient to measure trends and support a full strategy to manage impacts on ETP species, including measures to minimise mortality.

By the second annual surveillance audit the client will provide evidence in the form of a report on the further work it has undertaken to measure trends and support a full strategy to manage impacts on ETP species, including measures to minimise mortality.

By the third annual surveillance audit the client will provide evidence in the form of a report to demonstrate that information is sufficient to measure trends and support a full strategy to manage impacts on ETP species.

2. Authorship and Peer Reviewers

2.1 Team members

Jo Akroyd: Expert Advisor Principle 3 (P3) and Lead Assessor: Jo is a fisheries management and marine ecosystem consultant with extensive international and Pacific experience. She has worked at senior levels in both the public and private sector as a fisheries manager and marine policy expert. Jo was with the Ministry of Agriculture and Fisheries in New Zealand for 20 years. Starting as a fisheries scientist, she was promoted to senior chief fisheries scientist, then Fisheries Management Officer, and the Assistant Director, Marine Research. She was awarded a Commemoration Medal in 1990 in recognition of her pioneering work in establishing New Zealand's fisheries quota management system. Among her current contracted activities, she is involved internationally in fishery certification of offshore, inshore and shellfish fisheries as Fisheries Management Specialist and Lead Assessor for the Intertek Fisheries Certification audit team. She has carried out the Marine Stewardship Councils' (MSC) certification assessment for sustainable fisheries. Examples include NZ (hoki, southern blue whiting, albacore, hake, scallops), Fiji (longline albacore) Japan (pole and line tuna, flatfish, snowcrab, scallops), China (scallops) Antarctica (Ross Sea toothfish fishery).

Dr Graham Pilling: Expert Advisor Principle 1 (P1) and Principle 2 (P2): Currently a senior fisheries scientist at the Secretariat of the Pacific Community, Graham has over nineteen 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 and the provision of scientific advice to fisheries managers around the world. 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. Graham has 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. He has also 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), and chair of the FAO meeting on data poor fisheries (2010). He has been a member of a large number of Marine Stewardship Council accreditation teams assessing fisheries for sustainability against the MSC principles and has played a key role at international commissions on tropical and polar regions. Graham's work has contributed significantly to the institutional strengthening of fisheries institutions in the tropics.

Paul Knapman: General Manager /Project Director: Paul is the General Manager and a Lead Assessor for Intertek Fisheries Certification. 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.

2.2 Peer Reviewers

Dr Johanna Pierre
Dr Rob Blyth-Skyrme

3. Description of the Fishery

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

Intertek Fisheries Certification (IFC) can verify that this fishery is not being conducted under a controversial unilateral exemption to an international agreement and so conforms to Principle 3, Criterion A1 (MSC Certification Requirements v1.3 January 2013 (CR)). Fishing operations do not use destructive fishing practices such as fishing with poisons or explosions and so conform to Principle 3, Criterion B14 (MSC CR).

During the assessment stage and site visit there were to be 12 UoCs , UoCs 1 – 6 covering the trawl fisheries in LIN 2, 3, 4, 5, 6 and 7 respectively, and UoCs 7 – 12 covering the longline fisheries in LIN 2, 3, 4, 5, 6 and 7 (see 3.1.1). However the client has requested that the assessment of LIN 2 trawl and longline UoCs be postponed. UoC 1 (LIN 2 trawl) and UoC 7 (LIN 2 longline) have been omitted from this report.

The Units of Certification (UoC) for the assessment:

UoCs 2, 3, 4, 5 and 6,

Species:	Ling (*Genypterus blacodes)*
Geographical Area:	LIN3, LIN4, LIN5, LIN6, LIN7
Method of Capture:	Trawl
Management System:	NZ Quota Management System
Client Group:	NZ Deepwater Group Ltd

UoC 8, 9, 10, 11, and 12

Species:	Ling (*Genypterus blacodes)*
Geographical Area:	LIN3, LIN4, LIN5, LIN6, LIN7
Method of Capture:	Longline
Management System:	NZ Quota Management System
Client Group:	NZ Deepwater Group Ltd

The report refers to the UoCs in terms of LIN number and gear type.

3.1.1 Rationale for UoCs

Ling are widely distributed through the middle depths (200–800 m) of the New Zealand EEZ, particularly to the south of latitude 40° S. Current management divides the fishery into six Fisheries Management Areas (FMA), LIN2, LIN3, LIN4, LIN5, LIN6, LIN7. An administrative fish stock (with no recorded landings) exists for the Kermadec Quota Management Area (QMA, LIN 10). The location of the ling geographical areas is shown in Figure 1 below.

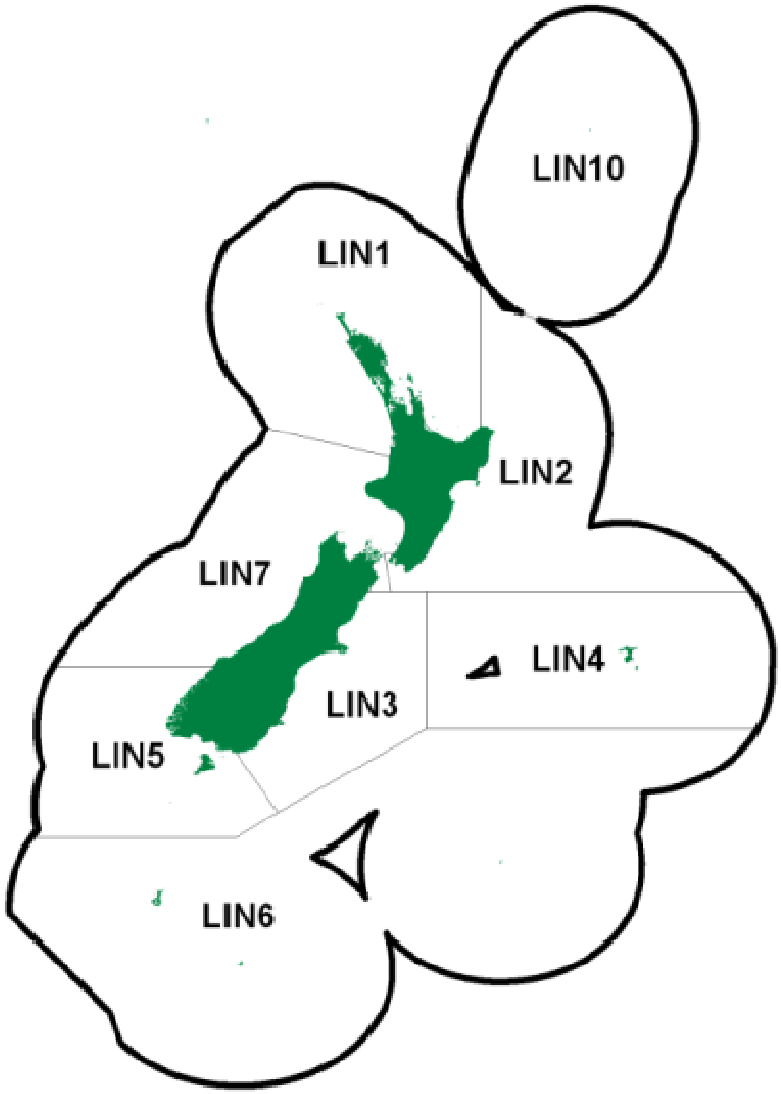

Figure 1: **Location of New Zealand Ling Fisheries Management Areas (FMA)**

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

The target stock for the trawl and longline fishery has six geographic areas requiring six UoCs for each gear type. Five of these have been assessed against the MSC Principles and criteria, in this report.

3.1.2 Description of 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 UoC; 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 ling 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.

3.1.3 Scope of Assessment in Relation to Enhanced Fisheries

The NZ ling fishery is not an enhanced fishery so the scope of assessment in relation to enhanced fisheries does not need to be considered in this assessment.

3.1.4 Scope of Assessment in Relation to Introduced Species Based Fisheries (ISBF)

Genypterus blacodes is native to New Zealand and as such the assessment is not required to consider the fishery against the ISBF criteria.

3.2 Overview of the fishery

3.2.1 Management operation

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. In 2005, the three companies agreed to amalgamate, and combine all deepwater interests in a single management company with a mission to optimise the sustainable economic value of New Zealand 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 MSC 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 Fleet and Gear Description

The fleets for the deep and mid-water fisheries of ling consist of trawls and bottom-set longlines (Table 1).

Trawls

The trawl vessels possess exclusively high aspect ratio multipurpose doors which allow bottom or midwater operation. Vessels exclusively use Furuno CN22/24 net monitoring system electronics, which monitors the headline height, ground rope/seabed relationship and water temperature. Some of the fleet have Scanmar or Simrad net monitoring of door spread and codend "fullness", but none have trawl sonar, as cabled systems are illegal.

Bottom trawls nets are of single or twin-rig and of two types:

- Alfredo derivatives which are characterised by low twine surface area (small nets), low headline height (3-5m), short groundrope (20-30 m), small mesh (max 300 m, min 100 m) and medium groundrigs (300-450 mm rubber bobbins).
- "Korean" type multipurpose trawls which are characterised by similar headline height and mesh sizes to Alfredo types, but longer groundrope and wings and small groundrope rigs.

The midwater trawls tend to be domestic in origin with a wide range of sizes measured by either headline length or headline opening (opening from 25-75 m). They have an all-nylon net with rope construction in the forepanel mesh in body and weights to open the net. Mesh sizes range from 65 m to 100 mm and can be used as pelagic or semi-pelagic gear.

"Kapron" trawls are used by the chartered 'Russian/Ukraine fleet'. The nets are of nylon construction with 12 m maximum mesh size and a 60 m maximum opening. They are a multipurpose trawl used on wide variety of species.

The ling fishery has a minimum mesh size of 100 mm for the cod end mesh.

Longliners

As well as trawl, ling is targeted by bottom-set longline. Table 1 contains, for each vessel type, the proportion of the total estimated ling catch that was taken by that vessel type while the target species was also ling. This gives an indication of the relative importance of the different methods in targeting each ling stock. In addition, Table 1 indicates the variation in size among the vessels targeting the different stocks, where mean reported number of hooks set varies from 450 to 10339 and line length 0.72 to 14.47 km. Although all liners broadly fish in the same way, larger vessels use an autoliner system setting a larger numbers of hooks.

Bottom-set longline using the autoline system accounts for the majority of ling catches in New Zealand zone (Smith, pers. comm. 2009). The autoline system uses lines set on the bottom, predominately from 5 to 15 km long. The line can be 7 mm, 9 or 11.5 mm in diameter, and has swivels at set spacing of 1.3 to 1.5 m. The 11.5 mm line is an integrated weighted line (IWL), which enables the line to sink faster, reducing bird bycatch risk. The larger autoliners operate under CCAMLR conservation measures, which have various bird bycatch mitigation controls on the operation which are highly effective. The smaller longline vessels, which do not operate in the CCAMLR jurisdiction, do not necessarily have these measures.

Hooks are from 12/0 through to 15/0, but hook size used to target for ling are generally 12/0s (Shaw, pers. comm., 2009). Gear is deployed out the stern of the vessels with a float attached to a grapple to take the line to the bottom and anchor it in place. There is a float and grapple on each end. Some vessels use what are called "droppers", which is a line set so hooks are about 100 meters off the bottom, although this is used more to target bluenose and hapuka groper.

Table 1: Number of vessels by gear and target fishery for all ling (LIN) stocks that reported landings during recent completed fishing years (Oct–Sept). Source: Foster, 2014, pers comm. Note vessels using 'other methods' are not part of this assessment.

Stock	Year	No. of vessels that landed stock	No. of vessels that targeted stock	No. of trawl target vessels	No. of lining target vessels	No. of target vessels using other methods	No. of target trawl vessels <28m	No. of target trawl vessels >28m	No. of lining target vessels <28m	No. of lining target vessels >28m	No. of target vessels using other methods <28m	No. of target vessels using other methods >28m
LIN1	2007/08	108	32	11	19	2	10	1	19		2	
	2008/09	104	26	11	16		9	1	16			
	2009/10	97	22	8	15		6	1	15			
	2010/11	90	27	9	19		7	1	19			
	2011/12	83	28	10	17	2	7	2	17		2	
	2012/13	94	17	8	10		6	1	10			
LIN2	2007/08	98	38	10	27	1	8	2	25	2		1
	2008/09	96	36	9	26	1	8	1	25	1		1
	2009/10	98	37	10	27		9	1	26	1		
	2010/11	103	39	10	29		9	1	28	1		
	2011/12	97	42	10	31	1	10		31			1
	2012/13	93	37	6	30	1	6		29	1		1
LIN3	2007/08	130	39	16	21	8	10	6	18	3	8	
	2008/09	125	41	18	21	9	11	7	18	3	9	
	2009/10	124	40	22	14	10	14	8	12	2	10	
	2010/11	126	43	16	20	12	10	6	18	2	12	
	2011/12	124	38	13	17	11	10	3	14	3	11	
	2012/13	127	30	6	18	11	4	2	17	1	10	1
LIN4	2007/08	51	21	10	11			10	6	5		
	2008/09	44	17	7	9	1		7	5	4	1	
	2009/10	41	16	8	7	1		8	5	2	1	
	2010/11	44	13	5	7	1		5	5	2	1	
	2011/12	39	8	2	6			2	4	2		
	2012/13	40	12	2	10	1		2	6	4	1	
LIN5	2007/08	84	32	23	8	1	2	21	5	3	1	
	2008/09	80	20	13	5	2	1	12	3	2	2	
	2009/10	83	23	15	6	2	4	11	5	1	2	
	2010/11	86	30	21	9	1	8	13	8	1	1	
	2011/12	88	29	24	5		7	17	4	1		
	2012/13	87	33	24	8	2	7	17	7	1	2	
LIN6	2007/08	40	22	19	3			19	1	2		
	2008/09	35	14	12	2			12		2		
	2009/10	36	10	8	2			8	1	1		
	2010/11	35	6	5	1			5		1		
	2011/12	36	10	8	2			8	1	1		
	2012/13	32	9	9	3			9				
LIN7	2007/08	116	26	14	13	1	11	3	13		1	
	2008/09	128	27	12	16	1	10	2	16		1	
	2009/10	126	34	16	18	1	12	4	18		1	
	2010/11	122	32	18	15	2	15	3	15		2	
	2011/12	116	26	15	11	1	13	2	11		1	
	2012/13	111	29	13	16	2	11	2	15	1	1	1

3.2.3 History of fishing and management

Ling are taken mainly by large trawlers, often as bycatch in fisheries targeting hoki, although ling-target fisheries also exist. From 1975 to 1980 there was a substantial longline fishery on the Chatham Rise (and to a lesser extent in other areas), carried out by Japanese and Korean longliners. Since 1980 ling have been caught by large trawlers, both domestic and foreign owned, and by small domestic longliners and trawlers. In the early 1990s the domestic fleet was increased by the addition of several larger longliners fitted with autoline equipment. This caused a large increase in the catches of ling off the east and south of the South Island (LIN 3, 4, 5 and 6). However, since about 2000 there has been a declining trend in catches taken by line vessels in most areas, offset, to some extent, by increased trawl landings.

The principal grounds for smaller domestic vessels are the west coast of the South Island (WCSI) and the east coast of both main islands south of East Cape. For the large trawlers the main sources of ling are Puysegur Bank and the slope of the Stewart-Snares shelf and waters in the Auckland Islands area.

Longliners fish mainly in LIN 3, 4, 5 and 6. In 2011–12, landings from Fish stocks LIN 3, LIN 4 and LIN 6 were significantly under-caught relative to their TACCs by 37%, 45% and 76%, respectively. The LIN 5 and LIN 7 TACCs were slightly over-caught (by 2% and 10%, respectively. (Figure 2). For the information of the reader, this section reports catch levels available from all ling FMAs.

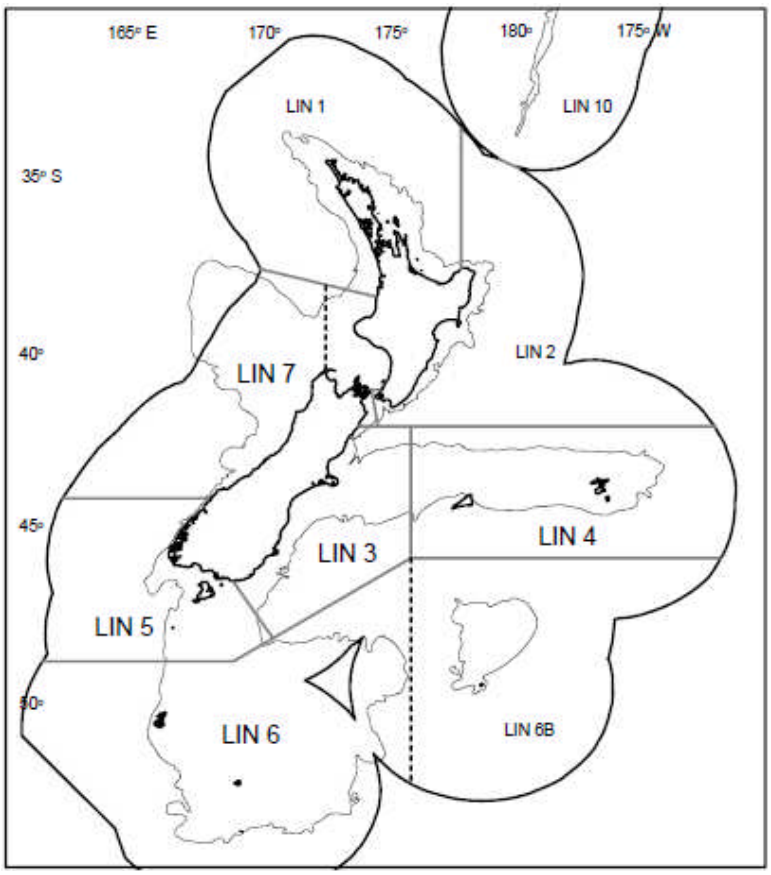

Figure 2: Area of ling stocks LIN 3, 4, 5, 6 and 7 and the 1000 m isobath. The boundaries used to separate biological stock LIN6B from the rest of LIN6, and LIN 7QC (west coast South Island section of LIN7) from LIN 7CK (the Cook Strait section of LIN 7), are shown by broken lines (from Horn, 2013a). LIN 1, 2 and 10 are not being assessed at this time.

Reported landings by nation from 1975 to 1987–88 are shown in Table 2, and reported landings by Fishstock from 1983–84 to 2011–12 are shown in Table 3.

All stocks considered within this assessment were removed from the Adaptive Management Programme on 30th September 2009. In an earlier proposal for the 1994–95 fishing year, TACCs for LIN 3 and 4 had been increased to 2810 and 5720 t, respectively. These stocks were removed from the AMP from 1 October 1998, with TACCs maintained at the increased level. However, from 1 October 2000, the TACCs for LIN 3 and 4 were reduced to 2060 and 4200 t, respectively. From 1 October 2004, the TACCs for LIN 5 and LIN 6 were increased by about 20% to 3595 t and 8505 t, respectively. From 1 October 2009, the TACC for LIN 7 was increased from 2225 t to 2474 t. All other TACC increases since 1986–87 in all stocks are the result of quota appeals.

Table 2 : Reported ling landings (t) from 1975 to 1987–88. Data from 1975 to 1983 are obtained from MAF; data from 1983–84 to 1985–86 are obtained from FSU; and data from 1986–87 to 1987–88 are obtained from QMS, '-' means no data available.

	New Zealand			Foreign licensed					
				Longline	Trawl				Grand Total
Fishing year	Domestic	Chartered	Total	Japan+Korea	Japan	Korea	USSR	Total	
1975 [1]	486	0	486	9269	2180	0	0	11499	11935
1976 [1]	447	0	447	19381	5108	0	1300	25789	26236
1977 [1]	549	0	549	26833	5014	200	700	34547	35096
1978–79 [2]	657	24	681	8904	3151	133	452	12640	13321
1979–80 [2]	915	2598	3513	3501	3856	226	245	7828	11341
1980–81 [2]	1028	-	-	-	-	-	-	-	-
1981–82 [2]	1581	2423	4004	0	2087	56	247	2391	6395
1982–83 [2]	2135	2501	4636	0	1256	27	40	1322	5958
1983 [3]	2695	1523	4218	0	982	33	48	1063	5281
1983–84 [4]	2705	2500	5205	0	2145	173	174	2491	7696
1984–85 [4]	2646	2166	4812	0	1934	77	130	2141	6953
1985–86 [4]	2126	2948	5074	0	2050	48	33	2131	7205
1986–87 [4]	2469	3177	5646	0	1261	13	21	1294	6940
1987–88 [4]	2212	5030	7242	0	624	27	8	659	7901

1. Calendar year.
2. April 1 to March 31 (except domestic vessels, which reported by calendar year).
3. April 1 to September 30 (except domestic vessels, which reported by calendar year).
4. October 1 to September 30.

It is believed that up to the mid 1990s some ling bycatch from the west coast hoki fishery was not reported. Estimates of total catch including non-reported catch are given in Table 3 for LIN 7.

It is believed that historically, some catch from LIN 7 was been reported against other ling stocks (probably LIN 3, 5, and 6). The likely levels of misreporting were considered moderate, being about 250–400 t in each year from 1989–90 to 1991–92 (Dunn, 2003). Data for stock assessment were adjusted accordingly.

Table 3 : Reported landings (t) of ling by all fish stocks from 1983–84 to 2011–12 and TACC (t) set for 1986–87 to 2011–12.

QMA	LIN 1		LIN 2		LIN 3		LIN 4		LIN 5	
FMA(s)	1 & 9		2		3		4		5	
	Landings	TACC	Landings	TACC	Landings	TACC	Landings	TACC	Landings	TACC
1983–84 [1]	141	-	594	-	1306	-	352	-	2605	-
1984–85 [1]	94	-	391	-	1067	-	356	-	1824	-
1985–86 [1]	88	-	316	-	1243	-	280	-	2089	-
1986–87 [2]	77	200	254	910	1311	1850	465	4300	1859	2500
1987–88 [2]	68	237	124	918	1562	1909	280	4400	2213	2506
1988–89 [2]	216	237	570	955	1665	1917	232	4400	2375	2506
1989–90 [2]	121	265	736	977	1876	2137	587	4401	2277	2706
1990–91 [2]	210	265	951	977	2419	2160	2372	4401	2285	2706
1991–92 [2]	241	265	818	977	2430	2160	4716	4401	3863	2706
1992–93 [2]	253	265	944	980	2246	2162	2100	4401	2546	2706
1993–94 [2]	241	265	779	980	2171	2167	3920	4401	2460	2706
1994–95 [2]	261	265	848	980	2679	2810	5072	5720	2557	3001
1995–96 [2]	245	265	1042	980	2956	2810	4632	5720	3137	3001
1996–97 [2]	313	265	1187	982	2963	2810	4087	5720	3438	3001
1997–98 [2]	303	265	1032	982	2916	2810	5215	5720	3321	3001
1998–99 [2]	208	265	1070	982	2706	2810	4642	5720	2937	3001
1999–00 [2]	313	265	983	982	2799	2810	4402	5720	3136	3001
2000–01 [2]	296	265	1105	982	2330	2060	3861	4200	3430	3001
2001–02 [2]	303	265	1034	982	2164	2060	3602	4200	3295	3001
2002–03 [2]	246	400	996	982	2529	2060	2997	4200	2939	3001
2003–04 [2]	249	400	1044	982	1990	2060	2618	4200	2899	3001
2004–05 [2]	283	400	936	982	2597	2060	2758	4200	3584	3595
2005–06 [2]	364	400	780	982	1711	2060	1769	4200	3522	3595
2006–07 [2]	301	400	874	982	2089	2060	2113	4200	3731	3595
2007-08 [2]	381	400	792	982	1778	2060	2838	4200	4145	3595
2008-09 [2]	320	400	634	982	1751	2060	2000	4200	3232	3595
2009-10 [2]	386	400	584	982	1718	2060	2026	4200	3034	3595
2010-11 [2]	438	400	670	982	1665	2060	1572	4200	3856	3595
2011-12 [2]	384	400	504	982	1292	2060	2305	4200	3649	3595

1. FSU data. 2. QMS data.

QMA	LIN 6		LIN 7			LIN 10		TOTAL	
FMA(s)	6		7 & 8			10			
	Landings	TACC	Landings	Estimated	TACC	Landings	TACC	Landings	TACC
1983–84 [1]	869	-	1552	-	-	0	-	7696	-
1984–85 [1]	1283	-	1705	-	-	0	-	6953	-
1985–86 [1]	1489	-	1458	-	-	0	-	7205	-
1986–87 [2]	956	7000	1851	-	1960	0	10	6940	18730
1987–88 [2]	1710	7000	1853	1777	2008	0	10	7901	18988
1988–89 [2]	340	7000	2956	2844	2150	0	10	8404	19175
1989–90 [2]	935	7000	2452	3171	2176	0	10	9028	19672
1990–91 [2]	2738	7000	2531	3149	2192	< 1	10	13506	19711
1991–92 [2]	3459	7000	2251	2728	2192	0	10	17778	19711
1992–93 [2]	6501	7000	2475	2817	2212	< 1	10	19065	19737
1993–94 [2]	4249	7000	2142	-	2213	0	10	15961	19741
1994–95 [2]	5477	7100	2946	-	2225	0	10	19841	22111
1995–96 [2]	6314	7100	3102	-	2225	0	10	21428	22111
1996–97 [2]	7510	7100	3024	-	2225	0	10	22522	22113
1997–98 [2]	7331	7100	3027	-	2225	0	10	23145	22113
1998–99 [2]	6112	7100	3345	-	2225	0	10	21034	22113
1999–00 [2]	6707	7100	3274	-	2225	0	10	21615	22113
2000–01 [2]	6177	7100	3352	-	2225	0	10	20552	19843
2001–02 [2]	5945	7100	3219	-	2225	0	10	19561	19843
2002–03 [2]	6283	7100	2918	-	2225	0	10	18903	19978
2003–04 [2]	7032	7100	2926	-	2225	0	10	18760	19978
2004–05 [2]	5506	8505	2522	-	2225	0	10	17189	21977
2005–06 [2]	3553	8505	2479	-	2225	0	10	14184	21977
2006–07 [2]	4696	8505	2295	-	2225	0	10	16102	21977
2007-08 [2]	4502	8505	2282	-	2225	0	10	16264	21977
2008-09 [2]	2977	8505	2223	-	2225	0	10	13137	21977
2009-10 [2]	2414	8505	2446	-	2474	0	10	12609	22226
2010-11 [2]	1335	8505	2800	-	2474	0	10	12337	22226
2011-12 [2]	2047	8505	2771	-	2474	0	10	12953	22226

The 1993-94 North region recreational fishing survey (Bradford 1996) estimated the annual recreational catch from LIN 1 as 10 000 fish (CV 0.23). With a mean weight likely to be in the range of 1.5 to 4 kg, this equates to a harvest of 15–40 t.

Recreational catch was recorded from LIN 1, 5, and 7 in the 1996 national diary survey. The estimated harvests (LIN 1, 3000 fish; LIN 5, < 500; LIN 7, < 500) were too low to provide reliable estimates.

Quantitative information on the level of Maori customary non-commercial take is not available. Ling bones have been recovered from archaic middens throughout the South Island and southern North Island, and on Chatham Island (Leach & Boocock 1993). In South and Chatham Islands, ling comprised about 4% (by number) of recovered fish remains.

3.2.4 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 customary 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. ling) 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 Fishery resources

Ling are widely distributed through the middle depths (200–800 m) of the New Zealand EEZ, particularly to the south of latitude 40°S.

Ling live to a maximum age of about 30 years; fewer than 0.2% of successfully aged ling have been older than 30 years. A growth study of ling from five areas (west coast South Island, Chatham Rise, Bounty Plateau, Campbell Plateau and Cook Strait) showed that females grew significantly faster and reached a greater size than males in all areas, and that growth rates were significantly different between areas. Ling grow fastest in Cook Strait and slowest on the Campbell Plateau (Horn 2005).

M (natural mortality) was initially estimated from the equation $M = \log_e 100/\text{maximum age}$, where maximum age is the age to which 1% of the population survives in an unexploited stock. The mean M calculated from 5 samples of age data was 0.18 (range = 0.17–0.20). However, a recent review of M, and results of modelling conducted in 2007, suggests that this parameter may vary between stocks (Horn 2008b). The M for Chatham Rise ling appears to be lower than 0.18, while for Cook Strait and west coast South Island the value is probably higher than 0.18.

Ling in spawning condition have been reported in a number of localities throughout the EEZ (Horn 2005). Time of spawning appears to vary between areas: July to November on the Chatham Rise; September to December on Campbell Plateau and Puysegur Bank; September to February on the Bounty Plateau; July to September off west coast South Island and in Cook Strait. Little is known about the distribution of juveniles until they are about 40 cm total length, when they begin to appear in trawl samples over most of the adult range.

3.3.2 Stock assessment and the status of stocks

A review of ling stock structure (Horn 2005) examined diverse information from studies of morphometrics, genetics, growth, population age structures, and reproductive biology and behaviour, and indicated that there are at least five ling stocks, i.e., west coast South Island, Chatham Rise, Cook Strait, Bounty Plateau, and the Southern Plateau (including the Stewart-Snares shelf and Puysegur Bank). Stock affinities of ling north of Cook Strait are unknown, but spawning is known to occur off Northland, Cape Kidnappers, and in the Bay of Plenty.

3.3.3 Assessments and information

Stock assessments are fully described in reports (Horn et al., 2013 and Horn and Francis, 2013) and in the recent Plenary Reports (MPI 2013, b,c). The stock assessments for two ling stocks (LIN 7WC, west coast South Island; LIN 7CK, Cook Strait) were updated in 2013, although the updated LIN2/7CK assessment (for those parts of LIN 2 and LIN 7 between latitudes 41° and 42° S and longitudes 174° and 175.4° E, equating approximately to Statistical Areas 16 and 17 in Cook Strait) was considered unsuitable for the provision of management advice (see below). Assessments for other stocks were updated in 2007 (LIN 6B, Bounty Plateau), or 2012 (LIN 3&4, Chatham Rise; LIN 5&6,

Sub-Antarctic). All assessments were updated using a Bayesian stock model implemented using the general-purpose stock assessment program CASAL (Bull et al. 2012).

Fishery-independent surveys provide the main abundance of information for many of the key stock assessments performed, but are not available in all management areas. The exceptions were LIN 6B where commercial longline CPUE data were used as the basis of a relative abundance series, and LIN 7WC where (hoki) trawl fishery CPUE and LIN 2/7CK where trawl and line fishery CPUE was used, in the absence of a time series of fishery independent surveys in these regions. As noted in the Fisheries Assessment Plenary document (MPI, 2013b), the association of Cook Strait ling (LIN 2CK) with that from the lower east coast of the North Island component of LIN2 is unknown, although around 75% of the Cook Strait landings were considered to be from LIN2 (from the Plenary document of 2009). The proportion of the LIN2 catch taken in the Cook Strait relative to the remainder of LIN2 varies from one fifth to one half annually (e.g. Horn and Ballara, 2012). For this audit, the assessment in LIN2/7CK has been attributed to the LIN7 FMA, along with the LIN 7WC assessment.

Comprehensive trawl surveys have been conducted annually on the Sub-Antarctic (LIN 6) and Chatham Rise (LIN 4) stocks, but are only sporadically available for the West Coast South Island (LIN 7WC) stock. The surveys use a random stratified sampling design and routinely collect acoustic as well as trawl data (e.g. Stevens et al., 2012).

Age compositions and length compositions are available from the surveys and commercial catches (Horn and Sutton 2012, 2013). Commercial catch sampling takes place through the observer programme and is available for all stocks, but does not necessarily form a complete time series. Otolith ageing has been validated (Horn 1993).

The state of the stock is the estimate of the spawning stock biomass relative to the reference points (Table 4). The target, hard and soft limit reference points are 40%, 20% and 10% of the unexploited stock (B_0) by default.

Table 4 : Reference points and current state of stock for ling. The current value is the best estimate (usually median) and the lower value is a lower bound reported in the assessment (either the lower 90% CI or lower value from the sensitivity analysis). All values are percentages of the unexploited SSB.

Stock	Year	Hard Limit	Soft Limit	Target	Current	Lower Value
Chatham Rise (LIN3 & 4)	2011	10	20	40	55	44
Sub-Antarctic (LIN 5 & 6, excl Bounty Plateau)	2011	10	20	40	89.2	69.8
Bounty Plateau (LIN 6B)	2006	10	20	40	61	45
West Coast South Is. (LIN 7WC)	2013	10	20	40	71	56
Cook Strait (LIN 2/7CK)	2010[1]	10	20	40	54	23

[1] 2013 assessment was rejected

LIN 3&4 (Chatham Rise stock)

The stock assessment for LIN 3&4 (Chatham Rise) was updated in 2012. For final model runs, the full posterior distribution was sampled using Markov Chain Monte Carlo (MCMC) methods, based on the Metropolis-Hastings algorithm. Bounded estimates of spawning stock virgin (B_0) and current (B_{2011}) biomass were obtained. Year class strengths and fishing selectivity ogives were estimated in the model. Trawl fishery and research survey selectivity ogives were fitted as double normal curves; line fishery ogives were fitted as logistic curves. MCMC chains were constructed using a burn-in length of 5x105 iterations, with every 1000th sample taken from the next 106 iterations (i.e., a final sample of length 1000 was taken from the Bayesian posterior).

For LIN 3&4, model input data included catch histories, biomass and sexed catch-at-age data from a summer trawl survey series, sexed catch-at-age from the trawl fishery, line fishery CPUE, unsexed

catch-at-age and catch-at-length from the line fishery, and estimates of biological parameters. The stock assessment model partitioned the population into two sexes, and age groups 3 to 25 with a plus group.

Most priors were intended to be uninformed, and were specified with wide bounds. The exception was an informative prior for the trawl survey q. The prior on q for all the R.V. Tangaroa trawl surveys was estimated assuming that the catchability constant was a product of areal availability (0.5–1.0), vertical availability (0.5–1.0), and vulnerability between the trawl doors (0.03–0.40). The resulting (approximately lognormal) distribution had mean 0.13 and CV 0.70, with bounds assumed to be 0.02 to 0.30. Penalty functions were used to constrain the model so that any combination of parameters that did not allow the historical catch to be taken was strongly penalised. A penalty was applied to the estimates of year class strengths to encourage estimates that averaged to 1.

Investigative model runs identified a conflict between the line fishery CPUE and the trawl survey biomass index, where the line fishery biomass index declined between 1991 and 1997, but the trawl survey index remained relatively flat throughout. This difference could not be resolved in a single model run by assuming different selectivity ogives for each biomass index. Therefore, to remove this conflict, a base case model run (Base) used all the observational data except those from the line fishery; the trawl survey biomass index being preferred in the base case because these data were fishery independent. A sensitivity run (NoTrawl) then included the line fishery data, and excluded the trawl survey data.

The error distributions assumed were multinomial for the at-age and at-length data, and lognormal for all other data. The weight assigned to each data set was controlled by the error coefficient of variation (CV). The observation-error CVs were calculated using standard formulae. An additional process error CV of 0.2 was added to the trawl survey biomass index following Francis et al. (2001), and a process error CV for the line fishery CPUE was estimated at 0.15 following Francis (2011). The multinomial observation error CVs for the at-age and at-length data were then adjusted using the reweighting procedure of Francis (2011). Reweighting of the at-age and at-length data was completed for the base and sensitivity runs separately.

The fits to the biomass indices, catch-at-age and catch-at-length data, were reasonable to good in all model runs, with generally balanced residuals. Since 1980, year class strengths were below average except for a period between 1994 and 1999, and in 2007. Estimated year class strengths were not widely variable, with all medians being between 0.5 and 2. Ling were first caught by the trawl survey (mean selectivity A50 of 5.2 years), then the trawl fishery (mean A_{50} of 8.0 years), and then the line fishery (A_{50} of 11.0 years). Males were estimated to be less vulnerable than females to the trawl and line fisheries. The estimated median M was 0.15.

The assessment is driven by the catch history, and by catch-at-age data, which contain information indicative of a stock decline during the 1990s. This is supported by a declining trend in the line fishery CPUE index during that time. Although estimates of current and virgin stock size were imprecise, it was unlikely that B_0 was lower than 110 000 t for this stock, and very likely that biomass in 2011 was greater than 44% of B_0.

The model indicated an increasing biomass since 2004 (driven by a reduction in catch). Annual landings from the LIN 3&4 stock have been less than 4600 t since 2004, markedly lower than the 6000–8000 t taken annually between 1992 and 2003.

Differences in the trends between the two relative abundance series (line fishery CPUE declining and then remaining constant; trawl survey series fluctuating without apparent trend) were noted, and while not necessarily incompatible further investigation was not pursued during this assessment.

LIN 5 & 6 (Sub-Antarctic stock)

The stock assessment for LIN 5&6 (Sub-Antarctic) was updated in 2012. For final runs, the full posterior distribution was sampled using Markov Chain Monte Carlo (MCMC) methods, based on the Metropolis-Hastings algorithm. Bounded estimates of spawning stock virgin (B_0) and current (B_{2011})

biomass were obtained. Year class strengths and fishing selectivity ogives were also estimated in the model. Trawl fishery selectivity ogives were fitted as double normal curves; line fishery and research survey ogives were fitted as logistic curves. Selectivities were assumed constant over all years in each fishery/survey.

MCMC chains were constructed using a burn-in length of 5x105 iterations, with every 2500th sample taken from the next 2.5x106 iterations (i.e., a final sample of length 1000 was taken from the Bayesian posterior).

For LIN 5&6, model input data include catch histories, biomass and catch-at-age data from summer and autumn trawl survey series, two line fishery CPUE series (from the spawning and home ground fisheries), catch-at-age from the spawning ground and home ground line fisheries, catch-at-age data from the trawl fishery, and estimates of biological parameters. A base case model run that incorporated all the data except the CPUE series is presented, with a sensitivity run that included the CPUE series. The stock assessment model partitions the population into two sexes, and age groups 3 to 25 with a plus group.

Lognormal errors, with known CVs, were assumed for all relative biomass, proportions-at-age, and proportions-at-length observations. The CVs available for those observations of relative abundance and catch data allow for sampling error only. However, additional variance, assumed to arise from differences between model simplifications and real world variation, was added to the sampling variance. The additional variance, termed process error, was estimated in MPD runs of the model and fixed in all subsequent runs.

Most priors were intended to be relatively uninformed, and were specified with wide bounds. The exceptions were the choice of informative priors for the trawl survey q. The priors on q for all the R.V. Tangaroa trawl surveys were estimated assuming that the catchability constant was a product of areal availability (0.5–1.0), vertical availability (0.5–1.0), and vulnerability between the trawl doors (0.03–0.40). The resulting (approximately lognormal) distribution had mean 0.13 and CV 0.70, with bounds assumed to be 0.02 to 0.30.

Penalty functions were used to constrain the model so that any combination of parameters that did not allow the historical catch to be taken was strongly penalised. A small penalty was applied to the estimates of year class strengths to encourage estimates that averaged to 1.

Two model runs were reported:

- Base case —with catch history and relative abundance series, M estimated as an ogive independent of sex, double-normal selectivity ogives for the trawl fishery, logistic ogives for the line fisheries and the resource survey series.
- CPUE — the base case model, but incorporating the two line fishery CPUE series.

Three other sensitivities were investigated: (1) splitting the summer survey series into early (1992–2006) and recent (2007–09) series with independent qs, (2) excluding the 2001 survey biomass point, and (3) fitting the survey ogives as double-normal. These models all produced estimates of stock status that were little different to those from the reported models.

Posterior distributions of year class strength estimates from the base case model were examined; the distribution from the CPUE model run differed little from the base case. Year classes were generally weak from 1982 to 1992, strong from 1993 to 1996, and average since then (although 2005 may be strong). Overall, estimated year class strengths were not widely variable, with all medians being between 0.5 and 2. Consequently, biomass estimates for the stock declined through the 1990s, but have exhibited an upturn during the last 12 years. The biomass trajectory from the CPUE model was little different to that derived from the base case.

Biomass estimates for the stock appear very healthy, with estimated current biomass from the two reported models at about 89% of B_0. Annual exploitation rates (catch over vulnerable biomass) were low (less than 0.06) in all years as a consequence of the high estimated stock size in relationship to the level of relative catches.

Resource survey and fishery selectivity ogives were relatively tightly defined. The survey ogive suggested that ling were fully selected by the research gear at about age 7–9. Fishing selectivities indicated that ling were fully selected by the trawl fishery at about age 9 years, and by the line fisheries at about age 12–16.

The assessment relied on biomass data from the Sub-Antarctic trawl survey series. The summer survey series was not particularly well fitted and had clear patterns in the residuals. It was also apparent that there can be marked changes in catchability between adjacent pairs of surveys. Estimated trawl survey catchability constants were moderately low (about 4–15% based on door spread swept area estimates), but are consistent with the priors.

The assessments indicated a biomass trough about 1999 and some recovery since then. Although estimates of current and virgin stock size are very imprecise, it is most unlikely that B_0 was lower than 200 000 t for this stock, and it is very likely that current biomass is greater than 70% of B_0.

The relatively high level of uncertainty in the model precluded any updated estimation of MCY and CAY (although an MCY was estimated in the 2007 assessment).

LIN 6B (Bounty Plateau only)

The stock assessment for the Bounty Plateau stock (part of LIN 6) was updated in 2007. For final runs, the full posterior distribution was sampled using Markov Chain Monte Carlo (MCMC) methods, based on the Metropolis-Hastings algorithm. Bounded estimates of spawning stock virgin (B_0) and current (B_{2007}) biomass were obtained. Year class strengths and fishing selectivity ogives were also estimated in the model. Line fishery ogives were fitted as logistic curves.

MCMC chains were constructed using a burn-in length of $5x10^5$ iterations, with every 1000^{th} sample taken from the next 10^6 iterations (i.e., a final sample of length 1000 was taken from the Bayesian posterior).

For LIN 6B, model input data include catch histories, line fishery CPUE, catch-at-age and catch-at-length from the line fishery, and estimates of biological parameters. In the absence of sufficient stock-specific data, maturity ogives were assumed to be the same as for LIN 3&4, a stock with comparable growth parameters to LIN 6B. Only a base case model run is presented. The stock assessment model partitions the population into two sexes, and age groups 3 to 35 with a plus group. There is one fishery (longline) in the stock.

Lognormal errors, with known CVs, were assumed for all relative biomass, proportions-at-age, and proportions-at-length observations. The CVs available for those observations of relative abundance and catch data allow for sampling error only. However, additional variance, assumed to arise from differences between model simplifications and real world variation, was added to the sampling variance. The additional variance, termed process error, was estimated in MPD runs of the model and fixed in all subsequent runs.

The assumed prior distributions used in the assessment were intended to be relatively uninformed, and were estimated with wide bounds.

Penalty functions were used to constrain the model so that any combination of parameters that did not allow the historical catch to be taken was strongly penalised. A small penalty was applied to the estimates of year class strengths to encourage estimates that averaged to 1.

Only a base case model run was completed. The assessment was driven largely by the catch-at-age and catch-at-length series from the line fishery; the first two years of CPUE data were not well fitted. The assessment indicates a declining biomass throughout the history of the fishery. Estimates of current and virgin stock size are not well known, but current biomass is very likely to be above 50% of B_0.

LIN 7WC (West coast South Island)

The stock assessment for LIN 7WC (west coast South Island) was updated in 2013. The assessment model partitions the population into age groups 3 to 28 with a plus group, with no sex in the partition.

The chosen base case was developed following the investigation of numerous previous models. It was found that the model could not reconcile some differences in sex ratios of the age-frequency data, so sex was removed from the partition.

Year class strengths and fishing selectivity ogives were also estimated in the model. Commercial trawl and research survey selectivities were fitted as double normal curves; the line fishery ogive was fitted as a logistic curve.

For final runs, the full posterior distribution was sampled using Markov Chain Monte Carlo (MCMC) methods, based on the Metropolis-Hastings algorithm. Bounded estimates of spawning stock virgin (B_0) and current (B_{2008}) biomass were obtained. MCMC chains were constructed using a burn-in length of 2×10^6 iterations, with every 4000^{th} sample taken from the next 4×10^6 iterations (i.e., a final sample of length 1000 was taken from the Bayesian posterior). Single chain convergence tests were applied to resulting chains to determine evidence of non-convergence. No evidence of lack of convergence was found in the estimates of B_0 or $B_{current}/B_0$ from the base case model run.

For LIN 7WC, model input data include catch histories, trawl fishery CPUE, extensive catch-at-age data from the trawl fishery, sparse catch-at-age data from the line fishery, biomass estimates and proportion at age from comparable Tangaroa surveys in 2000 and 2012, and estimates of biological parameters. A line fishery CPUE series was available, but was rejected as unlikely to be indexing stock abundance. The base case estimated instantaneous natural mortality, M, as a constant.

The error distributions assumed were multinomial for the proportions-at-age and lognormal for all other data. Biomass indices had assumed CVs set equal to the sampling CV, with additional process error of 0.2. The multinomial observation error effective sample sizes for the trawl fishery at-age data were adjusted using the reweighting procedure of Francis (2011). An ad hoc procedure was used for the at-age data from the line fishery and R.V. Tangaroa survey at-age data, giving the survey a relatively high weighting.

The assumed prior distributions used in the assessment were intended to be relatively uninformed, and were specified with wide bounds. The prior for the survey q was informative and was estimated using the Sub-Antarctic ling survey priors as a starting point because the survey series in both areas used the same vessel and fishing gear. However, the WCSI survey area in the 200–650 m depth range in strata 0004 A–C and 0012 A–C comprised 6619 km^2; seabed area in that depth range in the entire LIN 7 WC biological stock area (excluding the Challenger Plateau) is estimated to be about 20 100 km^2. So, because biomass from only 33% of the WCSI ling habitat was included in the indices, the Sub-Antarctic prior on μ was modified accordingly (i.e., $0.13 \times 0.33 = 0.043$), and the bounds were also reduced from [0.02, 0.30] to [0.01, 0.20]. The prior for M was informed and based on expert opinion. Priors for all selectivity parameters were assumed to be uniform.

Penalty functions were used to constrain the model so that any combination of parameters that did not allow the historical catch to be taken was strongly penalised. A small penalty was applied to the estimates of year class strengths to encourage estimates that averaged to 1.

MCMC runs of the base case and one sensitivity (where M was fixed at 0.18) were conducted. Both model runs were indicative of a B_0 greater than about 50 000 t. The upper bound on B_0 is highly uncertain and dependent on the priors on the survey q and M. Both model runs also indicated a biomass decline from 2000-2012. The model fit to the CPUE series was poor. Model estimates suggest a period of higher recruitment from 1978 to 1990 followed by lower recruitment since 1992. There was also some evidence for stronger recruitment in the most recent year for which an estimate can be made but this is highly uncertain.

LIN 2/7CK (Cook Strait)

A stock assessment of ling in Cook Strait (LIN 2/7CK) was completed in 2013. Because it is believed that the true M for the Cook Strait stock is higher than the 'default' value of 0.18, it was considered desirable to estimate M in the model, and so incorporate the effect of this uncertainty in M in the assessment. However, the simultaneous estimation of B_0 and M was not successful owing to the adoption of a multinomial likelihood (rather than lognormal) for proportions-at-age. Consequently,

models with fixed M values were run, and although the age data were reasonably well fitted, the model failed to accurately represent declines in resource abundance that appear evident from CPUE values, which have been declining since 2001. As a consequence the model was considered unsuitable for the provision of management advice.

The last stock assessment for LIN 2/7CK (Cook Strait) accepted by the Working Group was completed in 2010, and it is reported here. The stock assessment model partitions the population into two sexes, and age groups 3 to 25 with a plus group. Year class strengths and fishing selectivity ogives were also estimated in the model. Commercial trawl selectivity was fitted as double normal curves; line fishery ogives were fitted as logistic curves.

For final runs, the full posterior distribution was sampled using Markov Chain Monte Carlo (MCMC) methods, based on the Metropolis-Hastings algorithm. Bounded estimates of spawning stock virgin (B_0) and current (B_{2008}) biomass were obtained. MCMC chains were constructed using a burn-in length of $4x10^6$ iterations, with every 2000^{th} sample taken from the next $20x10^6$ iterations (i.e., a final sample of length 1000 was taken from the Bayesian posterior).

For LIN 7CK, model input data include catch histories, trawl and line fishery CPUE, extensive catch-at-age data from the trawl fishery, sparse catch-at-age data from the line fishery, and estimates of biological parameters. Initial modelling investigations found that the line CPUE produced implausible results; this series was rejected as a useful index. The base case used all catch-at-age data from the fisheries, and the trawl CPUE series. Instantaneous natural mortality was estimated in the model

Lognormal errors, with known CVs, were assumed for all CPUE and proportions-at-age observations. The CVs available for those observations allow for sampling error only. However, additional variance (termed process error), assumed to arise from differences between model simplifications and real world variation, was added to the sampling variance.

The assumed prior distributions used in the assessment were intended to be relatively uninformed, and were specified with wide bounds.

Penalty functions were used to constrain the model so that any combination of parameters that did not allow the historical catch to be taken was strongly penalised. A small penalty was applied to the estimates of year class strengths to encourage estimates that averaged to 1.

A single model was presented incorporating a catch history, trawl and line fishery catch-at-age, trawl CPUE series, with double-normal ogives for the trawl fishery and logistic ogives for the line fishery, and M estimated in the model.

The assessment is driven by the trawl fishery catch-at-age data and tuned by the trawl CPUE. Both input series contain information indicative of an overall stock decline in the last two decades. The confidence bounds around biomass estimates are wide. Median M was estimated to be 0.24 (95% confidence interval 0.16–0.30). Estimates of biomass are very sensitive to small changes in M, but clearly there is information in the model encouraging an M higher than the 'default' value of 0.18. The model indicated a slight overall biomass decline to about 2000, followed by a much steeper decline from 2000 to 2010. Exploitation rates (catch over vulnerable biomass) were very low up to the late 1980s, and have been low to moderate (up to about 0.12 yr^{-1}) since then. Since the early 1990s, trawl fishing pressure has generally declined, while line pressure has generally increased.

Estimates of biomass projections derived from this assessment had a relatively high level of uncertainty in the model, which precluded any updated estimation of MCY and CAY.

Projections for LIN 6B from the 2006 assessment indicated that the LIN 6B stock (Bounty Plateau) is likely to decline out to 2011, but probably will still be higher than 50% of B_0. Projections out to 2015 for LIN 2/7CK indicate that biomass is likely to increase with future catches equal to recent catch levels, or decline slightly if catches are equal to the mean since 1990. New projections made in 2011 out to 2016 for LIN 3&4 and 5&6, assuming future annual catches equal to recent catch levels: for LIN 3&4, stock size is likely to remain about the same; for LIN 5&6, stock size is likely to increase

slightly; for LIN 7 WC the Working Group did not consider that projections using either run were reliable and so no projections were presented.

3.3.4 Management advice

Overview
The stated objective is to have the stock fluctuating around the management target (40% unexploited biomass), with some acceptable, but undefined, variation. A formal time-constrained rebuilding plan is to be implemented if the soft limit is reached, and the hard limit defines to level below which the fishery should be considered for closure. The rebuilding plan requires that the ling biomass be rebuilt to the target level with an acceptable probability. The rebuild should be achieved between the time it would take for the stock to rebuild in the absence of fishing and twice that time (see the Harvest Strategy Standard (MFish 2008a)).

The stock assessment results are reported in MPI Fisheries Assessment Plenary documents (e.g. Horn and Francis, 2013; Horn et al., 2013), consistent with the harvest strategy, with the likelihood of current and projected stock status being below target and both soft and hard limit levels being reported. Scientific advice is consistent with achieving the target biomass or the achieving acceptable risks.

Table 5 : Results of projections for tested catches (base case models). The low value is the lower bound of the 95% credible interval.

Stock	Projection to Year	Projected Catch	Projected Status	
			Median	Low
Chatham Rise (LIN3 & 4)	2016	3900	55	41
Sub-Antarctic (LIN 5 & 6, excl Bounty Plateau)	2016	5900	103	84
Bounty Plateau (LIN 6B)	2011	600	53	26
West Coast South Is. (LIN 7WC)	Not considered reliable			
Cook Strait (LIN 2/7CK)	2015	220	59	24
		420	52	11

Chatham Rise (LIN 3 & 4)

Information	Commentary
Reference Points	Management Target: 40% B_0 Soft Limit: 20% B_0 Hard Limit: 10% B_0
Status in relation to Target	B_{2011} was estimated to be about 55% B_0; Very Likely (> 90%) to be at or above the target
Status in relation to Limits	B_{2011} is Exceptionally Unlikely (< 1%) to be below both the Soft and Hard Limits
Recent Trend in Biomass or Proxy	Biomass is very unlikely to have been below 40% B_0. Biomass is estimated to have been increasing since 2003.
Recent Trend in Fishing Mortality or Proxy	Fishing pressure is estimated to have been declining since 1999.
Trends in Other Relevant Indicators or Variables	Recruitment since the early 1990s is estimated to have been fluctuating slightly around the long-term average for this

Information	Commentary
	stock.
Stock Projections or Prognosis	Biomass is uncertain but current catch is unlikely to cause decline. Catches at level of the TACC have unknown prognosis.
Probability of Current Catch or TACC causing decline below Limits	Soft Limit: Exceptionally Unlikely (< 1%) Hard Limit: Exceptionally Unlikely (< 1%)

Sub-Antarctic stock (LIN 5 & 6)

Information	Commentary
Reference Points	Management Target: 40% B_0 Soft Limit: 20% B_0 Hard Limit: 10% B_0
Status in relation to Target	B_{2011} was estimated to be between 70% and 101% B_0; Virtually Certain (> 99%) to be at or above the target
Status in relation to Limits	B_{2011} is Exceptionally Unlikely (< 1%) to be below the Soft or Hard Limits
Recent Trend in Biomass or Proxy	Biomass appears to have been increasing since 2000.
Recent Trend in Fishing Mortality or Proxy	Fishing pressure is estimated to have always been low, and declining since 1998.
Trends in Other Relevant Indicators or Variables	Recruitment throughout the 1980s was low relative to the long-term average for this stock, but has been average or better since 1993.
Stock Projections or Prognosis	Stock status is predicted to improve over the next 5 years at catch levels equivalent to that from recent years (i.e., 5900 t per year) or equivalent to the TACC (i.e., 12 100 t).
Probability of Current Catch or TACC causing decline below Limits	Soft Limit: Exceptionally Unlikely (< 1%) Hard Limit: Exceptionally Unlikely (< 1%)

The following qualifying comments were noted:

- The summer trawl survey biomass estimates are variable and catchability clearly varies between surveys. The general lack of contrast in this series (the main relative abundance series) makes it difficult to accurately estimate past and current biomass.
- The assumption of a single Sub-Antarctic stock (including the Puysegur Bank), independent of ling in all other areas, is the most parsimonious interpretation of available information. However, this assumption may not be correct.
- Although the catch history used in the assessment has been corrected for some misreported catch, it is possible that additional misreporting exists.
- Although estimates of absolute current and reference biomass are unreliable, B_0 was probably over 200 000 t. The stock has probably only been lightly fished.

Bounty Plateau (part of LIN 6)

Information	Commentary
Reference Points	Management Target: 40% B_0 Soft Limit: 20% B_0 Hard Limit: 10% B_0
Status in relation to Target	B_{2006} was estimated to be 61% B_0; Very Likely (> 90%) to be at or above the target
Status in relation to Limits	B_{2006} is Very Unlikely (< 10%) to be below the Soft Limit and Exceptionally Unlikely (< 1%) to be below the Hard limit
Recent Trend in Biomass or Proxy	Median estimates of biomass are unlikely to have been below 61% B_0. Biomass is estimated to have been declining since 1999.
Recent Trend in Fishing Mortality or Proxy	Fishing pressure is estimated to have been low, but erratic, since 1980.
Trends in Other Relevant Indicators or Variables	Recruitment was above average in the early 1990s, but below average in the late 1990s. No estimates of recruitment since 1999 are available.
Stock Projections or Prognosis	Stock status is predicted to continue declining slightly over the next 5 years at a catch level equivalent to the average since 1991 (i.e., 600 t per year).
Probability of Current Catch or TACC causing decline below Limits	Note that there is no specific TACC for the Bounty Plateau stock. Soft Limit: Very Unlikely (< 10%) Hard Limit: Very Unlikely (< 10%)

Qualifying comments included:

- There are no fishery-independent indices of relative abundance, so the assessment is driven largely by the line fishery CPUE series.
- Stock projections are based on a constant future catch of 600 t per year. However, historic catches from this fishery have fluctuated widely, so future catches could be markedly different from 600 t per year.
- There is no separate TACC for this stock; it is part of the LIN 6 Fish stock that has a TACC of 8505 t.

West coast South Island (LIN 7)

Information	Commentary
Reference Points	Management Target: 40% B_0 Soft Limit: 20% B_0 Hard Limit: 10% B_0 Overfishing threshold: F corresponding to 40% B_0
Status in relation to Target	B_{2012} was estimated to be 71% B_0; Very Likely (> 90%) to be at or above the target
Status in relation to Limits	B_{2012} is Exceptionally Unlikely (< 1%) to be below the Soft or Hard limit

Information	Commentary
Status in relation to overfishing	Unknown
Recent Trend in Biomass or Proxy	Biomass is estimated to have been declining.
Recent Trend in Fishing Mortality or Proxy	Unknown
Trends in Other Relevant Indicators or Variables	The age structures of both the commercial catch and trawl survey catch are broad, indicating a low exploitation rate.
Stock Projections or Prognosis	No projections were reported.
Probability of Current Catch or TACC causing decline below Limits	Soft Limit: Unknown Hard Limit: Unknown

Qualifying comments included:

- This assessment is very uncertain but it is highly probable that B_{2012} is greater than 40% B_0 and it could be much higher.

Cook Strait (LIN 2/7 CK)

Information	Commentary
Reference Points	Management Target: 40% B_0 Soft Limit: 20% B_0 Hard Limit: 10% B_0 Overfishing threshold: F corresponding to 40% B_0
Status in relation to Target	B_{2010} was estimated to be 54% B_0; Likely (> 60%) to be at or above the target
Status in relation to Limits	B_{2010} is Exceptionally Unlikely (< 1%) to be below the Soft or Hard limit
Status in relation to overfishing	Overfishing is Very Unlikely (< 10%) to be occurring.
Recent Trend in Biomass or Proxy	Biomass is estimated to have been declining since 1999, but is unlikely to have dropped below 30% B_0.
Recent Trend in Fishing Mortality or Proxy	Overall fishing pressure is estimated to have been relatively constant since the mid 1990s, but has trended down for trawl and up for line.
Trends in Other Relevant Indicators or Variables	Recruitment from 1995 to 2006 was low relative to the long-term average for this stock. There are no estimates for the more recent year classes.
Stock Projections or Prognosis	Stock status is predicted to improve slightly over the next 5 years at a catch level equivalent to that since 2006 (i.e., 220 t per year), or remain relatively constant at a catch equivalent to the mean since 1990 (i.e., 420 t per year).
Probability of Current Catch or TACC causing decline below Limits	Note that there is no specific TACC for the Cook Strait stock. Soft Limit: Catch 220 t, Very Unlikely (< 10%); Catch 420 t, Very Unlikely (< 10%).

Information	Commentary
	Hard Limit: Catch 220 t, Exceptionally Unlikely (< 1%); Catch 420 t, Very Unlikely (< 10%).
Probability of Current Catch or TACC causing Overfishing to continue or to commence	Very Unlikely (< 10%).

Qualifying comments included:

- There are no fishery-independent indices of relative abundance. It is not known if the trawl CPUE series is a reliable abundance index.
- The stock structure of Cook Strait ling is uncertain. While ling in this area are almost certainly biologically distinct from the WCSI and Chatham Rise stocks, their association with ling from the lower east coast of the North Island component of LIN2 is unknown.
- It is possible that trawl selectivity has varied over time, resulting in poor fits to some age classes in some years.
- Line fishery selectivity is based on only two years of catch-at-age data from the autoline fishery. No information is available from the 'hand-baiting' line fishery.
- The model is moderately sensitive to small changes in M, and M is poorly estimated.
- There is no separate TACC for this stock; it comprises parts of Fish stocks LIN 7 and LIN 2.

3.4 Principle Two: Ecosystem Background

This section provides background on the ecosystem components considered under Principle 2. It provides a general overview of the characteristics of the ecosystem within the New Zealand EEZ, and the information, studies and management that is being carried out. It should be noted that more detailed examinations of information are presented within the Scoring Guidepost table.

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° of latitude, and covers sub-tropical to Sub-Antarctic marine ecosystems. Consequently, it is an extremely diverse area both biologically, and in terms of habitats. Ling occur widely through New Zealand's EEZ, and fishing takes place in a number of areas as noted earlier, including: West Coast South Island (LIN 7), the Chatham Rise (LIN 3 & 4), sub-Antarctic (LIN 5 & 6), Bounty Plateau (part of LIN 6) and the Cook Strait (LIN 2/7CK). The Chatham Rise and Sub-Antarctic areas share many key ecosystem characteristics (e.g. primary productivity, depth, benthos, fish (Pinkerton 2011a)).

Oceanography and primary productivity within the New Zealand EEZ has been well studied through research projects and remote sensing studies. Fairly extensive benthic surveys have been performed of seabed types around the New Zealand continental shelf and seamounts. Analyses have developed a Marine Environmental Classification (MEC; Snelder et al., 2005) and sediment distributions in the New Zealand EEZ using categorical definitions, along with the Interim Nearshore Marine Classification (INMARC) developed by DOC (e.g. Leathwick et al., 2006) and a Benthic Optimised Marine Environment Classification (BOMEC, Leathwick et al. 2009). Further projects mapping the

biodiversity of sea beds and the spatial and temporal extent of fishing are underway through NIWA. These include the ongoing 'Chatham/Challenger' project, which aims to map and compare habitats and diversity of sea-bed communities in fishable depths at key locations across the Chatham Rise and the Challenger Plateau (Probert and Grove, 1998; McKnight and Probert, 1997). The project is employing both acoustic mapping approaches and underwater camera work to map biodiversity and habitat types. In turn, the Ocean Survey 20/20 (OS 20/20) project aims to map the seafloor habitats and biodiversity of New Zealand's marine environment across large areas of the EEZ, but concentrating on the Chatham Rise and Challenger Plateau. Ongoing studies are expanding knowledge of the distribution of cold-water corals. The location of key vulnerable habitat types (smokers, hydrothermal vents etc.) is known.

Data from surveys, logbooks and the Ministry for Primary Industries' observer programme are available to allow the location of impacts by the fishery on habitat types to be identified. In turn, the footprint of the fishery is well established through VMS records and the TCEPR data. Bottom trawling that targets the hoki/hake/ling fishery complex is carried out most extensively in the areas of the Chatham Rise and the sub-Antarctic, with effort also concentrated on the west coast of the South Island, commonly in depths of around 200-800m.

The main impacts from demersal trawls on the benthic habitat concentrate on the removals of mobile and sessile species, and the disturbance and modification of the structure of the seafloor. Studies elsewhere in the world (e.g. Thrush and Dayton 2002; Clark and Rowden 2009) have demonstrated that repeated trawl disturbance can alter the benthic community by damaging or removing macrofauna, with the potential encouragement of anaerobic bacterial growth. A loss of sediment diversity can also occur, while processes such as nutrient transfer, oxygenation and productivity can also be impaired. The cumulative impact of trawling on the seabed will also depend upon the degree of previous trawling; there being a reduced impact per trawl over time.

The rate of recovery depends on the nature of the benthic habitat, with more mobile sediments such as mud and sand in high energy environments recovering faster than, for example, rocky sediments with slow growing organisms in low energy environments. This is the subject of continued studies within the New Zealand EEZ (e.g. projects BEN2007/01, BEN2007/04). In the Chatham Rise and sub-Antarctic regions, the majority of trawling is within higher-energy sediments such as sandy silt and clay, although some lower-energy areas exist in these regions. Impacts on underwater topographical features (UTFs) have been identified (Clark and Rowden, 2009).

Effectively, through Seamount closures or as a result of being within BPAs 80% of the seamounts within the New Zealand EEZ are closed to demersal trawling. These closures confer effective habitat protection. Closures occur largely outside the areas fished intensively for ling (Ministry of Fisheries 2010a). Finally, Benthic Protection Areas, which close over 30% of the New Zealand EEZ to demersal trawling, were established in 2007 for the purpose of benthic biodiversity protection (Helson et al. 2010, but see Leathwick et al. 2008).

Management of the ling fishery has not yet included an extensive assessment of 'significant' habitats. However, relevant information in this regard includes areas of particular importance for fishery sustainability (e.g. for spawning, or occupied by juvenile ling), spatial overlays of trawl tracks with marine environment and/or biological classifications. Currently, the best single tool currently available to characterising the likely impacts of bottom trawling on benthic organisms within different habitat categories is the Benthic-Optimised Marine Environment Classification (BOMEC) for New Zealand waters (Leathwick et al. 2009; Leathwick et al. 2010). However, BOMEC is not in and of itself a spatial map delineating different benthic habitats. It has not been 'ground-truthed' against the spatial disposition of extant benthic habitats in the real world and hence should be viewed with some caution. 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 et al. (2013). This analysis highlights the areal

extent and intensity of demersal trawling for ling. Of the six ling fisheries analysed (LIN2-LIN7), five had an area closed and/or not trawled of over 98.8% for 1989/90 to 2011/12. LIN5 Over the last five fishing years all six fisheries have an area closed and/or not trawled of over 99%, the lowest again being LIN5 at 99.5%. The most extensively trawled BOMEC class is 9, where from 1989/90 - 2009/10, 4.6% was trawled. Black and Wood (2011) overlaid demersal trawl tracks within each Fisheries Management Area to highlight the areal extent and intensity of demersal trawling for ling (e.g., trawling covers parts of the same habitat classes inter-annually). Results from Black (2013) indicate that within the 400-800m depth area, where most of the ling fishing takes place, 1.7% of the area was contacted between 1989-90 and 2009-10 (between 0-400m 1.34% was contacted over the same period). Of the entire fishable region within the EEZ for ling (1,408,210 km^2), 0.97% has been contacted once or more, between 1989-90 and 2009-10.

The impact of trawling for conservation and species diversity/persistence can be limited if trawling affects small proportions of a habitat type within an area. Trawling of small proportions of each habitat type may therefore be acceptable, and impact on benthic ecosystems reduced in this situation as the biodiversity is maintained in neighbouring areas. This is discussed further under Section 3.4.3.1.

The New Zealand Government closed 17 BPAs (Benthic Protection Areas) within the New Zealand EEZ (Exclusive Economic Zone) to bottom trawl fishing methods in perpetuity as of late 2007 (see Figure 4 for distribution). These areas comprise over 1.2 million km^2 of seabed. Protection is also provided under the accord to 52% of all UTFs within the New Zealand EEZ and 88% of identified hydrothermal vents. Demersal trawling and dredging is prohibited in these areas (pelagic fishing and demersal longlining being allowed). Regulations promulgated pursuant to the Fisheries Act (1996) implemented the closure of seamounts in 2001, representing 100,997 km^2 (http://www.mfe.govt.nz/environmental-reporting/oceans/protected-areas/management-tools.html).

The ecosystem structure around New Zealand has been examined through the collection and analysis of stomach contents in key fish species (juveniles and adults) on the Chatham Rise and sub-Antarctic regions of the New Zealand EEZ (e.g. Livingston and Stevens, 2004). This includes the dietary habits of ling. Ling appear to be mainly bottom dwellers, feeding on crustaceans such as *Munida* squat lobsters and scampi and also on fish, with commercial fishing discards being a significant dietary component (Dunn et al. 2010). However, they may at times be caught well above the bottom, for example when feeding on hoki during the hoki spawning season.

The structure of the mid-water food web is broadly understood for the Chatham Rise and Sub-Antarctic areas through numerous studies, which underpin existing and developing ecosystem models (Bradford-Grieve et al., 2003; ENV 2006/04, ZBD 2004/02; Pinkerton, 2011a). No model has yet been developed for the west coast South Island. Given the different ecosystems covered by existing models and studies, information is adequate to understand the functions of the key elements of the ecosystem. Information from the observer programme, and the logbooks (for the main 5 species in the catch) as well as continued sampling of stomachs, allow the main consequences for the ecosystem to be inferred.

The developed Ecopath models would allow the impacts of the fishery on components to be examined, ling being a component of fish groups within the model, although this analysis has not yet been performed.

The Chatham Rise fishery is best understood, and an ecosystem model has been developed for this fishery (Pinkerton 2011a). Changes include declines in the mean trophic level of commercial and trawl survey catches and changes in species abundance (Tuck et al. 2009, Pinkerton 2011b) although this may be a consequence of the data analysed in these analyses coming from a period when the biomass of hoki was declining. The ecosystem supporting the ling fishery in the Sub-Antarctic area is less well studied than that on the Chatham Rise. Ongoing change is reported from the Sub-Antarctic

ecosystem, including declining mean trophic level (Tuck et al. 2009). A key driver of this observed change is expected to have been the decline in hoki (rather than ling) 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). However, with the recovery of hoki stocks and key species being removed at levels close to or above B_{MSY}, there would be a sizeable proportion of biomass remaining in the ecosystem, and removals at this level are unlikely to lead to serious harm.

In summary, the two most significant ecosystem-level considerations in the ling fishery are the effects of removal of hoki biomass from the system through the ling-related fishery, 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 ling fishery spatially, such as trawl fisheries targeting hoki and hake (Ministry of Fisheries 2011a). Consequently, while considered separately for the purposes of this 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

Data on catch rates and the relative abundance of non-target species in the fishery are available from three main sources:

- The TCEPR (Trawl catch, effort and processing return) forms, which provide green-weight catch totals for the top five species (dependent on vessel size and fishing method) on a fishing-event basis, and daily summary of TACC species caught.
- The Ministry for Primary Industries observer data, which provides catch weight for all QMS and non-QMS species caught, on an observed tow-by-tow basis. This provides accurate and verifiable information, if on variable and patchy coverage). The observers monitored around 20% of trawls in 2007/08 in the HAK/HOK/LIN trawl fishery (see Table 6).
- Fishery independent trawl surveys on the Chatham Rise and Sub-Antarctic regions (and less frequent surveys on the west coast South Island), provide abundance estimates of finfish, cartilaginous fish, and squid species, as well as catch weights of macroinvertebrates. Further inshore surveys also provide some information on TACC stocks.

Observer coverage has varied considerably over time and between UoC (Table 6). Note that for the inshore longline fishery, data are only available for the combined 'Inshore ling, bluenose hapuka and bass' fishery, and hence the exact coverage within the specific inshore ling longline component has not been published.

Table 6: Percentage of observer coverage by fishing year and Unit of Certification (from Ramm, 2010, 2012a, b and Rowe, 2010). Dashes indicate no information (may equate to no fishing activity).

UoC	% tows/lines observed					Average, weighted by the fishing effort each year
	2007/08	2008/09	2009/10	2010/11	2011/12[1]	
Trawl LIN3	12.5	16.1	16.7	19.1	X	16.0
Trawl LIN4	10.5	9.1	7.9	16.8	X	11.1
Trawl LIN5	29.0	21.8	29.5	25.0	X	26.4
Trawl LIN6	44.6	44.4	63.9	33.1	X	46.1

UoC	% tows/lines observed					Average, weighted by the fishing effort each year
	2007/08	2008/09	2009/10	2010/11	2011/12[1]	
Trawl LIN7	22.9	30.6	23.0	30.3	X	26.7
Offshore Longline LIN3	6.1	0	-	4.7		4.6
Offshore Longline LIN4	7.9	76.9	67.7	5.9		15.9
Offshore Longline LIN5	0	0	100.0	0		12.1
Offshore Longline LIN6	57.1	51.4	29.6	37.1	X	43.5
Offshore Longline LIN7	-	-	-	-	X	0.0
Inshore Longline LIN3	0	5.0	4.7	15.2		5.1
Inshore Longline LIN4	0	0	7.1	0		1.9
Inshore Longline LIN5	11.5	0	0	0		1.2
Inshore Longline LIN7	-	0	0	0.9	X	0.3

[1] Crosses indicate that bycatch data from observers from these UoC provided to IFC by the client, but coverage was not yet available in an MPI/DOC publication (available to the Working Group).

In a scientific sense, an acceptable level of observer coverage will depend upon the objective of the programme. Data in the current study have been used by different authors to estimate the level of catch in non-target species and interactions with ETP species (PI 2.1, 2.2, 2.3), rather than a goal of compliance (where nearer 100% coverage might be required). While there is no set goal for observer coverage by fishing unit in New Zealand fisheries, and such a benchmark would need to be calculated for individual circumstances (being influenced by the likely probability of encounters, frequency of fishing events, etc.) target levels of up to 30% have been desired to analyse interactions with - for example - sea lions in the squid fishery[2]. In turn, practical and operational issues will limit access to longline vessel trips, particularly in the inshore fishery.

While statistical approaches can be developed to 'cope' with intermittent coverage and 'fill in' where data are lacking, the level of uncertainty will increase the lower the coverage, and the shorter and more intermittent the time series. Examination of the weighted averages calculated above show that, while the trawl fishery has consistent and reasonably high observer coverage over the last four years (>10%), only the offshore longline fishery in LIN4, and 6 (noting that LIN5 is based upon 100% coverage in one year) surpass a generic benchmark of 10%, while the inshore fishery in LIN3 shows lower but more consistent coverage. Indeed, based on these figures there has been 5% or less coverage in all other units of certification.

Under Principle 2, the longline fishery in each area is comprised of two different elements - the inshore longline fishery (smaller vessels) and the offshore longline fishery (larger vessels). We have therefore scored the longline fishery by area consistent with MSC Certification Requirements 27.10.7, and for each scoring element assigned the lowest score obtained by the inshore and offshore fishery.

3.4.2.1 Retained and bycatch species

The ling fishery is a component of New Zealand's Deepwater and Middle-depth fisheries which target a range of species (Ministry of Fisheries, 2010a). Data from the observer programme were used to assess the main retained and discarded non-target species within the catches by management area. These data were available for a five-year period from 2007/08 to 2011/12, and therefore represent the average catch levels over a significant time period. Temporal trends in the data could not be identified as a result, but the data period does reduce the impact of year-to-year fluctuations on results. Ballara et al. (2010) also provides an overview of catches and discards in the hoki/hake/ling fishery.

[2] e.g. http://www.fish.govt.nz/en-nz/Publications/Statements+of+Intent/SOI-2004-2008/Research+Services/Aquatic+Environment/Research+Observer+Days+-+SQU6T+and+SQU1T.htm).

The top ten species (retained and bycatch) within ling-targeted trawl fisheries by management area, based upon observer data from a five-year period from 2007/08 to 2011/12. Proportion of QMS species in catch by weight noted. Full tables are available at http://www.deepwater.co.nz/our-species/ling/msc-assessment-of-new-zealand-ling-fisheries/

Table 7 : Top ten (by weight) retained and bycatch species from the ling-targeted trawl fishery. Source: MPI Observer data. Non-QMS species noted with a * (which do not have to be retained). % includes Ling catches.

LIN 3	LIN 4	LIN 5	LIN 6	LIN 7
Hoki	Silver warehou	Hoki	Hoki	Hoki
Rattails*	Hoki	White warehou	Southern blue whiting	Silver warehou
Javelinfish*	Ghost shark	Hake	Hake	Giant stargazer
Silver warehou	Common roughy*	Javelinfish*	Javelinfish*	Northern spiny dogfish*
White warehou	Spiny dogfish	Silver warehou	White warehou	Ghost shark
Hake	Rattails*	Rattails*	Spiny dogfish	Gemfish
Spiny dogfish	Giant stargazer	Arrow squid	Pale ghost shark	Cat shark*
Sea perch	Barracouta	Red cod	Silverside*	Sea perch
Pale ghost shark	Javelinfish*	Leafscale gulper shark*	Rattails*	Smooth skate
Giant stargazer	Silver dory*	Spiny dogfish	Rough skate	Hake
95.1%	89.8%	97.1%	97.1%	96.8%

Table 8 : Top ten retained and bycatch species from the ling-targeted longline fishery. Source: MPI Observer data. Non-QMS species noted with a *.

LIN 3	LIN 4	LIN 5	LIN 6	LIN 7
Spiny dogfish	Spiny dogfish	Red cod	Spiny dogfish	Hake
Ribaldo	Ribaldo	Spiny dogfish	Black cod*	Spiny dogfish
Smooth skate	Sea perch	School shark	Rough skate	Ribaldo
Hake	School shark	Ribaldo	Pale ghost shark	Smooth skate
Sea perch	Hairy conger*	Smooth skate	Ribaldo	Northern spiny dogfish*
Shovelnose dogfish*	Smooth skate	Shovelnose dogfish*	Sharks & Dogfish[1]*	Shovelnose dogfish*
Sharks & Dogfish[1] *	Ghost shark	Leafscale gulper shark*	Seal shark*	Swollenhead conger*
Hairy conger*	Shovelnose dogfish*	Conger eel*	Hairy conger*	Bluenose
Leafscale gulper shark*	Red cod	Sharks & Dogfish[1] *	Rattails*	School shark
Seal shark*	Conger eel*	Hapuku*	Chimaera, purple*	Leafscale gulper shark*
92.5%	98.4%	98.7%	98.6%	98.6%

[1] Sharks and dogfish not otherwise specified in Sch3, Part2 Reporting Regs 2001

It is noted that ling- (and hake-) targeted fishing is undertaken as a part of the main hoki fishery. The key bycatch species within these fisheries are generally comparable to those caught within the related hoki fishery (which are hake (*Merluccius australis*), ling (*Genypterus blacodes*), silver warehou

(*Seriolella punctata*), and frostfish (*Lepidopus caudatus*) and the non-commercial spiny dogfish (*Squalus acanthias*), javelinfish (*Lepidorhynchus denticulatus*) and rattails (Macrouridae)). While some specific differences are found, and the assessment performed here is based upon retained species levels within the ling-targeted fishery (trawl and longline, separately), examination of the retained species levels within the hoki/hake/ling fishery relative to sustainable levels is recommended.

Retained species are, by regulation, the Quota Management System (QMS) species, which are enumerated and retained on board (unless '6th schedule' species like spiny dogfish, which are enumerated before return to the sea as per Schedule 6 of the Fisheries Act 1996: Stocks which may be returned to the sea or other waters in accordance with stated requirements). The main QMS species are the subject of analytical stock assessments and active management that is based upon formalised biologically based limits. For the remaining QMS species, the TACC system, which aims to limit the overall catch of species, combined with the 'deemed value' process, represents the management strategy for these species.

Information is sufficient to quantitatively estimate outcome status with a high degree of certainty for the majority of main QMS species caught, by target fishery and management area. However, information for some main QMS species and other QMS species is more limited and quantitative estimates of outcome status are not routinely developed, although qualitative assessments have been performed for particular species; trends in the abundance of key retained species that are adequately sampled by trawl surveys on the Chatham Rise and Sub-Antarctic have been reported following each survey. In theory action would be initiated if negative trends in particular species were identified. The potentially low statistical power of the survey data for some species is noted.

The New Zealand system identifies species by 'tier', Tier 1 being target species, Tier 2 being key non-target (bycatch) WMS species and tier 3 being non-QMS species.

For non-QMS species (Tier 3 species), stock assessments are not performed, and assessments of the potential impact of the fishery on population levels are highly uncommon. These species are not managed under the TACC process, although the increasing number of species within the QMS system demonstrates that substantial catches of non-QMS species tends to lead to the establishment of their QMS status, and hence become subject to more formalised monitoring and must be retained on board vessels. 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 (see also the QMS Introduction Process Standard; MPI (2008)). 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. While the QMS Introduction Process Standard provides a framework further formalisation of the procedure for moving non-QMS species within the QMS framework, and to monitoring 'minor' QMS species status and trends, given the information collected, would further improve the comprehensiveness of the by-catch management framework within the QMS. As noted, this has been performed for specific species, and could be prioritised based upon identification of key low-productivity species through a formalised Productivity-Sensitivity Analysis (as indicated within the framework).

Given that formal assessments of non-QMS species are not performed, for the purposes of the current assessment a number of assumptions have had to be made. We have assumed that where assessments or qualitative evaluations are lacking, a species may be at risk where they represent >5% of the total catch, or are caught at levels greater than 10 tonnes per year where this species is considered of low productivity (identified through a Productivity-Sensitivity Analysis (PSA)). We recognise that a species may have low abundance and high catchability, which may lead to incorrect estimation of status using these criteria. This approach is comparable to that taken under P1, in separating the determination of outcome from the management approach and information necessary to underpin that management.

In this section, the available information on the status of retained species which constitute over 5% of the observed catch during 2007-08 to 2011-12 is summarised. Of those species representing the 'main' retained species (>5% of the catch); for trawl fisheries:

- Hoki is assessed as two stocks (HOK1 and HOK10) but only the former overlaps with the areas of ling examined here. HOK1 is estimated to be above both the soft limit and target with high probability (>90%).

- Silver warehou represented up to 5% of the catch weight of ling-targeted tows in LIN 3 (equivalent to SWA 3) and 22% in LIN4 (a sub-set of the SWA4 area). Biomass indices from R.V. Tangaroa fishery-independent trawl surveys in QMAs 3 (part), 4 and 5 since 1991 are variable between years and have high CVs. They were therefore unsuitable for stock assessment. The Plenary report noted that "In most years from 2000-01 to 2008-09 catches in SWA 3 and SWA 4 were well above the TACCs as fishers landed catches well in excess of ACE holdings. The sustainability of current TACCs and recent catch levels for these fish stocks is not known, and it is not known if they will allow the stocks to move towards a size that will support the maximum sustainable yield." 2% (~20t) of the observed catch within this area was from ling-targeted tows.

- Ghost shark (*Hydrolagus novaezealandiae*) represents around 9% of the catch weight of ling-targeted tows in LIN 4 (equivalent to GSH 4). Examination of survey biomass trends in this region did not indicate any consistent trend since 1999, suggesting no declines in biomass. While catches have generally been below the TACC for this species, it was above that level in 2008-09 and 20011-12. While the plenary report notes that the data do not allow definitive judgement on whether recent catches have been sustainable in the long term, the biomass trends suggest there are no current concerns for the stock. This will continue to be monitored through the surveys.

- White warehou represented up to 9% of the catch weight of ling-targeted tows in LIN 5 (equivalent to part of WWA 5B). Catches of white warehou in this area are below the TACC. Comparison of survey time series in the Southland and Sub Antarctic region (Bagley et al., 2013) indicating significant uncertainty in estimates. Examining data from surveys in 2009 and 2011, white warehou biomass dropped from 2093 t in 2009 to 393 t in 2011, but high c.v.s associated with higher estimates indicate that these are typically the result of one-off large catches. However, examining the survey information showed little trend in biomass estimates in the core depth strata in R.V. Tangaroa surveys in the Sub-Antarctic region, although the uncertainty in annual estimates was notable.

- Southern blue whiting represented up to 8% of the catch weight of ling-targeted tows in LIN 6 (equivalent to SBW6A/B/I/R). All stocks are estimated to be unlikely (<40%) or exceptionally unlikely to be below the soft limit (<1%) and stocks are assessed to be as likely as not (40-60%) or likely to be above the target reference point, or believed to be only lightly exploited between 1993-2002. However, status in 6A is unknown.

For longline fisheries:

- Spiny dogfish (*Squalus acanthias*) represented 19% of the catch weight of ling-targeted sets in LIN 3, 23% in LIN 4, 8% in LIN 6 (equivalent to SPD3, SPD4 and SPD5, respectively). Catches in each region have been below the corresponding TACC. Based on a combination of CVs, variability in biomass indices and the time span of each series, it is concluded that surveys only provide reliable indices of dogfish abundance off the west coast of the South Island (SPD7, not under consideration here) and on the Chatham Rise (SPD 4). Relative biomass indices suggest that spiny dogfish became more abundant on the Chatham Rise during the early to mid 1990s. Although the relevant surveys were discontinued, spiny dogfish appear also to have increased substantially in abundance off the east coast of the South Island (SPD 3) and on the Stewart-Snares shelf (SPD5) in the mid 1990s. Indeed, spiny dogfish biomass in the core strata (30–400 m) for the east coast South Island trawl survey increased markedly in 1996 and although it fluctuated since then it has remained high with 2012 biomass 11% above the post-1994 average of 31 978 t. Catches within SPD 1 are low, and, in comparison to catches within other areas of the New Zealand EEZ which have not led to declines in available abundance indices, are highly likely to be within biologically based limits.

- Ribaldo represented 12% of the catch weight of ling-targeted sets in LIN 3 (equivalent to RIB 3). Catches in this area have been below the TACC level (176 tonnes) throughout, bar one year. Assessments based upon the relative biomass index of ribaldo from summer middle depth trawl surveys of the Chatham Rise indicated they were relatively flat over time. Precision was generally good in this time series (< 20%). Although numbers of individual ribaldo caught were low the Working Group considered this index to be suitable to monitor major trends in this stock. The working group summarised that stock size was likely (> 60%) to remain near current levels under current catches and unlikely (<40%) to fall below soft or hard limits at those catch levels.

- Rough skate represented 6% of the catch weight of ling-targeted sets in LIN 6 (equivalent to part of RSK3). Catches in this region have been below the TACC level (1653 tonnes) throughout, bar one year. The plenary report noted that it was “unknown if recent catch levels or the TACC will cause their populations to decline.” However, biomass estimates available from the east coast South Island showed a generally increasing trend in biomass across the available time period. Biomass in the core strata (30–400 m) for the east coast South Island trawl survey in recent years is about double that of the 1990s. Coefficients of variation are variable ranging from 19 to 30% (mean 22%), but overall are low to medium.

- Pale ghost shark represented 5% of the catch weight of ling-targeted sets in LIN6 (equivalent to part of GSP5). Catches in this region have been well below the adjusted TACC level. Biomass estimates from the R.V. Tangaroa trawl survey time series show no clear trend, with notable inter-annual fluctuations, and a general increase in biomass since 2005. This suggests that current bycatches are highly likely to be within biologically-based limits.

- Hake represented 11% of the catch weight of ling-targeted sets in LIN 7 (equivalent to HAK 7). Catches in recent years (2005-06 to 2011-12) have been well below the TACC (7700 tonnes) which was adjusted upward at that time, but prior to that period were frequently above the TACC (6855 tonnnes). The stock assessment available for this region indicated that the stock was very unlikely (<10%) to be below the soft limit, and exceptionally unlikely (<1%) to be below the hard limit. B_{2012} was estimated to be 58% B_0; Very Likely (> 90%) to be at or above the target.

Non-retained (non-QMS) species that constituted more than 5% of the trawl catch during 2007-08 to 2011-12 represented rattails (family Macrouridae) and javelinfish (*Lepidorhynchus denticulatus*) in

LIN 3 and common roughy in LIN 4. Analysis of bycatch within the trawl fishery (Ballara et al., 2010) showed a declining trend in the bycatch of rattails, and no clear trend in the bycatch of javelinfish. Examination of rattail biomass from Chatham Rise survey time series has shown an increasing trend, suggesting that in this region the fishery is having no negative effect (Stevens et al., 2010). For common roughy, available survey biomass estimates for common roughy suggest catch levels < 1% of the biomass.

Non-retained (non-QMS) species that constituted more than 5% of the longline catch during 2007-08 to 2011-12 represented black cod (*Paranotothenia magellanica*) in LIN 6 (Sub-Antarctic) at 6%.

No assessments exist for these species. However, data on trends in biomass of rattails and javelinfish 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'Driscoll et al. 2011).

For black cod, a non-QMS species, survey information has not been reported for the Sub-Antarctic. Catches averaged just over 20 tonnes per annum over the period, and in the past two years have been well below one tonne; the average was increased by high catches in 2007/08 and 2008/09. The growth of this species ($K=0.26y^{-1}$), fecundity, trophic level (3.4) and medium resilience (see Fishbase.org) suggest that recent catches appear unlikely to lead to fishing impacts based on the biology of the species.

In relation to Tier 2 species (key bycatch species), it will not always be easy to implement specific harvest strategies. Management Action 28 in the Annual Operational Plan for the deepwater fisheries (MPI, 2012) 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.

As noted above, Tier 3 species (non-QMS species, usually discarded) can be added to the QMS system under Section 17B of the Fisheries Act and/or the species managed under Section 11 of the Act (see also the QMS Introduction Process Standard) if a sustainability problem is detected.

It is difficult to detect whether there is a sustainability concern for many Tier 2 (QMS) and Tier 3 (non-QMS) species (e.g. MPI 2013a, b, c) but as noted in the National Deepwater plan (Ministry of Fisheries, 2011) management of species based on CPUE and size-based trends are underway. A number of projects related to improving the information base for Tier 2 and Tier 3 species are either planned or underway, including a project (DEE2011-03) to conduct Level 1 risk assessments for Tier 3 species which could lead to additional research being conducted (see Management Action #16 of the Annual Operational Plan for Deepwater Fisheries 2012/13; MPI, 2012b). Furthermore, the use of CPUE time series and size classes are becoming more frequent for Tier 2 species (MPI, 2013a, b, c).

3.4.2.2 ETP species

The Wildlife Act 1953 gives absolute protection to wildlife throughout New Zealand and its surrounding marine Exclusive Economic Zone. All marine mammals (including all seal, dolphin and whale species) are fully protected throughout New Zealand and its EEZ under the Marine Mammals Protection Act 1978. The result of this is that almost all native birds and all marine mammals and marine reptiles (including visiting turtles and sea snakes) are fully protected in New Zealand (under one of two Acts), and out as far as the edge of the EEZ. The exceptions are a small number of native birds managed as game birds, and a few other native birds that are partially protected. Just one native

bird, the black-backed gull, is currently unprotected. In addition, Schedule 7A of the Wildlife Act lists certain marine species that are legally protected, i.e., all species in the orders Antipatharia (black corals), Gorgonacea (gorgonian corals), and Scleractinia (stony corals) and the family Stylasteridae (hydrocorals). Fish protected under the Wildlife Act include the oceanic whitetip, basking, deepwater nurse, white pointer, and whale sharks, manta and spinetail devilrays, and two groupers. CITES listed species include: the New Zealand fur seal; elephant seal; a number of cetaceans; basking, Great white, scalloped, hammerhead and porbeagle sharks; as well as black coral (*Antipatharia* spp) (http://www.doc.govt.nz/about-doc/role/international/endangered-species/cites-species/nz-cites-listed-species/).

The national requirements for ETP protection in New Zealand law notes that while interactions are not forbidden (i.e. zero), the law requires interactions to be reported on MPI's Non-fish and Protected Species Catch Return form[3]. The long-term aim is to minimise mortalities where possible, with the zero interactions being described as the aspirational objective. The approach requiring reporting of interactions, combined with observer coverage. provides good information on the potential effects of the fishery on ETP species. No specific limits on interactions have been set; activities aimed at minimising interactions are underway (see mitigation approaches described below).

It is recognised that the fishery is a sub-set of the hoki/hake/ling-targeted fishery. Catch rates of these different components of the effort have been examined. Given that the area-based breakdown between species-specific fisheries management areas is different (not all areas correspond), it is difficult to assess area-specific overall ETP interactions within the hoki/hake/ling complex. The target-fishery-specific area data are used here, although it is recommended that analysis across the fishery complex is performed in future.

Information is available on ETP species interactions through the on-going observer programme on board vessels. This information is analysed based upon the identified 'target' fishery. As noted earlier, an issue for the longline fisheries and their interactions with ETP species is the level of observer coverage by area that allows these model estimates to be developed. Weighted average observer coverage, calculated earlier, indicated that while the trawl fishery has consistent and reasonably high observer coverage over the last four years (>10%), only the offshore longline fishery in LIN4, 5 and 6 and the inshore longline fishery in LIN6 surpassed a generic benchmark of 10%. Indeed, based on these figures there has been 5% or less coverage in all other units of certification.

For the ling fishery, interactions focus on seabirds, marine mammals, and cold water corals.

Seabirds

Bird interactions in the ling fishery have been analysed in a number of studies (e.g. Abraham and Thompson, 2011), which provide detailed breakdowns of interactions and model the likely impact of the total fishing fleet based upon data from observed vessels. Note that the estimates of captures detailed below and in provided references include recorded captures in the net, on the warps, or tangled in line, and hence includes observed warp strikes, and captures are also estimated by fishing method, being categorised by whether they were warp captures, net captures, or reported caught through some other means (see https://data.dragonfly.co.nz/psc/v20121101/birds/ling/all-vessels/eez/all/ for a breakdown by year and interaction type for the ling fishery). They exclude animals that landed on the deck or collided with the vessel's superstructure (Abraham and Thompson, 2011).

Population estimation studies are also underway for both birds and marine mammals, which allow an evaluation of the likely impact of interactions on ETP species populations to be evaluated. In turn, ecological risk assessment studies for birds have been completed (Richard et al., 2009; Richard and

[3]http://www.fish.govt.nz/NR/rdonlyres/0C0794C6-D30A-4032-806A-F7554036EEDA/0/Complianceinfosheet08.pdf

Abraham 2013[4]), which allow evaluations to focus on potentially more at risk species. These data have been used within the current study to evaluate the potential impact of the fishery on ETP bird and marine mammal populations. In turn, National Plans of Action have been developed for birds and sharks (MPI, 2013d).

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 onboard observers 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). The efficacy of these devices has been examined in New Zealand (Middleton and Abraham 2007) and internationally (e.g., Bull 2009; Løkkeborg 2011). Streamer lines are the most effective in reducing seabird strikes on trawl warps. There are a number of trawl vessels operating in LIN3, 5 and 7 of sizes smaller than 28 m as noted (see Table 1). Vessel size is included within the models used to estimate seabird interactions (Abraham and Thompson, 2011) and hence will be incorporated within the analysis of overall interaction rates discussed below. However, given the lack of requirements for bird (and other ETP) interaction mitigation approaches for these vessels, a recommendation for the collection and analysis of specific information on ETP interactions for this vessel size class has been generated to confirm interaction rates and develop appropriate mitigation approaches if and as required.

General mitigation approaches being employed by trawlers, supported through legislation, include voluntary industry-led codes of practice, detailed in Vessel Management Plans.

Vessel Management Plans are developed on a vessel-specific basis. These include methodologies to limit offal discharge during periods of vulnerability for birds, and are audited by MPI observers. This approach allows mitigation methods to be adapted to a particular vessel's operations, but may not eliminate interactions. Cleaning of the net before shooting is also required. Studies on trawl net interaction mitigation processes have been undertaken (Clement and Associates 2009). Reporting practices are also in place, so that bird captures trigger action by DWG and are reported to MPI.

The majority of seabird interactions with the ling trawl fishery involve white-chinned petrels, white-capped albatrosses, sooty shearwaters, and other albatrosses and seabirds (Table 9. Abraham and Thompson 2011. Note that this information is updated regularly). Information from the most recent years shows a decline in captures, although the rate of interactions has shown an increase over the fishery as a whole (DWG, 2013a). Interactions were primarily in LIN5/6. The situation will continue to be monitored through the observer programme. A Level 1 risk assessment (based on expert knowledge) concluded that the hoki/hake/ling fishery did not represent an especially high risk for seabird populations, as long as effective management measures, including effective mitigation, are in place (Rowe 2013[5]). Richard and Abraham (2013) provide a Level 2 risk assessment (based on semi-quantitative approaches, following Hobday et al., 2007) which identifies at-risk species caught in New Zealand commercial fisheries. This was used to support the updated National Plan of Action – Seabirds (2013, see below).

[4]https://fs.fish.govt.nz/Doc/23121/AEBR_109_2596_PRO2010-2,%20Obj.%201,%20MS4,%20RR2,1.pdf.ashx
[5]http://www.doc.govt.nz/Documents/science-and-technical/dmcs10entire.pdf

Table 9: Summary of all bird captures in ling 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	1 407	146	10.4	4	2.74	M	38	(22 - 61)	100.0
2007–08	2 207	241	10.9	8	3.32	M	50	(30 - 88)	100.0
2006–07	1 665	157	9.4	2	1.27	M	22	(12 - 37)	100.0
2005–06	1 394	113	8.1	3	2.65	M	32	(17 - 60)	100.0
2004–05	985	76	7.7	3	3.95	M	23	(12 - 39)	100.0
2003–04	557	22	3.9	0	0.00	M	8	(2 - 18)	100.0
2002–03	634	16	2.5	0	0.00	M	10	(3 - 22)	100.0
2001–02	572	5	0.9	0	0.00	R	8	(3 - 13)	43.7
2000–01	390	0	0.0	-		R	7	(3 - 12)	56.4
1999–00	571	7	1.2	0	0.00	R	6	(3 - 10)	44.7
1998–99	468	0	0.0	-		R	4	(2 - 7)	46.2

All observed captures by species 1998/99 – 2008/09: sooty shearwater (6), white-chinned petrel (4), white-capped albatross (3), Salvin's albatross (2), black-browed albatross (unidentified) (1), seabird-small (1), fairy prion (1), albatross (unidentified) (1), Buller's albatross (1)

Key locations for 2008-09 captures were Chatham Rise (LIN 4) with a modelled maximum of 16 interactions with sooty shearwaters. Captures in other locations and in 2007-08 were below 15 across all species.

Table 10: Summary of all bird captures in ling trawl 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 (2011)).

		Observed				Estimated			
	Tows	No. obs	% obs	Capt.	Rate	Type	Est. captures		% inc.
2008–09									
Stewart-Snares	375	69	18.4						
White-chinned petrels				0	0.00	M	1	(0 - 5)	100.0
Other birds				0	0.00	M	1	(0 - 4)	100.0
Chatham Rise	234	18	7.7						
Sooty shearwaters				4	22.22	M	7	(4 - 16)	100.0
Subantarctic	120	52	43.3						
White-capped albatrosses				0	0.00	M	0	(0 - 1)	100.0
White-chinned petrels				0	0.00	M	0	(0 - 1)	100.0
Other albatrosses				0	0.00	M	1	(0 - 3)	100.0
Other birds				0	0.00	M	0	(0 - 1)	100.0
2007–08									
Stewart-Snares	694	136	19.6						
White-chinned petrels				1	0.74	M	3	(1 - 8)	100.0
Other birds (fairy prion)				1	0.74	M	2	(1 - 4)	100.0
Chatham Rise	559	23	4.1						
Sooty shearwaters				0	0.00	M	3	(0 - 10)	100.0
Subantarctic	205	55	26.8						
White-capped albatrosses				1	1.82	M	1	(1 - 3)	100.0
White-chinned petrels				2	3.64	M	2	(2 - 3)	100.0
Other albatrosses[a]				2	3.64	M	3	(2 - 5)	100.0
Other birds (seabird – small)				1	1.82	M	1	(1 - 3)	100.0

Compared to the trawl fishery, notable numbers of birds interacted with the ling longline fishery. The majority of seabird interactions with the ling longline fishery involve white-chinned petrel, grey petrel, Salvin's albatross, sooty shearwater, Cape petrels, petrel (unidentified), albatross (unidentified), and Chatham albatross (Table 11, Abraham and Thompson 2011). Information from the most recent years shows no trend in estimated captures, although the relatively low observer coverage leads to greater uncertainty in overall estimates (DWG, 2013b). Interactions were primarily in the southern region LIN3-6. The situation will continue to be monitored through the observer programme.

Table 11: Summary of all bird captures in ling longline 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			
	Hooks	No. obs	% obs	Capt.[s]	Rate	Type	Est. captures		% inc.
2008–09	11 699 928	3 215 658	27.5	5	0.002	M	413	(75 - 1 407)	100.0
2007–08	12 401 506	2 983 578	24.1	19	0.006	M	314	(99 - 1 102)	100.0
2006–07	11 713 762	1 834 822	15.7	13	0.007	M	285	(53 - 1 103)	100.0
2005–06	13 341 632	3 605 075	27.0	29	0.008	M	182	(92 - 376)	100.0
2004–05	16 322 190	2 618 400	16.0	18	0.007	M	523	(134 - 1 732)	100.0
2003–04	21 218 162	4 840 054	22.8	43	0.009	M	316	(118 - 1 042)	100.0
2002–03	16 796 068	11 187 039	66.6	250	0.022	M	428	(317 - 659)	100.0
2001–02	24 353 509	7 547 517	31.0	427	0.057	M	1 313	(860 - 2 508)	100.0
2000–01	23 157 794	5 033 144	21.7	505	0.100	M	1 246	(882 - 2 103)	99.6
1999–00	26 539 103	3 377 278	12.7	186	0.055	M	1 845	(971 - 3 676)	99.7
1998–99	29 196 641	3 060 232	10.5	90	0.029	M	1 591	(577 - 4 530)	99.7

All observed captures by species 1998/99 – 2008/09: white-chinned petrel (796), grey petrel (403), Salvin's albatross (150), sooty shearwater (86), Cape petrels (44), petrel (unidentified) (23), albatross (unidentified) (16), Chatham albatross (9), northern giant petrel (8), common diving petrel (7), white-capped albatross (7), southern giant petrel (5), wandering albatross (unidentified) (4), giant petrels (unidentified) (4), Buller's albatross (4), seabird - small (3), storm petrels (3), southern black-browed albatross (2), prions (unidentified) (2), broad-billed prion (1), other species (8).

Key locations for 2008-09 captures were Chatham Rise (LIN 4) and the Sub-Antarctic (LIN 6) with a modelled maximum of 1,100 interactions with white-chinned petrels in LIN 4, and 221 interactions with white-chinned petrels in LIN 6.

IUCN status of species reported captured ranges from Least Concern (e.g. Cape Petrel) to Vulnerable (e.g., Salvin's albatross) (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 ling fishery breed on offshore islands where there are no permanent human settlements. A new NPOA Seabirds has been developed (MPI, 2013). The NPOA-Seabirds aims to reduce the number of seabird deaths from fishing and sets out an approach for the coming five years. It defines over-arching objectives for the prevention, monitoring and management of incidental seabird capture. It sets out how these objectives are to be addressed and implemented by the Ministry for Primary Industries, and provides clear expectations for regular review and reporting on progress towards meeting the objectives. It outlines ways to reduce fishing-related seabird deaths by raising awareness of the problem and encouraging the research and resourcing of new measures and methods. The risk assessment (Richard and Abraham 2013) underpinning the NPOA-Seabirds guides management expectations. For example, seabird species identified as at very high or high risk of having commercial fisheries bycatch exceed population sustainability limits should be managed to a lower risk category by 2018. Species in these categories that are reported caught in ling fisheries include white-capped albatross, Buller's albatross, Chatham albatross and Salvin's albatross.

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 less well studied 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 are also 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.

Table 12: Summary of all bird captures in ling longline 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 (2011)).

				Observed			Estimated		
	Hooks	No. obs	% obs	Capt.	Rate	Type	Est. captures		% inc.
2008–09									
Chatham Rise	6 382 948	1 824 408	28.6						
White-capped albatrosses				0	0.000	M	2	(0 - 5)	100.0
White-chinned petrels				1	0.001	M	294	(23 - 1 100)	100.0
Sooty shearwaters				0	0.000	M	2	(0 - 8)	100.0
Other albatrosses[a]				2	0.001	M	14	(3 - 36)	100.0
Other birds				0	0.000	M	8	(0 - 33)	100.0
Subantarctic	2 786 330	1 391 250	49.9						
White-chinned petrels				0	0.000	M	46	(1 - 221)	100.0
Sooty shearwaters				0	0.000	M	0	(0 - 2)	100.0
Other albatrosses				0	0.000	M	2	(0 - 10)	100.0
Other birds[b]				2	0.001	M	4	(2 - 12)	100.0
Stewart-Snares	1 323 200	0	0.0						
White-chinned petrels				0		M	5	(0 - 33)	100.0
Sooty shearwaters				0		M	6	(0 - 21)	100.0
Puysegur	249 850	0	0.0						
White-chinned petrels				0		M	23	(0 - 159)	100.0
Sooty shearwaters				0		M	3	(0 - 13)	100.0
Other birds				0		M	1	(0 - 4)	100.0
2007–08									
Chatham Rise	5 612 870	1 375 300	24.5						
White-capped albatrosses				0	0.000	M	2	(0 - 5)	100.0
White-chinned petrels				0	0.000	M	91	(0 - 533)	100.0
Sooty shearwaters				0	0.000	M	1	(0 - 6)	100.0
Other albatrosses (Buller's albatross)				3	0.002	M	11	(3 - 28)	100.0
Other birds[c]				5	0.004	M	42	(15 - 90)	100.0
Subantarctic	3 591 200	1 381 800	38.5						
White-chinned petrels				6	0.004	M	79	(6 - 450)	100.0
Sooty shearwaters				0	0.000	M	1	(0 - 3)	100.0
Other albatrosses				0	0.000	M	3	(0 - 15)	100.0
Other birds				0	0.000	M	31	(6 - 82)	100.0
Stewart-Snares	1 194 423	114 423	9.6						
White-chinned petrels				0	0.000	M	23	(2 - 76)	100.0
Sooty shearwaters				5	0.044	M	12	(5 - 28)	100.0
Puysegur	969 053	108 455	11.2						
White-chinned petrels				0	0.000	M	11	(0 - 75)	100.0
Sooty shearwaters				0	0.000	M	4	(0 - 17)	100.0
Other birds				0	0.000	M	1	(0 - 7)	100.0

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/hake/ling trawl 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

ling fisheries): 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.

The risk assessment noted that annual potential seabird fatalities within the deepwater trawl complex were between 1% and 50% of the PBR. Seabird captures in the ling fishery account for approximately 1% 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 ling trawl fishery does not threaten sustainability.

The risk assessment noted that annual potential seabird fatalities within the 'large' longline complex were between 1% and 50% of the species PBR, while the 'small' (sized) longline complex were generally less than 10% of the species PBR, but between 10 and 30% of the PBR for flesh-footed shearwater, between 30 and 100% of the PBR for Salvin's albatross and Chatham Island albatross, and over the PBR for Black petrel (Richard and Abraham, 2013a).

The black petrel (*Procellaria parkinsoni*) was the species most at risk from commercial fishing activities (Richard and Abraham 2013). The black petrel is endemic to New Zealand and is classified as Vulnerable by the IUCN (IUCN, 2013). It breeds in only two colonies: approximately 2000 annual pairs on Great Barrier Island, and approximately 100 annual pairs on Little Barrier Island. Most observed captures were close to its breeding grounds, primarily in the bottom longline snapper fishery, but also in the bottom longline bluenose fishery, and in inshore trawl fisheries. Francis & Bell (2010) found that the main black petrel population breeding on Great Barrier Island has been increasing with an average of 1.2% per year, from 1,598 breeders in 1988 to 1,964 breeders in 2005. This was, however, primarily based on two population surveys that used different methods. The uncertainty associated with these surveys was not taken into account, and it is possible that the population has been declining despite this apparent increase. Fisheries bycatch data were not considered by Francis & Bell (2010). Black petrel migrate to eastern Pacific waters outside of the breeding season, and will also be vulnerable to capture in fisheries there. They may also be caught by recreational fishers in the Hauraki Gulf area (Abraham et al. 2010a). These sources of fisheries mortality were not included in the risk assessment. While the ling longline fishery is not implicated within the significant captures of Black petrel, further monitoring of interactions should occur in future audits.

Small vessel ling longline interactions were estimated by Abraham and Thompson (2011). Mean estimates peaked in 1999-00 at 237 interactions (Table 13), and a maximum of 170 'other albatrosses' were caught in Chatham Rise in 2008-09 (Table 14).

Seabird captures in the ling trawl fishery account for approximately 1% 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 ling trawl fishery does not threaten sustainability.

Table 13: Summary of all bird captures in ling longline 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			
	Hooks	No. obs	% obs	Capt.[a]	Rate	Type	Est. captures		% inc.
2008–09	5 878 334	498 750	8.5	4	0.008	R	146	(79 - 232)	59.4
2007–08	6 596 699	249 800	3.8	3	0.012	R	128	(69 - 205)	48.8
2006–07	5 262 334	344 635	6.5	38	0.110	R	152	(98 - 221)	51.2
2005–06	2 880 869	0	0.0	-		R	46	(24 - 74)	39.6
2004–05	5 222 531	27 220	0.5	0	0.000	R	168	(88 - 270)	62.3
2003–04	3 523 618	38 533	1.1	1	0.026	R	95	(51 - 153)	51.9
2002–03	2 906 481	112 256	3.9	16	0.143	R	65	(42 - 94)	40.4
2001–02	3 641 862	0	0.0	-		R	114	(60 - 184)	58.4
2000–01	5 956 949	0	0.0	-		R	121	(64 - 195)	42.9
1999–00	5 934 170	234 000	3.9	16	0.068	R	237	(132 - 371)	72.0
1998–99	6 635 113	0	0.0	-		R	199	(105 - 320)	56.0

Table 14: Summary of all bird captures in small vessel ling longline 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 (2011)).

		Observed				Estimated			
	Hooks	No. obs	% obs	Capt.	Rate	Type	Est. captures		% inc.
2008–09									
Chatham Rise	2 957 030	498 750	16.9						
White-capped albatrosses				0	0.000	R	2	(0 - 6)	100.0
White-chinned petrels				0	0.000	R	40	(20 - 64)	100.0
Other albatrosses				0	0.000	R	86	(23 - 170)	100.0
Other birds[a]				4	0.008	R	17	(8 - 27)	100.0
2007–08									
Chatham Rise	2 410 020	235 800	9.8						
White-capped albatrosses				0	0.000	R	2	(0 - 5)	100.0
White-chinned petrels				3	0.013	R	38	(20 - 59)	100.0
Other albatrosses				0	0.000	R	76	(21 - 151)	100.0
Other birds				0	0.000	R	12	(3 - 21)	100.0

Marine mammals

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 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 ling trawl fisheries, they are the most captured New Zealand protected species. Captures of fur seals in the ling fishery occur in all fishing areas (Table 15), and estimated total captures peaked in 2004-05 at 55 individuals across all fisheries (mean estimate of 29 in 2008-09). This represents 5-6% of the total estimated trawl captures of New Zealand fur seals in those years. Other fisheries capturing fur seals include trawl fisheries targeting hoki, southern blue whiting, and surface longline fisheries (Ramm 2010, 2011).

Fewer fur seals are caught in longline fisheries around New Zealand, and no interactions have been noted specifically with the ling longline fishery (Abraham and Thompson, 2011).

No interactions have been noted with sea lions within any of the ling fisheries (Abraham and Thompson, 2011). In turn, no whale interactions have been observed interacting with ling fisheries.

There are no specific regulations defining mitigation approaches for marine mammal interactions within this fishery. All vessels managed under the DWG are required to follow specific operating procedures to reduce the risk of seal captures. Procedures are described in the Operating Procedures: Marine Mammals, based on data analyses and expert opinion (Deepwater Group 2011c). These require the rapid reporting of mortalities so that action can be taken. In turn, operating procedures are also provided to minimise the danger period when the trawl net is close to the surface, shallow turns while trawling, and to avoid discharging offal (as in the VMP for bird bycatch mitigation). Some vessels avoid shooting nets where marine mammals are present (Rowe, 2009). Reporting practices are in place, so that marine mammal captures trigger action by DWG and are reported to MPI. Current research and management priorities for fur seals include better assessments of capture levels in Cook Strait, identifying the regional provenance of by-caught fur seals, and investigating female foraging behaviour.

Table 15: Summary of New Zealand fur seal captures in ling trawl fisheries, broken down by fishing areas, 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									
Stewart-Snares	375	69	18.4	0	0.00	M	5	(0 - 14)	100.0
West Coast SI	267	0	0.0	0		M	4	(0 - 13)	100.0
Chatham Rise	234	18	7.7	0	0.00	M	7	(1 - 20)	100.0
Puysegur	163	0	0.0	0		M	7	(0 - 23)	100.0
Subantarctic	120	52	43.3	0	0.00	M	0	(0 - 1)	100.0
East of NI	70	0	0.0	0		N			
North East	69	0	0.0	0		N			
West Coast NI	56	1	1.8	0	0.00	M	0	(0 - 3)	100.0
Cook Strait	39	0	0.0	0		N			
Auckland Is.	14	6	42.9	0	0.00	M	0	(0 - 1)	100.0
2007–08									
Stewart-Snares	694	136	19.6	3	2.21	M	15	(6 - 30)	100.0
West Coast SI	318	0	0.0	0		M	6	(0 - 16)	100.0
Chatham Rise	559	23	4.1	0	0.00	M	12	(2 - 33)	100.0
Puysegur	218	13	6.0	0	0.00	M	8	(1 - 23)	100.0
Subantarctic	205	55	26.8	1	1.82	M	1	(1 - 2)	100.0
East of NI	36	0	0.0	0		N			
North East	76	0	0.0	0		N			
West Coast NI	64	0	0.0	0		M	1	(0 - 4)	100.0
Cook Strait	5	0	0.0	0		N			
Auckland Is.	32	14	43.8	0	0.00	M	1	(0 - 5)	100.0

Sharks
Five species of sharks (the basking shark, deepwater nurse shark, white shark, oceanic whitetip shark, and the whale shark) are protected by domestic legislation in New Zealand waters. The basking shark has been reported to interact with the hoki trawl fishery (e.g. Francis and Lyon, 2012; Francis and Sutton, 2012). However, there have been no observed interactions with key shark species the ling fishery noted over the period 2007/08 - 2011/12.

3.4.3 Protected benthos

The following benthic organisms are protected in New Zealand (e.g. listed on Schedule 7A of the Wildlife Act): black corals (all species in the order Antipatharia), Gorgonian corals (all species in the order Gorgonacea), Stony corals (all species in the order Scleractinia), 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 MPI 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.

Red and Black coral distribution within New Zealand waters has been mapped. The 'red coral' is noted to include all species in the genus *Errina* (which lies within the family Stylasteridae) but is also the common name of a number of coral species in the order Gorgonacea. Cold water corals captured in trawls are noted by observers present onboard, and where they cannot be identified they are returned to NIWA for more detailed examination under DOC funded projects. Fishery-independent surveys are also underway using cameras inside and outside the main fishery areas.

For protected cold water corals, the designation of Benthic Protection Areas, which include seamounts known to include such key species, acts as a non-directed strategy for managing the fishery's impacts on these species.

Understanding of the distribution of benthic organisms, including protected species, is gradually growing for New Zealand waters. Baird et al. (2012) summarised knowledge gathered from research surveys and observed commercial fishing effort to develop a data set of 7731 records. Coral records from the four orders (Scleractinia (stony corals), Anthoathecata (hydrocorals), Alcyonacea (gorgonians) and Antipatharia (black corals)) were distributed throughout the Fishery Management Areas, though differences by area and depth were evident at the family and genus level, where lower taxonomic detail was available. Modelled distributions were predicted to concentrate in deeper waters and areas of high relief. Generally the areas predicted to have the greatest probability of coral occurrence were outside the main fisheries areas, except for some deepwater fisheries that occurred on areas of steeper relief. The fisheries that pose the most risk to protected corals are the deepwater trawl fisheries for species such as orange roughy, oreo species, black cardinalfish, and alfonsino. In shallower waters, scampi trawl fisheries appear to pose the greatest risk to coral in all protected orders. Bottom longline fisheries pose a particular risk to those corals that have a branching or bushy structure. Examining table E1 of the report, reported interactions within the ling fishery occurred for 2 hydrocorals (observed in FMA 4 and FMA 6), and 1 bamboo coral (FMA 4). These represented 0.01% or less, of the noted interactions across fisheries.

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

The New Zealand government commissioned an environmental classification to provide a spatial framework that subdivided the TS and EEZ into areas having similar environmental and biological character. This Marine Environment Classification (MEC) was launched in 2005 (e.g. Snelder et al.,

2005, 2006) using available physical and chemical predictors, and because environmental pattern was thought a reasonable surrogate for biological pattern (e.g. Figure 4). However, the MEC was viewed as less appropriate for benthic invertebrates, and this led to the development of other systems more focused towards benthic systems (e.g. a classification optimised for demersal fish; Leathwick et al., 2006), and BOMEC in 2009 (Leathwick et al.,(2009)).

The Ministry of Fisheries commissioned a Benthic-Optimised Marine Environment Classification, BOMEC, to build upon the work underpinning the MEC (MPI, 2012). Many more physical, chemical, and biological data layers were available for the development and tuning of this classification, including information of greater relevance for benthic invertebrates. The BOMEC classes were strongly driven by depth, temperature, and salinity into five major groups: inshore and shelf; upper slope; northern mid-depths; southern mid-depths; and deeper waters (generally beyond the fishing footprint, down to 3000 m, the limit of the analysis). While BOMEC represents the most current tool for considering likely impacts of bottom trawling on benthic organisms within different defined habitat categories, and recent testing (Bowden et al., 2011) indicated that the BOMEC outperforms the original MEC at predicting benthic habitat classes, there remain limitations at finer spatial scales. Bowden et al. (2011) found that only at large spatial scales (100s-1000s km) was there correspondence between the distribution of biotic habitats and the environmental classes defined by MEC and BOMEC classifications. Bowden et al. (2011) also found that resolution increased at higher class levels, especially for the MEC; and at finer scales (BOMEC 15 Class level) there was little evidence of correspondence between individual biotic habitats and environmental classes from any of the classifications. Furthermore, the BOMEC classification, has not yet been ground-truthed against direct observations of benthic habitats.

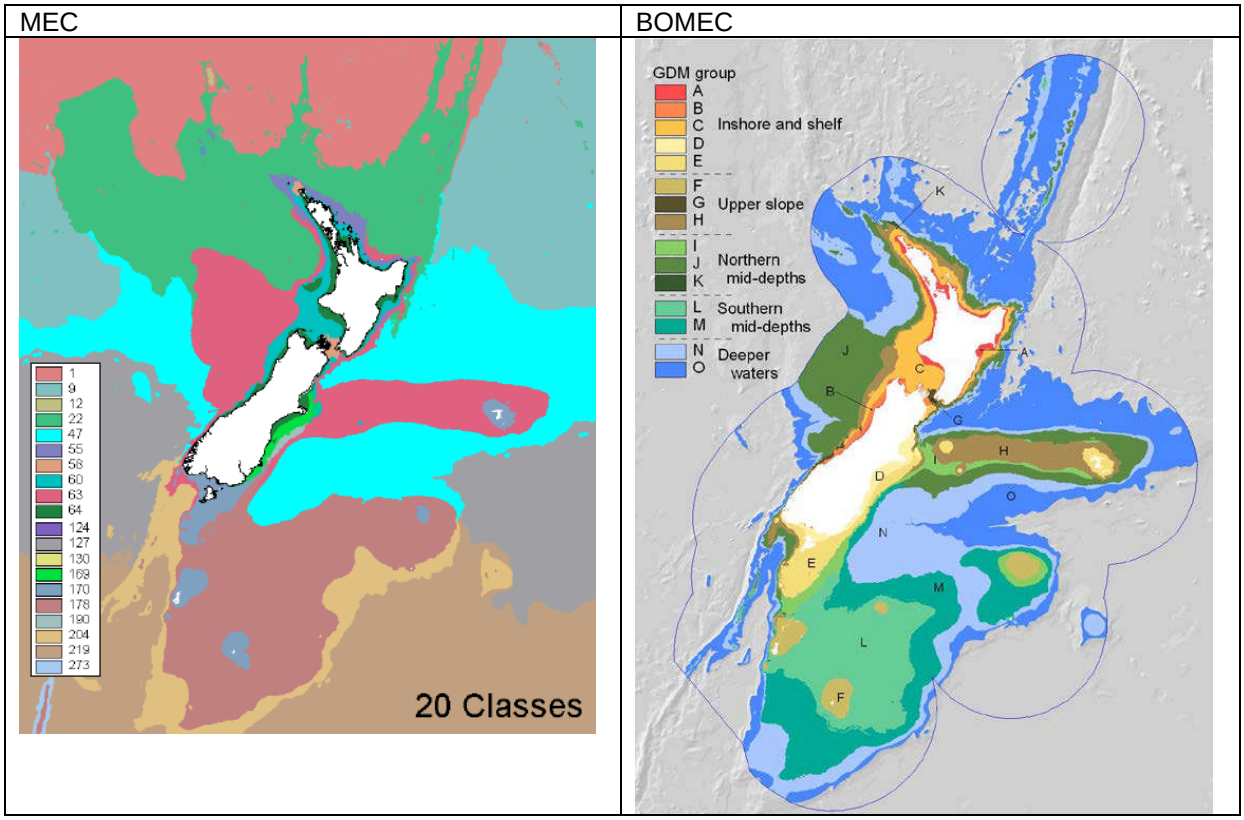

Figure 3: Maps of the 20-class version of the 2005 general purpose Marine Environment Classification (MEC, from Snelder et al. 2005; left) and Benthic Optimised Marine Environment Classification (BOMEC; from Leathwick et al., 2010; right).

Spatial closures are the main tool used in New Zealand waters to mitigate captures of vulnerable benthic species. For example, 18 seamounts closed to fishing are located around the EEZ. An industry initiative led to the creation of Benthic Protected Areas (see Figure 4). The development of BPAs was based upon the marine environment classification studies available at that time, but further information has continued to be collected.

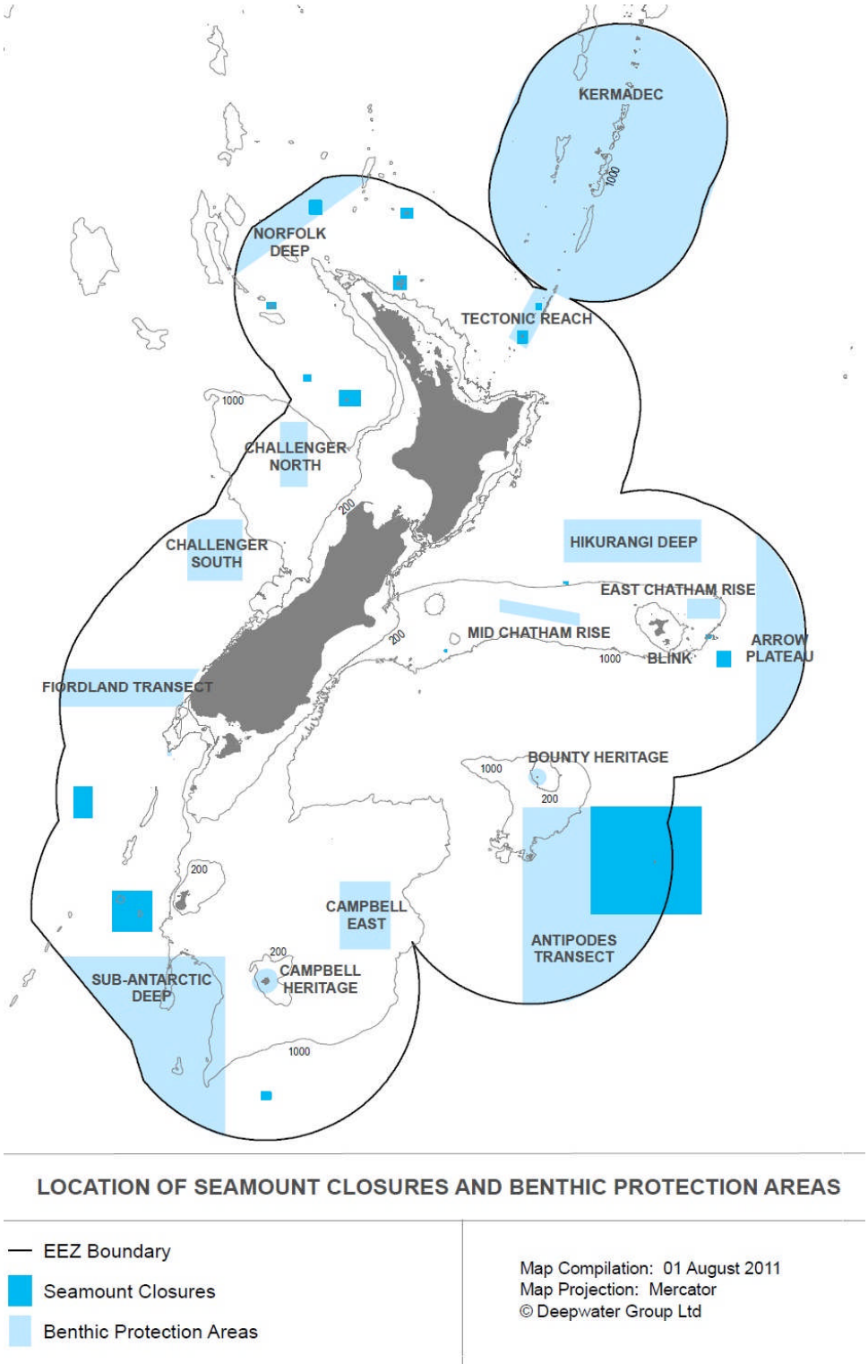

Figure 4 : Map showing the general location of benthic protection areas and seamount closures within NZ EEZ Source: Deepwater Group

The changes within previously fished habitats inside BPAs over time have been examined. This has mainly used camera surveys to examine benthic faunal recovery. The impact of introducing Benthic Protection Areas on previously fished seamounts has been monitored, and evidence of recovery in coral cover has been seen (where extant corals in neighbouring areas may allow better recruitment, noting that this depends on the species-specific recovery rate).

Change within the main fished area has not been directly examined, and is inferred from literature on other fisheries. The observer programme notes benthic invertebrates brought up in the trawl fishery, although the taxonomic resolution of these groups is less detailed. Taxonomic guides developed by NIWA for cold water corals and sponges are improving species recognition, while still unidentified corals are returned for professional taxonomic identification.

The pattern of New Zealand's trawl footprint for deepwater fisheries has been monitored relative to the Benthic-Optimised Marine Environment Classification (BOMEC) (e.g. Black et al., 2013). This provides an indicative mechanism with which to regionally assess the impacts of the ling fishery on benthic habitat, keeping in mind that the BOMEC classifications (as outputs from a model) are yet to be ground truthed, and that the communities inhabiting these habitat types are less known and relatively difficult to sample. Examined compared to the BOMEC grid codes (15 classes, referred to as A-0 in Figure 3 and 1-15 below), the maximum swept area covered represents just under 5% of BOMEC type 9 (Table 16).

Table 16: Swept area of ling-targeted tows between 1989-90 and 2009-10 (from Black et al., 2013).

BOMEC Gridcode	Area (km2)	Swept Area (km2)	Swept Area (%)
1	27,557	1	0.00%
2	12,420	4	0.03%
3	89,710	73	0.08%
4	27,268	19	0.07%
5	60,990	491	0.81%
6	38,609	192	0.50%
7	6,342	79	1.24%
8	138,551	5,079	3.67%
9	52,224	2,393	4.58%
10	311,361	1,488	0.48%
11	1,289	0	0.00%
12	198,577	3,824	1.93%
13	233,825	71	0.03%
14	493,034	15	0.00%
15	935,315	2	0.00%
Total	2,627,073	13,730	0.52%

Examinations of the trawl footprint by LIN region have also been undertaken (Black, 2013). Over the last five fishing years, the swept area recorded in the 300-600 m depth zone is always less than 3%, except for LIN 5 where it was 7.9%. For full information and further figures, the reports are available at http://www.deepwater.co.nz/our-species/ling/msc-assessment-of-new-zealand-ling-fisheries/. An example is presented in Figure 5.

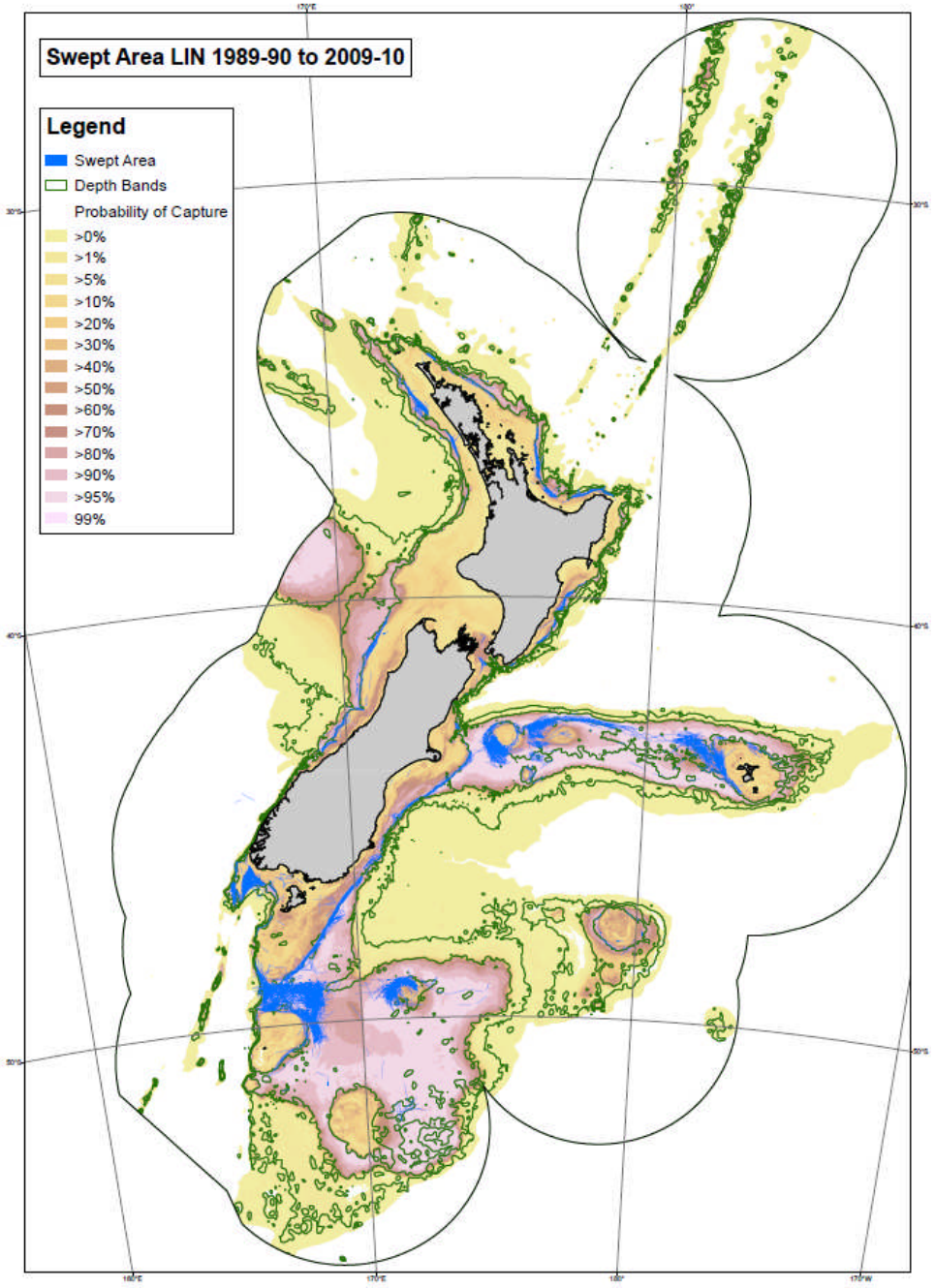

Figure 5. Total swept area of ling-targeted trawls over the period 1989-90 to 2009-10, from Black et al. (2013).

3.5 Principle Three: Management System Background

The NZ ling fishery is a single jurisdiction fishery.

The management system

Ling was introduced into the Quota Management System (QMS) in 1986 and since that time the Quota Management Area (QMA) boundaries have not changed. There are five biological stocks of

ling that do not align with the quota management areas (see Section 3.3.2). Stock assessments for ling fisheries are completed based on biological stock, rather than QMAs. Under the National Deepwater Plan all ling stocks in LIN3, LIN4, LIN5, LIN6 and LIN7 are Tier 1 stocks as they are high volume and/or high value fisheries. The Tier 1 stocks undergo a formal assessment based on targeted research.

3.5.1 Management approach

Since 1986, the major commercial fisheries in New Zealand fisheries waters (including ling) have been managed through a quota management system (QMS) based on individual transferable quotas (ITQs). Within the QMS, fisheries sustainability objectives are achieved by setting a total allowable catch (TAC) that is consistent with the productivity of a fishery. TACs can be reviewed on an annual basis and a total allowable commercial catch (TACC) is then determined taking into account any recreational and customary harvesting. The TACC for each fishery is then apportioned to quota holders as an annual catch entitlement according to the percentage of quota they hold for a fishery. Fishers are required to hold sufficient annual catch entitlement to cover all target and bycatch species caught, or alternatively, to pay deemed values. Annual catch entitlements are widely traded during their period of validity to enable fishers to balance catches taken against quota held. Total catch limits are also set for some commercial fisheries not managed within the QMS. A fishing permit is required to fish for QMS and non-QMS species

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
- 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

3.5.2 Interested parties

Interested parties include:

- MPI: NZ Government department responsible for the management of NZ Fisheries;
- DWG (ling) Quota Owners; ACE Owners; Selected Vessel Operators;
- Seafood Industry Council (SeaFIC), representing all sectors of the seafood industry, now restructured into Seafood New Zealand;
- Department of Conservation: NZ Government department responsible for the management protected species; and
- E-NGOs, representing Environmental interests.

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

3.5.3 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.

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 a format that is accessible to all interested parties.

3.5.4 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 tangata whenua[6] 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 tangata whenua. Involving tangata whenua 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 MPI Chief Executive to consult with stakeholders before making a decision. There are also other MPI 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 including:

- 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);
- MPI and DWG Partnership Agreement (See DWG (2010) Memorandum of Understanding between the MPI and the Deepwater Group: Continuing a partnership between the MPI and the deepwater fishing industry for the management of New Zealand's deepwater fisheries);
- eNGOs – as required and for specified matters (e.g. ERA), and the Science Working Groups (Middle depth, Deepwater and Aquatic Environment Working Groups).

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

3.5.5 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 MPI 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 development of 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.

3.5.6 Objectives for the fishery

The Fisheries Plan (MPI, 2010d) outlines the objectives for the all deepwater and middle-depth fisheries:

The ling fishery specific chapter of the National Deepwater Plan has specific objectives tailored to the ling fisheries that are achievable, and which directly guide actions in the ling fisheries. These are then specified within the Annual Operational Plan (AOP) by year. These fishery specific objectives are subject to the Annual Review report and are measureable.

Utilisation-focused Operational Objectives

OO1.1 Support the relevant ling fisheries in achieving and maintaining credible third party certification and ensure any Conditions of Certification are met within the required timeframe

OO1.2 Enable quota owners to develop and implement a harvest regime that will maximise the value obtained from ling fisheries

OO1.3 Ensure satisfactory levels of compliance are achieved in ling and associated fisheries

OO1.4 Develop and implement a stock monitoring and management regime for the ling fisheries to enable development of appropriate management settings and harvest strategy

OO1.5 Collaboratively assess potential management tools to manage ling based on biological stock boundaries

Environment-focused Operational Objectives

OO2.1 Develop an agreed harvest strategy for ling fisheries, including a stock rebuild strategy that is consistent with the Harvest Strategy Standard

OO2.2 Develop and implement a management strategy for ribaldo (bycatch species)

OO2.3 Implement appropriate spatial management measures to address any adverse effects of fishing for ling on the benthic habitat

OO2.4 Ensure that incidental seabird mortalities in ling fisheries are mitigated and minimised

OO2.5 Monitor incidental bycatch of Tier 3 species in ling fisheries

3.5.7 Fleet characteristics

Records from the fisheries begin in the 1970s, when foreign longliners began fishing for ling, but soon expanded to include large foreign and domestic trawlers, small domestic longliners and small domestic trawlers.

In recent years, the fisheries continue to be prosecuted by both deepwater and inshore vessels using a variety of methods. The main fishing method and proportion of catch taken by inshore vessels differs by fishery.

The deepwater trawl fleet fishes predominantly on the west coast of the South Island and in the sub-Antarctic fishery at Puysegur Bank and the slope of the Stewart-Snares shelf .

Between 2001/02 and 2010/11, trawlers greater than 28 m have taken 55-71% of the annual ling catch from the fishery. A significant amount of ling is taken as bycatch in trawl fisheries for hoki, hake, and silver warehou.

The deepwater longline fleet consists of several autoliners which take the majority of the bottom longline proportion of the catch. These vessels almost exclusively target ling, with most of the catch coming from the sub-Antarctic and Chatham Rise fisheries. The Bounty Platform fishery is fished almost entirely by this fleet, but catches are smaller than those in the sub-Antarctic and Chatham Rise fisheries. Between 2001/02 and 2010/11, deepwater bottom longliners have taken 15-31% of the annual ling catch from fisheries covered in this chapter.

Inshore vessels catch ling primarily from the west coast South Island fishery south of Hokitika Canyon, with over 50% of catches in that fishery coming from inshore vessels in 2009-10. Overall, in fisheries covered in this chapter, inshore vessels have caught 9-22% of the total annual catch. This proportion has been increasing in recent years. Within the inshore fleet, 60% of catches are taken by longlining and about 30% by trawling, with the remainder taken by other methods such as setnetting, drop lining, and as a bycatch in blue cod potting.

3.5.8 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.

The Fisheries Act 1996 (the Act) requires that, prior to setting management measures for ling, the Minister of Fisheries shall consult with persons having an interest in the stock or the effects of fishing on the aquatic environment in the area in which the fishery takes place, including Maori, environmental, commercial and recreational interests. In addition, the Act requires that in setting a TAC under section 13, the Minister shall have regard to such social, cultural and economic factors (s)he considers relevant.

Social and cultural factors include those related to the harvesting of ling by all parties; commercial, recreational and customary. However, there is little recreational or customary fishing for ling. There are no recreational or customary allowances for any ling fish stock.

Social and cultural factors also include the non-extractive value of healthy ling and key bycatch stocks and the values associated with an aquatic environment that is not adversely impacted on by ling fishing activity. These intrinsic values must also be considered when determining the appropriate management measures for a fishery.

3.5.9 Measures for regulation of the fishery

MPI and the DWG to work in partnership outlining the priority 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 workplans and 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.

3.5.10 Monitoring control and surveillance

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.

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 MPI detailing all the catches made for that month by the permit holder, as they may fish from more than one vessel.

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.

3.5.11 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 >28m and from 2011 all trawlers <28m in the Cook Strait as well as small trawlers and longliners in other places) on best practice; and
- provide a best practice manual

3.5.12 Review and audit of Management Plan

The ling specific chapter of the National Fisheries Plan for Deepwater has specific objectives tailored to the ling fisheries, that are achievable, and which directly guide actions in the ling fishery. These are then specified in the Annual Operating Plan (AOP) each year. Progress against the objectives in the plan is reviewed annually and reported in the Annual Review Report. The objectives also guide planning in the Annual Operating Plan, however the Fish Plan itself is only reviewed every five years.

3.5.13 Research Plan

The 10 Year Research Programme for deepwater fisheries sets out the research and monitoring approach for ling over the next 10 years.
Ling stocks will be assessed at a 2-3 year interval using the following information:

- Trawl surveys – primarily for LIN3, LIN4, LIN 5 and LIN7;
- CPUE from the trawl bycatch (LIN7 and Cook Strait);
- Regular length-frequency sampling by Observers; and
- Routine catch-at-age analysis of otoliths collected by Observers and during trawl surveys.

The 10 Year Research Plan also identifies monitoring environmental interactions including:

- Environmental monitoring
- Benthic impacts
- ETP species
- Fish bycatch

4 Evaluation Procedure

4.1 Harmonised fishery assessments

No other ling fisheries have been either certified or are under MSC assessment.

The New Zealand ling fishery does overlap with the MSC certified hoki fishery and the NZ hake fishery, currently under assessment. The hake and the ling fishery assessments are occurring at the same time.

The ling fishery assessment has been harmonised (where appropriate) with hoki and hake in the following ways

- The same default assessment tree has been used for hoki, hake and ling
- Consistency of outcomes has been ensured so as not to undermine the integrity of the MSC fishery assessments. In scoring the fishery the assessment team looked to provide consistency of scoring outcome for PIs, reviewed the scoring rationales for the hoki fishery and, where appropriate, i.e. under P2 and P3 in particular, took then into account.
- As the NZ hake and ling fishery are occurring at the same time important steps in the assessment have been harmonised, e.g. site visits, stakeholder inputs, client meetings, assessment planning, coordinated process steps and timing of reports.
- Fisheries information has been shared between fisheries.
- Conclusions, where appropriate, are consistent between the three fisheries with respect to evaluation, scoring and conditions. This is especially relevant for Principle 3 for all species and Principle 2 for hoki, hake and ling trawl UoCs.

4.2 Previous assessments

This fishery has not been previously MSC assessed or certified.

4.3 Assessment Methodologies

This assessment of the NZ ling fishery has been carried out using the Marine Stewardship Council's Certification Requirements v 1.3 14 January 2013.

The full assessment reporting template has been used without any adjustments.

The default assessment tree has been used without any adjustments

4.4 Evaluation Processes and Techniques

4.4.1 Site visits

A number of stakeholders who previously expressed an interest in the New Zealand deepwater and middle-depth species certification were contacted prior to the commencement of this latest reassessment. Other potential new stakeholders were also contacted. The full list of those individuals and organisations contacted is contained below in Table 17 for 2009 and Table 18 for 2013.

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.

Table 17 : List of stakeholders consulted during the 2009 assessment

Name	Affiliation	Date	Key Issues
George Clement Aoife Martin Richard Wells	DWG MFish DWG	13/07/09	Fishing operations and management
Nathan Walker (Senior Scientist) Johanna Pierre (Manager, Marine Conservation Services) Stephanie Rowe (Scientific Officer)	MFish DOC DOC	16/07/09	Ecosystem Interactions
Peter Horn (Hake and Ling Stock Assessor) David Middleton (Chief Scientist) Rosemary Hurst (Scientist) Pamela Mace (Chief Scientist)	NIWA NZ Seafood Industry Council NIWA Mfish	14/07/09	Stock assessments
Pamela Mace (Chief Scientist) Martin Cryer (Science Manager) Mary Livingston (Principle scientist) Ed Abraham (Consultant) Cathryn Bridge (Senior Policy Manager) Nathan Walker (Senior Scientist) Stephanie Rowe (Scientific Officer)	MFish MFish MFish Dragonfly MFish MFish DOC	15/07/09	Ecosystem interactions and management effectiveness
Alan Martin (Operation Manager-Observer Services)	Mfish	16/07/09	Observer program and data
Diane Tracey (Scientist Deep Sea Fisheries)	NIWA	16/07/09	Ecosystem interactions
David Foster (Fisheries Analyst) Aoife Martin (Manager, Deep Water Fisheries) Tom Chatterton (Manager, Deep Water Fisheries) Vicky Reeve (Fisheries Analyst) Jeremy Helson (Senior Fisheries	Mfish	16/07/09	Management effectiveness

Name	Affiliation	Date	Key Issues
Analyst) Andy Hill (Deep Water Fisheries)			
Geoff Clarke Andrew Coleman (Compliance) Dean Baigent (Surveillance)	MFish MFish Mfish	14/07/09	Compliance and Enforcement
Kevin Hackwell Kirstie Knowles	Royal Forest & Bird	23/07/09	Ecosystem interactions and management effectiveness
Catherine Wallace (Co-Chairman) Barry Weeber (Co-Chairman) Karli Thomas (Oceans Campaigner) Geoff Keey (Political Advisor)	ECO ECO Greenpeace Greenpeace	23/07/09	Ecosystem interactions and management effectiveness
Peter Trott (Fisheries Program Manager) Rebecca Bird (Marine Programme Manager)	WWF Australia WWF New Zealand	24/07/09	Ecosystem interactions and management effectiveness

Table 18 : List of stakeholders consulted during 2013 assessment[7]

Date	Name	Organisation	Purpose of meeting	Type
9th Sept 2013	George Clement	DWG Ltd	Opening meeting	Open
	Aaron Irving	DWG Ltd	Opening meeting	Open
	Richard Wells	DWG Ltd	Opening meeting	Open
	Jeremy Helson	MPI	Opening meeting	Open
	Geoff Tingley	MPI	Opening meeting	Open
	Tiffany Bock	MPI	Opening meeting	Open
	Rosemary Hurst	NIWA	Opening meeting	Open
	Peter Horn	NIWA	Opening meeting	Open
	Charles Edwards	NIWA	Opening meeting	Open
9th Sept 2013	Rosemary Hurst	NIWA	NIWA stakeholder meeting	Open
	Peter Horn	NIWA		
	Charles Edwards	NIWA		
	Jeremy Helson	MPI		
	Geoff Tingley	MPI		
	Tiffany Bock	MPI		
	George Clement	DWG Ltd		
	Aaron Irving	DWG Ltd		
	Richard Wells	DWG Ltd		
10th Sept 2013	Edward Abraham	Dragonfly	Dragonfly stakeholder meeting	Open
	Finlay Thompson	Dragonfly		
	Philipp Neubauer	Dragonfly		
	Tiffany Bock	MPI		
	Richard Wells	DWG		
10th Sept 2013	Paul Crozier	WWF NZ	eNGO stakeholder meeting	Closed
	Kevin Hackwell	Forest and Bird		
	Barry Weeber (subject to proviso)	ECO		

[7] Please note IMM Assessors Jo Akroyd and Graham Pilling attended all meetings
Please note all stakeholders were asked if they preferred an open or closed meeting.

Date	Name	Organisation	Purpose of meeting	Type
10th Sept 2013	Geoff Tingley	MPI	MPI Science and Deepwater	Open
	Jeremy Helson	MPI		
	Tiffany Bock	MPI		
	George Clement	DWG		
	Richard Wells	DWG		
	Aaron Irving	DWG		
10th Sept 2013	Dean Baigent	MPI	MPI Compliance	Open
	Geoff Tingley	MPI	MPI Compliance	Open
	Richard Wells	DWG	MPI Compliance	Open
	George Clement	DWG	MPI Compliance	Open
	Tiffany Bock	MPI	MPI Compliance	Open
	Aaron Irving	DWG	MPI Compliance	Open
10th Sept 2013	George Clement	DWG	Closing meeting	Open
	Aaron Irving	DWG	Closing meeting	Open
	Richard Wells	DWG	Closing meeting	Open
	Geoff Tingley	MPI	Closing meeting	Open
	Tiffany Bock	MPI	Closing meeting	Open

4.4.2 Consultations

Consultations were held with the individuals and organisations as identified in 4.4.1 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 2.

4.4.3 Evaluation techniques

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. A further notification was made on the MSC website prior to the second site visit and all know interested parties were contacted by email.

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.

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.

Decision rule
The team scored individual performance indicators by applying the following:

SG60
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 were met, the PI would achieve at least a 60 score.

SG80
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.

SG100
In order to achieve a 100 score, all of the 60 issues, all of the 80 issues, and all of the 100 issues needed to be met and each scoring issue justified by supporting rationale.

If only some 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 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 was 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 1.3, 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. If any of the three Principles individually scored <80 the fishery would not pass the MSC standard.

A summary of the scoring elements considered under Principles 1 and 2 are summarised in Table 19.

Table 19: Scoring elements

UoC	Component	Scoring elements (fishery)	Main/not main	Data-deficient or not
LIN3	1.1/1.2	Ling		Not data deficient
	2.1	Hoki (trawl)	Main	Not data deficient

UoC	Component	Scoring elements (fishery)	Main/not main	Data-deficient or not
	2.1	Silver warehou (trawl)	Main	Not data deficient
	2.1	Spiny dogfish (longline)	Main	Not data deficient
	2.1	Ribaldo (longline)	Main	Not data deficient
	2.2	Javelinfish (trawl)	Not main	Not data deficient
	2.2	Rattails (trawl)	Not main	Not data deficient
	2.3	Cold water corals (trawl and longline)		Not data deficient
	2.4	Benthic habitat (trawl and longline)		Not data deficient
LIN4	1.1/1.2	Ling		Not data deficient
	2.1	Hoki (trawl)	Main	Not data deficient
	2.1	Silver warehou (trawl)	Main	Not data deficient
	2.1	Ghost shark (trawl)	Main	Not data deficient
	2.1	Spiny dogfish (longline)	Main	Not data deficient
	2.2	Common roughy (trawl)	Main	Not data deficient
	2.3	White-capped albatross (Longline)		Not data deficient
	2.3	Sooty shearwaters (trawl and longline)		Not data deficient
	2.3	White-chinned petrel (longline)		Not data deficient
	2.3	Fur seals (trawl)		Not data deficient
	2.3	Cold water corals (trawl and longline)		Not data deficient
	2.4	Benthic habitat (trawl and longline)		Not data deficient
LIN5	1.1/1.2	Ling		Not data deficient
	2.1	Hoki (trawl)	Main	Not data deficient
	2.1	White warehou (trawl)	Main	Not data deficient
	2.3	Sooty shearwaters (longline)		Not data deficient
	2.3	White-chinned petrel (trawl and longline)		Not data deficient
	2.3	Fur seals (trawl)		Not data deficient
	2.3	Cold water corals (trawl and longline)		Not data deficient
	2.4	Benthic habitat (trawl and longline)		Not data deficient
LIN6	1.1/1.2	Ling		Not data deficient
	2.1	Hoki (trawl)	Main	Not data deficient
	2.1	Southern blue whiting (trawl)	Main	Not data deficient
	2.1	Spiny dogfish (longline)	Main	Not data deficient
	2.1	Rough skate (longline)	Main	Not data deficient
	2.1	Pale ghost shark (longline)	Main	Not data deficient
	2.2	Black cod (longline)	Main	Not data deficient
	2.3	White-capped albatrosses (trawl)		Not data deficient
	2.3	Sooty shearwaters (longline)		Not data deficient
	2.3	White-chinned petrel (trawl and longline)		Not data deficient
	2.3	Fur seals (trawl)		Not data deficient
	2.3	Cold water corals (trawl and longline)		Not data deficient
	2.4	Benthic habitat (trawl and longline)		Not data deficient
LIN7	1.1/1.2	Ling		Not data deficient
	2.1	Hoki (trawl)	Main	Not data deficient
	2.1	Hake (longline)	Main	Not data deficient
	2.3	Cold water corals (trawl and longline)		Not data deficient
	2.4	Benthic habitat (trawl and longline)		Not data deficient

5 Traceability

5.1 Eligibility Date

The client has aked that in order for client group members to gain the maximum benefit of the certification the actual eligibility date is taken as 6 months prior to the publication of the Public Comment Draft Report (PCDR). The PCDR was published on 3rd July 2014, therefore, the actual eligibility date is 3rd January 2014. It should be noted that any client group member wishing to take advantage of the actual eligibility date will need to meet and be able to demonstrate the necessary chain of custody requirements were in place.

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 MPI before landing and maybe subject to monitoring by enforcement officers

5.2.1 Tracking and tracing

As with the certified hoki fishery, clear traceability and tracking is already in place. Procedures and audits are regularly carried out. Procedures that are in place include “when fish 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 to record that fact. 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 hake) and ensure that any fish that will not be fit for human consumption (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 ling caught outside NZ EEZ is processed in New Zealand. The processes and procedures for reporting and landing fish in New Zealand will ensure that Ling caught in geographic area LIN2 (lower east coast North Island and Cook Straight) are never sold as MSC-certified.

5.2.3 At sea processing

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 ling.

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 are non-certified so that they are barcoded as non-certified and trackable and separable ever after simply by scanning. Onshore systems in load-out audit of 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.

Under MPI 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 and area fished. Therefore, the risk of substitution is considered to be well managed and therefore negligible.

5.2.4 Transhipping

Transhipping is rare in the ling fishery. However if it did occur there is legislation in place to ensure the potential traceability risks 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 are 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 Chains of Custody certifications from first point of landing.

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

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

IFC determined that the systems in place for tracking and tracing are sufficient, therefore, 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 99.5% of total ling quota is held by DWG shareholders. Anyone who owns ling quota has the opportunity to become a DWG.

5.4 Eligibility of Inseparable or Practically Inseparable (IPI) stock(s) to enter further Chains of Custody

There are no IPI stocks involved with this fishery.

6 Evaluation Results

6.1 Principle Level Scores

Table 20: Final Principle Scores

Ling trawl fisheries

UoC 1 LIN2	UoC 2 LIN3	UoC 3 LIN4	UoC 4 LIN5	UoC 5 LIN6	UoC 6 LIN7
not assessed	Principle 1: 91.9	Principle 1: 91.9	Principle 1: 91.9	Principle 1: 89.4	Principle 1: 88.1
not assessed	Principle 2: 84.7	Principle 2: 84.7	Principle 2: 84.7	Principle 2: 84.7	Principle 2: 83.3
not assessed	Principle 3: 96.3	Principle 3: 96.3	Principle 3: 96.3	Principle 3: 96.3	Principle 3: 96.3

Ling longline fisheries

UoC 7 LIN2	UoC 8 LIN3	UoC 9 LIN4	UoC 10 LIN5	UoC 11 LIN6	UoC 12 LIN7
not assessed	Principle 1: 91.9	Principle 1: 91.9	Principle 1: 91.9	Principle 1: 89.4	Principle 1: 88.1
not assessed	Principle 2: 81.3	Principle 2: 81.3	Principle 2: 81.3	Principle 2: 81.3	Principle 2: 81.0
not assessed	Principle 3: 96.3	Principle 3: 96.3	Principle 3: 96.3	Principle 3: 96.3	Principle 3: 96.3

6.2 Summary of Scores

Fishery Assessment Scoring Worksheet Ling Trawl: UoC 2 (LIN3), UoC 3 (LIN4), UoC4 (LIN5), UoC5 (LIN6)

Prin-ciple	Wt (L1)	Component	Wt (L2)	PI No.	Performance Indicator (PI)	Wt (L3)	Weight in Principle			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	100	25.00	16.67
				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
				1.2.2	Harvest control rules & tools	0.25	0.125			80	10.00	10.00
				1.2.3	Information & monitoring	0.25	0.125			90	11.25	11.25
				1.2.4	Assessment of stock status	0.25	0.125			90	11.25	11.25
Two	1	Retained species	0.2	2.1.1	Outcome	0.333	0.0667			80	5.33	5.33
				2.1.2	Management	0.333	0.0667			85	5.67	5.67
				2.1.3	Information	0.333	0.0667			90	6.00	6.00
		Bycatch species	0.2	2.2.1	Outcome	0.333	0.0667			80	5.33	5.33
				2.2.2	Management	0.333	0.0667			80	5.33	5.33
				2.2.3	Information	0.333	0.0667			90	6.00	6.00
		ETP species	0.2	2.3.1	Outcome	0.333	0.0667			95	6.33	6.33
				2.3.2	Management	0.333	0.0667			85	5.67	5.67
				2.3.3	Information	0.333	0.0667			80	5.33	5.33
		Habitats	0.2	2.4.1	Outcome	0.333	0.0667			80	5.33	5.33
				2.4.2	Management	0.333	0.0667			80	5.33	5.33
				2.4.3	Information	0.333	0.0667			80	5.33	5.33
		Ecosystem	0.2	2.5.1	Outcome	0.333	0.0667			80	5.33	5.33
				2.5.2	Management	0.333	0.0667			90	6.00	6.00
				2.5.3	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	12.50
				3.1.2	Consultation, roles & responsibilities	0.25	0.125			100	12.50	12.50
				3.1.3	Long term objectives	0.25	0.125			100	12.50	12.50
				3.1.4	Incentives for sustainable fishing	0.25	0.125			90	11.25	11.25
		Fishery specific management system	0.5	3.2.1	Fishery specific objectives	0.2	0.1			100	10.00	10.00
				3.2.2	Decision making processes	0.2	0.1			95	9.50	9.50
				3.2.3	Compliance & enforcement	0.2	0.1			90	9.00	9.00
				3.2.4	Research plan	0.2	0.1			100	10.00	10.00
				3.2.5	Management performance evaluation	0.2	0.1			90	9.00	9.00

Overall weighted Principle-level scores		Either	Or
Principle 1 - Target species	Stock rebuilding PI not scored	91.9	
	Stock rebuilding PI scored		
Principle 2 - Ecosystem		84.7	
Principle 3 - Management		96.3	

Fishery Assessment Scoring Worksheet UoC 6 (LIN7) trawl

Prin-ciple	Wt (L1)	Component	Wt (L2)	PI No.	Performance Indicator (PI)	Wt (L3)	Weight in Principle			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
				1.2.2	Harvest control rules & tools	0.25	0.125			80	10.00	10.00
				1.2.3	Information & monitoring	0.25	0.125			80	10.00	10.00
				1.2.4	Assessment of stock status	0.25	0.125			90	11.25	11.25
Two	1	Retained species	0.2	2.1.1	Outcome	0.333	0.0667			80	5.33	5.33
				2.1.2	Management	0.333	0.0667			85	5.67	5.67
				2.1.3	Information	0.333	0.0667			80	5.33	5.33
		Bycatch species	0.2	2.2.1	Outcome	0.333	0.0667			80	5.33	5.33
				2.2.2	Management	0.333	0.0667			80	5.33	5.33
				2.2.3	Information	0.333	0.0667			80	5.33	5.33
		ETP species	0.2	2.3.1	Outcome	0.333	0.0667			95	6.33	6.33
				2.3.2	Management	0.333	0.0667			85	5.67	5.67
				2.3.3	Information	0.333	0.0667			80	5.33	5.33
		Habitats	0.2	2.4.1	Outcome	0.333	0.0667			80	5.33	5.33
				2.4.2	Management	0.333	0.0667			80	5.33	5.33
				2.4.3	Information	0.333	0.0667			80	5.33	5.33
		Ecosystem	0.2	2.5.1	Outcome	0.333	0.0667			80	5.33	5.33
				2.5.2	Management	0.333	0.0667			90	6.00	6.00
				2.5.3	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	12.50
				3.1.2	Consultation, roles & responsibilities	0.25	0.125			100	12.50	12.50
				3.1.3	Long term objectives	0.25	0.125			100	12.50	12.50
				3.1.4	Incentives for sustainable fishing	0.25	0.125			90	11.25	11.25
		Fishery specific management system	0.5	3.2.1	Fishery specific objectives	0.2	0.1			100	10.00	10.00
				3.2.2	Decision making processes	0.2	0.1			95	9.50	9.50
				3.2.3	Compliance & enforcement	0.2	0.1			90	9.00	9.00
				3.2.4	Research plan	0.2	0.1			100	10.00	10.00
				3.2.5	Management performance evaluation	0.2	0.1			90	9.00	9.00

Overall weighted Principle-level scores		Either	Or
Principle 1 - Target species	Stock rebuilding PI not scored	88.1	
	Stock rebuilding PI scored		
Principle 2 - Ecosystem		83.3	
Principle 3 - Management		96.3	

Fishery Assessment Scoring Worksheet Ling Longline: UoC 8 (LIN3), UoC 9 (LIN4), UoC 10 (LIN5), UoC11 (LIN6)

Prin-ciple	Wt (L1)	Component	Wt (L2)	PI No.	Performance Indicator (PI)	Wt (L3)	Weight in Principle			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	100	25.00	16.67
				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
				1.2.2	Harvest control rules & tools	0.25	0.125			80	10.00	10.00
				1.2.3	Information & monitoring	0.25	0.125			90	11.25	11.25
				1.2.4	Assessment of stock status	0.25	0.125			90	11.25	11.25
Two	1	Retained species	0.2	2.1.1	Outcome	0.333	0.0667			80	5.33	5.33
				2.1.2	Management	0.333	0.0667			85	5.67	5.67
				2.1.3	Information	0.333	0.0667			85	5.67	5.67
		Bycatch species	0.2	2.2.1	Outcome	0.333	0.0667			80	5.33	5.33
				2.2.2	Management	0.333	0.0667			90	6.00	6.00
				2.2.3	Information	0.333	0.0667			80	5.33	5.33
		ETP species	0.2	2.3.1	Outcome	0.333	0.0667			75	5.00	5.00
				2.3.2	Management	0.333	0.0667			75	5.00	5.00
				2.3.3	Information	0.333	0.0667			75	5.00	5.00
		Habitats	0.2	2.4.1	Outcome	0.333	0.0667			80	5.33	5.33
				2.4.2	Management	0.333	0.0667			80	5.33	5.33
				2.4.3	Information	0.333	0.0667			80	5.33	5.33
		Ecosystem	0.2	2.5.1	Outcome	0.333	0.0667			80	5.33	5.33
				2.5.2	Management	0.333	0.0667			90	6.00	6.00
				2.5.3	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	12.50
				3.1.2	Consultation, roles & responsibilities	0.25	0.125			100	12.50	12.50
				3.1.3	Long term objectives	0.25	0.125			100	12.50	12.50
				3.1.4	Incentives for sustainable fishing	0.25	0.125			90	11.25	11.25
		Fishery specific management system	0.5	3.2.1	Fishery specific objectives	0.2	0.1			100	10.00	10.00
				3.2.2	Decision making processes	0.2	0.1			95	9.50	9.50
				3.2.3	Compliance & enforcement	0.2	0.1			90	9.00	9.00
				3.2.4	Research plan	0.2	0.1			100	10.00	10.00
				3.2.5	Management performance evaluation	0.2	0.1			90	9.00	9.00

Overall weighted Principle-level scores		Either	Or
Principle 1 - Target species	Stock rebuilding PI not scored	91.9	
	Stock rebuilding PI scored		
Principle 2 - Ecosystem		82.0	
Principle 3 - Management		96.3	

Fishery Assessment Scoring Worksheet UoC 12 (LIN7)longline

Prin-ciple	Wt (L1)	Component	Wt (L2)	PI No.	Performance Indicator (PI)	Wt (L3)	Weight in Principle			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
				1.2.2	Harvest control rules & tools	0.25	0.125			80	10.00	10.00
				1.2.3	Information & monitoring	0.25	0.125			80	10.00	10.00
				1.2.4	Assessment of stock status	0.25	0.125			90	11.25	11.25
Two	1	Retained species	0.2	2.1.1	Outcome	0.333	0.0667			80	5.33	5.33
				2.1.2	Management	0.333	0.0667			85	5.67	5.67
				2.1.3	Information	0.333	0.0667			80	5.33	5.33
		Bycatch species	0.2	2.2.1	Outcome	0.333	0.0667			80	5.33	5.33
				2.2.2	Management	0.333	0.0667			80	5.33	5.33
				2.2.3	Information	0.333	0.0667			80	5.33	5.33
		ETP species	0.2	2.3.1	Outcome	0.333	0.0667			75	5.00	5.00
				2.3.2	Management	0.333	0.0667			75	5.00	5.00
				2.3.3	Information	0.333	0.0667			75	5.00	5.00
		Habitats	0.2	2.4.1	Outcome	0.333	0.0667			80	5.33	5.33
				2.4.2	Management	0.333	0.0667			80	5.33	5.33
				2.4.3	Information	0.333	0.0667			80	5.33	5.33
		Ecosystem	0.2	2.5.1	Outcome	0.333	0.0667			80	5.33	5.33
				2.5.2	Management	0.333	0.0667			90	6.00	6.00
				2.5.3	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	12.50
				3.1.2	Consultation, roles & responsibilities	0.25	0.125			100	12.50	12.50
				3.1.3	Long term objectives	0.25	0.125			100	12.50	12.50
				3.1.4	Incentives for sustainable fishing	0.25	0.125			90	11.25	11.25
		Fishery specific management system	0.5	3.2.1	Fishery specific objectives	0.2	0.1			100	10.00	10.00
				3.2.2	Decision making processes	0.2	0.1			95	9.50	9.50
				3.2.3	Compliance & enforcement	0.2	0.1			90	9.00	9.00
				3.2.4	Research plan	0.2	0.1			100	10.00	10.00
				3.2.5	Management performance evaluation	0.2	0.1			90	9.00	9.00

Overall weighted Principle-level scores		Either	Or
Principle 1 - Target species	Stock rebuilding PI not scored	88.1	
	Stock rebuilding PI scored		
Principle 2 - Ecosystem		81.0	
Principle 3 - Management		96.3	

6.4 Summary of Conditions and recommendations

Table 21: Summary of conditions

NB: details of rationale for condition and timelines for action are in Appendix 1.3: Conditions

Condition number	Condition	Performance Indicator	Related to previously raised condition? (Y/N/N/A)
1	The client is required to demonstrate that the direct effects of <34 m longline vessels (not targeting bluenose or snapper) are highly unlikely to create unacceptable impacts to ETP bird species.	**2.3.1**	**N/A**
2	The client is required to demonstrate that there is a strategy in place for managing the inshore longline fishery component's impact on ETP species, including measures to minimise mortality, which is designed to be highly likely to achieve national and international requirements for the protection of ETP species.	**2.3.2**	**N/A**
3	The client is required to demonstrate that information is sufficient to measure trends and support a full strategy to manage impacts on ETP species.	**2.3.3**	**N/A**

Recommendation 1:

There are a number of trawl vessels operating in LIN 3, 5 and 7 of vessel lengths smaller than 28 m (see Table 1). Their small size technically excludes them from the requirement to put in place bird interaction mitigation methods, although voluntary code of conduct approaches may be present. Vessel size is included within the models used to estimate seabird interactions (Abraham and Thompson, 2011). Hence if information is available from these smaller vessels, it will be incorporated within the analysis of overall interaction rates, which as noted within this document are below levels of concern. However, it is recommended that the results of existing models be examined to identify vessel-size factors for the UoC, and if necessary targeted data collection undertaken to support further analyses of ETP interactions for this vessel size class within the UoC be performed. Where results show a basis for concern, appropriate mitigation approaches should be considered.

Recommendation 2:

Observer data available from coverage on the longline component in LIN 7 in the 2011/12 year has been judged sufficient to provide an estimate of the outcome status of the main bycatch species with respect to biologically-based limits, and to support a partial strategy to manage bycatch species. However, we note that this is a single year of information and inter-annual variability in catches seen in the other FMAs increases the uncertainty in the judgements made. It is recommended that the observer coverage be continued within this UoC in the coming years, and that the results be monitored

during annual audits to ensure that no significant changes in the fishery interactions with bycatch species occur.

7 References

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

Wildlife Act 1953

Appendix 1 Scoring and Rationales

Evaluation Table for 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		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	It is likely that the stock is above the point where recruitment would be impaired.	It is highly likely that the stock is above the point where recruitment would be impaired.	There is a high degree of certainty that the stock is above the point where recruitment would be impaired.
	Met?	Y	Y	Y
		LIN 3&4 Chatham Rise The current biomass for the Chatham Rise stock as a percentage of B_0 is 55%, which is well above the target reference point (40%). The 95% credible interval (44–71%) also excludes the current limit reference points. As a result, the latest Plenary report noted that B_{2011} was Exceptionally Unlikely (< 1%) to be below both the Soft and Hard Limits. A score of 100 is given. LIN 5&6 Sub-Antarctic (excl Bounty Plateau) The current biomass for the Sub-Antarctic stock as a percentage of B_0 is 89%, which is above the target reference point (40%). The 95% credible interval (69–100%) also excludes the current limit reference points. As a result, the latest Plenary report noted that B_{2011} was Exceptionally Unlikely (< 1%) to be below the Soft or Hard Limits. A score of 100 is given. LIN 6B Bounty Plateau The last stock assessment for this region was updated in 2007. The biomass B_{2006} for the Bounty Plateau stock as a percentage of B_0 is 61%, which is above the target reference point (40%). The 95% credible interval (45–79%) also excludes the current limit and target reference points. B_{2006} was Exceptionally Unlikely (< 1%) to be below the Hard Limit and very unlikely to be below the soft limit (<10%). Projections at 600 t per year showed that the stock was very unlikely (<10%) to be below the soft and hard limits. Projections out to 2011 (~current) showed a decline in biomass was likely but that at those catch levels (600 mt) the stock was unlikely to fall below the soft limit (B_{2011} = 26-116%B_0). A score of 100 is given. LIN 7WC West Coast South Island The current biomass for the West Coast South Island stock as a percentage of B_0 is 71%, which is above the target reference point (40%). The 95% credible interval (56–85%) also excludes the current limit reference points. As a result, the latest Plenary report noted that B_{2012} was Exceptionally Unlikely (< 1%) to be below the Soft or Hard Limits. A score of 100 is given. LIN 7CK Cook Strait The 2010 estimated biomass for the Cook Strait stock (7CK) as a percentage of B_0 is 54%, which is above the target reference point (40%). The 95% credible interval (23–80%) also excludes the current limit reference points, noting that the level of uncertainty is wide. As a result, the latest Plenary report noted that B_{2010} was Exceptionally Unlikely (< 1%) to be below the Soft or Hard Limits. It is noted that the 2013 assessment was rejected due to an inability to reflect CPUE (and hence resource abundance) declines, and the 2010 assessment was used for advice. Following that year, the plenary document shows longline CPUE has declined.		

PI 1.1.1		**The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing**		
	Justification	Projections under the higher of two alternative future catch levels indicated a 10% chance of falling below the soft limit by 2015, and a 2% chance of falling below the hard limit. While there remains some uncertainty over current status, the 2% risk meets the MSC definition of a 'high degree of certainty' (95th percentile) and a score of 100 is given.		
b	**Guidepost**		The stock is at or fluctuating around its target reference point.	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.
	Met?		Y	Y (N - LIN6B, LIN 7CK)
		LIN 3&4 Chatham Rise The current biomass for the Chatham Rise stock as a percentage of B_0 is 55%, which is well above the target reference point (40%). The Plenary report notes that the stock is Very Likely (> 90%) to be at or above the target, while the assessment indicates the stock has been above the target level since the start of the time series. While the biomass of the Chatham Rise stock was uncertain, the current catch was felt unlikely to decline based on projection results, and exceptionally unlikely (<1%) to fall below the soft limit. A score of 100 is therefore given. LIN 5&6 Sub-Antarctic (excl Bounty Plateau) The current biomass for the Sub-Antarctic (excl Bounty Plateau) stock as a percentage of B_0 is 89%, which is well above the target reference point (40%). The Plenary report notes that the stock is virtually certain (> 99%) to be at or above the target, while the assessment indicates the stock has been above the target level since the start of the time series. The biomass of the Sub-Antarctic stock was predicted to improve under recent catch levels or the TACC, and was exceptionally unlikely (<1%) to fall below the soft limit. A score of 100 is therefore given. LIN 6B Bounty Plateau The current biomass for the Bounty Plateau stock as a percentage of B_0 is 61%, which is well above the target reference point (40%). The Plenary report notes that the stock is very likely (> 90%) to be at or above the target, while the assessment indicates the stock has been above the target level since the start of the time series. The biomass of the Bounty Plateau stock was predicted to continue declining slightly over the next 5 years at recent average catch levels, and was very unlikely (<10%) to fall below the soft limit. However, the historical nature of this assessment increases the uncertainty over the stock status and a score of 80 is given. LIN 7WC West Coast South Island The current biomass for the West Coast South Island stock as a percentage of B_0 is 71%, which is well above the target reference point (40%). The Plenary report notes that the stock is very likely (> 90%) to be at or above the target, while the assessment indicates the stock has been above the target level since the start of the time series. No projections were reported in the assessment, however the lower bounds of the current status estimates are well above the target and limit levels. A score of 100 is therefore given.		

PI 1.1.1		The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing
	Justification	LIN 7CK Cook Strait The 2010 biomass for the Cook Strait stock as a percentage of B_0 is 54%, which is well above the target reference point (40%). The Plenary report notes that the stock is likely (> 60%) to be at or above the target, while the assessment indicates the stock has been above the target level since the start of the time series. The biomass of the Cook Strait stock was predicted to improve slightly over the next 5 years at a catch level equivalent to that since 2006, or remain relatively constant at a catch equivalent to the mean since 1990, and was very unlikely (<10%) to fall below the soft limit. Recent catches have been around the level of 140 mt, lower than either of the two future scenarios examined. However, the historical nature of this assessment increases the uncertainty over the stock status and a score of 80 is given.
References		MPI 2013a plenary report Horn and Francis, 2013 Horn et al., 2013

Stock Status relative to Reference Points			
	Type of reference point	**Value of reference point**	**Current stock status relative to reference point**
Target reference point	Biomass relative to unfished levels (B_0)	40%	Median values: 55% (LIN 3&4), 89% (LIN 5&6), 61% (LIN 6B), 71% (LIN 7WC), 54% (LIN 2/7CK)
Limit reference point	Biomass relative to unfished levels (B_0)	20% (soft limit) 10% (hard limit)	

OVERALL PERFORMANCE INDICATOR SCORE: All of the scoring issues of the 60, 80 and 100 scoring guideposts are met for all stocks except LIN6B and LIN 7CK which do not achieve one of the two SG100 scoring guideposts. The final score is 100 for all stocks except LIN6B and LIN 7CK, where the score is 90.	**100 (LIN 3,4,and 5)** **90 (LIN6, and LIN 7)**
CONDITION NUMBER (if relevant):	**N/A**

Evaluation Table for PI 1.1.2

PI 1.1.2		Limit and target reference points are appropriate for the stock		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	Generic limit and target reference points are based on justifiable and reasonable practice appropriate for the species category.	Reference points are appropriate for the stock and can be estimated.	
	Met?	Y	Y	
	Justification	The Management Target ($0.4B_0$) is consistent with maintaining the stock at a B_{MSY} proxy level (and is often above the B_{MSY} level calculated under deterministic considerations). The limit reference point on which this re-assessment is based (the soft limit of $0.2B_0$) is at 50% of the Management Target. The values for the B_0 reference points are calculated as part of the stock assessment. The reference points are therefore appropriate for the stocks and can be estimated. A score of 80 is given.		
b	**Guidepost**		The limit reference point is set above the level at which there is an appreciable risk of impairing reproductive capacity.	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.
	Met?		Y	N
	Justification	Given the assumed form of the stock-recruitment relationship (Beverton-Holt) and the assumed extent of compensation (a steepness of 0.9), the hard limit corresponds to a reduction in expected recruitment from virgin levels of around 40% 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 ling, it is currently not possible to estimate steepness. However, steepness estimates for similar species tend to be higher than 0.75. The limit reference point is therefore above the level at which there is an appreciable risk of impairing reproductive capacity. However, the hard and soft limits are defaults under the harvest strategy standard. There is no evidence that they were selected to be deliberately precautionary; the limit reference point does not take account of the uncertainty in estimating B_0 or current biomass. A Score of 80 is given.		
c	**Guidepost**		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 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.
	Met?		Y	Y

PI 1.1.2		Limit and target reference points are appropriate for the stock		
	Justification	40% B_0 is often used as a proxy for MSY, and is the basis for the Harvest Strategy Standard. This level may be higher than the actual MSY for a stock, although calculations for the stock and fleet combinations are not readily available. This apparent discrepancy is 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 (as noted in stock assessment documents). The Management Target is precautionary in the sense that it reduces the risk of the stock dropping below the soft and hard limits, and the target reference point will maintain the stock above B_{MSY}. Given that ling is not considered a keystone species within the food web and ecology of New Zealand's waters, this level should maintain ecological integrity. A score of 100 is therefore given.		
d	Guidepost		For key low trophic level stocks, the target reference point takes into account the ecological role of the stock.	
	Met?		Not relevant	
	Justification	Ling does not satisfy the criteria for a LTL species: (a) family Ophidiidae does not appear in the list of “key LTL species” in MSC Certification Requirements, and (b) the diet of ling is not predominantly plankton and ling do not have the biological characteristics of LTL species identified in the MSC Certification Requirements.		
References		Horn and Francis, 2013 Horn et al., 2013 MPI, 2013a Punt et al., 2013 Ministry of Fisheries, 2008 MSC, 2012		
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):				

Evaluation Table for PI 1.1.3

PI 1.1.3		Where the stock is depleted, there is evidence of stock rebuilding within a specified timeframe		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	Where stocks are depleted rebuilding strategies, which have a reasonable expectation of success, are in place.		Where stocks are depleted, strategies are demonstrated to be rebuilding stocks continuously and there is strong evidence that rebuilding will be complete within the specified timeframe.
	Met?	(Y/N)		(Y/N)
	Justification	These stocks are currently above the target reference point level, so rebuilding is not necessary and this performance indicator does not apply.		
b	**Guidepost**	A rebuilding timeframe is specified for the depleted stock that is the shorter of 30 years or 3 times its generation time. For cases where 3 generations is less than 5 years, the rebuilding timeframe is up to 5 years.	A rebuilding timeframe is specified for the depleted stock that is the shorter of 20 years or 2 times its generation time. For cases where 2 generations is less than 5 years, the rebuilding timeframe is up to 5 years.	The shortest practicable rebuilding timeframe is specified which does not exceed one generation time for the depleted stock.
	Met?	(Y/N)	(Y/N)	(Y/N)
	Justification	N/A		
c	**Guidepost**	Monitoring is in place to determine whether the rebuilding strategies are effective in rebuilding the stock within a specified timeframe.	There is evidence that they are rebuilding stocks, or it is highly likely based on simulation modelling or previous performance that they will be able to rebuild the stock within a specified timeframe.	
	Met?	(Y/N)	(Y/N)	

PI 1.1.3		**Where the stock is depleted, there is evidence of stock rebuilding within a specified timeframe**
	Justification	N/A
References		[List any references here]
OVERALL PERFORMANCE INDICATOR SCORE:		**N/A**
CONDITION NUMBER (if relevant):		

Evaluation Table for PI 1.2.1

PI 1.2.1		There is a robust and precautionary harvest strategy in place		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	The harvest strategy is expected to achieve stock management objectives reflected in the target and limit reference points.	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 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.
	Met?	Y	Y	Y
	Justification	The harvest strategy for ling is consistent with the New Zealand Harvest Strategy Standard, HSS. The strategy aims to "provide a consistent and transparent framework for setting fishery and stock targets and limits and associated fisheries management measures, so that there is a high probability of achieving targets, a very low probability of breaching limits, and acceptable probabilities of rebuilding stocks that nevertheless become depleted, in a timely manner". The harvest strategy standard specifies probabilities for each of these outcomes and includes 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. However, under the HSS objectives, management measures and controls should result in the stock fluctuating about the target level. How that is to be achieved for stocks between the target and soft limit is not explicitly prescribed in the HSS. A recent management decision for scampi 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 harvest strategy standard was established following extensive consultation and review (including international peer-review of a draft of the standard). A review was undertaken in 2007 of the fisheries stock assessment process and the sustainability advice, and found that broadly the process worked well. Some weaknesses in implementation were also identified. The stock assessment documents report stock status relative to the reference points and quantify the implications of future TACC levels. It is noted that the standard does not address issues pertinent to multispecies catches, since ling is taken as bycatch in the hoki trawl fishery. However, it should be noted that the TACC, ACE and Deemed Value system provides a flexible framework which should in theory allow management of these issues. 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. A score of 100 is given.		

PI 1.2.1		There is a robust and precautionary harvest strategy in place		
b	Guidepost	The harvest strategy is likely to work based on prior experience or plausible argument.	The harvest strategy may not have been fully tested but evidence exists that it is achieving its objectives.	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.
	Met?	Y	Y	N
	Justification	The implementation of the proposed harvest strategy for all ling stocks includes: (a) a stock assessment estimating the current biomass (b) a precautionary region between the soft limit reference point and the hard limit reference points where a formal rebuild strategy is needed, (c) fishery closure to be considered if the stock is below the hard limit. The harvest strategy is not specified as a mathematical function. Under an Adaptive Management Programme proposal for the 1994–95 fishing year, TACCs for LIN 3 and 4 were increased to 2810 and 5720 t, respectively. These stocks were removed from the AMP from 1 October 1998, with TACCs maintained at the increased level. However, from 1 October 2000, the TACCs for LIN 3 and 4 were reduced to 2060 and 4200 t, respectively. The TACC for LIN 3 was exceeded in the mid-1990s, and in the early 2000s following the reduction, but have been exceeded slightly in one year since then. In LIN 4 the TACC has not been exceeded since it was reduced, and the TACC is not currently limiting the fishery. From 1 October 2004, the TACCs for LIN 5 and LIN 6 were increased by about 20% to 3595 t and 8505 t, respectively. The TACC in LIN 5 has been exceeded in four out of eight years since it was increased in 2004-05, by a maximum of 15%, while that in LIN 6 has not been exceeded since that time. From 1 October 2009, the TACC for LIN 7 was increased from 2225 t to 2474 t. All other TACC increases since 1986–87 in all stocks are the result of quota appeals. The catch has exceeded the TACC in the majority of years. The decline in catches (still above the TACC) in recent years may at least in part be due to the reduced hoki exploitation rate which is undergoing rebuilding, and increases in the TACC for that species are mirrored by increases in LIN7 catches in recent years. The quota management areas frequently does not quite coincide with the specific stock assessments, in particular that of LIN 6 and 7, which have been separated into sub-units. This is accounted for in the assessment and this has not caused a detectable stock management problem. The strategy has not been fully tested, preventing a higher score under this indicator. Although stock assessments are not annual, stock status indices (primarily catches and age compositions, with intermittent fishery-independent surveys in the case of LIN 4 & 7, but including abundance indices for LIN 4; see PI 1.2.3) are updated each year for monitoring purposes. This level of monitoring should detect significant problems created by the harvest strategy. However, the implications of uncertainty on the performance of the harvest strategy have not been evaluated formally and the harvest strategy has not been in place sufficiently long that it is possible to evaluate its performance empirically. Evidence exists that management is prepared to apply controls consistent with the harvest strategy standard. This appears to be consistent with the relative risks posed to these stocks by the fishery. While the HSS recognizes the value of MSE to evaluate harvest strategies, MSE has not been used for New Zealand ling stocks. Specifically, given that the harvest strategy is not mathematically specified, any MSE evaluation can only be approximate. Thus, it is premature to conclude that the harvest strategy has been fully evaluated. A score of 80 is given.		

PI 1.2.1		There is a robust and precautionary harvest strategy in place		
c	Guidepost	Monitoring is in place that is expected to determine whether the harvest strategy is working.		
	Met?	Y		
	Justification	Fishery-dependent and –independent data are available to monitor trends in abundance as well as the age- and sex-structure of the populations 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; see the 10 year research plan for Deepwater Fisheries). Thus, monitoring is in the place that is expected to determine whether the harvest strategy is working. The fishery passes the 60 level.		
d	Guidepost			The harvest strategy is periodically reviewed and improved as necessary.
	Met?			Y
	Justification	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. 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. For specific stocks, TACC levels for ling have been changed, along with changes in hoki TACC but as noted above do not appear to constrain the fishery. However, the harvest strategy for ling has evolved over time, with the development of formal limits and target reference points, demonstrating that the harvest strategy has been reviewed periodically and revised. A score of 100 is therefore given.		
e	Guidepost	It is likely that shark finning is not taking place.	It is highly likely that shark finning is not taking place.	There is a high degree of certainty that shark finning is not taking place.
	Met?	Not relevant	Not relevant	Not relevant
		Sharks are not a target species, hence this element is not scored.		
References		Ministry of Fisheries, 2008 Ministry of Fisheries, 2010c Ministry of Fisheries. 2011a, b, c MSC. 2012		
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):				**NA**

PI 1.2.2		There are well defined and effective harvest control rules in place		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	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.	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.	
	Met?	Y	Y	
	Justification	The harvest control rule for New Zealand ling is comprised of "Management actions determined by the results of a series of forward projections under a range of catch assumptions, guided by the biological reference points". The harvest control rule is not a catch control rule (a mathematical function which pre-determines TACCs based on stock status relative to limit and target reference points). Rather the harvest control rules are consequences of the requirements of the Fisheries Act 1996 and Harvest Strategy Standard. For this PI, and consistent with the hoki certification, the harvest control rule is interpreted 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%. While the harvest strategy standard recognizes the need for action when stocks are below targets, but above the soft limit, consistent with the MSC standard, it lacks details on exactly how the exploitation rate will be reduced below the soft limit (the deemed value system may make actual control difficult). The short-term consistency of TACC levels with the target biomass (0.4 B_0) is identified through projections. In practice, TACCs have remained by default at the same level unless there is a practical need to change them. However, action has been demonstrated in other fisheries; e.g. the TACC for scampi was reduced in 2011 when stock was projected to drop between the target and limit reference points. 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. A score of 80 is given.		
b	**Guidepost**		The selection of the harvest control rules takes into account the main uncertainties.	The design of the harvest control rules takes into account a wide range of uncertainties.
	Met?		Y	N

PI 1.2.2		There are well defined and effective harvest control rules in place		
	Justification	The assessment is based on a series of scenarios which capture the main assessment-related uncertainties. Short-term projections are undertaken for a subset of these scenarios, using specific scenarios for future catch, and those projections account for uncertainty regarding future recruitment (by drawing on estimated historical recruitments, which while ignoring the potential change in future recruitment due to the stock-recruitment relationship is not unreasonable given an assumed steepness of 0.9 and the longevity of the species). The results of the projections are expressed in terms of probabilities of failing to achieve various goals. Thus, the selection of the harvest control rules takes into account the main uncertainties related to stock status and conducting projections. However, while 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, the uncertainty examined within the stock assessment and projection process for ling cannot be said to be 'wide', given the potential for structural and biological uncertainties noted within the assessment documents. A score of 80 is given.		
c	Guidepost	There is some evidence that tools used to implement harvest control rules are appropriate and effective in controlling exploitation.	Available evidence indicates that the tools in use are appropriate and effective in achieving the exploitation levels required under the harvest control rules.	Evidence clearly shows that the tools in use are effective in achieving the exploitation levels required under the harvest control rules.
	Met?	Y	Y	N
	Justification	The main tools used to implement the harvest control rules are 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 ACE from other quota holders. However, the deemed value also discourages discarding, an important attribute where ling is taken as retained non-target species in the much larger hoki fishery. The estimated catch has generally been less than the TACC since 2005, the exceptions being in regions LIN 5 and LIN 7, and generally do not constrain catches. Persistent over-catch of TACC would lead to reviews of the causes and if necessary controlling mechanism (e.g. deemed value to discourage over-catch). Overall, it is not yet clear how effective the tools will be during current hoki rebuilding, when the quota value would become very high if the ling quota constrains the hoki fishery. While available evidence shows that the tools used to implement harvest control rules are appropriate and effective in controlling exploitation, clearer evidence under developing conditions within the fishery should be provided over the coming years. A score of 80 is given.		
References		Ministry of Fisheries, 2008 Ministry of Fisheries, 2011a, b MPI, 2013a,b,c		
OVERALL PERFORMANCE INDICATOR SCORE: All of the scoring issues for the 80 scoring guidepost are met.				**80**
CONDITION NUMBER (if relevant):				**NA**

Evaluation Table for PI 1.2.3

PI 1.2.3		Relevant information is collected to support the harvest strategy		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	Some relevant information related to stock structure, stock productivity and fleet composition is available to support the harvest strategy.	Sufficient relevant information related to stock structure, stock productivity, fleet composition and other data is available to support the harvest strategy.	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.
	Met?	Y	Y	N
		The report of the Stock Assessment Plenary (and individual stock assessment reports) summarizes information on stock structure and biology of ling, including growth, natural mortality and maturity. Stock abundance is estimated from a stock assessment, which requires data on catches, abundance indices, age and size composition. Otolith ageing has been validated. Sufficient data are all available to obtain good estimates of stock abundance from the assessment. Information on all vessels is held through a registry and licence system. Vessel activity is monitored through VMS and an observer programme. Monitoring of information not directly used in the harvest strategy includes mapping of spawning aggregations, remote sensing environmental change, productivity, physical oceanographic processes and bathymetry. 1. Stock structure. Ling are managed as eight administrative QMAs, although five of these (LIN 3, 4, 5, 6, and 7) currently produce about 95% of landings. Research has indicated that there are at least five major biological stocks of ling in New Zealand waters: the Chatham Rise, the Sub-Antarctic (including the Stewart-Snares shelf and Puysegur Bank), the Bounty Platform, the west coast of the South Island, and Cook Strait. The stock assessment process recognises these stocks and combines QMAs accordingly. Analysis of morphometrics, genetics and lift history characteristics underpins these divisions, although it appears unlikely that the stocks are genetically distinct. 2. Productivity. Data on growth rates are available from age and growth studies, fecundity-at-size has been estimated for the stocks, although some parameters are shared with neighbouring stocks (e.g. LIN 6B uses LIN 3 & 4 maturity ogives). Natural mortality estimates have been estimated using empirical approaches and also within the assessment model, but in common with most assessments is kept constant over time. Understanding of the drivers of recruitment remains poor, and consequently the assessment conducts projections where future recruitment is sampled from historical estimates. 3. Fleet composition. The total effort in the fishery is known, and comprehensive data are available at fine spatial scales. Although detailed information is available on catch and effort, including gear type and location, this information is generally 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. However, commercial CPUE time series have been developed for those regions where fishery-independent time series are absent or intermittent. 4. A variety of other data sources (diet, environmental conditions etc.) is also available for use in assessments and other analyses.		

PI 1.2.3		Relevant information is collected to support the harvest strategy		
	Justification	Thus, relevant information related to stock structure, stock productivity and fleet composition is available to support the harvest strategy. However, while there is considerable information on the biology of ling in New Zealand, sufficient data gaps remain (e.g. environmental influences, movement) that it cannot be concluded that the range of information available is comprehensive. A score of 80 is therefore given.		
b	Guidepost	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.	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.	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.
	Met?	Y	Y	Y: LIN 3&4, LIN 5&6 and LIN 7WC only
		While extensive survey time series is available from regions LIN 3 & 4 and LIN 5 & 6, supplemented with standardised longline CPUE indices, and LIN 7WC, it is noted that the survey has changed over time. 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). The sampling coefficients of variation, CVs, of the abundance indices range from 0.05 to 0.46, with estimates commonly in the range of 0.05-0.2, while that of the commercial time series vary between 0.03 and 0.36, with some CVs being fixed at 0.04. Additional variance (“process error”) is usually added to these CVs to account for unquantified uncertainty between stock abundance and the abundance indices. Removals are estimated by region and fishery, and information on age and length are sampled from the catches and the surveys. 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. Length- and age-frequencies are based on '00s of measurements and otoliths of fish each survey. It is believed that up to the mid-1990s some ling bycatch from the west coast hoki fishery was not reported. Estimates of total catch including non-reported catch are included within the assessment. It is also believed that in recent years, some catch from LIN 7 has been reported against other ling stocks (probably LIN 3, 5, and 6). The likely levels of misreporting are moderate, being about 250–400 t in each year from 1989–90 to 1991–92. Estimates of recreational catch are available, while there are none on customary non-commercial catches. There is likely to be some mortality associated with escapement from trawl nets, but the level is not known and is assumed to be negligible. For LIN 3&4, LIN 5&6, the 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. A score of 100 is given.		

PI 1.2.3		**Relevant information is collected to support the harvest strategy**		
	Justification	For LIN 7CK (considered part of LIN 7 here), the lack of fishery-independent surveys is a gap where the harvest control rule requires high accuracy and the stock assessment method used to achieve this accuracy seems to require explicit abundance indices. This suggests that while 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, while the sources of uncertainty are understood, the information cannot be said to have a high degree of certainty. A score of 80 is therefore given for LIN 7.		
c	**Guidepost**		There is good information on all other fishery removals from the stock.	
	Met?		Y	
	Justification	Catches by gears other than trawl are negligible. The landed catches by Maori for customary purposes and by recreational fishers are considered negligible and/or estimated. Catches by all commercial fishing sectors (including non-ling fisheries) are counted against the TACC. Thus, there is good information on all fishery removals from the stocks. A score of 80 is given.		
References		Colman, 1998a, b Bagley et al., 2013 Francis et al., 2001 Francis et al., 2003 MPI 2013a,b,c Horn, 2005 Horn and Francis, 2013 Horn et al., 2013 Dunn, 2003		
OVERALL PERFORMANCE INDICATOR SCORE: All LIN areas meet the scoring issues at SG80. One 100 scoring guidepost is met in LIN 3&4, LIN 5&6, and hence they score 90				**LIN 3,4 5&6 90** **LIN 7 80**
CONDITION NUMBER (if relevant):				**NA**

Evaluation Table for PI 1.2.4

PI 1.2.4		There is an adequate assessment of the stock status		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**		The assessment is appropriate for the stock and for the harvest control rule.	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.
	Met?		Y	Y
	Justification	The latest assessments for each stock were carried out in 2011-2013, dependent upon the stock, using an age-structured CASAL model with Bayesian estimation of posterior distributions. The exceptions are LIN 6B and LIN 7CK, where the last accepted assessments were in 2007 and 2010 respectively. The assessment uses fishery independent abundance indices (or primarily commercial catch indices in some areas), catch-at-age from the commercial fishery and trawl surveys, and estimates of biological parameters. The population model can account for the biology of different sexes, as applied in most ling assessments. Stock structure has been examined using genetics, morphology and size composition, so that appropriate size selectivity and stock structure is used in the model. There is no formal (i.e. mathematical) harvest control rule for New Zealand ling. Rather, decisions regarding the TACC is based on stock status as it assessed relative to biomass-based reference points. The projections conducted for current or alternative levels of future catches are adequate to inform decision makers regarding changes in (relative) abundance (stock status is not generally well known in absolute terms). The assessment is appropriate for the stock and the harvest control rules. However the assessment is seen to be sensitive to the assumptions made on the biological structure (sex separation, natural mortality, etc., e.g. in LIN 3&4) within the model, although relative outputs for LIN 3&4 were reasonably robust to these uncertainties. Given the assessments examine the major features relevant to the biology of ling, a score of 100 is given.		
b	**Guidepost**	The assessment estimates stock status relative to reference points.		
	Met?	Y		
	Justification	The stock assessment provides estimates of spawning biomass relative to (a) the soft and hard limits (0.1 and $0.2B_0$), (b) where it has been estimated/reported (for some stocks) estimates of B_{MSY} values under the assumption of deterministic dynamics, and (c) the Management Target (0.4 B_0). Thus, the assessment estimates stock status relative to reference points, and meets the SG.		

PI 1.2.4		There is an adequate assessment of the stock status		
c	Guidepost	The assessment identifies major sources of uncertainty.	The assessment takes uncertainty into account.	The assessment takes into account uncertainty and is evaluating stock status relative to reference points in a probabilistic way.
	Met?	Y	Y	Y
	Justification	The assessment is based on the CASAL package, which accounts for both observation and process error. Each assessment includes sensitivity tests ("runs") which explore key uncertainties. Uncertainty is explored in the report of the Stock Assessment Plenary, but in greater detail within the stock assessment reports reviewed by the Fisheries Assessment Working Group, which includes some structural uncertainty. The report of the Stock Assessment Plenary does contains a 'major sources of uncertainty' section, and the outputs of alternative runs are noted in a 'qualifying comments' section. The Plenary report also identifies uncertainty regarding recent and future recruitment as key. The results of the assessment include the probability that the current spawning stock biomass exceeds the hard and soft limits, and the Management Target. Posterior distributions based on MCMC sampling are also provided for current spawning biomass and for year class strength. 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. A score of 100 is given. It is noted that the choice of a 'key' stock assessment run as the basis for management advice, while common practice, does not incorporate the full structural uncertainty within the assessments.		
d	Guidepost			The assessment has been tested and shown to be robust. Alternative hypotheses and assessment approaches have been rigorously explored.
	Met?			N
	Justification	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 ling 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	Guidepost		The assessment of stock status is subject to peer review.	The assessment has been internally and externally peer reviewed.
	Met?		Y	N

PI 1.2.4		There is an adequate assessment of the stock status	
	Justification	The assessment is reviewed internally at NIWA before review at the Fisheries assessment working group and publication in the Plenary document. This is the primary form of peer-review; Fisheries Assessment Working Groups (FAWGs) evaluate relevant research, determine the status of fisheries and fish stocks and evaluate the consequences of alternative future management scenarios. They do not make management recommendations or decisions (this responsibility lies with MPI Fisheries Management and the Minister of Fisheries). These groups are open to the public (see Ministry of Fisheries [2011] for Terms of Reference). The Working Group is chaired by MPI, and includes members from NIWA, MPI, industry and environmental NGOs, Thus, the assessment of stock status is subject to peer review. However, the stock assessments have not been subject to external peer review. A score of 80 is therefore given.	
References		Horn and Francis, 2013 Horn et al., 2013 MPI, 2011a Bull et al. 2008, 2012 Dunn, 2003	
OVERALL PERFORMANCE INDICATOR SCORE: All of the scoring issues for the 80 scoring guidepost are met in all regions. Two of the four scoring issues for the 100 scoring guidepost are also met.			**90**
CONDITION NUMBER (if relevant):			

Evaluation Table for 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		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	Main retained species are likely to be within biologically based limits (if not, go to scoring issue c below).	Main retained species are highly likely to be within biologically based limits (if not, go to scoring issue c below).	There is a high degree of certainty that retained species are within biologically based limits and fluctuating around their target reference points.
	Met?	Y	Y	N
		Retained species are, by regulation, the Quota Management Species (QMS), which are enumerated and retained on board (unless 6th schedule species like spiny dogfish). The main QMS are the subject of analytical stock assessments and active management that is based upon formalised biologically based limits, which represents a full strategy. For the remaining QMS species, the TACC system, which aims to limit the overall catch of species, combined with the 'deemed value' process, represents a partial strategy for these species. For others, the impact of the fishery on these species depends upon the extent to which they are caught within the ling trawl and longline fisheries. For trawls, the main retained species in this fishery were: Hoki (all fisheries), assessed to be above the soft limit with very high probability (>99%) and above the target with high probability (>90%) Silver warehou (LIN3 and 4), In the absence of assessments, biomass indices from R.V. Tangaroa trawl surveys suggest no declines in estimated biomass. Combined with the generally low levels of annual capture in this fishery (the average time series capture being skewed by a large event in one year) and pattern of catches against the TACC, this suggests that the stock is highly likely to be within biologically based limits. However, the level of capture should be monitored in annual audits. Ghost shark (LIN 4). Survey data showed no specific trends since 1999, indicating no declines in biomass, suggesting there are no current concerns for the stock. White warehou (LIN 5). While survey data were limited and uncertain, little trend in biomass estimates in the core depth strata were seen, suggesting there are no current concerns for the stock. However the uncertainty in estimates is noted. Southern blue whiting (LIN 6) Available assessments indicated the stocks to be unlikely (<40%) or exceptionally unlikely (<1%) to be below the soft limit and stocks are assessed to be as likely as not (40-60%) or likely to be above the target reference point, or believed to be only lightly exploited between 1993-2002. However, status in 6A, a sub-set of region 6, is unknown. For longlines, the main retained species in this fishery were:		

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		
	Justification	Spiny dogfish (LIN 3, 4, and 6). Survey indices suggest no declines in biomass. Ribaldo (LIN 3). Survey-based assessments indicated the stock was likely to remain near current levels under current catches, and unlikely (<40%) to fall below soft or hard limits. Rough skate (LIN 6). Available biomass estimates from surveys are generally increasing. Pale ghost shark (LIN6). Catches in this region have been well below the adjusted TACC level. Biomass estimates from the R.V. Tangaroa time series show no clear trend, with notable inter-annual fluctuations, and a general increase in biomass since 2005. This suggests that current bycatches are highly likely to be within biologically-based limits Hake (LIN 7). Assessments show the stock is very likely to be above the target, unlikely (<10%) to be below the soft limit and exceptionally unlikely (<1%) to be below the hard limit. Based on this information, while the main retained species in each fishery are highly likely to be within biologically based limits, and most can be confirmed to be and fluctuating around their target reference points, this cannot be confirmed for all species caught. Other retained QMS species within the LIN areas are subject of TACC limits. However, these levels are not necessarily based upon analytical assessments and biologically based limits, although these could be performed for some species with available bycatch information and data from fishery-independent surveys. This would be required for a higher score. A score of 80 is given.		
b	Guidepost			Target reference points are defined for retained species.
	Met?			N
	Justification	Target reference points are defined for several retained species, e.g. hoki and hake. 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. The SG100 is not met.		
c	Guidepost	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.	If main retained species are outside the limits there is a partial strategy of demonstrably effective management measures in place such that the fishery does not hinder recovery and rebuilding.	
	Met?	(Y/N)	(Y/N)	

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**		
	Justification	N/A. However, TACCs are set for all of the retained species and could be adjusted given the results of assessments. The assessments for hoki and 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	**Guidepost**	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.		
	Met?	(Y/N)		
	Justification	N/A		
References		Ministry of Fisheries. 2008. Harvest Strategy Standard for New Zealand Fisheries MPI (2013a,b,c)		
OVERALL PERFORMANCE INDICATOR SCORE: The main retained species are the subject of stock assessments and are within biologically based limits. However, not all retained species are the subject of stock assessments and managed relative to reference points. This would be required for a higher score.				**80**
CONDITION NUMBER (if relevant):				

Evaluation Table for 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		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	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.	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.	There is a strategy in place for managing retained species.
	Met?	Y	Y	N
	Justification	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. 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. Several of the retained species (hake, southern blue whiting) are managed using the same harvest strategy (based on hoki). 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 aims to develop specific management procedures for silver warehou and white warehou; these are not yet in place although SWA1 is currently managed through an adaptive management programme (overlap with LIN 7) and work is planned to establish CPUE series for SWA3&4, related to the hoki fishery (Annual Operational Plan for Deepwater Fisheries for 2012/13). There is a wider range of QMS species taken in this fishery than those species noted above. For those species, there is less documented evidence on the frequency and framework for assessing the catches of minor QMS species against TACC over time, the full basis of the TACC levels set, and the relationship between these catches and trends in the survey data, nor the decision making process behind many of the changes made. The implementation of such a formalised management plan and process for all QMS species, including the development of routine monitoring of bycatch indicators currently planned, would represent a strategy that would increase the score against this PI. A score of 80 is therefore given.		

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		
b	Guidepost	The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/species).	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.	Testing supports high confidence that the strategy will work, based on information directly about the fishery and/or species involved.
	Met?	Y	Y	N
	Justification	Few changes have been made the TACCs for the main target species. However, the stocks of many main species are all assessed to be above their target levels while no indications of declining stock sizes have been found for other species. 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. In turn, there is evidence for the effectiveness of the approach for key species such as ling, where TACC reductions to address poor status have proved successful. However, no testing of the strategies for all main retained species has been undertaken. A score of 80 is therefore given.		
c	Guidepost		There is some evidence that the partial strategy is being implemented successfully.	There is clear evidence that the strategy is being implemented successfully.
	Met?		Y	N
		Observers conduct detailed monitoring of trawled catches at sea as well as operational measures. In the hake/hoki/ling fishery in LIN3-7, an average 11.1-46.1% of trawl tows have been covered on average by observers between 2007/08 and 2010/11 fishing years. For the deepwater longline fishery, where the focus is generally focused more on ETP interactions but includes monitoring of bycatch species, coverage ranged from 0% (LIN7, although data are available for 2011/12), through 4.6% in LIN3 respectively, to 12.1%, 15.9% and 43.5% in LIN5, 4 and 6. For longliners, while interactions in LIN 3 and 7 can be inferred or modelled from coverage in most recent years or neighbouring regions (e.g. ETP species), the resulting estimates will be more uncertain. Observer coverage of inshore fisheries has historically been at very low levels, due to the difficulties in placing observers on small vessels. Since 2008/09 inshore there has been an increased focus on inshore fisheries; coverage in 2010/11 focused on some of the less observed ling and bluenose bottom longline vessels. Within this complex, coverage on average was less than 2% in regions LIN4, 5, 6 and 7 (zero in LIN6), with a maximum of 5.1% in LIN3. Coverage has varied notably between years in each management region. Reporting on the main species caught is also required from vessels through logsheets. This provides a comprehensive dataset for species with which to assess implementation of catch management strategies for these species. There is clear evidence, based on this information, that the strategy for managing *main* retained species is being implemented successfully for offshore trawl fisheries, through the stock assessments and variations in TACC that result where required (e.g. hake, hoki, southern blue whiting), and through monitoring of catch and survey data available in other regions. QMS *main* non-target species in the (combined, in that observer information from		

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		
		inshore and offshore longline fisheries was examined) longline fishery included those for which stock assessments were available, those for which survey and CPUE-style indices have been examined, supplemented by relative catch levels. However, for many species, the phrase used within the Plenary document is "Estimates of current and reference biomass are not available for any [species] stocks and therefore it is not known if current TACCs and recent catches are sustainable or whether they are at levels which will allow the stocks to move towards a size that will support the maximum sustainable yield". This indicates that the strategy is not formally apply to all QMS species. A score of 80 is given. However, the increasing use of the survey time series to support indications of stock status is noted as a positive development. Continued surveys within LIN7 would further support this. Concerns over the observer coverage in specific longline fleets are discussed under other PIs.		
d	**Guidepost**			There is some evidence that the strategy is achieving its overall objective.
	Met?			N
	Justification	Regular updates of stock assessments underlying harvest strategies for the main species occur to include new information, and TACCs are reviewed regularly. With these tools and processes, there is therefore <u>some</u> evidence that the strategy is achieving its overall objective for main species, but the effectiveness for the minor QMS species is not clear, and as noted supporting evidence for stock levels is not always available. However, the SG100 level text is not met.		
e	**Guidepost**	It is likely that shark finning is not taking place.	It is highly likely that shark finning is not taking place.	There is a high degree of certainty that shark finning is not taking place.
	Met?	Y	Y	Y
		Shark finning, as defined by the MSC standard, is "The practice of removing any of the fins of a shark (including the tail) while at sea and discarding the remainder of the shark at sea". Under current provisions of the Animal Welfare Act 1999, it is an offence to willfully ill-treat an animal. It is considered that the practice of removing the fins from a shark and returning it to the sea while still alive fits within the definition of ill-treating an animal. All retained shark species are within the QMS, and hence are required to be retained on board: “No commercial fisherman shall return to or abandon in the sea or any other waters any fish, aquatic life, or seaweed of legal size, or for which no legal size is set, that is subject to the quota management system (See Fisheries Act 1996, s 72(1))”. The exception is Schedule 6 species, detailed in the Fisheries Act 1996. This lists species and stocks which may be returned to the sea in accordance with stated requirements. For fish species listed on this schedule, the requirements include that the individual be likely to survive on return to the sea, and that the		

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
	Justification	return takes place as soon as practicable after the take. Spiny dogfish have a unique status on Schedule 6, in that they are allowed to be returned to the sea either alive or dead as long as they are reported and counted against Annual Catch Entitlement. This allows operators to choose whether to land spiny dogfish or return them to the sea. At the time this provision was implemented there were limited markets for spiny dogfish and the management objective was to set catch limits and ensure that there was full reporting against those limits. The provision of choice to fishers aimed to mitigate costs associated with landing spiny dogfish and possibly needing to dispose of them on land. This approach was expected to result in better reporting of spiny dogfish catches by reducing the incentive to illegally dump and not report catches. Without accurate reporting, appropriate management settings for this fishery could not be established. Since the NPOA-sharks 2008, school shark (*Galeorhinus galeus*) has been added to Schedule 6, and is a relatively rare bycatch in ling trawls and uncommon in longline fisheries (<5% of catch weight). The Deepwater Group has implemented a number of principles in order to optimize the applicability of the NPOA sharks of banning shark finning consistent with the MSC definition. The new NPOA-sharks, which has now been finalised,has one specific objective of eliminating shark finning in New Zealand fisheries (Objective 2.4). As noted in that document, within the deepwater fishery as a whole, excluding spiny dogfish, 97.4% of QMS sharks were fully utilised or released. Half of all deepwater spiny dogfish catch was fully utilised, with the remainder returned to the sea under Schedule 6 provisions; MPI confirmed that all retained shark were with fins attached. The information available is supported by the monitoring by observers in the fishery. MPI note that the catch balancing system ensures that nothing is landed that isn't reported, and that sharks were confirmed to be returned to the water whole. A score of 100 is given.
References		Ramm, 2012 MPI, 2013b MPI, 2013d Observer species catch records, 2007/08 to 2011/12 Interview with MPI Ballara et al., 2010 MPI 2012c MPI 2013a, b, c
OVERALL PERFORMANCE INDICATOR SCORE: All of the scoring issues for the 60 and 80 scoring guidepost are met as are one of four 100 scoring guideposts. The resultant score is 85.		**85**
CONDITION NUMBER (if relevant):		**NA**

Evaluation Table for 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		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	Qualitative information is available on the amount of main retained species taken by the fishery.	Qualitative information and some quantitative information are available on the amount of main retained species taken by the fishery.	Accurate and verifiable information is available on the catch of all retained species and the consequences for the status of affected populations.
	Met?	Y	Y	N
	Justification	Data on catch rates and the relative abundance of non-target catch species in the fishery are available from three main sources: The TCEPR (Trawl catch, effort and processing return) forms and longline logbooks, which provide green-weight catch totals for the top five/eight species (dependent on vessel size and fishing method) on a fishing-event basis, and daily summary of TACC species caught. The MPI fisheries observer data, which provides catch weight for all QMS and non-QMS species caught, on an observed tow-by-tow/set-by-set basis. This provides accurate and verifiable information (if on variable and patchy coverage in the longline fishery in particular). In the hake/hoki/ling fishery in LIN3-7, coverage has been on average above 11% of trawl tows.. For the deepwater longline fishery, coverage ranged from less than 5% (LIN3 and 7), to over 12% (LIN4-6), although coverage varies year on year. Inshore longline coverage has varied more significantly from year to year with many areas having no coverage in particular years, or no coverage at all in LIN6 (where little 'inshore' fishing occurs). Average coverage in LIN3 was 5%. Fishery independent trawl surveys on the Chatham Rise and Sub-Antarctic regions, and much less frequently the west coast South Island region, provide abundance estimates of finfish, cartilaginous fish, and squid species, as well as catch weights of macroinvertebrates. Further inshore surveys also provide some information on TACC stocks. Data on removals of all retained species are collected and are available are summarized in the report of the Stock Assessment Plenary. Thus, some quantitative information is available on the amount of main retained species taken by the fishery. However, due to lack of knowledge of population parameters of all species across the geographic regions of interest, consequences for the status of all affected populations cannot be assessed as required at the SG100 level. A score of 80 is given. Issues with low observer coverage are raised under other SG.		
b	**Guidepost**	Information is adequate to qualitatively assess outcome status with respect to biologically based limits.	Information is sufficient to estimate outcome status with respect to biologically based limits.	Information is sufficient to quantitatively estimate outcome status with a high degree of certainty.
	Met?	Y	Y	N

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		
	Justification	The stocks of hoki, hake and southern blue whiting 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 also available for some other retained species, combined with observer coverage, provide independent monitoring of landed catch. Thus, information is sufficient to estimate outcome status with respect to biologically based limits. However, not all of the retained species are indexed well by surveys and trends in catch-rate indices may not always be plausible. While a number of research projects are either underway or are planned which could increase the information base for the retained species, currently the sustainability of some TACC levels is unknown. While status can be inferred through catch trends and levels, combined with knowledge of stock biology, it cannot be said that information is sufficient to quantitatively estimate outcome status with a high degree of certainty. A score of 80 is therefore given.		
c	Guidepost	Information is adequate to support measures to manage main retained species.	Information is adequate to support a partial strategy to manage main retained species.	Information is adequate to support a strategy to manage retained species, and evaluate with a high degree of certainty whether the strategy is achieving its objective.
	Met?	Y	Y	Y (LIN3&4,5&6), N (LIN7)
	Justification	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, observer coverage in the trawl fishery has been of sufficient consistent coverage to identify bycatch species and support management strategies. In the longline fishery, the coverage has been more variable (LIN4 & 6 of the offshore longline fishery being exceptions). 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. Combined with the regular trawl surveys used within assessments in LIN3&4 and LIN5&6, information being collected 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, and a score of 100 is given. The current lack of trawl survey time series for LIN7 that allows a time series of relative abundance to be developed, and means information is only adequate to support a partial strategy. A score of 80 is given.		
d	Guidepost		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)	Monitoring of retained species is conducted in sufficient detail to assess ongoing mortalities to all retained species.
	Met?		Y	Y (Trawl fisheries in LIN3-7, offshore longline LIN6). N (all other UoC)

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**
	Justification	For trawl fisheries, observer monitoring and catch reporting is consistent and reasonably extensive, both in terms of placements on vessels and coverage of tows (see above). For longline fisheries, coverage has been relatively consistent in LIN6, but in other FMAs is less extensive and more variable than the trawl coverage, with over 12% achieved only in the offshore fishery in areas LIN4, while the inshore fishery observer coverage has only been over 5% in LIN3 (reasonably consistent coverage in the last few years) and intermittent in other areas. As a result, only the LIN6 longline component exhibits consistent coverage in the offshore longline component, noting that there is negligible fishing in the inshore component of this region given the offshore location of the FMA. Vessel-based logbook reporting also occurs for the main species caught in all fisheries. Thus, monitoring of retained species is conducted in sufficient consistent detail to assess ongoing mortalities of all retained species in trawl fisheries in LIN3-7 and the longline fishery in LIN6 and a score of 100 is given. For the other offshore and inshore longline fisheries (LIN3,4,5,7), sufficient data continue to be collected through the majority of approaches, and a score of 80 is given.
References		MPI, 2013a, b, c Bagley et al., 2013 Ballara et al., 2010 O'Driscoll et al., 2011 MPI (2012a) DWG, pers comm.
OVERALL PERFORMANCE INDICATOR SCORE: All of the scoring issues for the 60 and 80 scoring guidepost are met in all UoCs. **Two of four 100 scoring guideposts are met for the trawl fisheries in LIN3, 4, 5 and 6, and the longline fishery in LIN 6, and a score of 90 is given. One 100 scoring guidepost is met by longliner fisheries in LIN3, 4, 5 and 6 and the trawl fishery in LIN 7, and a score of 85 is given. A score of 80 is given for LIN 7 longline**		**90 (LIN3,4,5,6 trawl, LIN6 longline)** **85 (LIN7 trawl, LIN3,4,5 longline)** **80 LIN 7 longline**
CONDITION NUMBER (if relevant):		**NA**

Evaluation Table for 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		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	Main bycatch species are likely to be within biologically based limits (if not, go to scoring issue b below).	Main bycatch species are highly likely to be within biologically based limits (if not, go to scoring issue b below).	There is a high degree of certainty that bycatch species are within biologically based limits.
	Met?	Y	Y	N
		Due to the lack of information on status for non QMS species, we have taken the following approach. The main bycatch species are defined as those considered to represent >5% of the catch, or as being particularly vulnerable (e.g. non-QMS elasmobranch species). For the purposes of this assessment, we have therefore assumed that a species may be at risk where they represent >5% of the total catch, or are caught at levels greater than 10 tonnes per year where this species is considered of low productivity. We recognise that a species may have low abundance and high catchability, which may lead to incorrect estimation of status using these criteria. This is picked up under PI 2.2.2. This approach is comparable to that taken under P1, in separating the determination of outcome from the management and information. All interactions with birds, marine mammalsetc are considered under 2.3. Observers present on vessels record and estimate the weight of all species brought on board, while vessel logbooks also record these species if they are among the most frequent species within the catch. Monitoring bycatch and addressing significant levels of catch represents a partial strategy, based upon the review of potential QMS status (see 2.2.2). For this purpose, longline catch in each region has been grouped. However, it is noted that more unit specific information would be desirable from the inshore fishery component (see 2.2.3). For trawls, main (>5% of the catch weight) bycatch species fall within LIN3 (rattails and javelinfish) and LIN4 (common roughy). Bycatch trends and survey indices indicated that rattails and javelinfish were highly likely to be within biologically based limits, while available survey biomass estimates for common roughy suggest catch levels < 1% of the biomass. MSC guidelines defining 'highly unlikely' state that there should be no more than a 30% probability that the true status is at a level where there is a risk of serious or irreversible harm. Taking that point to be the hard limit, the stock is highly likely to be within biologically based limits. For longline fisheries, black cod was a main non-QMS species in LIN6 (all other areas showed no main non-QMS species by weight). Catches averaged over 20 tonnes per annum, a figure skewed by high (but highly variable from year-to-year, with no trend) catches in the past - in the last two years catches were below one tonne. The growth of this species ($K=0.26y^{-1}$), fecundity, trophic level (3.4) and medium resilience (see Fishbase.org) suggest that catches at this level appear unlikely to lead to fishing impacts.		

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**		
	Justification	In general, the 2010 ERA for related hoki fisheries 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'). Given the trends in bycatch levels and survey indices available, and the relatively small catches considered, it reasonable to conclude the main vulnerable species are highly likely (probability > 0.7) to be within biologically based limits. However, given the large number of bycatch species and the difficulty monitoring many of these, it is not possible to draw conclusions regarding <u>all</u> bycatch species in each unit of certification with a high degree of certainty, as required at the SG100 level. A score of 80 is given.		
b	**Guidepost**	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.	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.	
	Met?	N/A	N/A	
	Justification	N/A		
c	**Guidepost**	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.		
	Met?	N/A		
	Justification	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.		
References		Ballara et al., 2010 Bagley et al., 2013 Bagley and O'Driscoll, 2012 Blackwell, R.G., 2010 Boyd, 2011		

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**
	MPI (2013b) O'Driscoll et al., 2011
OVERALL PERFORMANCE INDICATOR SCORE: The score is 80 because all of the scoring issues for 80 scoring guidepost are met, but none for the 100 scoring guideposts.	**80**
CONDITION NUMBER (if relevant):	**NA**

Evaluation Table for 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		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	There are measures in place, if necessary, that are expected to maintain the main bycatch 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.	There is a partial strategy in place, if necessary, that is expected to maintain the main bycatch 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.	There is a strategy in place for managing and minimizing bycatch.
	Met?	Y	Y	N
	Justification	Specific main (including 'vulnerable') species are discussed under 2.1.1. Ongoing monitoring of trawl and longline catches occurs through the observer programme. 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. Species outside the QMS system tend to be considered as low risk of being caught unsustainably. Substantial catches of non-QMS species tends to lead to the establishment of their QMS status. Furthermore, the framework of continual monitoring of bycatch catches through the observer programme, and the noting of species catches within vessel logbooks if they represent the most frequent species caught in a fishing event, provides a basis for simple assessments of the impact of the fishery on these species or species groups. 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. There is increasing evidence of continued monitoring of non-QMS species through the observer data (primarily for the trawl fishery, notably less for particular regions and components of the longline fishery) and available survey time series (primarily LIN3&4 and LIN5&6). Continued monitoring and quantification of bycatch is also a key management objective of the National deepwater plan 2012-13 (MO2.1), with activities including the accurate reporting of bycatch information through observer programmes, with a focus on identifying deepwater shark species (Action #16), while action #30 describes monitoring catches of and assessing risks to non-QMS (Tier 3) species from deepwater fishing activity. Completion and action on the findings of these activities for the fishery under certification would demonstrate a cohesive strategy. Combined with the QMS Introduction Process Standard and associated activities, this forms a partial but developing strategy for managing bycatch. A score of 80 is given.		

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		
b	Guidepost	The measures are considered likely to work, based on plausible argument (e.g. general experience, theory or comparison with similar fisheries/species).	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.	Testing supports high confidence that the strategy will work, based on information directly about the fishery and/or species involved.
	Met?	Y	Y	N
	Justification	Adding a species to the QMS allows 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 and this has been adjusted for specific retained species/stocks to remove overfishing. There are other ways to handle over catch by individual operators, e.g. purchase of quota from other quota holders. Components of the QMS framework are regularly reviewed, based on species harvests recorded and any other significant new information. The strategy has been tested through various species being incorporated into the QMS and represents an explicit part of the management framework for ling. No apparent collapses have been identified through examination of survey time series. However, as noted within the Plenary document, there is no fully objective basis for confidence that the TACCs for all minor QMS species are set within biologically based limits and hence the strategy cannot be said to be fully tested. A score of 80 is given.		
c	Guidepost		There is some evidence that the partial strategy is being implemented successfully.	There is clear evidence that the strategy is being implemented successfully.
	Met?		Y	N
	Justification	As species have moved from bycatch to QMS status within the fishery, they have been subject to more formalised monitoring and must be retained on board vessels. Two recent examples of species introduced through the QMS Introduction Process Standard are Patagonian toothfish and attached bladder kelp. The Patagonian toothfish was introduced because MPI 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. There is clear evidence that the strategy is being implemented successfully for main bycatch species but not for all bycatch species. A score of 80 is therefore given.		
d	Guidepost			There is some evidence that the strategy is achieving its overall objective.
	Met?			N

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**
	Justification	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 and more formal management of sustainability issues. The strategy is not for ALL bycatch species . A score of 100 is not given.
References		Ministry of Fisheries 2010a,b Ministry of Fisheries, 2008b, c MPI 2013a, b, c
OVERALL PERFORMANCE INDICATOR SCORE: All of the scoring issues for the 60 and 80 scoring guidepost are met in all regions. None of the four 100 scoring guideposts are met, and the resultant score is 80		**80**
CONDITION NUMBER (if relevant):		**NA**

Evaluation Table for 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		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	Qualitative information is available on the amount of main bycatch species taken by the fishery.	Qualitative information and some quantitative information are available on the amount of main bycatch species taken by the fishery.	Accurate and verifiable information is available on the catch of all bycatch species and the consequences for the status of affected populations.
	Met?	Y	Y	N
	Justification	Key quantitative information on the level of bycatch (non-QMS species and hence generally not enumerated on logsheets) comes from the observer programme. Resulting 'main' species (or those to be considered 'vulnerable') are noted in 2.1.1. Information on status is supported by studies on trawl survey data in regions, and where catches are of sufficient importance, these should be noted on logsheets. The observer programme provides for the production of estimates of bycatch by quota area and fishery. The coverage of the ling trawl fishery is considered to be good for the fisheries under assessment. The precision of bycatch estimates depends on the level of observer coverage and are therefore less precise for the longline fishery, whose coverage has generally been more intermittent and on average lower. The exception is LIN6 offshore longline (there being no inshore longline component given the offshore location of the FMA), where an average of 43.5% of sets have been observed. All other regions have had some observations over the last five years, providing some quantitative information. However, the generally lower degree of coverage in the inshore fishery is noted and discussed under other scoring elements. An increasing number of studies have examined and summarized trends in abundance of non-target species from trawl surveys for the Chatham Rise and sub-Antarctic region, and compared the disjointed time series for the west coast South Island. However, survey information is not available for all regions of the fishery and some bycatch species are not well monitored by the surveys undertaken. Therefore, while qualitative information and some quantitative information is available on the main bycatch species affected by the fishery, it is not possible to evaluate the consequences of fishing activities on all bycatch species' populations in each of the areas. A score of 80 is given.		
b	**Guidepost**	Information is adequate to broadly understand outcome status with respect to biologically based limits	Information is sufficient to estimate outcome status with respect to biologically based limits.	Information is sufficient to quantitatively estimate outcome status with respect to biologically based limits with a high degree of certainty.
	Met?	Y	Y	N

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**		
	Justification	The status of main vulnerable species caught in bycatch are monitored through available trawl surveys (areas LIN3 and 4, LIN5 and 6), noting that the survey in the WCSI (LIN7) provides a very limited time series. It is noted that the 10 year research plan includes a combined trawl/acoustic survey on the WCSI. To date, trends in abundance have not been detected in any of the surveys. On this basis, information is sufficient to estimate relative abundance, as a proxy for biologically-based limits. In LIN regions 3-7, trawl observer reporting provides high quality information on those catches, while longline observer data provides sufficient information to estimate outcome status, where these data sources are combined with trawl survey data (noting that an increasing time series in LIN7 will develop in the future, and a recommendation (recommendation 2) has been developed accordingly). Information available in these areas on population parameters is therefore sufficient to estimate outcome status for bycatch species with respect to biologically-based limits . A score of 80 is therefore given.		
c	**Guidepost**	Information is adequate to support measures to manage bycatch.	Information is adequate to support a partial strategy to manage main bycatch species.	Information is adequate to support a strategy to manage retained species, and evaluate with a high degree of certainty whether the strategy is achieving its objective.
	Met?	Y	Y	Y (LIN3,4,5,6 trawl, LIN 6 longline) only

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		
	Justification	The primary source of bycatch information is through the observer programme, supplemented by available survey information. In the hake/hoki/ling trawl fishery in LIN3-7, coverage has been on average above 10% of trawl tows. For the deepwater longline fishery, coverage ranged from less than 5% (LIN3 and 7, with LIN7 being estimated using data supplied by DWG for the 2011/12 year), to over 10% (LIN4-6), although coverage varies year on year. Coverage in the offshore longline LIN 6 FMA has been relatively high and consistent. Inshore longline coverage has varied more significantly from year to year with many areas having no coverage in particular years. Average coverage in LIN 3 was generally over 5%, with this region also showing relatively consistent year-on-year coverage. In addition to data collection by observers, there is also vessel-based reporting of species caught where those catches are significant. When combined with information collected through trawl surveys in most areas, as well as inshore along the coast, a significant body of data is available to support a strategy to manage bycatch, and evaluate whether this strategy is achieving its objective. A score of 100 is given for the trawl fisheries in LIN3-7, noting the combination of survey information, observer coverage and logsheet information is adequate to support a strategy to manage retained species, and evaluate with a high degree of certainty whether the strategy is achieving its objective. For the longline fishery, a score of 100 is given for the offshore longline fishery in LIN6, noting the survey information, observer coverage and logsheet information is adequate to support a strategy to manage retained species, and evaluate with a high degree of certainty whether the strategy is achieving its objective, while 80 is given for LIN3-5, noting the combination of survey information, reasonable observer coverage to identify the key species and their catch rates/levels, and logsheet information to support. For LIN 7 longline a score of 80 has also been given, noting that the available information indicates no main bycatch species within this UoC. The short time series of information available is recognised, and recommendation 2 has been developed accordingly.		
d	Guidepost		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).	Monitoring of bycatch data is conducted in sufficient detail to assess ongoing mortalities to all bycatch species.
	Met?		Y	Y (LIN3 and 4, LIN5 and 6 trawl, LIN6 longline) N (all other UoC)

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
	Justification	The data collected from surveys are generally sufficient to cover the major areas of the fishery (Chatham Rise & sub-Antarctic, LIN3 and 4, LIN5 and 6), but the time series in west coast South Island is notably limited (LIN7). In combination with the ongoing observer coverage (LIN3 and 4, LIN5 and 6 trawl, and the LIN6 offshore fishery but not for the remaining longline fishery FMAs, where either the inshore or offshore component in each LIN area shows intermittent and low coverage) and actions detailed in the Annual Operational Plan for the fishery, this is sufficient to detect increases in risk to the main bycatch species. That said, the precision of estimates for particular bycatch species within the trawl surveys, in particular the WCSI is more limited. This will improve with further surveys in this area. A score of 100 is given for LIN3 and 4, LIN5 and 6 trawl, and a score of 80 is given for all other LIN areas, reflecting the reduced information from fishery-independent surveys and observer programmes in those areas.
References		Ballara et al., 2010 Bagley et al., 2013 Ramm, 2012 O'Driscoll et al., 2011
OVERALL PERFORMANCE INDICATOR SCORE: **For the trawl fishery, all of the scoring issues for the 60 and 80 scoring guidepost and two of the four 100 guideposts is met in LIN 3,4,5 and 6, and a score of 90 is given. For LIN7, all 80 guideposts are met, and a score of 80 given.** **For longline, all 80 scoring guideposts are met in LIN3-6 and LIN7 and a score of 80 is given. For LIN6, two of the four 100 guideposts are met, and a score of 90 is given.**		**Trawl:** **LIN3-6 :90** **LIN7: 80** **Longline** **LIN3-5 and 7: 80** **LIN 6: 90**
CONDITION NUMBER (if relevant):		**NA**

Evaluation Table for 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**		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	Known effects of the fishery are likely to be within limits of national and international requirements for protection of ETP species.	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.	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.
	Met?	Y	Y	Y (trawl LIN3-7) N (all longliners all regions)
		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 (Compliance Information Sheet 8), and the long-term aim is to minimise mortalities where possible. This provides good information on the potential effects of the fishery on ETP species. It is also noted that the NPOA-Seabirds requires that seabird species identified as at very high or high risk of having commercial fisheries bycatch exceed population sustainability limits should be managed to a lower risk category by 2018. The new NPOA-sharks also specifies a risk-based approach to identifying and managing impacts on sharks. Trawl vessels over 28 m in length are also required to deploy specified mitigation measures to reduce seabird captures; compliance with these measures is assessed by government observers. In turn, regulation requires the use of a streamer line during the setting of bottom longlines on vessels greater than 7 m in length, and therefore may not cover the whole fleet. Line weighting approaches are also used. Occasionally, the New Zealand government will identify a maximum allowable mortality level for protected species in accordance with legislative provisions. No specific limits on interactions have been set in the ling fishery; the activities aimed at minimising interactions are underway. It is noted that the interaction rate will be population size dependent, and therefore there is a need to explicitly consider population size estimates to evaluate unacceptable impact levels. 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. Good observer coverage and reporting within the ling trawl fishery means that the effects of the fishery are known and estimable, in terms of bycatch of ETP species		

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**		
		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. Focused coverage can be implemented to improve knowledge where additional information is required for management. These include protection and monitoring of bird and mammal breeding sites. Data collected are subjected to appropriate exploratory and/or quantitative analyses, 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. Regular (annual) estimates of interactions of fisheries with ETP species are developed raising observer information up to the level of the fishery. Through these approaches, the risk assessment for birds, existing population estimates for key ETP species allow the current interaction rates to be viewed in relation to national and international requirements with a high degree of certainty, and are highly likely to be within limits of national and international requirements. For trawls in LIN3-7, a score of 100 is given, reflecting the greater certainty in annual interaction estimates. For longliners, a score of 80 is given, reflecting the greater uncertainty in estimates. Further discussions on observer coverage are made under 2.3.3.		
B	**Guidepost**	Known direct effects are unlikely to create unacceptable impacts to ETP species.	Direct effects are highly unlikely to create unacceptable impacts to ETP species.	There is a high degree of confidence that there are no significant detrimental direct effects of the fishery on ETP species.
	Met?	Y	Y (trawl fisheries) N (longline vessels)	Y (trawl fisheries) N (longline vessels)
		Birds Observer reports of bird kills within the ling fishery have varied over time, and by LIN area. Numbers available from the observer programme focus on warp-strike events (all gears), hooking (longliners), as well as trawl-net interactions, and less on deck-strikes, since the former events were the most common prior to the implementation of mitigation measures. It is recommended that the recording of deck-strike and in particular trawl net interactions continue to be improved For trawlers, 8 incidences of birds being landed dead from the trawl warps or doors have been reported by observers since the 2004/05 fishing year. Four times that many net captures have been reported[8]. The majority of interactions with the trawl fishery involve white-chinned petrels, white-capped albatrosses, sooty shearwaters and 'other albatrosses and seabirds'. Key locations for captures were LIN4 (a maximum of 16 sooty shearwaters), numbers being below 5 in other locations. Conservative population estimates include: sooty shearwaters around 5 million adult pairs; white-capped albatross around 100,000 pairs; and white-chinned petrels around 70,000 (uncertain estimate). When taking the overall mortalities within the fishery into account, white-chinned petrel fall within the 'moderate' risk category. Based upon these numbers and the catch rate in the ling trawl fishery, the effects of the trawl fishery appear highly likely to be within national limits. This is supported by the risk assessment for birds, which indicated that annual potential seabird fatalities within the deepwater trawl complex were between 1% and 50% of the PBR. Seabird captures in the ling fishery account for approximately 3% of seabirds caught in New Zealand offshore		

[8] https://data.dragonfly.co.nz/psc/v20130304/birds/ling-trawl/all-vessels/eez/all/

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**
		trawl fisheries in 2007/08 and 2008/09.

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
	The longline fishery showed greater levels of bird interactions than trawls, with interactions noted in LIN4, LIN5 and LIN6 (Chatham Rise, Sub-Antarctic, Puysegur and Stewart-Snares regions). During the period 2007-2009 no other region showed recorded bird interactions (while observer coverage was generally low in those areas and years, interactions should have been noted although interactions on vessels without observer coverage cannot be confirmed). Estimated bird bycatches have varied between years, often being zero in particular years, demonstrating the potential inter-vessel, inter-area and inter-year variability that can occur. Key locations for 2008-09 captures were Chatham rise (LIN4) and the Sub-Antarctic (LIN6) with a modelled maximum of 1,100 interactions with white-chinned petrels in LIN4 and 221 interactions in LIN6. In 'small bottom-set longline' fisheries (described as vessels <34m not targeting bluenose or snapper, but combining the targeting of a number of species), the seabird risk assessment noted estimated Salvin's albatross and Chatham albatross fatalities were notable; indeed the small-vessel group had the highest vulnerability. Conservative population estimates for key bird species are: white-chinned petrels are around 70,000 (uncertain estimate) and when taking the overall mortalities within fisheries into account, white-chinned petrel were within the 'moderate' risk category; sooty shearwaters around 5 million adult pairs; this species was within the low risk category. The uncertainty in the risk ratio was more sensitive to uncertainty in bottom-longline fatalities than information on mortalities in other fisheries or biological characteristics. The risk assessment suggested that the larger bottom longline vessels were of relatively low risk with a mean annual potential fatality value between 1-10% of the PBR, suggesting direct effects are highly unlikely to create unacceptable impacts to ETP species. The smaller bottom longline vessels (noting that this was not split into ling vessels specifically - see 2.3.3) showed greater risk, with black petrel interactions being greater than the mean PBR, Salvin's albatross and Chatham Island albatross interactions being between 30-100% of the PBR, and Flesh-footed shearwater interactions being between 10-30% of the PBR. While the ling small bottom longline component of this category is unlikely to create unacceptable impacts to ETP species, this uncertainty needs to be addressed. As the longline UoC combines both small and large longline vessels, and given the risk and uncertainty over interaction rates for these gears resulting from variable observer coverage, a score of 60 is given for the longline fishery. Marine mammals Interactions between the ling trawl fishery and marine mammals are typically with fur seals. In the past few years, interactions have varied between LIN areas, and peaked in 2008-09 at 7 (0-23) interactions at Puysegur and Chatham Rise. Populations are monitored, and estimates of total New Zealand population sizes, and number of breeding colonies are generally increasing; total population estimates around New Zealand exceed 50,000 adults and are thought to be expanding following direct historical exploitation. However there remains some uncertainty over population status in the WCSI. Overall population growth suggests that mortalities in the LIN trawl fisheries are highly unlikely to directly affect the increasing population, although continued study is warranted. No fur seal interactions have been observed in the ling longline fishery. No interactions with sea lions or dolphins have been noted. Fish There have been no observed interactions of basking sharks, or other protected shark species,with the ling fishery. Cold water corals Observer data shows that protected cold water corals are brought up in trawls in the areas under certification, and reported interactions within the ling fishery have been

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detailed in the main text. These represented 0.01% or less of noted interactions.

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
Justification	detailed in the main text. These represented 0.01% or less of noted interactions. Recent reports indicated that the ling/hoki/ling fishery did not pose a great risk to coral. A score of 100 is therefore given for the trawl fishery. Given the level of interactions with seabirds and concerns raised over the estimated levels of capture in the small bottom longline component relative to calculated PBRs in the risk assessment, a score of 60 is given for longline vessels. A condition is raised.

C	**Guidepost**		Indirect effects have been considered and are thought to be unlikely to create unacceptable impacts.	There is a high degree of confidence that there are no significant detrimental indirect effects of the fishery on ETP species.
	Met?		Y	N
	Justification	On trawlers, indirect effects are being managed through attempts to limit the discharge of offal through Vessel Management Plans while the timing of offal discharge is managed on longline vessels. Offal provides food for birds and to a lesser extent marine mammals. There is no evidence of hook losses from longlines leading to chick mortalities from the bird population surveys. It is therefore unlikely that indirect effects will create unacceptable impacts. Indirect effects on ETP species are subject to ongoing review by DOC as part of the Marine Conservation Services Programme.		
References		Abraham and Thompson 2011b Thompson et al., 2013a, b Thompson et al., 2010 Richards et al., 2011 Richards and Abraham, 2013a; 2013b Francis and Smith, 2010 Baird et al., 2012 Baird, 2011 Ministry of Fisheries Compliance Information sheet 8 New Zealand Gazette 2010 www.acap.aq DOC, 2012 Baker et al., 2009 Hamilton and Baker, 2010 Thompson et al., 2013 Baird, 2008		
OVERALL PERFORMANCE INDICATOR SCORE: All of the scoring issues for the 60 scoring guidepost are met. **For trawlers, all 80 scoring guidepost are met in all regions and two of the three 100 scoring guideposts are met. A score of 95 is given.** **For longliners, two of the three 80 scoring guideposts are met. A score of 75 is given and a condition raised.**				**Trawls:** **LIN3-7:95** **Longliners: 75**
CONDITION NUMBER (if relevant):				**1**

Evaluation Table for 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.		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	There are measures in place that minimise mortality of ETP species, and are expected to be highly likely to achieve national and international requirements for the protection of ETP species.	There is a strategy in place for managing the fishery's impact on ETP species, including measures to minimise mortality, which is designed to be highly likely to achieve national and international requirements for the protection of ETP species.	There is a comprehensive strategy in place for managing the fishery's impact on ETP species, including measures to minimise mortality, which is designed to achieve above national and international requirements for the protection of ETP species.
	Met?	Y	Y (trawl) N (longline)	N
		Key legislation for ETP species includes the Fisheries Act (1996), the Wildlife Act (1953), which also protects specific fish species, Marine Mammals Protection Act (1978), and specific regulations for birds (relating to bycatch mitigation approaches). Combined with the requirement to report injury or mortality of protected species to the Department of Conservation without offence, and the observer programme on board trawlers, these provide a strategy to monitor the fishery and hence implement the legislation. An environmental risk assessment process has been performed to support the revision of New Zealand's NPOA – Seabirds, by identifying those species most under pressure from additional mortality above natural levels. A new NPOA sharks has been finalised and is publically available. General mitigation approaches for trawlers, supported through legislation, include voluntary industry-led codes of practice. These include individual vessels developing a Vessel Management Plan, which cover methodologies to limit offal discharge during periods of vulnerability for birds, and which are audited by MPI observers. This approach allows mitigation methods to be adapted to the particulars of vessel operations, but as a result may be unable to eliminate interactions. In turn, regulations require the use of one of three potential bird scaring devices: paired streamer lines, a bird baffler or warp deflector, which must be deployed as soon as possible after trawl shooting by all vessels 28 m or greater in length (we note that there are a number of vessels under 28m operating in LIN 3, 5 and 7 and a recommendation has been developed for this component of the fishery). The efficacy of these devices has been examined in New Zealand and internationally (e.g., Bull 2009; Løkkeborg 2011). Streamer lines are the most effective in reducing seabird strikes on trawl warps. These devices have been shown through the observer programme data to have successfully reduced mortalities through warp strikes. The cleaning of the net before shooting is also required. Cleaning of the net before shooting is also required. Studies on trawl net interaction mitigation processes have been undertaken.. Reporting practices are also in place, so that bird captures trigger action by DWG and are reported to MPI.		

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.**		
	Justification	General mitigation approaches for longliners, supported through legislation, include voluntary industry-led codes of practice. These include individual vessels' Vessel Management Plans, which cover methodologies to limit offal discharge during periods of vulnerability for birds, and which are audited by MPI observers. This approach allows mitigation methods to be adapted to the particulars of vessel operations, but as a result may be unable to eliminate interactions. In turn, regulation requires the use of a streamer line during the setting of bottom longlines on vessels greater than 27 m in length, and therefore may not cover the whole fleet. Line weighting approaches are also used. Reporting practices are also in place, so that bird captures trigger action by DWG and are reported to MPI. While there are no specific regulations defining mitigation approaches for marine mammal interactions within this fishery, the industry has developed operating procedures to identify and react to marine mammal bycatch events. Reporting practices are in place, so that marine mammal captures trigger action by DWG and are reported to MPI. In turn, operating procedures are also provided to minimise the danger period when the trawl net is close to the surface, shallow turns while trawling, and to avoid discharging offal (as in the VMP for bird bycatch mitigation). Some vessels avoid shooting nets where marine mammals are present. For ETP fish species, legislation provides the main strategy to minimise mortality. The implementation of this strategy is essentially operational. Fisheries plans under development for the hoki and deepwater trawl fisheries will include basking shark within them. For protected cold water corals, the operational strategy of towing within the historical footprint provides some protection to cold water corals, although it is noted that corals are still brought up in trawls. The designation of Benthic Protection Areas, which include seamounts known to include such key species, act as a non-directed strategy for managing the fishery's impacts on these species. While the effectiveness of these areas relative to the overall population of protected corals has not been specifically examined, risk assessments indicate that the ling fishery is unlikely to cause a risk to populations. While operational plans appear effective, not all ETP are managed through comprehensive strategies, as defined by MSC, designed to exceed national and international requirements (e.g. basking sharks, corals). The 80 ievel is met for trawlers. For longliners, information suggests that the (not regulated) implementation of bird-scaring devices may be less rigorous in the inshore sector. The 60 level is met but not the 80 and a condition raised.		
b	**Guidepost**	The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/species).	There is an objective basis for confidence that the strategy will work, based on information directly about the fishery and/or the species involved.	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.
	Met?	Y	Y	N

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.**		
	Justification	There is an objective basis for confidence that the strategy will work, based on information derived from scientific research, knowledge of species and their interactions with fisheries, global best practice, and past performance under operational plans. 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. 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. Fur seals: The OPMM is based on detailed knowledge (and expert opinion) of marine mammal species, the hoki/ling/ling fishery, and interactions with 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 fishery. 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). However, as noted the risk assessment indicates that the ling fishery is not a risk factor for these species. Protected fishes: No specific operational actions are in place to minimise captures of protected fishes, specifically the basking shark, noting the rarity of interactions. While the management strategy is multi-faceted, and considers information from the fishery, the efficacy of some components has not been evaluated quantitatively. A score of 80 is therefore given.		
c	**Guidepost**		There is evidence that the strategy is being implemented successfully.	There is clear evidence that the strategy is being implemented successfully.
	Met?		Y	Y (trawlers) N (longline vessels)
		For the framework in place, detailed monitoring is conducted by fisheries Observers on some vessels in some UoCs, at levels clearly sufficient to estimate interaction levels and rates. 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 spatial management areas also occurs; BPAs are monitored through VMS and observer coverage, and evidence shows that they are being adhered to. Camera surveys on closed seamounts have shown that the closure of areas with protected cold water corals within them has allowed recovery where impacts have occurred previously. Strategic documents are also reviewed from time to time, e.g. the Annual Operational Plan, the finalised NPOA – Sharks and legislation (reviews in recent years have included the addition of new species as legally protected, revised reporting regulations, and gazetting of required mitigation measures). A score of 100 is therefore given for trawlers. In turn, while there are clear regulations for the use of seabird scaring devices on		

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.**		
		longline vessels, the implementation and hence effectiveness of these approaches to mitigate bird interactions in inshore (longline) fisheries is less known. Given the intermittent and frequently limited observer coverage on these vessels, it cannot ben said that there is clear evidence from available observations and information from enforcement, that the existing strategy is being implemented successfully, and a score of 80 is given for the longline component.		
d	**Guidepost**			There is evidence that the strategy is achieving its objective.
	Met?			N
	Justification	Management objectives to achieve environmental outcomes desired from the ling fishery focus on avoiding and minimising adverse environmental impacts, including on ETP species. As noted, the strategic framework includes 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. The 100 scoring guidepost is not met.		
References		New Zealand Gazette 2010 Abraham and Thompson, 2011 Bull LS. 2009. New mitigation measures reducing seabird by-catch in trawl fisheries. Fish and Fisheries 10:408–427. Deepwater Group Ltd., 2009. Deepwater Group Ltd., 2011. Department of Conservation. 2012. MPI. 2013d. Ministry of Fisheries. 2010 MPI, 2012b MPI, 2013d Ministry of Fisheries. 2011d. New Zealand Gazette 2010. Pierre et al., 2010. Ramm, 2012. Rowe, 2010. Middleton and Abraham 2007 Bull 2009. Løkkeborg 2011. Clement and Associates 2009.		
OVERALL PERFORMANCE INDICATOR SCORE: For trawlers, all of the scoring issues of the 60 and 80 scoring guideposts are met, and one component of the 100 scoring guidepost. A score of 85 is given. **For longliners, two of the three 80 scoring guideposts are met, and a score of 75 is given.**				**85 (trawl vessels)** **75 (longline vessels)**

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.**
CONDITION NUMBER (if relevant):	**2**

Evaluation Table for 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.		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	Information is sufficient to qualitatively estimate the fishery related mortality of ETP species.	Sufficient information is available to allow fishery related mortality and the impact of fishing to be quantitatively estimated for ETP species.	Information is sufficient to quantitatively estimate outcome status of ETP species with a high degree of certainty.
	Met?	Y	Y	N

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.**		
	Justification	The DOC Marine Conservation Services Programme aims to monitor the effects of commercial fishing on protected species. Estimates of captures for seabird and marine mammal bycatch are publically available online. Monitoring seabird mortality within trawl fisheries is a specific role of the observer on board vessels. The coverage of observers has been sufficient to develop reasonably precise estimates of the likely total mortality of seabirds, and to monitor trends in the mortalities over time, including the impacts of bird mortality mitigation approaches discussed under 2.3.2. Captures are observed by 'type', including entanglement within the net and warp strikes.However, the limited observer coverage of inshore longline fishing vessels means the impact of these vessels on ETP populations is a concern, particularly given the potential impact of that component on some ETP groups. This is discussed further under element c. Surveys of bird populations are underway, and estimates of breeding population size are available which allow quantitative estimates of outcome status. There remain difficulties in assessing non-warp strike bird mortalities such as those related to net entanglements, for specific fisheries. Monitoring of marine mammal mortalities within the fisheries is also a specific role of the observer on board vessels. The coverage of observers has been sufficient to develop estimates of the likely total mortality of marine mammals, and to monitor trends in the mortalities over time. Where information is less robust, specific data collection initiatives have been developed. Surveys of relevant marine mammal populations are underway, but these are not yet able to definitively indicate abundance levels in all areas to allow the outcome status to be identified with a high degree of certainty. For particular protected fish species (e.g. basking sharks), specific projects have been funded in an attempt to gather some information on population sizes. In turn, tagging projects have been performed on great white sharks. Low interaction rates noted by observers do allow quantitative estimates to be made. Cold water corals captured in trawls are noted by observers present onboard, and where they cannot be identified they are returned to experts on shore for more detailed examination. Fishery-independent surveys are also underway using cameras inside and outside the main fishery areas and the recovery of corals within newly closed areas of the New Zealand EEZ have been undertaken. Further projects have examined other biological aspects of cold water corals. These data have been combined to examine the overlap of fishing vessel operations with the distribution of protected cold water corals to be identified, and a risk-based evaluation of the potential degree of impacts undertaken. Areas or fishing units 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. A score of 80 is therefore given.		
b	**Guidepost**	Information is adequate to broadly understand the impact of the fishery on ETP species.	Information is sufficient to determine whether the fishery may be a threat to protection and recovery of the ETP species.	Accurate and verifiable information is available on the magnitude of all impacts, mortalities and injuries and the consequences for the status of ETP species.
	Met?	Y	Y	N

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.**		
	Justification	Information from the observer programme is sufficient to support the strategy of bird mitigation to manage impacts, and data have shown decreases in bycatch following the introduction of mitigation methods, allowing the impact to be identified with a reasonably high degree of certainty. This programme also provides information on the interactions between gears and sea mammals, ETP fish species and coral. Combined with the fishery-independent underwater surveys, they allow the effectiveness of any mitigation approaches to be evaluated. However, for many seabird species and fur seals, population estimates can be dated or imprecise and fate information is not comprehensive. Current information has, however, allowed risk assessments to be performed on fishing risks to ETP species populations for main fishery groups (trawl, offshore and inshore bottom longliner groups). A score of 80 is given.		
c	**Guidepost**	Information is adequate to support measures to manage the impacts on ETP species.	Information is sufficient to measure trends and support a full strategy to manage impacts on ETP species.	Information is adequate to support a comprehensive strategy to manage impacts, minimize mortality and injury of ETP species, and evaluate with a high degree of certainty whether a strategy is achieving its objectives.
	Met?	Y	Y (trawlers LIN3-7) N (longliners LIN3-7)	N
		Information on ETP species 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 known, for example, monitoring of warp strikes has indicated reductions in Salvin's albatross and white-capped albatross within fisheries following the introduction of mandatory warp mitigation in January 2006 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. Fishing impacts on protected coral species are determined by weight, and managed using spatial measures. Knowledge of the distribution of coral species is broadly known in areas of relevance to the fishery. A number of population-level research projects are also underway on other ETP species, which will provide information useful for management. Trends in fisheries captures and mortalities are measured through observer data collection. Trends can be derived using effort information and observations from specific years, these interpolations can only be adequate to support measures (SG60), rather than sufficient to measure trends (SG80) given the additional uncertainty that results in the modelling process, and the potential for unusual years to form the basis of model results. Available reports providing estimates by UoC demonstrate the patchy nature of data. Where observer coverage has been relatively high (e.g. LIN6), confidence intervals remain relatively high, suggesting bycatch patterns that vary, and which affect the measurement of trends.		

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.**
	Justification	Data coverage and time series is considered through expert opinion to be sufficient within the trawl fisheries in LIN3-7 to provide information sufficient to measure trends and support a full strategy, and a score of 80 is given. Although expert opinion has been used to make this judgment, a fuller understanding would require further inputs from the modelling approach to identify what is a 'sufficient' level for each unit of certification.
References		Thompson et al., 2013a,b Tracey et al., 2011 Richard et al., 2011 Rowe, 2010 Richard and Abraham, 2013 Richard and Abraham, 2011 Abraham and Thompson, 2011 https://data.dragonfly.co.nz/psc/v20121101/birds/hake-trawl/all-vessels/eez/all/ https://data.dragonfly.co.nz/psc/v20130304/new-zealand-fur-seal/hake-trawl/all-vessels/eez/all/
OVERALL PERFORMANCE INDICATOR SCORE: All of the scoring issues of the 60 are met. **For trawlers, in LIN3-7 all 80 scoring guideposts are met and a score of 80 is given.** **For longliners, two of the three 80 scoring guideposts are met, and a score of 75 is given.**		**Trawlers:** **LIN3-7: 80** **Longliners: 75**
CONDITION NUMBER (if relevant):		**3**

Evaluation Table for 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		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	The fishery is unlikely to reduce habitat structure and function to a point where there would be serious or irreversible harm.	The fishery is highly unlikely to reduce habitat structure and function to a point where there would be serious or irreversible harm.	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 harm.
	Met?	Y	Y	N
		Trawlers 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. The degree of trawling impact on the seabed will be dependent upon sediment types, and is some concern. Research in other geographic areas and studies of the impacts of trawling on the Chatham Rise have identified the stirring of sediments and benthos, the degree of impacts dependent upon the substrate type and level of previous trawl disturbance events. The footprint of the trawl fisheries has been examined within the New Zealand EEZ. Currently, the best single tool currently available to evaluate benthic habitat types is the Benthic-Optimised Marine Environment Classification (BOMEC) for New Zealand waters. The pattern of New Zealand's trawl footprint for deepwater fisheries has been monitored relative to the BOMEC categories. The estimated swept area of the gear in relation to the BOMEC category areas within the New Zealand EEZ as a whole (rather than within the individual regions of certification under this assessment) has been less than 5%, and generally less than 2%. Examinations of the trawl footprint by LIN region have also been undertaken. Trawling occurred mainly in the 300-600m depth zone, sweeping a maximum of 7.9% of that depth band in LIN5. Vessel operational strategy indicates that the same tracks are being trawled; it is highly unlikely that habitat structure and function will be degraded further, pending appropriate management action. Lost gear events appear to be rare, and given the value of the gear all efforts are made to retrieve any that are lost. The examination of the trawl footprint of the fishery relative to the area of BOMEC classifications and LIN fishery areas provides evidence that the fishery is highly unlikely to reduce habitat structure and function to a point where there would be serious or irreversible harm. However, further evidence on the basis of the inter-relationship between the BPAs, ground-truthing of the latest habitat classification (relative to the rate of recovery following disturbance), combined with the current analysis of trawl paths, is recommended to increase the score. Note that issues with cold water corals are dealt with under PI2.3. A score of 80 is given.		

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	
	Justification	Longliners The impacts of demersal longlining on the benthic habitat will be limited to the movement of longlines and anchors across the bottom on shooting and hauling, as well as due to shifting that results from underwater currents. Bottom-set longlines may snag on benthic epifauna, particularly to those corals that have a branching or bushy structure, and irregular objects on the bottom, and may damage or move objects, but may also break and gradually entangle itself around bottom features. The key determinant of the effects of longlines is how far they travel over the seabed during setting and retrieval. In addition to the line and hooks, anchors can be pulled some distance across the seabed before ascending. In general, however, longline fisheries offer the potential to conduct fisheries with less significant habitat damage. Impacts are generally considered to be relatively minor (but certainly not negligible). In turn, cold water corals are known to occasionally be brought up on longlines, although the potential impact is expected to be much lower than trawls, despite the fact that these gears can fish inside BPAs. A recent report on the distribution of coral species (primarily considered under 2.3) indicated that 'bottom longline fisheries... operate in areas where protected corals are found but the catch from these fisheries is not well understood.' This demonstrates the potential for benthic interactions, but these are expected to be negligible compared to bottom trawling. A score of 80 is given.	
	References	Black et al. 2013 Black, 2013 Hewitt et al., 2011 Snelder et al., 2005, 2006 Leathwick et al., 2006 Bowden et al. 2011 MPI, 2012	
OVERALL PERFORMANCE INDICATOR SCORE: The fishery satisfies the scoring issues for the 60 scoring guidepost and the scoring issues of the 80 scoring guidepost, but not the 100 scoring guidepost.			**80**
CONDITION NUMBER (if relevant):			**NA**

Evaluation Table for 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		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	There are measures in place, if necessary, that are expected to achieve the Habitat Outcome 80 level of performance.	There is a partial strategy in place, if necessary, that is expected to achieve the Habitat Outcome 80 level of performance or above.	There is a strategy in place for managing the impact of the fishery on habitat types.
	Met?	Y	Y	N

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		
	Justification	The Marine Reserves Act (1971) provides the basis for enacting protected areas within New Zealand, while the Conservation Act (1987), Wildlife Act (1953), and Fisheries Act (1996) also provide a framework for implementation. The New Zealand Biodiversity Strategy (2000) identified the need to develop a Marine Protected Areas Policy to protect a full range of natural marine habitats and ecosystems to effectively conserve marine biodiversity, using a variety of appropriate mechanisms, including legal protection. The MPI Strategy for Management of the Environmental Effects of Fishing provides a further framework for managing impacts, aiming to implement an Ecosystem Approach to Fisheries, make significant improvements in managing the environmental effects of fishing, and to ensure the Ministry for Primary Industries meets its environmental obligations under the Fisheries Act 1996 and other legislation in an efficient and consistent manner. Trawlers While the processes are ongoing, currently around a third of the New Zealand EEZ has been encompassed by Benthic Protection Areas (from 2007). The requirement for the BPA design was to encompass not less than 10% of each oceanic class of the MEC and each oceanic class was to be represented in two or more BPAs. They were also spread by latitude and longitude throughout the New Zealand EEZ, which runs from sub-tropical waters to sub-Antarctic waters, and to protect benthic habitats over a range of depths. The designated BPAs are indicated to protect: 28 percent of Underwater Topographic Features (including seamounts); 52 percent of seamounts (underwater mountains over 1000 metres in height); and 88 percent of active hydrothermal vents. Demersal trawling and dredging is prohibited in these areas (pelagic fishing and demersal longlining being allowed). In turn, data continue to be collected to underpin studies. Further development of Marine Protected Areas continues primarily within the Territorial Sea (from the coast to the 12-mile limit). Combined, the BPAs and seamount closures, along with the operational strategy of towing within the path of historical trawl footprints, represent a partial strategy. 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, but there is no clear link between the findings and its use 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. A score of 80 is therefore given. Longliners In addition to the partial strategy given by the legislative framework detailed above, the further strategy for longliners is an operational one - impacts of demersal longline fishing will be reduced when compared to those of demersal trawls, and any impacts will be highly localised. A score of 80 is given.		
b	Guidepost	The measures are considered likely to work, based on plausible argument (e.g. general experience, theory or comparison with similar fisheries/habitats).	There is some objective basis for confidence that the partial strategy will work, based on information directly about the fishery and/or habitats involved.	Testing supports high confidence that the strategy will work, based on information directly about the fishery and/or habitats involved.
	Met?	Y	Y	N

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**		
	Justification	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 and the closure of areas such as seamounts and the Benthic Protection Areas, combined with their location, the use of VMS and the analysis of trawl tracks relative to BOMEC areas provides an objective basis that the partial strategy will work. A score of 80 is given. We noted that there was a proposal to review BPAs in 2013, which has not as yet been progressed.		
c	**Guidepost**		There is some evidence that the partial strategy is being implemented successfully.	There is clear evidence that the strategy is being implemented successfully.
	Met?		Y	N
	Justification	Fisheries observers monitor compliance with the boundaries of Benthic Protection Areas or other closed areas, particularly on trawl vessels where coverage has generally been more consistent. The MPI and DWG are able to follow up if compliance anomalies are detected. VMS data from trawl vessels also provides information on the trawl footprint which has been related to the BOMEC areas. There is therefore clear evidence that the strategy as stands is being implemented successfully. This provides some evidence that the partial strategy is being implemented. A score of 80 is given.		
d	**Guidepost**			There is some evidence that the strategy is achieving its objective.
	Met?			N
	Justification	As noted in b), a strategy is not considered to be in place.		
References		Black et al., 2013 DOC, 2012 DOC, 2005 MPI, 2012b		
OVERALL PERFORMANCE INDICATOR SCORE: The fishery satisfies the scoring issues for the 60 scoring guidepost and the scoring issues of the 80 scoring guidepost, but none at the 100 scoring guidepost.				**80**
CONDITION NUMBER (if relevant):				**NA**

Evaluation Table for 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		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	There is basic understanding of the types and distribution of main habitats in the area of the fishery.	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.	The distribution of habitat types is known over their range, with particular attention to the occurrence of vulnerable habitat types.
	Met?	Y	Y	N
	Justification	Oceanography and primary productivity has been well studied through projects and remote sensing studies. Fairly extensive benthic surveys have been performed of seabed types around the New Zealand continental shelf and seamounts. Characteristics of habitats within the New Zealand EEZ have been classified and mapped through several projects, e.g. the Marine Environment Classification, the Oceans 20/20 work (e.g. on the Chatham rise; the Chatham-Challenger project), and BOMEC. The projects aimed to map and compare habitats and diversity of sea-bed communities in fishable depths at key locations across the Chatham Rise and the Challenger Plateau, using both acoustic mapping approaches and underwater camera work to map biodiversity and habitat types. In turn, the Ocean Survey 20/20 (OS 20/20) project aimed to map the seafloor habitats and biodiversity of New Zealand's marine environment across large areas of the EEZ, concentrating on the Chatham Rise and Challenger Plateau. The location of key vulnerable habitat types (smokers, hydrothermal vents etc) is known. Habitat mapping data, combined with the results of specimen collections from known trawl locations by fisheries observers, 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 of fishing activity, the degree of habitat knowledge at sub-regional scales is patchier. In turn, the footprint of the fishery is well established through VMS records and the TCEPR data, and has been used within risk assessments for key benthic species. However, the extent of habitat knowledge at sub-regional scales, including for vulnerable habitat types, is patchier. A score of 80 is therefore given.		
b	**Guidepost**	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.	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.	The physical impacts of the gear on the habitat types have been quantified fully.
	Met?	Y	Y	N

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**		
	Justification	Data from surveys, logbooks and the observer programme are available to allow impacts of the fishery on habitat types to be identified. The VMS provides reliable information on the spatial extent, timing and location of use of the fishing gear. In turn, reviews of the distribution of BOMECs and recent fishing trawl survey tracks has clarified the distribution and change of the fishery footprint relative to the ecosystem, providing an assessment of the main areas of potential impact sensitive to recovery times. The changes within previously fished habitats inside BPAs over time have been examined, particularly for seamounts. That on the main fished area has not been examined, and is inferred from literature on other fisheries; demersal trawling is a fishing method that typically destroys habitat features and complexity. The observer programme notes benthic invertebrates brought up in the trawls, while records are also available from observers on longline vessels. Taxonomic guides developed by NIWA for cold water corals and sponges are improving species recognition, while still unidentified corals are returned for professional taxonomic identification. The body of information on the physical impacts of the gear on habitat is therefore growing, but cannot be said to have been quantified fully. A score of 80 is therefore given.		
c	**Guidepost**		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).	Changes in habitat distributions over time are measured.
	Met?		Y	N
	Justification	The continuation of the observer programme, logbook records, and surveys, provides sufficient data to detect any increase in risk to habitat. The continued collection of information and study of cold water corals has allowed risk assessments to be performed for the fisheries in general, and the continued overlay of BOMEC distributions and trawl footprints provides a mechanism to identify increased risk. However, no regular sampling regimes exist that are designed to measure changes in habitat distributions over time. A score of 80 is therefore given.		
References		Snelder et al., 2007 Leathwick et al. 2009 Bowden et al. 2011 Hewitt et al., 2011 Black et al., 2013		
OVERALL PERFORMANCE INDICATOR SCORE: : The fishery satisfies the scoring issues for the 60 scoring guidepost and the scoring issues of the 80 scoring guidepost, but none at the 100 scoring guidepost.				**80**
CONDITION NUMBER (if relevant):				**NA**

Evaluation Table for 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		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	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.	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.	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.
	Met?	Y	Y	N
	Justification	At an EEZ level, New Zealand fisheries have been preliminarily assessed to be sustainable in an energetic context. 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 species are expected to result in some level of ecosystem effects. Relative to this, the Chatham Rise fishery is best understood as change is ongoing; the ecosystem has not stabilised at an alternative state. However, studies show: no evidence of loss of community constituents, although 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. However, in other systems biogeochemical cycles have been reported to be disrupted by bottom trawling. This can be evaluated using the presence and dynamics of organisms over time. Based upon logical argument and the position of ling within the ecosystem in the areas under certification, the extraction of ling and the range of QMS and non-QMS species from the ecosystem through the fishery is unlikely to disrupt key elements of underlying ecosystem structure and function. Ecosystem models developed for the sub-Antarctic region and Chatham Rise have not yet been specifically used to assess whether fishery removals at current levels (with stocks often well above single species B_{MSY} levels) may impact upon the modelled ecosystems. However, the trophic model of the Southern Plateau ecosystem, where hoki, rather than ling, forms a large part of the fish component, suggests the area has low productivity and energy transfer between components is efficient. A model for Chatham Rise suggests a more productive web. Stock sizes of ling in these areas indicate there remains a sizeable proportion of biomass in the ecosystem, and removals at this level are unlikely to lead to serious harm. This is particularly true given the recovery of the hoki population within these ecosystems. 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 the component is within the range where there is risk of serious or irreversible harm. Sufficient uncertainty exists on the impact of fishing for this specific species such that further work on ecosystem effects of the fishery would be worthwhile, particularly for less-studied areas. A score of 80 is given.		
References		Knight et al., 2011		

PI 2.5.1	**The fishery does not cause serious or irreversible harm to the key elements of ecosystem structure and function**	
	Tuck et al. 2009 Thrush and Dayton, 2002 MacDarmid et al., 2005 Bradford-Grieve et al., 2003	
OVERALL PERFORMANCE INDICATOR SCORE: The fishery satisfies the scoring issues for the 60 scoring guidepost and the scoring issues of the 80 scoring guidepost, but not the 100 scoring guidepost.		**80**
CONDITION NUMBER (if relevant):		**NA**

Evaluation Table for 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		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	There are measures in place, if necessary.	There is a partial strategy in place, if necessary.	There is a strategy that consists of a plan, in place.
	Met?	Y	Y	Y
	Justification	The partial strategy in place is represented by the TACCs in operation within the fishery for all the QMS species, combined with 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. This takes into account available information collected through the logbook system, observer programme and fishery-independent surveys. In addition, implementation of BPAs will help maintain ecosystem integrity in nearby areas. 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, which builds upon the partial strategy. This includes components such as: The Fisheries Act (to avoid, remedy or mitigate any adverse effects of fishing on the aquatic environment) and Wildlife Act; The Annual Operational Plan for Deepwater Fisheries; The National Fisheries Plan for Deepwater and Middle-depth Fisheries; and research specifications for the 10 year research programme for deepwater fisheries, which includes a specific focus on ecosystem functioning and trophic linkages. The result of these elements includes to maintain QMS species at or above target levels, limit impacts on non-QMS species, and reduce the impact of gear on habitats. While they do not form a specific strategy aimed primarily at ecosystem maintenance, they work together to do so to form a plan. A score of 100 is therefore given.		
b	**Guidepost**	The measures take into account potential impacts of the fishery on key elements of the ecosystem.	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.	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.

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		
	Met?	Y	Y	N
	Justification	The measures listed above either require some consideration of impacts (e.g. the Fisheries Act), take account of them with the intent of delivering better management (e.g. fisheries management objectives), or seek to manage them to reduce the environmental effects of fishing (e.g. ETP bycatch measures). Furthermore, research outcomes are fed back into management, although in the areas of ecosystem structure and function, stronger links could be developed. Where unacceptable impacts are detected, the current framework allows them to be addressed, including through fishery management measures. It is noted that, to date, responses have focussed on individual ecosystem components (e.g. target stock status, seabird bycatch levels) rather than broader effects, demonstrating that while the elements naturally work together, this is not through a specific ecosystem design; they are currently not developed across ecosystem components/functions to the level required for the SG100 level. A score of 80 is therefore given.		
c	**Guidepost**	The measures are 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 plausible argument (e.g., general experience, theory or comparison with similar fisheries/ecosystems).	The measures are considered likely to work based on prior experience, plausible argument or information directly from the fishery/ecosystems involved.
	Met?	Y	Y	N
	Justification	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, habitat). For example, target species stocks have been actively managed, fish species brought under the QMS structure, and seabird bycatch mitigation measures introduced, to address sustainability concerns specifically, while BPAs have been put in place. Annual review of the Annual Operational Plan for Deepwater Fisheries 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) allows such review. Ling is not a low trophic level species and current populations are likely or highly likely to be above the target biomass reference levels. However, it is also a subset of the hoki fishery and a bycatch in hoki-targeted trawls. Indeed the role of hoki in the fishery, and the response of the ecosystem to hoki removals, has been studied in greater depth than that of ling across the fishery areas evaluated here. This provides plausible argument that the strategy for the ling fishery is likely to work. It will be monitored during the surveillance audits based upon the decisions made on TACC levels - noting the potential for increased ling bycatch in hoki targeted fishing -which have generally remained unchanged following recovery of the hoki fishery. A score of 80 is given.		
d	**Guidepost**		There is some evidence that the measures comprising the partial strategy are being implemented successfully.	There is evidence that the measures are being implemented successfully.
	Met?		Y	Y

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
	Justification	With particular reference to individual ecosystem components (rather than functions), there is evidence that the strategy is being implemented successfully. For example, stock assessments of the target and retained species and monitoring of incidental mortalities of ETP species are ongoing, combined with fishery-independent surveys for many areas, while TACCs and other control mechanisms are being monitored and for the main species adjusted where necessary. BPAs are monitored through observer and VMS coverage, and as part of the partial management strategy should provide some ecosystem buffering. There is therefore evidence that the approaches are being implemented successfully. A score of 100 is given.
References		MPI, 2013a, b, c Ministry of Fisheries 2010b New Zealand Gazette, 2010 Thompson et al., 2013a Richard and Abraham, 2013a Baird et al., 2012 Francis and Lyon, 2012 Horn, 2013a, b
OVERALL PERFORMANCE INDICATOR SCORE: The fishery satisfies the scoring issues for the 60 scoring guidepost and the scoring issues of the 80 scoring guidepost, and two of the four at the 100 scoring guidepost.		**90**
CONDITION NUMBER (if relevant):		**NA**

Evaluation Table for PI 2.5.3

PI 2.5.3		There is adequate knowledge of the impacts of the fishery on the ecosystem		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	Information is adequate to identify the key elements of the ecosystem (e.g., trophic structure and function, community composition, productivity pattern and biodiversity).	Information is adequate to broadly understand the key elements of the ecosystem.	
	Met?	Y	Y	
	Justification	Stomach content analysis projects have been performed provides information to adequately broadly understand the functions of the key elements of the ecosystem, including trophic structure, community composition, productivity and biodiversity. Studies on the Chatham Rise have expanded existing analyses, and include the diet of juvenile fish of key species. However, recent projects have not examined the predators of the key fish species, although they are generally understood. The structure of the mid-water food web is broadly understood for the Chatham Rise and Sub-Antarctic areas through a number of studies, which underpin ecosystem models. No model has yet been developed for the west Coast South Island but information from areas is adequate to broadly understand the key elements of the ecosystem. Given the different ecosystems covered by existing models and studies, information is adequate to broadly understand the functions of the key ecosystem elements. A score of 80 is given.		
b	**Guidepost**	Main impacts of the fishery on these key ecosystem elements can be inferred from existing information, and have not been investigated in detail.	Main impacts of the fishery on these key ecosystem elements can be inferred from existing information and some have been investigated in detail.	Main interactions between the fishery and these ecosystem elements can be inferred from existing information, and have been investigated.
	Met?	Y	Y	Y (LIN3&4, LIN5&6), N (other LIN areas)
	Justification	The main impacts of the fishery on the ecosystem elements can be inferred from the stock assessments (for key species), QMS catch trends, and surveys which cover the target, related species, and most levels of the ecosystems. Investigations have been particularly detailed on the Chatham Rise. For the Southern Plateau and Chatham Rise (LIN 3&4, LIN 5&6) existing models includes ling within fish groups, and have been used to investigate the impacts of fishing on those ecosystems and feed into the fishery management process; hence the main interactions have been investigated for the ling fishery. For LIN3- LIN6, therefore, a score of 100 is given. For other LIN areas, where models have not been used (but impacts can be inferred from existing models, noting that specific ecosystem elements have been investigated through existing target, bycatch, ETP and habitat studies) a score of 80 is given.		

PI 2.5.3		There is adequate knowledge of the impacts of the fishery on the ecosystem		
c	Guidepost		The main functions of the Components (i.e., target, Bycatch, Retained and ETP species and Habitats) in the ecosystem are known.	The impacts of the fishery on target, Bycatch, Retained and ETP species are identified and the main functions of these Components in the ecosystem are understood.
	Met?		Y	N
	Justification	The main functions of the components of the ecosystem have been identified through the ecosystem sampling programme undertaken to parameterise the ecosystem models for the Chatham Rise and sub-Antarctic regions around New Zealand. It is noted that ecosystem data for the west of New Zealand is less abundant. 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. The impacts of the fishery on main functions of the target, bycatch, and ETP species components are identified through ongoing monitoring that is a core component of the fishery management regime, and 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. There is also the potential for trawl gear to affect the productivity of benthic communities. Scientific research suggests that while certain communities will be adversely affected, others might benefit from increased availability of particular organisms, and that productivity may overall be increased. A score of 80 is therefore given.		
d	Guidepost		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.	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.
	Met?		Y	Y (LIN3&4 and LIN5&6), N (other LIN areas)
	Justification	Information from the observer programme, and logbooks (for the main 5 species in the catch) as well as continued sampling of stomachs, allow the main consequences for the ecosystem to be inferred. The developed Ecopath models allow the impacts of the fishery on components to be examined, although this analysis has not yet been performed for areas other than LIN4. There is therefore 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, sufficient information is available on the components and elements of the ecosystem to allow the main consequences of the fishery to be inferred in LIN3-LIN6, as evidenced by the ecosystem models developed for these regions. A score of 100 is therefore given. For other areas, the reduced survey frequency and lack of an existing ecosytem model reduce the score for this region, noting that sufficient information is still available on the impacts of the fishery on the Components to allow some of the main consequences for the ecosystem to be inferred. A score of 80 is given.		

PI 2.5.3		There is adequate knowledge of the impacts of the fishery on the ecosystem		
e	Guidepost		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).	Information is sufficient to support the development of strategies to manage ecosystem impacts.
	Met?		Y	Y
	Justification	There is a growing body of information available on the ecosystem components in which ling occurs and interacts. Linkages between all ecosystem components and the ling fishery cannot be quantified, making the scale of responses to changes in fishing patterns difficult to predict. However, sufficient information is available to support the development of strategies to manage ecosystem impacts. A score of 100 is given.		
References		Dunn et al., 2010 Stevens et al., 2011 Horn, 2013a,b Pinkerton, 2011 Bradford-Grieve et al., 2003 Horn and Dunn, 2010 Baird 2011		
OVERALL PERFORMANCE INDICATOR SCORE: The fishery satisfies the scoring issues for the 60 scoring guidepost and the scoring issues of the 80 scoring guidepost. For LIN3&4 and LIN5&6, three of the four 100 scoring guideposts are met and the score is 95. For other LIN areas, one of the four 100 scoring guideposts are met and the score is 85.				**95 (LIN3-6), 85 (other LIN areas)**
CONDITION NUMBER (if relevant):				**NA**

Evaluation Table for 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; and** • **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.**		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	There is an effective national legal system and a framework for cooperation with other parties, where necessary, to deliver management outcomes consistent with MSC Principles 1 and 2	There is an effective national legal system and organised and effective cooperation with other parties, where necessary, to deliver management outcomes consistent with MSC Principles 1 and 2.	There is an effective national legal system and binding procedures governing cooperation with other parties which delivers management outcomes consistent with MSC Principles 1 and 2.
	Met?	Y	Y	Y

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; and** • **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.**		
	Justification	MPI is responsible for the utilisation of New Zealand's fisheries resources while ensuring sustainability in accordance with its governing legislation - the Fisheries Act 1996. Where ensuring sustainability means— (a) maintaining the potential of fisheries resources to meet the reasonably foreseeable needs of future generations; P1 and (b) avoiding, remedying, or mitigating any adverse effects of fishing on the aquatic environment P2 **utilisation** means conserving, using, enhancing, and developing fisheries resources to enable people to provide for their social, economic, and cultural well-being. There are legal protection provisions for marine wildlife, as in the Wildlife Act 1953 and the Marine Mammals Protection Act 1978, and reporting requirements around the incidental capture of these species during fishing 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. Procedures and processes 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. are set out under Part 7 of the Fisheries Act. MPI's fisheries management responsibilities extend to the 200 nautical mile limit of the NZ EEZ. MPI provides management, licencing (where applicable) research and compliance and education services for commercial, recreational and customary fishing. MPI assists the Minister for Primary Industries in the administration of the relevant Acts. The Government's commitment to wide consultation and engagement is set out in Section 12 of the Act. MPI 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. . MPI do this in a number of ways eg through regular meeting of working groups. These meetings are open to everyone, and consider fish stocks and the effects of fishing on the aquatic environment.There is an effective national legal system and binding procedures governing cooperation with other parties which delivers management outcomes consistent with MSC Principles 1 and 2. This SI meets 100.		
b	**Guidepost**	The management system incorporates or is subject by law to a mechanism for the resolution of legal disputes arising within the system.	The management system incorporates or is 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.	The management system incorporates or is 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.
	Met?	Y	Y	Y

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; and** • **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.**		
	Justification	The Fisheries Act provides opportunities to negotiate and resolve disputes. The Minister may appoint a Disputes Commissioner and the Minister makes the final determination. 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 and the Court has made a decision. The Memorandum of Understanding between the Deepwater Group Ltd and the Ministry for Primary Industries has encouraged better working relationships, and fostered avoidance of the need for litigation between the Ministry and industry. The management system incorporates or is 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. A score of 100 is given		
d	**Guidepost**	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 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 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.
	Met?	Y	Y	Y
	Justification	MPI 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 Tangata Whenua 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. A score of 100 is given.		
References		Fisheries Act 1996 DWG Partnership 2010 Treaty of Waitangi (Fisheries Claims) Settlement Act 1992 Deed of Settlement 1992 Maori Fisheries Act 2004		

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; and** • **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.**
	Customary Fisheries Regs 1998
OVERALL PERFORMANCE INDICATOR SCORE: All of the scoring guideposts are met for 60, 80 and 100.	**100**
CONDITION NUMBER (if relevant):	

Evaluation Table for 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		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are generally understood.	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.	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are explicitly defined and well understood for all areas of responsibility and interaction.
	Met?	Y	Y	Y

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**		
	Justification	The Ministry of Primary industries (MPI) is the Government agency responsible for the utilisation and sustainable management of the fisheries resources. The role of MPI, 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. MPI 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 (DOC) is the central government organisation charged with conserving the natural and historical heritage of New Zealand. The department is responsible for marine reserves and protected species (including almost all seabirds, all marine mammals such as dolphins, whales, sea lions and fur seals, some sharks and some coral species). DWG is an amalgamation of EEZ fisheries quota owners in New Zealand. DWG 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 MPI 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 ling quota owners are represented through the DWG. The MPI and DWG signed a Memorandum of Understanding (MOU) in 2006 which sets out how DWG and MPI work collaboratively to improve the management of deepwater fisheries (including ling). eNGOs and other stakeholders have an important role in participating and contributing to management processes. 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. A score of 100 is given.		
b	**Guidepost**	The management system includes consultation processes that obtain relevant information from the main affected parties, including local knowledge, to inform the management system.	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.	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.
	Met?	Y	Y	Y

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**		
	Justification	Section 12 of the 1996 Act includes a range of specific consultation requirements. MPI 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 MPI Chief Executive to consult with stakeholders before making a decision. MPI has a well-defined process for stakeholder consultation. The consultation process: - sets out best practice process for how MPI 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 MPI 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 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. A score of 100 is given.		
c	**Guidepost**		The consultation process provides opportunity for all interested and affected parties to be involved.	The consultation process provides opportunity and encouragement for all interested and affected parties to be involved, and facilitates their effective engagement.
	Met?		Y	Y

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**
	Justification	MPI has a well-defined process for stakeholder consultation. The consultation process: - sets out best practice process for how MPI 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 MPI 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 MPI seeking stakeholder views throughout the year using, for example, the Initial Position process, the Working group forums, and fisheries planning meetings. 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. The consultation process provides opportunity and encouragement for all interested and affected parties to be involved, and facilitates their effective engagement. A score of 100 is given.
References		Fisheries Act 1996 DWG 2010 MFish 2010i MFish 2010j MFish 2010 l MP I2012b DOC 2012
OVERALL PERFORMANCE INDICATOR SCORE: All of the scoring guideposts are met for 60, 80 and 100.		**100**
CONDITION NUMBER (if relevant):		

Evaluation Table for 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		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	Long-term objectives to guide decision-making, consistent with the MSC Principles and Criteria and the precautionary approach, are implicit within management policy	Clear long-term objectives that guide decision-making, consistent with MSC Principles and Criteria and the precautionary approach are explicit within management policy.	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.
	Met?	Y	Y	Y
		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:* 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." 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: the wider strategic context that Fisheries Plans are part of, including Fisheries 2030; the nature and status of the management objectives that will apply across all deepwater fisheries; and how the National Deepwater Plan will be implemented and how stakeholders will be engaged during the implementation phase.		

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**
	Justification	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. 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. This SI scores 100.
References		Fisheries Act MFish 2010d MFish 2010f Pricewaterhouse Coopers 2008
OVERALL PERFORMANCE INDICATOR SCORE: All of the scoring guideposts are met for 60, 80 and 100.		**100**
CONDITION NUMBER (if relevant):		

Evaluation Table for 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		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	The management system provides for incentives that are consistent with achieving the outcomes expressed by MSC Principles 1 and 2.	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.	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 do not contribute to unsustainable fishing practices.
	Met?	Y	Y	P
	Justification	**Incentives**: The QMS and the use of ITQs provides stability and security for quota owners and hence incentives for sustainable utilisation (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 ling fishery. The management system has explicit mechanisms that facilitate regular review of management policy or procedures (Fisheries Act). Under Section 13 of the Fisheries Act 1996 the Minister of Fisheries needs to take social, 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 MPI 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. The management system does not explicitly consider incentives in a regular review of management policy or procedures to ensure they not contribute to unsustainable fishing practices. As such, the fishery only partially meets the 100 level of performance		
References		Fisheries Act 1996 Lock et al 2007		
OVERALL PERFORMANCE INDICATOR SCORE: The scoring guideposts are met for 60 and 80 and partially met for 100.				**90**
CONDITION NUMBER (if relevant):				

Evaluation Table for 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		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	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	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.	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.
	Met?	Y	Y	Y
	Justification	The management system has explicit short and long-term objectives which are set out in long-term plans e.g., Fisheries 2030, National Fishing Plan Deepwater and Middle depths Plan and Annual Operational. Objectives are subject to an annual review report.. The objectives specific to the ling fishery are set out in the national Fishing Plan for deepwater and Middle depth fisheries Part 1B- Ling. These are then specified within the annual Operating Plan. These are fishery specific, subject to annual review and are measurable. The National Plans of Action for sharks and seabirds, both revised and published in 2013, provide additional examples of management objectives (relating to some ETP species) that are applicable to the assessed fisheries and consistent with Principle 2.		
References		Pricewaterhouse Cooper 2008 MFish 2010d MFish 2011e MPI 2012b MPi 2012d		
OVERALL PERFORMANCE INDICATOR SCORE: The scoring guideposts are met for 60 and 80 and 100.				**100**
CONDITION NUMBER (if relevant):				

Evaluation Table for 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, and has an appropriate approach to actual disputes in the fishery under assessment.		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	There are some decision-making processes in place that result in measures and strategies to achieve the fishery-specific objectives.	There are established decision-making processes that result in measures and strategies to achieve the fishery-specific objectives.	
	Met?	Y	Y	
	Justification	The decision-making process is clearly outlined in the Fisheries Act (specifically Sections 10,11&12). Section 10 of the Fisheries Act requires that all decisions be based on the best available information. The management of fisheries to achieve these goals is based upon the scientific evaluation of: the sustainable yields of 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 is also the process of advice development – working groups reviewing information, preparation of initial position papers, consultation, preparation of final advice papers, advice provided to the Minister, and Ministerial decisions being made. There are therefore established decision-making processes that result in measures and strategies to achieve the fishery-specific objectives. A score of 80 is given.		
b	**Guidepost**	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.	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.	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.
	Met?	Y	Y	N

PI 3.2.2		The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives, and has an appropriate approach to actual disputes in the fishery under assessment.
	Justification	Section 10 of the Fisheries Act 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 makes the final decision based on advice received from 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 MPI 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. 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. 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 various fora, such as working groups. All issues are addressed through such mechanisms, although this may not be to the satisfaction of all stakeholders. The assessment team does not have full evidence that 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. A score of 80 is met.

PI 3.2.2		**The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives, and has an appropriate approach to actual disputes in the fishery under assessment.**		
c	**Guidepost**		Decision-making processes use the precautionary approach and are based on best available information.	
	Met?		Y	
	Justification	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 be followed by the MPI. 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. This SI meets 100.		
d	**Guidepost**	Some information on fishery performance and management action is generally available on request to stakeholders.	Information on fishery performance and management action is available on request, and explanations are provided for any actions or lack of action associated with findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.	Formal reporting to all interested stakeholders provides comprehensive information on fishery performance and management actions and describes how the management system responded to findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.
	Met?	Y	Y	Y

PI 3.2.2		**The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives, and has an appropriate approach to actual disputes in the fishery under assessment.**		
	Justification	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. 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 for Deepwater and Middle- Depth Fisheries and the annual Operating Plan for Deepwater Fisheries are always provided to stakeholders. There are annual review reports produced by MPI to describe performance and delivery on fisheries management objectives, e.g., for deepwater fisheries: A score of 100 is given.		
e	**Guidepost**	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 for the fishery.	The management system or fishery is attempting to comply in a timely fashion with judicial decisions arising from any legal challenges.	The management system or fishery acts proactively to avoid legal disputes or rapidly implements judicial decisions arising from legal challenges.
	Met?	Y	Y	Y
		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 Disputes 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 and the Court has made a decision. The Memorandum of Understanding between the Deepwater Group Ltd and the MPI 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 3.2.2		**The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives, and has an appropriate approach to actual disputes in the fishery under assessment.**
	Justification	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. The 'inform and assist' compliance model, as well as the co-operation and partnership between the Ministry and Industry have been successful in pre-empting disputes. MPI Compliance acts proactively in providing education and awareness programmes, fact sheets and meetings with management and industry. MPI Compliance also works collegiately with the fishing industry to proactively avoid legal disputes. A score of 100 is given.
References		Fisheries Act 1996 MFish 2009b MFish 2010i MFish 2010j
OVERALL PERFORMANCE INDICATOR SCORE: All of the scoring issues for the 60 and 80 scoring guidepost are met as is two of the three for the 100 scoring guidepost.		**95**
CONDITION NUMBER (if relevant):		

Evaluation Table for PI 3.2.3

PI 3.2.3		Monitoring, control and surveillance mechanisms ensure the fishery's management measures are enforced and complied with		
Scoring Issue		SG 60	SG 80	SG 100
A	**Guidepost**	Monitoring, control and surveillance mechanisms exist, are implemented in the fishery under assessment and there is a reasonable expectation that they are effective.	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.	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.
	Met?	Y	Y	N
		The ling management system has an effective monitoring, control and surveillance system. **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 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. **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 ling fisheries resources (including catch and effort information), and the effect of ling 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). **Accurate Reporting and Recordkeeping**. The Fisheries Act and Fisheries Regulations impose on all persons operating in the ling 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) record-keeping 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 record-keeping also demonstrates effectiveness. Compliance with record-keeping and recording requirements is essential to fulfil the fishers legal obligations in relation to the commercial fishing for ling (Fisheries Act ss 189-190; also see Fisheries Regulations).The required returns include: catch, effort, and landing returns (CELR); catch landing returns (CLR); trawl catch, effort, and processing returns (TCEPR); and non-fish and protected species catch return (NF-PSCR).		

PI 3.2.3		Monitoring, control and surveillance mechanisms ensure the fishery's management measures are enforced and complied with		
	Justification	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. 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. And meets the 80 level. However it is considered that there is minimal observer coverage. Observer programmes are part of best practice approaches for fisheries management, and achieving a comprehensive monitoring system without a reasonable level of observer coverage (or electronic) monitoring seems impossible. In addition, there must be a demonstrated consistent ability to enforce management measures etc. "Consistent" seems to imply comprehensive monitoring to be at reasonable levels over time. While the framework exists (e.g. legislative provisions for observers, and the existence of a programme) observers still need to be deployed in fisheries to be effective. The 100 level is not met.		
b	Guidepost	Sanctions to deal with non-compliance exist and there is some evidence that they are applied.	Sanctions to deal with non-compliance exist, are consistently applied and thought to provide effective deterrence.	Sanctions to deal with non-compliance exist, are consistently applied and demonstrably provide effective deterrence.
	Met?	Y	Y	Y
		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		

PI 3.2.3		Monitoring, control and surveillance mechanisms ensure the fishery's management measures are enforced and complied with		
		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).		
	Justification	- **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. Sanctions to deal with non-compliance exist, and are consistently applied. The MPI 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. A score of 100 is given.		
c	**Guidepost**	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.	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.	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.
	Met?	Y	Y	Y

PI 3.2.3		Monitoring, control and surveillance mechanisms ensure the fishery's management measures are enforced and complied with		
	Justification	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. 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 MPI Compliance Business Group has 100 dedicated sea days to this. However, the MPI 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 substantially increased surveillance and monitoring effort in the deepwater fisheries, including a greater utilisation of observers. There is a designated liaison person acting between MPI 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. A score of 100 is given.		
d	Guidepost		There is no evidence of systematic non-compliance.	
	Met?		Y	
	Justification	Although there has been evidence, in the past, of non-compliance in the ling fishery; e.g. 'trucking" and high grading, this has been investigated by MPI compliance. This is not considered to be systematic, and has been dealt with by MPI. Those vessels now have high levels of observer coverage. SG80 is met.		
References		DWG 2009 DWG 2011b MFish 2009 a MFish 2010d MFish 2010f MFish 2011b MFish 2011c MFish 2011e MFish 2011f MPI 2012b MPI 2013f MPI 2013		
OVERALL PERFORMANCE INDICATOR SCORE: All of the scoring issues of the 60, 80 and 100 scoring guideposts are met.				**100**

PI 3.2.3	Monitoring, control and surveillance mechanisms ensure the fishery's management measures are enforced and complied with
CONDITION NUMBER (if relevant):	

Evaluation Table for PI 3.2.4

PI 3.2.4		The fishery has a research plan that addresses the information needs of management		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	Research is undertaken, as required, to achieve the objectives consistent with MSC's Principles 1 and 2.	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.	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.
	Met?	Y	Y	Y
		There are MPI Deepwater, middle depths and Aquatic Environment medium term research plans that together provide a strategic approach to research, and include 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 Intent, 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 MPI, 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. Fisheries research falls into four key areas, each of which has its own specific goal. These research areas and associated goals are: (α) Fisheries Resources - to provide the information on sustainable yields and stock status required for the sustainable utilisation of New Zealand's fisheries resources; (β) Harvest Levels - to determine the nature and extent of commercial and recreational catch, Maori customary take, illegal catch, and fishery induced mortality; (χ) 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 (δ) 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 tangata whenua 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.		

PI 3.2.4		**The fishery has a research plan that addresses the information needs of management**		
	Justification	The research programme also has the flexibility to deliver one-off specific research projects to address particular management requirements. The ling fisheries are included in this programme and the research has been planned and contracted for delivery for the ten year period starting in 2010-11. Reports are released into the public domain. The increasing extent to which DOC and MPI are working together on protected species research planning. An example of a recent DOC research plan for fisheries interactions can be found at: www.doc.govt.nz/Documents/conservation/marine-and-coastal/marine-conservation-services/approved-csp-annual-plan-2013-14.pdf. The strategic plan guiding the production of this research plan is at: www.doc.govt.nz/Documents/conservation/marine-and-coastal/marine-conservation-services/reports/csp-strat-statement2013.pdf Collaboration amongst the two agencies extends to planning observer services, especially in areas of shared priority and inshore fisheries (though not capturing inshore ling fisheries currently), e.g., www.fish.govt.nz/NR/rdonlyres/4C71155C-BD92-4D6E-A4B9-198DA7BA7717/0/FINALInshoreObserverProgramme201314.pdf As 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. This SI meets the 100 level.		
b	**Guidepost**	Research results are available to interested parties.	Research results are disseminated to all interested parties in a timely fashion.	Research plan and results are disseminated to all interested parties in a timely fashion and are widely and publicly available.
	Met?	Y	Y	Y

PI 3.2.4		The fishery has a research plan that addresses the information needs of management
	Justification	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 There are MPI Deepwater, Middle depths and Aquatic Environment medium term research plans that together provide a strategic approach to research, and includes timelines and priorities. A Research Coordinating 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 MPI research planning process ensures that results are disseminated to all interested parties in a timely fashion. Research is planned, discussed and evaluated in the Deepwater, Middle depths Working Group and Aquatic Environment Working Group (which are results focused) in a timely fashion. Work on protected species-fisheries interactions (therefore relevant to P2) done by the Conservation Services Programme at DOC. CSP follows a similar process to MPI in terms of consulting stakeholders and disseminating project outputs. For example, see: www.doc.govt.nz/conservation/marine-and-coastal/conservation-services-programme/meetings-and-project-updates/. 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. This SI meets the 100 level.
References		DOC 2012 MFish2010c MFish 2010d MFish 2010k MFish 2010l MFish 2011a MPI 20013g
OVERALL PERFORMANCE INDICATOR SCORE: All the Scoring guideposts are met for 60, 80 and 100		**100**
CONDITION NUMBER (if relevant):		

Evaluation Table for 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		
Scoring Issue		SG 60	SG 80	SG 100
A	**Guidepost**	The fishery has in place mechanisms to evaluate some parts of the management system.	The fishery has in place mechanisms to evaluate key parts of the management system	The fishery has in place mechanisms to evaluate all parts of the management system.
	Met?	Y	Y	Y
	Justification	The management system has internal processes to evaluate management performance. These include evaluations of policy, research, operations, compliance and enforcement. There is also an Annual Review Report that is an internal review of the performance and delivery of the management system. The stock assessment process is rigorously reviewed. 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. The management system has internal processes to evaluate 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. MPI and DWG have in place mechanisms to evaluate all parts of the management system. The 100 level is reached.		

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**		
B	**Guidepost**	The fishery-specific management system is subject to occasional internal review.	The fishery-specific management system is subject to regular internal and occasional external review.	The fishery-specific management system is subject to regular internal and external review.
	Met?	Y	Y	N
	Justification	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 ling stock assessment in recent times. However the working group reviewed the versions of the assessments reported in the fish stocks plenary reportsThe fishery-specific management system is subject to regular internal and occasional external review. This SI meets the 80 SG.		
References		Mfish 2010d Mfish 2010f Mfish 2010k Mfish2010l Mfish 2011b Mfish 2011e MPI 2012a MPI2012b MPI2013f		
OVERALL PERFORMANCE INDICATOR SCORE: : All of the scoring guideposts meet the 60 and the 80 and one of the two at 100 level				**90**
CONDITION NUMBER (if relevant):				

Appendix 1.2 Conditions and Client Action Plan

Table A1.3: Condition 1

Performance Indicator	**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**
Score	Longliners: 75
Rationale	Risk assessment analyses have shown that the known effects of the small bottom longline fishery (<34m not targeting bluenose or snapper) on bird populations have the potential to create unacceptable impacts on particular species, but the contribution to this issue by the specific Units of Certification is not clear.
Condition	The client is required to demonstrate that the direct effects of <34 m longline vessels (not targeting bluenose or snapper) are highly unlikely to create unacceptable impacts to ETP bird species.
Milestones	By the first annual audit, the client will provide evidence in the form of a report on the work it has undertaken to demonstrate that the direct effects of <34 m longline vessels (not targeting bluenose or snapper) are highly unlikely to create unacceptable impacts to ETP bird species. This milestone has been defined as a means to monitor progress. Meeting the milestone would likely not result in a change in score at this surveillance audit. By the second annual surveillance audit the client will provide evidence in the form of a report to show that the direct effects of <34 m longline vessels (not targeting bluenose or snapper) are highly unlikely to create unacceptable impacts to ETP bird species. Meeting this milestone will demonstrate that all scoring issues of the SG 80 have been met and would result in a score of 80 for this performance indicator.
Client action plan	*Year 1:* • Continue to monitor and report observed seabird captures in the ling fisheries in accordance with MO1.2, MO1.6, MO2.5 and MO2.6 of the National Fisheries Plan (MPI, 2013). • Review existing information to assess the nature and extent of seabird interactions in the ling longline fisheries. Review will include analyses of captures by species, area, method and vessel size, and take into account New Zealand seabird risk assessment framework. • Assess the operational aspects of seabird interactions in ling long line vessels <34 m, • Develop and implement Operational Procedures for ling long line vessels <34 m, including seabird mitigation, Vessel Management Plans, education and outreach, as required.

	Year 2: • Continue to monitor and report observed bird captures in the ling fisheries in accordance with MO1.2, MO1.6, MO2.5 and MO2.6 of the National Fisheries Plan (MPI, 2013) • Continue implementation and monitoring of the Operational Procedures for ling long line vessels (<34 m). • Assess the nature and extent of the of seabird interaction, by the ling long-line vessels (<34 m) including analyses of captures by bird species, area, fishing method and vessel size, and take into account New Zealand seabird risk assessment framework.
Consultation on condition	MPI has confirmed that it supports the intentions of Deepwater Group Ltd with regards to the certification of trawl and bottom longline fisheries in LIN3-LIN7. The Ling Client Action Plan was drafted by DWG in consultation with MPI, and MPI is committed to supporting implementation of the Action Plan wherever possible.

Table A1.3: Condition 2

Performance Indicator	**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**
Score	Longliners; 75
Rationale	There is no current consistent strategy for managing bird interactions within the inshore longline fishery component, which is part of the fishery component that the bird Risk Assessment has noted presents a notable risk to seabird populations.
Condition	The client is required to demonstrate that there is a strategy in place for managing the inshore longline fishery component's impact on ETP species, including measures to minimise mortality, which is designed to be highly likely to achieve national and international requirements for the protection of ETP species.
Milestones	By the first annual audit, the client will provide evidence in the form of a report on the work it has undertaken to develop a strategy for managing the inshore longline fishery component's impact on ETP species, including measures to minimise mortality. This milestone has been defined as a means to monitor progress, meeting the milestone would likely not result in a change in score at this surveillance audit. By the second annual surveillance audit the client will provide evidence in the form of a report on the further work it has undertaken to develop and implement

	a strategy for managing the inshore longline fishery component's impact on ETP species, including measures to minimise mortality. This milestone has been defined as a means to monitor progress, meeting the milestone would likely not result in a change in score at this surveillance audit. By the third annual surveillance audit the client will provide evidence in the form of a report on the further work it has undertaken to develop and implement a strategy for managing the inshore longline fishery component's impact on ETP species, including measures to minimise mortality which is designed to be highly likely to achieve national and international requirements for the protection of ETP species. Meeting this milestone will demonstrate that all scoring issues of the SG 80 have been met and would result in a score of 80 for this performance indicator.
Client action plan	*Year 1:* • Continue to monitor and report observed bird captures in the ling fisheries in accordance with MO1.2, MO1.6, MO2.5 and MO2.6 of the National Fisheries Plan (MPI, 2013) • Review existing information to assess the nature and extent of seabird interactions in the ling long line fisheries, use this information in the development of the management strategy for ling long-line vessels • Assess the operational aspects of seabird interactions in ling long line vessels <34 m, • Develop and implement Operational Procedures for ling long line vessels <34 m, including seabird mitigation, Vessel Management Plans, education and outreach, as required. *Year 2:* • Continue to monitor and report observed bird captures in the ling fisheries in accordance with MO1.2, MO1.6, MO2.5 and MO2.6 of the National Fisheries Plan (MPI, 2013) • Continue implementation and monitoring of the Operational Procures for ling long line vessels (<34 m). • Assess the nature and extent of the of seabird interaction, by the ling long-line vessels (<34 m) *Year 3:* • Continue to monitor and report observed bird captures in the ling fisheries in accordance with MO1.2, MO1.6, MO2.5 and MO2.6 of the National Fisheries Plan (MPI, 2013) • Report the efficacy of the management strategy (which includes a risk based management framework, observation and reporting, and Operational Plan for long-line vessels.
Consultation on condition	MPI has confirmed that it supports the intentions of Deepwater Group Ltd with regards to the certification of trawl and bottom longline fisheries in LIN3-LIN7. The Ling Client Action Plan was drafted by DWG in consultation with MPI, and MPI is committed to supporting implementation of the Action Plan wherever possible.

Table A1.3: Condition 3

Performance Indicator	**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.**
Score	Longliners: 75
Rationale	A key component of quantifying ETP interactions within the fishery is the information obtained through the observer programme. Currently, observer coverage in key components of the longline fishery in all areas is felt to be insufficient to measure trends and support a full strategy to manage impacts on ETP species. In turn, it is not clear whether the absence of interaction estimates for some UoC reflects the absence of interactions, or the limitations of available data.
Condition	The client is required to demonstrate that information is sufficient to measure trends and support a full strategy to manage impacts on ETP species.
Milestones	By the first annual audit, the client will provide evidence in the form of a report on the work it has undertaken to demonstrate that information is sufficient to measure trends and support a full strategy to manage impacts on ETP species, including measures to minimise mortality. This milestone has been defined as a means to monitor progress, meeting the milestone would likely not result in a change in score at this surveillance audit. By the second annual surveillance audit the client will provide evidence in the form of a report on the further work it has undertaken to measure trends and support a full strategy to manage impacts on ETP species, including measures to minimise mortality. This milestone has been defined as a means to monitor progress, meeting the milestone would likely not result in a change in score at this surveillance audit. By the third annual surveillance audit the client will provide evidence in the form of a report to demonstrate that information is sufficient to measure trends and support a full strategy to manage impacts on ETP species. Meeting this milestone will demonstrate that all scoring issues of the SG 80 have been met and would result in a score of 80 for this performance indicator.
Client action plan	*Year 1:* • Continue to monitor and report observed bird captures in the ling fisheries in accordance with MO1.2, MO1.6, MO2.5 and MO2.6 of the National Fisheries Plan (MPI, 2013) • Conduct a review of available data to assess the nature and extent of ETP

	seabird interaction information for ling long-line fisheries • Ascertain whether this information is adequate to support a strategy to manage ETP seabird species and support progress towards determining that the fisheries do not pose a threat to the protection and recovery of ETP species. • Identify main information gaps in order to target future data gathering activities *Year 2:* • Continue to monitor and report observed bird captures in the ling fisheries in accordance with MO1.2, MO1.6, MO2.5 and MO2.6 of the National Fisheries Plan (MPI, 2013). • If the gap analysis undertaken in Year 1 fails to demonstrate that there is adequate information available on ETP seabird interactions to support a strategy for management and determine that ling longline fisheries do not pose a threat to the protection and recovery of ETP species: • Develop an agreed strategy to increase the information available to support a management strategy for bycatch. This agreed strategy could include: • Assessing the requirements of observer coverage across seasons, sub-areas and across each fish stock in accordance with MO1.4 of the National Fisheries Plan (MPI, 2013) • Assessing whether MPI is able to increase observer coverage ling bottom longline fishing effort • Assessing the feasibility of independent third party observers or fisheries technicians to collect required information *Year 3:* • Continue to monitor and report observed bird captures in the ling fisheries in accordance with MO1.2, MO1.6, MO2.5 and MO2.6 of the National Fisheries Plan (MPI, 2013) • Provide evidence of the nature and extent of the of seabird interaction in ling long-line fisheries, demonstrate that information is sufficient to measure trends and support a full strategy to manage impacts on ETP seabird species in ling long-line fisheries.
Consultation on condition	MPI has confirmed that it supports the intentions of Deepwater Group Ltd with regards to the certification of trawl and bottom longline fisheries in LIN3-LIN7. The Ling Client Action Plan was drafted by DWG in consultation with MPI, and MPI is committed to supporting implementation of the Action Plan wherever possible.

Appendix 2. Peer Review Reports

Peer Reviewer 1

Assessment Details	
Fishery	New Zealand Ling
Conformity Assessment Body	Intertek Fisheries Certification
Contact Person	
Contact Details	
Peer Review Due Date	May 17 2014

Overall Opinion

Has the assessment team arrived at an appropriate conclusion based on the evidence presented in the assessment report?	**Yes/No** **Yes (in most cases)**	**Conformity Assessment Body Response**
Justification: **The assessments made in this report are especially challenging given the restricted information base available for some UoCs - in particular UoCs in which very little observer coverage has been achieved. Broadly, the information supports the scores assigned. However, in some cases, the lack of information would have contributed to this reviewer assigning a different score.**		

Do you think the condition(s) raised are appropriately written to achieve the SG80 outcome within the specified timeframe?	**Yes/No** **PI 2.3.1: No** **PI 2.3.2: Yes** **PI 2.3.3: No**	**Conformity Assessment Body Response**
Justification: **PI 2.3.1: The timeframe over which progress against the condition is measured would be more likely to support the desired outcomes if longer. Bycatch events are variable between years, sometimes due to factors beyond the fishery's sphere of influence. Demonstrating, with any at-sea information, that longline vessels <34 m (not targeting bluenose or snapper) are highly unlikely to create unacceptable impacts to ETP bird species would be expected to take longer than one year. Given the lack of information currently available on bycatch by vessels of this size class, the collection of new information is expected to be required to meet this condition. Adding at least one more year is recommended. Adding another two years in which the condition can be addressed is desirable.** **PI 2.3.2: The timeframe over which the condition is to be addressed is achievable. Note that at-sea monitoring above recent levels implemented by government would be expected to be necessary to close out the condition. Demonstrating the ongoing commitments to implementing the strategy would also be necessary.** **PI 2.3.3: The timeframe over which the condition is to be addressed would benefit from being longer, to allow more information to be collected where new information is required. As noted under PI 2.3.1 above, bycatch events are variable between years, sometimes due to factors beyond the fishery's sphere of influence. Therefore, more than one year of information is required to address this condition and a commitment to ongoing data collection is necessary. Further, the long lead-in time that is typically required to plan the allocations of government observer services could constrain addressing the condition in the current timeframe. Extending the timeframe by one year is recommended.** **In addition, there are two recommendations made in the report. The content of these recommendations is appropriate to the assessment.**	We note the response, and agree that if the first milestone (which includes review of existing information from the observer programme for this specific fleet) indicates that further information needs to be collected, the timescale for meeting this Condition may be extended. This will be reviewed during the first annual audit. Agreed, and this would be subject to scrutiny during the future annual audits. Failure to maintain a strategy would reduce the score for this PI accordingly. We note and agree with the response. As for Condition 1 above, this would be subject to review at the first annual audit.

If included:

Do you think the client action plan is sufficient to close the conditions raised?	**Yes/No** **PI 2.3.1: No** **PI 2.3.2: Yes** **PI 2.3.3: No**	**Conformity Assessment Body Response**
Justification: **PI 2.3.1: The information base available on the vessels in this size class is very small. The condition most likely requires the collection of new information. If monitoring is expected to be conducted using "typical" levels of observer coverage assigned to these vessels, meeting the condition will most likely be extremely challenging. If new data is to be collected, a longer timeframe is required to meet the condition effectively.** **PI 2.3.2: Demonstrating the ongoing commitments to implementing the strategy would also be necessary.**		See responses above.

PI 2.3.3: Information to measure trends would need to have a temporal extent of more than one year. Deferring the final reporting on the condition to Year 4 is recommended. Demonstrating the ongoing elements of information collection as needed to support a full strategy would also be important.	

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	Ministry for Primary Industries' Plenary Reports reflect the best available information describing the status of New Zealand commercial fish stocks. The information used to assess stock status is drawn from these reports. Stock assessments captured in plenary reports are conducted by contracted scientists and reviewed by a working group process open to all stakeholders. Stock assessment results convey confidence intervals which relate to the certainty levels required in assessing the scoring issues (e.g., a high degree of certainty). 1.1.1(b): LIN3&4: The lower bound of the 95% credible interval of spawning biomass as a percentage of B_0 briefly dips below the management target of 40% in the early 2000s. Consider clarifying this in the text.	

1.1.2	Yes	Yes	NA	1.1.2(c): The dominant precautionary issue considered appears to be the imperfect information base on the fishery and population, rather than ecological context *per se*.	A note on the position of ling within the foodweb (it is not a 'keystone' species) and the maintenance of ecological integrity at the TRP level in particular has been added.
1.1.3	NA	NA	NA	The stocks under assessment are not considered depleted.	
1.2.1	Yes	Yes	NA		
1.2.2	Yes	Yes	NA	1.2.2(c): It would be useful to elaborate on how the east-west split relates to ling harvests. Rationale could usefully describe what happens when TACCs are overcaught (e.g., is there an evaluation of the cause of overcatch, how might this feed back into management frameworks). Persistent overcatch may be indicative of issues with the design and/or implementation of harvest control rules, or the management structure.	This sentence has been removed. Agreed, text has been added to cover this.
1.2.3	Yes	Yes	NA		
1.2.4	Yes	Yes	NA	1.2.4(b): Identify for which stocks B_{MSY} values have been estimated under the assumption of deterministic dynamics. 1.2.4(d): The age of the (2006 and 2010, respectively) LIN 6B and LIN 7CK assessments may reduce the appropriateness of their application to the current fishery (i.e., robustness in practical terms, rather than intrinsic robustness of the models themselves at the time they were done). (This could also reflected further in the rationale for scoring issue 1.2.4(a)).	We have clarified that B_{MSY} has only been estimated/reported for some stocks, noting that the management framework is using $\%B_0$ as reference levels. We note the historical nature of the assessments for LIN 6B and LIN 7CK in PI 1.1.1 and score that PI accordingly.

2.1.1	Yes	Yes	NA	The variable level of information available for assessing the retained species is noted. Building knowledge of stock statuses for poorly known species is encouraged. For some species, consideration under 2.1.1(d) seems appropriate (or the rationale as to why this is not appropriate presented – e.g., accompanying Table 19's listings). For example, the MPI Plenary Report is clear that the status of white warehou is unknown, and the sustainability of the current TACC (and catch level) is also unknown.	We disagree with the part of this comment focusing on 2.1.1d, noting that 2.1.1d forms part of the SG60 hierarchy text, and hence would be scored if a main stock were considered only likely to be within biologically based limits. White warehou is, for the reasons articulated in that section, considered highly likely to be within biologically-based limits. As noted in the scoring guidepost text for 2.1.1.a (80) " Main retained species are highly likely to be within biologically based limits (if not, go to scoring issue c below)." As noted we recommend that the level of capture of this species should be monitored in the annual audits.
2.1.2	Yes	Yes	NA	2.1.2(b): Examples of other fisheries for which TACCs have been revised would provide additional evidence of the efficacy of this kind of partial strategy. 2.1.2(e): The NPOA-Sharks 2013 is now finalised and published, and includes information relating to the management of shark finning: http://www.fish.govt.nz/en-nz/Consultations/npoa+sharks+2013/default.htm -Note the comment about consistency in scoring approaches in the "Any other comments" box below.	Agreed, the example of hoki has been added. Agreed, the NPOA was finalised following the submission of the review draft. The text has been updated accordingly.

2.1.3	Yes	No	NA	2.1.3(c): For UoCs with very low levels (or unknown, for LIN7 offshore) of observer coverage (e.g., Inshore LIN7, LIN4, LIN5 and Offshore LIN3), the best possible score for this SI is 80 in my view (noting that the 100-level score relates to all retained species, not main). Information to support a strategy should include information on the fishery and catches of all retained species (ideally with the independence and detail that observer data provides).	We disagree. While the low level of observer coverage does indeed lead to a lower score for elements a, b and d, in our view however the information to support a strategy to manage retained (QMS) species is available through the logsheets, the available observer information, and fishery-independent survey information which allows the monitoring of the retained species population (rather than the sub-component seen by observers).
2.2.1	No	No	NA	2.2.1(a): Orange roughy is a QMS species, and so by definition not a bycatch species. The introductory text section mentions common roughy, which may be what is meant here. In that case, information on common roughy would be needed to make an assessment.	This was a typo - should read common roughy - text adjusted.
2.2.2	Yes	Yes	NA	Note the comment about consistency in scoring approaches in the “Any other comments” box below.	
2.2.3	Yes	Yes	NA	2.2.3(b): The score is appropriate at 80, but the text for the 100-level SI is included. 2.2.3(c): Include scoring conclusions for all UoCs under the SI100 box. 2.2.3(d): The lack of observer coverage for some UoC is especially challenging for this SI.	Agreed, adjusted. Agreed, adjusted. Agreed.

2.3.1	Yes	No		2.3.1(a): Where no observer coverage has occurred, the effects of the fishery on ETP species can be qualitatively assessed but cannot be “known”. Therefore, in my view, in fisheries for which minimal (e.g., < 5% coverage) observer (or electronic monitoring) information is available, SG80 cannot easily be met. -Noting the requirement of the NPOA-Seabirds (i.e., that seabird species identified as at very high or high risk of having commercial fisheries bycatch exceed population sustainability limits should be managed to a lower risk category by 2018-including species reported caught in ling fisheries such as Salvin’s albatross, Buller’s albatross, white-capped albatross and Chatham albatross) would be useful. https://fs.fish.govt.nz/Doc/23121/AEBR_109_2596_PRO2010-02,%20Obj.%201,%20MS4,%20RR2,1.pdf.ashx -Similarly, requirements of the National Plan of Action-Sharks should be considered, to the extent that these relate to ETP shark species. 2.3.1(b): Observer-collected information and modelling outputs, including estimated captures, are now publicly available for seabird and marine mammal bycatch, to the end of the 2010/11 fishing year (https://data.dragonfly.co.nz/psc/). For trawlers, 8 incidences of birds being landed dead from the trawl warps or doors have been reported by observers since the 2004/05 fishing year. Four times that many net captures have been reported (https://data.dragonfly.co.nz/psc/v20130304/birds/ling-trawl/all-vessels/eez/all/). Reporting all interactions with trawl gear is deemed important, rather than recommending any focus on a subset of that gear. Tidying up the rationale text explaining why offshore bottom longline vessels are considered problematic in this SI would be helpful-the uncertainty around estimates seems to be the reason. The inshore case is clear.	Through the modelling approach used, the potential impact of bycatches can be developed through the available observations or by 'inference'. However, as noted under 2.3.1a, this leads to greater uncertainty in estimates, such that the effects of the fishery are known. Improvement of the available information is needed to address this, and hence has been raised as the subject of a Condition. Noted, these further references have been added to the text of this PI as well as PI2.3.3 where relevant to information. Agreed, we have clarified the text.

2.3.2	Yes	No	NA	2.3.2(a): Please clarify which legislation provides the strategy to minimise ETP fish mortality. 2.3.2(c): The scoring rationale relates largely to trawlers. For fisheries where minimal observer coverage or other vessel-based at-sea monitoring has occurred, I do not consider that there can be evidence that the strategy is being implemented successfully. Referring to the regulations for the deployment of seabird bycatch reduction approaches in bottom longline fisheries would be helpful in this section.	We have clarified the text. This has been clarified in the text, noting that while the observations available do not provide 'clear evidence', the available information from observers and enforcement agencies to provide evidence. A reference to the regulations has been added.
2.3.3	Yes	Yes	NA	2.3.3(c): It would be useful to give a specific example of uncertainties applicable to LIN6 longline, given the high levels of observer coverage achieved in that UoC.	Text updated to note the relatively high uncertainty/variability in the resulting model estimates for this region, which despite the relatively high observer coverage will affect the ability to measure UoC-specific trends.
2.4.1	Yes	Yes	NA		
2.4.2	Yes	Yes	NA	2.4.2(a): I suspect the Marine Reserves Act (1971) is the intended Act here. -Note the comment about consistency in scoring approaches in the “Any other comments” box below.	Agreed, text updated
2.4.3	Yes	Yes	NA	I would consider the benthic surveys done in the NZ EEZ to be extensive, rather than comprehensive. Significant gaps remain across a very large area.	Agreed, text adjusted
2.5.1	Yes	Yes	NA		

2.5.2	No	Yes	NA	2.5.2(d): Where observer coverage is very low, there will be minimal or no evidence that some measures intended to reduce fishing impacts on components of the ecosystem are being implemented (e.g., lack of information on seabird bycatch reduction measures required to be deployed in longline fisheries). In my view, the SI cannot be scored at the 100 level.	We disagree, noting that observer coverage is but one part of the different informational elements available to managers across these fisheries, including the observer coverage on related fisheries within the regions, combined with the benthic surveys, VMS, etc. This provides evidence that measures for the management of ecosystem structure and function are being implemented successfully. For specific key components of the ecosystem (in particular ETP species), key UoC have already been 'marked down' as a result of the limited observer coverage within 2.3.
2.5.3	Yes	No	NA	2.5.3(c): The rationale for scoring notes that "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." This appears to be at odds with a score of 80 allocated to this scoring issue. The score of 80 requries that "The main functions of the Components (i.e., target, Bycatch, Retained and ETP species and Habitats) in the ecosystem are known."	Agreed, this has been clarified in the text.
3.1.1	Yes	Yes	NA	3.1.1(a): The rationale could also include the legal protection provisions for marine wildlife, as in the Wildlife Act 1953 and the Marine Mammals Protection Act 1978, and reporting requirements around the incidental capture of these species during fishing.	This has been added to the text
3.1.2	Yes	Yes	NA		
3.1.3	Yes	Yes	NA	Fisheries Act s10 (d) could be considered as not in support of managing according to the precautionary principle, when information is lacking (for example, where utilisation went ahead despite important gaps in environmental knowledge).	Noted. However this view has been debated and MPI consider that the precautionary approach is always considered.

3.1.4	Yes	Yes	NA		
3.2.1	Yes	Yes	NA	The National Plans of Action for sharks and seabirds, both revised and published in 2013, provide additional examples of management objectives (relating to some ETP species) that are applicable to the assessed fisheries and consistent with Principle 2.	
3.2.2	Yes	Yes	NA	3.2.2(a): The rationale could also reflect the process of advice development – working groups reviewing information, preparation of initial position papers, consultation, preparation of final advice papers, advice provided to the Minister, and Ministerial decisions being made. 3.2.2(c): Identifying key outcomes from the FAO document and comparing those to the Fisheries Act provisions would be useful. Fisheries Act s10 (d), included in the justification for scoring issue (c), could be considered as not in support of managing according to the precautionary principle, when information is lacking. 3.2.2(d): The rational for this SI could also include the annual review reports produced by MPI to describe performance and delivery on fisheries management objectives, e.g., for deepwater fisheries: www.mpi.govt.nz/Default.aspx?TabId=126&id=1827 and http://deepwater.hosting.outwide.net/wp-content/uploads/2014/03/MPI-2013-Annual-Review-Report-2012-13-ARR.pdf	These comments are helpful and text has been added to incorporate the main points raised.

3.2.3	Yes	No	NA	3.2.3(a): In my view, for fisheries with minimal observer coverage the scoring issue cannot be met at the 100 level. This requires (amongst other things) the implementation of a comprehensive monitoring system. Observer programmes are part of best practice approaches for fisheries management, and achieving a comprehensive monitoring system without a reasonable level of observer coverage (or electronic) monitoring seems impossible. In addition, there must be a demonstrated consistent ability to enforce management measures etc. "Consistent" seems to imply comprehensive monitoring to be at reasonable levels over time. While the framework exists (e.g. legislative provisions for observers, and the existence of a programme) observers still need to be deployed in fisheries to be effective for monitoring. 3.2.3(c): Clarify the extent of the 100 sea days referred to, i.e., is this allocation intended to provide for the collection of information relating to compliance by government observers across all (assessed?) ling fisheries? In future, it would be worth exploring the completion of non-fish protected species catch returns by fishers. While a required part of the reporting framework, utilisation of these forms is patchy (e.g., Pierre et al. 2013[9]).	Agree the justification has been changed to address this and the score reduced from 100 to 90 to reflect this. Text changed Agree

[9] http://www.doc.govt.nz/Documents/conservation/marine-and-coastal/marine-conservation-services/mit2012-01-reducing-seabird-bycatch-in-bottom-longline-fisheries.pdf

3.2.4	No	Yes	NA	3.2.4(a): The rationale could note the increasing extent to which DOC and MPI are working together on protected species research planning. An example of a recent DOC research plan for fisheries interactions can be found at: www.doc.govt.nz/Documents/conservation/marine-and-coastal/marine-conservation-services/approved-csp-annual-plan-2013-14.pdf. The strategic plan guiding the production of this research plan is at: www.doc.govt.nz/Documents/conservation/marine-and-coastal/marine-conservation-services/reports/csp-strat-statement2013.pdf Collaboration amongst the two agencies extends to planning observer services, especially in areas of shared priority and inshore fisheries (though not capturing inshore ling fisheries currently), e.g., www.fish.govt.nz/NR/rdonlyres/4C71155C-BD92-4D6E-A4B9-198DA7BA7717/0/FINALInshoreObserverProgramme201314.pdf 3.2.4(b): Rationale could also reflect the work on protected species-fisheries interactions (therefore relevant to P2) done by the Conservation Services Programme at DOC. CSP follows a similar process to MPI in terms of consulting stakeholders and disseminating project outputs. For example, see: www.doc.govt.nz/conservation/marine-and-coastal/conservation-services-programme/meetings-and-project-updates/.	Agreed. Text has been added to the justification for these scoring issues.

3.2.5	Yes	Yes	NA	3.2.5(a), (b): The Annual Review Report provides another form of internal review, of the performance and delivery of the management system. 3.2.5(b): Clarifying the extent of stock assessment review would be helpful. The text notes “However there has not been a review of the ling stock assessment in recent times.” However, the working group reviewed the versions of the assessments reported in the fish stocks plenary reports. Some of these assessments are somewhat dated now, and so this comment may refer to these, or possibly a lack of wider external review? References have been omitted for this PI, but should be added.	The comments are accepted and text changes made. References have been added

Any Other Comments

Comments	Conformity Assessment Body Response
There appeared to be one consistency issue in the report around the assessment of partial strategies and strategies across scoring issues. In PI 2.4.2, scoring issue (a) identifies whether a partial strategy or a strategy is in place. Scoring issue (d) is based on a strategy (which is not considered to exist in this case, and the scoring issue is not assessed). However, in previous situations (e.g., PI 2.1.2, scoring issues (a) and (d); PI 2.2.2, scoring issue (a), (c) and (d)), the assessment of ‘strategy’ scoring issues continued in cases where only partial strategies were considered to be in existence.	This has been noted, along with the comments made by the other reviewer, and the scores adjusted accordingly.

Peer Reviewer 2

Overall Opinion

Has the assessment team arrived at an appropriate conclusion based on the evidence presented in the assessment report?	**Yes**	**Conformity Assessment Body Response**
Justification: In general, yes, the assessment team has arrived at an appropriate conclusion based on the evidence presented. Specific comments are made with respect to PIs in the scoring assessment, below (and particularly with respect to some P2 PIs), and clarification on those points is required. Assuming that the information is provided and the data (for example on retained and bycatch species) show what is expected, the fishery should still proceed through the assessment with only the existing three proposed conditions of certification.		

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: No further comments – the conditions appear to be appropriately written.		

If included:

Do you think the client action plan is sufficient to close the conditions raised?	**Yes**	**Conformity Assessment Body Response**
Justification: Again, no further comments – the conditions appear to be appropriately written.		

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)

The Executive Summary does not describe the fishery – there is no indication of what gears are used, where the fishery operates, how much of the target species is taken and what other species are taken as incidental catches. It would be very useful for readers to have that description before being presented with the scores for 10 scored UoCs (and what do the acronyms LIN2, LIN3, etc. mean?).

Some additional text has been added to better describe the fishery.

It is noted that the fisheries are almost always referred to by the LIN number rather than by UoC number. For example, Table 1 shows vessels by gear and target fishery but does not indicate how this relates to UoCs, and even the scores for the PIs are given by LIN number, for example for PI 2.1.3 they are given as "*90 (LIN3,4,5,6 trawl, LIN6 longline) LIN7 trawl, LIN3,4,5 longline) 80 LIN 7 longline*". This is not helpful in an MSC report where fisheries are assessed by UoC, but it's particularly unhelpful given that there are 10 UoCs being scored covering 5 geographic areas and 2 gear types, and where the LIN numbers don't correspond to the UoC numbers (ie. LIN 3 = UoCs 2 and 8, LIN 4 = UoCs 3 and 9). Given the complexity, adding the UoC numbers in to the text in parentheses following any mention of LIN numbers is more or less essential if understanding is to be imparted to readers.

While the point is well taken, given the fishery is managed using LIN numbers and stakeholders are more familiar with this description the team consider it appropriate to refer to the LIN number rather than the UoC number .

Section 3.1.1. Please describe/define QMA, and add to list of acronyms.

Acronym spelt out in the text and is in the list of acronyms.

Section 3.2.2. It is noted that "*An unpublished report written by Baird, et al. (2002) on the spatial extent and nature of mobile bottom fishing methods within the New Zealand EEZ, 1989-90 to 1998-99 provides further data on trawl gear types.*" But, unless it is available (i.e. published), this report is not useful. In any case, the citation for Baird *et al*. 2002 is not provided in the reference list.

Reference removed.

Section 3.2.2. The report states "*The fleets for the deep and mid-water fisheries of ling consist of semi-pelagic trawls*" but then goes on to describe Alfredo and Korean bottom trawl net designs. Please clarify if the fleets use only semi-pelagic gears or a combination of bottom trawl and semi-pelagic gears.

Clarified in the report

Section 3.2.2. The report states ""Kapron" trawls are used by the Russian/Ukraine fleet". Please indicate how this fleet fits in with the NZ fishery.

Clarified in the report

Table 1 source is Foster 2014. This is missing in the reference list.

Noted as pers. comm.

Table 1 indicates '*trawl target vessels*', '*lining target vessels*' and '*target vessels using other methods*'. What other methods are these, and are they included somewhere in the assessment or not included (because the existing UoCs only specify trawl or long-line methods)?

Clarified

Section 3.2.3. Non-NZ vessels are reported to have harvested ling previously. Are any non-NZ vessels still permitted or active inside the NZ EEZ?

All vessels are New Zealand owned or in partnership/chartered by New Zealand companies

Section 3.2.3. Please define/describe AMP, and add to list of acronyms.

The acronym has been spelt out. As this no longer applies, we have left the text as is.

Table 3. It would be useful to provide the mean landings by UoC for the last 5 years in the different LINs.

These are available on the MPI website, and to ensure the report is not overly long is not reproduced here.

Section 3.2.3. It would be very helpful to explain the relationship between the FMAs, QMAs and fish stocks, early in this section. For example, Table 3 lists the QMAs against the fish stocks (LINs), but QMAs 8 and 9 are not shown in Figures 1 or 2, which show the FMAs (LINs). Why do QMAs 8 and 9 not appear in Figures 1 or 2?

It is agreed that with the Ling fishery areas can be confusing as the management areas (QMAs and FMAs) do not always align with the biological stocks. The caption under Fig 2 has been revised to clarify the different areas. We note as per table 3, QMAs 8 and 9 are part of stock area LIN7 and LIN1, respectively.

Section 3.3.3. In combination with comment 11, above, a figure showing LIN 2 and 7 in detail is needed somewhere. Figure 2 shows the FMAs in general, but the existing text states that parts of LIN 2 and 7 are associated and uses the descriptors CK and WC which are not shown in the figure. And where/what is LIN 2/7CK?

This is detailed in the re-arranged text for Section 3.3.3.

Similarly, Table 3 shows fish stock LIN 2 to be associated with QMA 2, and fish stock LIN 7 to be associated with QMAs 7 and 8. The NZ government website indicates that QMA 8 is analogous to LIN 7CK, but how this all fits together is not clear at all from the report.

See response above.

Section 3.3.3. starts "*Stock assessments are fully described in reports (Horn et al., 2013 and Horn and Francis, 2013) and in the recent Plenary Reports. Details are not reproduced here*". In fact, large chunks of the text in this section specific to the different UoCs have been copied from the detailed plenary reports. While using appropriately referenced text in this way is not necessarily an issue, readers of MSC reports should not be required to have specialist knowledge of stock assessment methodologies in order to

understand the text. However, this is the case, here, where sentences such as "*MCMC chains were constructed using a burn-in length of 5x105 iterations, with every 1000th sample taken from the next 106 iterations (i.e., a final sample of length 1000 was taken from the Bayesian posterior).*" are almost certainly completely meaningless to most readers. A relatively simple summary of the stock assessment approach taken in each area would be of far more use to the average reader – P1 specialists can be directed to read the detailed text in the plenary reports if they want more information.

Noted and well taken, however, extracting text that describes the stock assessment is considered to be the most effective way to ensure it is accurately reported

Section 3.4.1 states "*The impact of trawling for conservation and species diversity/persistence can be limited if trawling affects small proportions of a habitat type within an area*." I agree, but is there any information available on the time taken for recovery in these areas?

A cross-reference to section 3.4.3.1 has been added.

Table 6. Please indicate what the dashes, crosses and empty cells mean.

This has been clarified.

Section 3.4.1. The report states "*The New Zealand Government closed 17 BPAs (Benthic Protection Areas) within the New Zealand EEZ (Exclusive Economic Zone) to bottom trawl fishing methods in perpetuity as of late 2007 ... Demersal trawling and dredging is prohibited in these areas (pelagic fishing and demersal longlining being allowed)*". As at least some of the trawl gear used in the ling fishery is semi-pelagic, so do these BPA closures extend to the ling fishery?

See Section 3.4.3.1

Section 3.4.2. This states that Ministry of Fisheries observer data are available, and that these provide accurate and verifiable information on catch weight for all QMS and non-QMS species caught. However, Tables 7 (trawl) and 8 (longline) do not indicate which are retained and which are bycatch (i.e. discarded) species, does not provide quantities or a percentage of each species relative to the ling catch, and is only for the top 10 species (how is 'top ten' defined – by weight??). This lack of information prevents the reader from understanding which are main retained or main bycatch species, and whether or not there are more species that should have been considered as 'main'. Some of this information is provided later in the text, but this still provides no indication of whether these species and quantities are retained or bycatch, or some combination of both. It would be simplest and clearest to extend Tables 7 and 8 and provide totals for all species taken down to a sensible minimum contribution.

Within Table 6, non-QMS species (which are not required to be retained, a point which has been added to the Table heading) are noted with a *.
Clarified that the top 10 are defined by weight.
We note that the paragraph above the table states "The top ten species (retained and bycatch) within hake-targeted trawl fisheries by management area, based upon observer data from a five-year period from 2007/08 to 2011/12. Proportion of QMS species in catch by weight noted"

Section 3.4.2.2 states "*IUCN status of species reported captured ranges from Least Concern (e.g. Cape Petrel) to Vulnerable (www.iucnredlist.org).*" It would be useful if the species in the vulnerable category were

listed, as this is one of the categories (albeit the lowest risk one) where the IUCN identifies species to be ‘threatened’.

While an example has been added, we refer to the IUCN website given the dynamic nature of the listing.

Section 3.4.2.2. Please define ‘Level 2 risk assessment?’

Described and reference to Hobday et al., 2007 added.

Section 3.4.2.2 states “*The risk assessment noted that annual potential seabird fatalities within the 'large' longline complex were between 1% and 50% of the species PBR, while the 'small' longline complex were generally less than 10% of the species PBR*”. Does the ‘small’ longline complex comprise all or a part of the ling longline fleet, or is the complex just a part of the ling longline fleet?

Clarified.

Section 3.4.2.2 states “*Five species of sharks (the basking shark, deepwater nurse shark, white shark, oceanic whitetip shark, and the whale shark) are protected by domestic legislation in New Zealand waters. The basking shark has been reported to interact with the hoki trawl fishery (e.g. Francis and Lyon, 2012; Francis and Sutton, 2012). However, there have been no observed interactions with the ling fishery noted over the period 2007/08 - 2011/12.*” The final sentence appears to refer to basking sharks. Have any interactions been observed or reported for the other species?

Clarified to note no observations of the other listed species seen.

Section 3.4.3.1. Figures 3 and 4 are somewhat interesting but they would more useful if they included the fishing areas or, even better, summary trawl VMS data, in order to allow readers to see where the fishery was working in comparison to habitats.

Section 3.4.3.1. A figure showing fishing activity (e.g., summary VMS data or hours fished by grid square) would be a very useful addition to the report. At present, readers are given no indication of where fishing occurs except on a gross scale.

A figure (Figure 5) and reference to the location of the documents on the DWG website has been added

Section 4.1. It is stated that harmonization between the hake, fishery and the ling and hoki fisheries has occurred (e.g. “*Consistency of outcomes has been ensured*” and “*Conclusions, where appropriate, are consistent between the three fisheries with respect to evaluation, scoring and conditions*”), but no evidence has been provided. A table showing scores and providing reasons for any substantial differences would be useful.

MSC requirements state that “where an assessment overlaps with a certified fishery or fishery in assessment that a CAB has already scored, the team shall base their assessment on the rationale and scores detailed for the previously scored fishery”. In this case the CAB has taken into account the certified hoki fishery and the under assessment ling fishery.
Further the MSC requirements state “to achieve harmonisation, CABs shall undertake the following key activities:

a. The use of complementary assessment trees.
b. The sharing of fishery information.
c. The achievement of consistent conclusions with respect to evaluation, scoring and conditions.”. This has been done and
CI3.2.3.3 says “The team shall explain and justify any difference in the scores in the scoring rationale for relevant PIs.” There are no substantial differences in the scores for these fisheries for relevant PIs.

A number of typographic mistakes were spotted in the report. These were highlighted and the report returned to the authors.

The text has been amended.

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 (all UoCs)	Yes (all UoCs)	N/A	N/A	
1.1.2	Yes (all UoCs)	Yes (all UoCs)	N/A	N/A	
1.1.3	Not scored	Not scored	N/A	N/A	
1.2.1	Yes (all UoCs)	Yes (all UoCs)	N/A	N/A	
1.2.2	Yes (all UoCs)	Yes (all UoCs)	N/A	N/A	
1.2.3	Yes (all UoCs)	Yes (all UoCs)	N/A	N/A	
1.2.4	Yes in general (all UoCs)	Yes in general (all UoCs)	N/A	I have some concern over scoring UoCs 6 and 12 the same as the other UoCs, when the most recent assessment for the LIN 2/7CK stock was rejected. A comment from the authors would be welcomed.	Which refer to the assessment for stock in LIN7. Given that the assessment model is comparable to those used in the other stock areas, we consider it appropriate for the the stock and management regime, but 'mark down' these UoCs based on the information available (1.2.3) and the historical nature of the assessment (1.1.1) noting that projections indicate the stock should remain healthy at recent catch rates.

	No (all UoCs)	No (all UoCs)	N/A	In general, it is very difficult to understand how the different UoCs have been scored as the text indicates species by LIN rather than by UoCs. Information on the quantities of retained non-target species in the different UoCs is discussd but not presented clearly (e.g., in a table) anywhere in the report. At present, readers are informed which are the main retained species, and this looks to have been determined on the basis of weight as a percentage of catch. However, while weight is an important criterion for 'main', the MSC GCR requires that vulnerability and value are also considered. In my opinion it is essential that readers are provided with simple, summarid catch data or observer data to allow them to determine if the decisions have been taken appropriately with regard to deciding which species are main or not. Further to this expectation that a list of all retained species and their catch quantities is provided, PI 2.1.1 SId SG60 does not specify only 'main' species. What measures or practices are in place that are expected to result in the	Note response to earlier main-text comments and reference to the location of the full spreadsheet on the DWG website. Note we have also included an evaluation of the vulnerability of stocks when considering non-QMS species in particular. We disagree with this part of the comment, noting that 2.1.1d forms part of the SG60 hierarchy text in the MSC Certification Requirements and hence would be scored if a main stock were considered only 'likely' to be within biologically based limits. That is not the case for the main species in this fishery

				fishery not causing the retained species (i.e., all retained species) to be outside biologically based limits or hindering recovery – N/A is not an appropriate answer, here, given the lack of other information.	
	No (all UoCs)	No (all UoCs)	N/A	Understanding the scoring rationale here is again hampered by the lack of information provided on catch composition. SId requires that there is a strategy in place (for all retained species), but SIa indicates that there is not a strategy in place. A 'N' is therefore appropriate for SId, togetehr with an overlal score of 85.	See comments above The scoring has been amended to 85
	Yes (all UoCs)	Yes (all UoCs)	N/A	The scores for this PI seems appropriate, but it is noted that the rationale states "*Data on removals of all retained species are collected and are available are summarized in the report of the Stock Assessment Plenary*". A table summarising that information by UoC would be useful (essential in my opinion) in the assessment report.	See comments above
	No (all UoCs)	No (all UoCs)	N/A	Similar to the comment on PI 2.1.1., there are no data provided on actual catch	Note response to earlier main-text comments and reference to the location of the full spreadsheet on the DWG website.

				composition, which would greatly aid in the understanding of the scoring. Also similar to PI 2.1.1, PI 2.2.1 SIc SG60 does not specify only 'main' species. What measures or practices are in place that are expected to result in the fishery not causing the bycatch species (i.e., all bycatch species) to be outside biologically based limits or hindering recovery? In particular, a comment on how UoC 11 meets this requirement with respect to black cod (where the report states: "Catches averaged over 20 tonnes per annum, a figure skewed by high catches in the past - in the last two years catches were below one tonne.") is required, given the risk that the recent reduction in catches may indicate a stock decline.	We do not agree with this part of the comment, noting that 2.2.1c forms part of the SG60 hierarchy text in the MSC Certification requirements, and hence would be scored if a main bycatch stock were considered only 'likely' to be within biologically based limits. That is not the case here. For black cod, we have clarified what was meant by high catches in the past – considerable variability in catches from year to year, with no trend.
	No (all UoCs)	No (all UoCs)	N/A	It would be helpful to restate which species are considered to be main. SIc and SId require that a strategy is in place. As this is not the case (SIa), all UoCs can achieve no more than the SG 80 level of performance- the score should be lowered	A reference to PI 2.1.1. has been added. Score amended to 80.However, given 2.2.2 focuses on strategy, rather than specific stocks, the current text is viewed as appropriate.

				from 90 to 80. More information on how species outside the QMS syetem 'tend to be considered as low risk', and which species are outside the system, would supoprt the scoring, here. The report notes "Catches are generally below TACCs, especially for lower value non-target species", but it should also be noted that this, therefore, does not necessarily protect these stocks from overharvesting in any meaningful way if the TACC is not based on the results of an appropriate stock assessment or other analyses of stock status.	Agreed, we have re-arranged the text to clarify the process. We do not disagree, and this is one of the stated reasons why the current partial strategy does not achieve the SG 100 level
	Yes (all UoCs)	No (all UoCs)	N/A	Again, it would be helpful to restate which species are considered to be main, here. SIb is not specific to 'main' species and so all species need to be considered. It is not clear if all species have been considered, however.	A reference to PI 2.1.1. has been added. As per earlier responses, scoring element (b) relates to the text under a), hence at the 60 and 80 level refers to the 'main' species, if so scored under a).
	Yes (UoCs 2 – 7, No (UoCs 8 – 12)	Yes (UoCs 2 – 7, Yes probably (UoCs 8 – 12)		Scoring here is complicated by the difficulty in distinguishing between seabird mortalities resulting from the ling-targeted longline fishery, and seabird mortlaities resulting from	As the reviewer notes, the combined estimated catches for the grouped longline fishery is above the estimated PBR. A condition has been raised to examine whether interactions from the specific UoC lead to significant interactions. The client will

				longline fisheries targeting other species. But, the report notes that "…black petrel interactions being greater than the mean PBR" without specifying how far above the PBR the mortalities are. This is important information and, although a condition has been set to address uncertainty, a comment from the authors as to how the longline UoCs meet the SG60 requirement of SIb would be useful. For example, a check on the number of ling vessels versus other vessels in the reporting group might provide some evidence to back up the assertion that "Known direct effects are unlikely to create unacceptable impacts to ETP species". A number of elasmobranch species are listed as being protected in NZ waters in the introductory sections, but only basking shark is mentioned in the scoring rationale. Can the authors please confirm that no protected shark species are taken in the different UoCs?	be asked to provide information on the relative proportion of inshore- ling targeting vessels vs 'other species' targeting vessels. If the relative proportion for ling is low then the fleet is unlikely to exceed the PBR on its own. This would be checked through the condition at the annual audit. Text has been added.
	Yes (all UoCs)	Yes (all UoCs)	N/A	N/A	
	Yes (all UoCs)	Yes (all UoCs)	N/A	N/A	
	Yes (all UoCs)	Yes (all UoCs)	N/A	N/A	

	Yes (all UoCs)	Yes (all UoCs)	N/A	The report states in this section that “For example, the work overlaying trawl tracks and habitat types is extremely informative...”. It is noted, though, that there is no graphical representation of the areas fished in comparison to habitat provided in the report! I agree that such a figure or figures would be informative, and should be provided.	Agreed, a figure has been added (Figure 5) along with a reference to the documents on the DWG website to the main text.
	Yes (all UoCs)	Yes (all UoCs)	N/A	As noted in another comment, a reference and clarification for the statement “The location of key vulnerable habitat types (smokers, hydrothermal vents etc) is known.” would be helpful, particularly given the latter statement that “However, the extent of habitat knowledge at sub-regional scales, including for vulnerable habitat types, is patchier”.	See response to earlier comment.
	Yes (all UoCs)	No (all UoCs)	N/A	Given this is a demersal fishery, a comment on any impacts of the fishery on ecosystem productivity and links to marine habitats may be appropriate. This comment applies to PIs 2.5.2 and 2.5.3, also.	Additional text on the impact of benthic trawling on ecosystem productivity has been added under 2.5.3. We note that, given the specific layout of the MSC process, benthic habitat issues are dealt with under 2.4 and are not covered here.
	Yes (all UoCs)	No (all UoCs)	N/A	The rationale for SIa is insufficient to justify a score of 100. The report states “The	The text has been clarified to note that the partial strategy of TACCs and measures to control impacts on individual ecosystem

				partial strategy in place…" and "There are no measures in place relating to ecosystem function specifically", while the MSC GCR states "A strategy ... should be designed to manage impact on that component specifically."A score of 80 is appropriate, however.	components is built upon by a legislative framework that together form a plan. We feel that (consistent with the scoring for NZ hoki) this achieves the SG100 level.
	No (all UoCs)	Yes (all UoCs)	N/A	The rationale for SIb does not support a score of 100 for any UoC. The report states "With the exception of the Southern Plateau and Chatham Rise where models includes ling within fish groups, existing models have not been used to investigate the impacts of fishing on those ecosystems or feed into the fishery management process, and hence the main interactions have not been fully investigated for the ling fishery" while the SG100 requirement is that "Main interactions between the fishery and these ecosystem elements can be inferred from existing information, and have been investigated." A score of 80 seems more appropriate.	We have clarified the text to remove the misunderstanding. For LIN 3-6, existing Ecopath models have been developed and used, and hence a score of 100 is given. For the other UoC where models do not exist (but impacts can be inferred from existing models), a score of 80 is given.
	Yes (all UoCs)	Yes (all UoCs)	N/A	PI 3.1.1., SIa states that "MPI is required to consult with those classes of persons	Text has been added to give examples

				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" An example of how and where this has happened may be useful.	
	Yes (all UoCs)	Yes (all UoCs)	N/A	PI 3.1.2., SIb states: "There is evidence that consultation occurs on a regular basis and that information provided by stakeholders is often taken into account".. Similarly to PI 3.1.1, an example of how and where this has happened may be useful.	Text has been added to give example
	Yes (all UoCs), subject to clarification on points raised	Yes (all UoCs), subject to clarification on points raised	N/A	N/A	
	Yes (all UoCs)	Yes (all UoCs)	N/A	N/A	
	Yes (all UoCs)	No (all UoCs)	N/A	PI 3.2.1 SG100 requires "*Well defined and measurable short and long-term objectives ... are explicit within the fishery's management system*". While confirming that there are short and long-term objectives, the report does not confirm that the objectives are measurable. A comment from the authors would be useful.	Text has been added tot the report to confirm that objectives are measurable
	Yes (all UoCs)	Yes (all UoCs)	N/A	N/A	
	Yes (all UoCs)	Yes (all UoCs)	N/A	N/A	

	Yes (all UoCs)	Yes (all UoCs)	N/A	N/A	
	Yes (all UoCs)	No (all UoCs)	N/A	This PI is scored 90 overall, although both SIa and SIb are considered to meet the SG80 level of perofmrnace but no more. A score fo 80 is appropriate.	The text has been ammeneded to justify the 90 score

Any Other Comments

Comments	Conformity Assessment Body Response
None	

For reports using the Risk-Based Framework:

Performance Indicator	Does the report clearly explain how the process used to determine risk using the RBF led to the stated outcome? Yes/No	Are the RBF risk scores well-referenced? Yes/No	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	N/A			
2.1.1	N/A			
2.2.1	N/A			
2.4.1	N/A			
2.5.1	N/A			

For reports assessing enhanced fisheries:

Does the report clearly evaluate any additional impacts that might arise from enhancement activities?	**Yes/No** N/A	**Conformity Assessment Body Response:**
Justification: N/A		

Appendix 3. Stakeholder submissions

There were no written submissions made by stakeholders received prior to the deadline. However following this date, MSC did send a submission that has been taken into account

Date: 08/08/2014

SUBJECT: MSC Review and Report on Compliance with the scheme requirements

Dear Jo Akroyd

Please find below the results of our partial review of compliance with scheme requirements.

CAB	Intertek Fisheries Certification Ltd. (IFC)
Lead Auditor	Jo Akroyd
Fishery Name	New Zealand EEZ ling trawl and longline

Ref	Type	Page	Requirement	Reference	Details	PI
6073	Minor	67	CR-27.12.1.3 v.1.3	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: 27.12.1.3 The opportunity of substitution of certified with non-certified fish prior to or at landing fraudulent claims from within and outside ther certified fishery.	The report does not adequately address how the systems of tracking and tracing addresses opportunities of substituting with non-certified fish. The report states that the fishery certificate ends at landing but not what happens at this point, particularly in relation to segregation of fish from the 5% fishers not part of DWG. 5.2.1 describes purchases from non-CoC holders, but it is not clear why this is relevant if the fishery certificate cannot extend beyond first point of sale.	

6077	Guidance	68- 69	CR-27.12.2.1 v.1.3	27.12.2 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:27.12.2.1 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. a. Chain of custody certification shall always be required following a change of ownership of the product to any party not covered by the fishery certificate. b. Chain of custody certification may be required at an earlier stage than change of ownership if the team determines that the systems within the fishery are not sufficient to make sure all fish and fish products identified as such by the fishery originate from the certified fishery. c. If the point where chain of custody certification is required is covered by the fishery certificate, the team shall determine the parties or category of parties covered by the fishery certificate that require chain of custody certification.	The traceability section of the report does not provide reference to a list of eligible parties that can supply MSC certified fish or vessels that are part of the fishery. Presumably these are the DWG shareholder, but a link to where this list is publically available would be useful.	

This report is provided for action by the CAB and ASI in order to improve consistency with the MSC scheme requirements; MSC does not review all work products submitted by Conformity Assessment Bodies and this review should not be considered a checking service. If any clarification is required, please contact Maylynn Nunn on +61 2 9524 8400 for more information.

Best regards,

Fisheries Oversight Director Dan Hoggarth

Marine Stewardship Council

cc: Accreditation Services International

Intertek Fisheies Certification comment

MSC REF 6073 Minor CR 27.12.1.3

The report does not adequately address how the systems of tracking and tracing addresses opportunities of substituting with non-certified fish. The report states that the fishery certificate ends at landing but not what happens at this point, particularly in relation to segregation of fish from the 5% fishers not part of DWG. 5.2.1 describes purchases from non- CoC holders, but it is not clear why this is relevant if the fishery certificate cannot extend beyond first point of sale..

IFC response: Section 5.2.1 has been revised to better address the tracking and tracing systems that are in place for this fishery.
Section 5.3 has been changed to read Chain of Custody required from first point of landing.
The Ministry of Primary Industries recent catch records for LIN by DWG Shareholders and other companies/fishers who contract catch, buy LIN ACE, or whose catches of HAK are sold by DWG shareholders to establish both the level of representation of 'fishers' in the ling fisheries and as a basis to assess the CoC matters. Over the last five years 99.5% of ling catch is related to DWG catch. The report has been amended to say this.

MSC REF 6074 Guidance.

The report does not clearly define how during at-sea- processing, particularly for surimi, it is ensured MSC ling and other species are not mixed or substituted for non MSC products.

IFC Response: The labelling system used by the fishing fleet has been described in section 5.2.3. The section has been strengthened to describe procedures are in place to ensure species are not mixed or substituted.

MSC REF 6075 Minor CR 27.12.1.2 v1.3
Page 12 of the audit report refers to only 5 out of 6 of the geographic areas where ling is fished being within the UoC. However in the traceability section 5.2.2. it does not reference this or explain how it is ensured that fish from the geographic region not covered within the UoC are never sold as MSC-certified.

IFC Response: 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. Any ling caught in an area within a UoC will be clearly identified and not mixed with UoC ling. Section 5.2.2 has been strengthened.

MSC REF 6076 Guidance CR 27.12.1.2 V 1.3

The traceability section of the report does not detail how the gear specification is managed, for example mesh size and number of hooks set, and if additional gear types -outside of the UoC- may be taken out by the client group.

IFC response: The traceability section has been amended to address this. Gear specification, areas to fish etc are all listed in the Fishing permit. This is heavily monitored both at sea- observers and port inspections – Ministry of primary industries. Any breach would be severely punished.

DWG vessels will have only certified ling at point of landing. These will be clearly labelled eg vessel name and as MSC certified fish. The labelling and documentation accompanies fish all the way from landing to final point of sale. Ling from a non Deepwater Group vessel will not be able to be labelled as certified. The fish will be

clearly identified as to which vessel the fish was caught. Ling from different vessels is never mixed and never sold together.

MSC REF 6077 Guidance CR 27.12.2.1 v1.3

The traceability section of the report does not provide reference to a list of eligible parties that can supply MSC certified fish or vessels that are part of the fishery. Presumably these are the DWG shareholder, but a link to where this list is publically available would be useful.

IFC Response: More than 99% of the ling are caught by DWG members. The website is www.deepwater.co.nz

2009 Stakeholders Interviews

MSC Interview Record NZ EEZ Fisheries

IMM Attendees
Lead Auditor/Coordinator: Seran Davies
Team Members:
Geoff Tingley (Lead Principle 1), Graham Pilling (Lead Principle 2) and Jo Akroyd (Lead Principle 3)
Stakeholders:

Affiliation	**Representatives**
Greenpeace	Karli Thomas (Oceans Campaigner)
	Geoff Keey (Political Advisor)
ECO	Barry Weeber (Co-Chair and Main Fisheries Specialist)
	Cath Wallace (Co-Chair and Economist)
Location:	Ministry of Fisheries, Wellington, New Zealand.

Date: 23rd July 2009

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

eNGO

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?

P1
TACC is higher than the stock. TACC should be reduced. There is a verbal agreement to "shelve" the TACC i.e. they will not fish to the higher TACC.

These fisheries have areas where there are either none or very old stock assessments.

6A and 6R stock is unknown as there is no stock assessment. 6R was last assessed in 1998 based upon one ecosound reading. The biggest catch was through tracking of southern blue whiting (Japanese vessel in 2001).

There are no stock assessments for LIN 1 and LIN 2. HAK4 and HAK1 have reasonable assessments. HAK7 there is a problem with the fishery information. All of HAK7 needs to be acoustically assessed.

The extent to which New Zealand manage the TAC/TACC follows stocks enables the approach to effectively fish stocks right down.
Ambiguities within section 10 of the Fisheries Act.

P2
BPAs are not marine reserves and are not deemed as being suitable for protecting endemic biodiversity. Around ½ of these areas are located in areas where no fishing occurs. They therefore provide limited protection from a threat which historically does not occur there. Also, these BPAs are voluntary so industry could potentially revoke the non-fishing activity. It is considered that this industry led approach is actually undermining the actual MPA programme.

Bottom trawling cannot be considered as a sustainable fishing practice. Greenpeace require a broader definition of the term “destructive fishing” which should include bottom trawling, canyoning, dredging and drift nets.

Trawling is destructive and causes damage, has been reported by NIWA scientists that trawlers can “wander” into closed and protected areas such as sea mounts.

Bycatch of fur seals and sea lions within these fisheries.

The long line fleet have a large impact upon seabirds (range of petrels and albatross species). The trawl fishery is better managed to avoid bird with various forms of mitigation.

There are discrepancies in observer coverage across these fisheries.

Compliance issue with the non-reporting of bycatch species on boats which do not carry observers. The West coast hake and Ling fisheries, SBW, Campbell and Bounty Island fisheries all have marine mammal bycatch.

There is a large shark bycatch in the deepwater fisheries. Spiny dogfish in ling fishery (previously non QMS).

Concern that hake and ling are being certified “on the coat tails” of New Zealand hoki. Two independent review panels state that this (hoki) fishery should not have been certified.

P3

Hake has a high rate of juvenile catch both retained and discarded (run through fish meal plant). This is affecting small areas which are targeted and this calls into question how this is affecting stock.

High grading occurs within the hoki fishery.

Public access to fishery management is required. Management is currently deemed to be quite secretive and management documents are not within the public domain (no public engagement within the process). Section 12 of the fisheries act- no public right to be involved in management of fisheries.

Management is reliant on the fishing industry for money.

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

Seran Davies
IMM Project Coordinator

MSC Interview Record NZ EEZ Fisheries

IMM Attendees
Lead Auditor/Coordinator: Seran Davies
Team Members:
Geoff Tingley (Lead Principle 1), Graham Pilling (Lead Principle 2) and Jo Akroyd (Lead Principle 3)

Stakeholders:

Affiliation	**Representatives**
Royal Forest & Bird	Kevin Hackwell (Advocacy Manager) and Kirstie Knowles (Marine Conservation Advocate)

Location: Ministry of Fisheries, Wellington, New Zealand.

Date: 23rd July 2009

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

eNGO

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?

The BPA's should not be considered very highly within this assessment. The position of them is incorrect and no research, knowledge of habitat or suitable benthos was undertaken to support them. RF&B do not agree that the BPA's address the protection of some of the hake, ling & SBW (Southern Blue Whiting) grounds. Research needs to be undertaken on the habitats and the BPA's should not be given much weighting within these EEZ fishery assessments.

High grading occurs within the NZ EEZ fisheries.

Southern Blue Whiting (SBW)
Key issues raised with regard to P2 but also some concerns regarding status of stock under P1. High catches of marine mammals (mostly NZ fur seals but also some NZ sea lions). The squid trawl fishery has the worst record for this and has a plan to rectify the situation. Argue to the contrary that the code of practice does not work. Murray Smith has undertaken modelling work on bycatch & Sophie Manual (NIWA). Bounty Islands pose the biggest risk area with large amounts of bycatch. Factors contributing to capture include turning whilst trawling plus the time of day when trawling takes place- these things are not picked up by the codes of practice. Also seasonal strategies do not come into play. This fishery has killed more mammals than the squid fishery. 95% of New Zealand Sea lions are breeding on the Auckland Islands. Louise Chilvers (DOC) and Igor Debsky (DoC)/Nathan Walker (MFish) have further information on this. Observer coverage is misaligned to the period of increased bycatch. Seabird bycatch is not particularly high but it is a diverse range of birds. There is potential underreporting of marine mammal bycatch.
In addition there are trophic impacts and habitat impacts associated with bottom trawling. The range of species caught as bycatch is not as well-known as from the hoki fishery.

Ling
Long line: Currently low level in NZ waters. Fishing occurs around the Bounty Islands in smaller vessels. Vessels over 28m have seabird mitigation in place. Ed Abraham has information showing high seabird bycatch

from longline fishery (smaller vessels). Also sponges and corals are brought up from the seabed by the lines. There is a long history of misreporting from this Ling fishery.
Problem raised with Hoki are the same for hake and ling as it is the same fishery. There is a research paper on misreporting in the hoki fishery which also includes ling misreporting information (Philip Clarke, 2009). Other research includes information on the misreporting of observer documents (Tracey Batman (MFish) Richard Burns & Geoffrey Cove (Lincoln University), Graham Brewer (Dunedin).
Trawl
Issue with P2- fur seal bycatch. The SLEDS (Sea Lion Exclusion Devices) do not work for fur seals and this results in unacceptably high levels of fur seal bycatch.

Hake
The hake fishery has the same issues as identified for Ling. Problem with single species focus stock assessments (as hake, ling and hoki are all caught together e.g. hake/ling may be bycatch in the hoki fishery and vice versa. Issue therefore with the three overlap species of hoki, hake and ling.
Issue with process and transparency at the Ministry (MPI). Scientists results and information are not always integrated into Ministry decisions especially with regard to ETP and habitats.
RF&B support real time catch reporting.
Bounty Islands has a serious fur seal bycatch problem. Some areas are good, but equally some are not e.g. no seabird standard in place etc. ENGO's contacted to comment by MPI. DW Fish plan (DWG & DWTeam) provided to RF& B to comment on but there was no scientific involvement & they do not consult with scientists internally.
There is no drive regarding the working towards minimising the bycatch. Aerial counts of fur seal populations are informative for distribution but cannot be used for abundance information. Boat based information undertaken in Fjordland (South Island) is the same.
Trawls should only go over old trawl areas- no expansion into new areas. For BPAS – areas of significance need to be identified as well as areas being put to one side to study the rate of recovery of the seabed from trawling in order to better understand the impact of the fishery.
NO MPAs are planned within NZ's EEZ until 2013. The considered approach for the MPA protection was squashed by the BPA plan.
RF&B would like to discuss the BPAs with DWG. MFish and DOC have been told to freeze all work due to the agreement for the BPAS.

Overview:
Issue with P2 for Southern Blue Whiting
Autoliners are ok within the longline fleet (but the small vessels are not- less regulations, more issues with bycatch etc)
With regard to the trawl fisheries, RF&B do not think that the hoki fishery met the MSC standard (although hake and ling are slightly better than hoki).

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

Hugh Best (Marine conservationist) has 16 years worth of fur seal data.
Barry Weever (ECO) - key person to be contacted on fisheries stock assessments.
Louise Chilvers (DOC) and Igor Debsky (DoC)/Nathan Walker (MFish)
Murray Smith & Sophie Manual (NIWA)
Ed Abraham

Seran Davies
IMM Project Coordinator

MSC Interview Record

IMM Attendees
Lead Auditor/Coordinator: Seran Davies
Team Members:
Geoff Tingley (Lead Principle 1), Graham Pilling (Lead Principle 2) and Jo Akroyd (Lead Principle 3)
Stakeholders:

Affiliation	**Representatives**
WWF	Peter Trott (WWF-Australia. Fisheries Programme Manager)
	Rebecca Bird (WWF- New Zealand. Marine Programme Manager)

Location: Talley's Seafood, Nelson, New Zealand.

Date: 24th July 2009

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

eNGO

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?

There is no management in place for bycatch species (except if QMS) e.g. what about sharks? General harvest strategies are in place not specific to the fisheries themselves for appropriate reference points e.g. SBW.
There is not enough information on the habitat types e.g. % of areas fished and sensitivity level of habitat. Require demonstrable proof regarding impacts to trophic structure and ecosystem modelling.
There is not enough convincing evidence that seals will survive SLEDs. Critical injury and hypoxia may occur. SEDs are effective in other fisheries and should be introduced here in addition to the SLEDS.

Hake
Similar issues as for Hoki. Bycatch problems with fur seals, birds, sharks and skates. Issues with Trawl footprints. Concerns for hake stock on Chatham rise classified as overfished in last 5 years. Information is not causing concern for sub-Antarctic stocks.

Hake and Ling fisheries are not precautionary enough. Variability in stocks not considered.

Concerned that the harvest strategy is not tried and tested as it is a generic strategy.

There is an impact of this fisheries gear type on the habitat. The severity of this impact is not well known.
Discarding is occurring within the fishery predominantly of bycatch species (also happens with QMS species).
Monitoring & compliance: prosecutions are occurring due to high grading within the hoki fishery (same fishery as for hake). There is also a compliance issue with tracking the products fo this fishery.

There is underreporting present throughout the EEZ fisheries and the trawl fisheries have an issue with compliance.

Ling
Chatham rise is fully fished. There is limited information regarding stock status for west coast South Island.
Impacts of this fishery upon bycatch species are unknown also; discarding of bycatch is known to occur.

Inshore long lines have high interactions with seabirds and no effective mitigation nor codes of practice. Australian fisheries abide by CCAMLR regulations which are proving to be effective- suggest the same approach for NZ fisheries.

Southern Blue Whiting
There is an issue with the stock especially Campbell and Bounty stocks. Uncertainties in stock assessments also unknown stock trend. Damaging gear type used in fishery. Protected species are affected-especially around the Bounty's e.g. sea lions, birds and other marine mammals. Model is based upon the squid fishery only (using information based upon sea lion capture). Not enough convincing information to suggest that the usage of the SLEDS is allowing survival (high percentage is suffering hypoxia or serious injury). Current on-going monitoring is not effective and further information is required.

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

Seran Davies

IMM Project Coordinator

2012 Interviews

Site Visit - Stakeholder Meeting Checklist

Stakeholder Interview Record MPI deepwater and Science, MPI Compliance

Assessment Team	Names
Lead Assessor	Jo Akroyd
P1 Team Member	Graham Pilling
P2 Team Member	Graham Pilling
P3 Team Member	Jo Akroyd

Meeting Location	
Date	

Stakeholders Name	Affiliation
Jeremy Helson	MPI – Deepwater
Tiffany Bock	MPI – Deepwater
Geoff Tingley	MPI – Science
Dean Baigent	MPI – Compliance
Geoff backhouse	MPI – Compliance

Comments:
Meeting 1. Deepwater and Science
Meeting 2 Compliance

2. Status

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

MPI are the Managers of the NZ fisheries

3. IMM Assessment Team Questions

Assessment team questions for stakeholders

Deepwater and science
Please describe the processes involved in the management of the fishery and the activities involved relating to management of P1 and P2 species, as well as the processes relevant to P3.
Compliance
Please could you describe the compliance in these two fisheries, any concerns you have and any enforcement issues

4. Stakeholder Key Issues and responses

Deepwater and Science

- With regard the process involved in setting the TACCs, the underpinning science was defined within the 10 year research programme, which holds for 5 years with a subsequent 5 year extension. The science is peer reviewed through the NZ working group structure and put forward

to managers who consider options for TACC changes (including status quo) usually based upon constant catch projections of future status. These options undergo statutory consultation through the IPP (initial position paper) that allows the incorporation of stakeholder views and commentary. This consultation process is a requirement of the Fisheries Act. Based on consultation, final advice is then provided to the Minister. The final advice paper (FAP) includes information on the environmental impacts, biology of the stocks, ETP and bycatch, as well as multispecies issues. The IPPs and FAPs are placed on the website. Advice is probabilistic where feasible which was generally discussed in detail at the Working Group level.

- The criteria for the rebuilding period (less than twice the time that stock rebuilding would occur in the absence of fishing) was detailed.
- A paper by Dr Mace on the harvest strategy, as submitted to the MSC process for hoki, was noted.
- MPI provided details on the number of recent decisions on TACC change, their directions, and the level of support for these from the industry stakeholder
- The working relationship between MPI and DWG was described
- The consultation process on the 10 year research plan was described, including the consultation planning meeting in 2010
- Further examples of the process involved were noted through the NPOA seabirds and sharks process
- The QMS and tier levels of species were described, noting that the Fishery Plan provides the higher level goals that drive the Annual Operational Plan, progress on which is reported on annually (Annual report reviewing progress vs the Annual Operational Plan). The pattern of introduction of species into the QMS was described, noting the QMS Introduction and Final Advice Paper 2008
- The Official Information Act was also noted
- The role of the PBR within the management system was discussed. It was noted that the Fisheries Act (section 15(2)) presents an obligation on protected species, along with in section 9. However, neither presents specific numbers or statutory targets for specific protected species. In general, the Minister may take measures considered necessary to avoid, remedy or mitigate the effect of fishing on any protected species. PBR were considered to act as one indicator for action, rather than absolute trigger values. Trigger values are available under the Fisheries Act but require a formal process to be established. This has not occurred in the fisheries in question as it has been deemed unnecessary based on historical catch of protected species. It was noted that one interaction itself acts as a trigger for action. The AEWG has not reviewed the PBRs for key species (e.g. sea lions). Some PBRs have been reviewed by the AEWG Working Group; there are also more detailed Bayesian models for other sea lion populations that have been extensively peer reviewed. The exception is the sea lion PBR for the Campbell Islands southern blue whiting fishery (SBW6I).
- The Science 2012 process aims to provide a better understanding of the risk that fisheries pose for other ETP species beyond seabirds (a risk assessment for which has already been completed). This project is currently running up to 2013 and was started in 2012. It will examine cumulative impacts on species as well as the risk posed by individual fisheries
- It was noted that the squid SQU6T has been closed in some years due to sea lion bycatch levels, based on assumed strike rates, so that sanction can be used in that fishery and could be extended to other fisheries if deemed necessary.
- The history of the BPAs and their utility was discussed, and the discussions undertaken as part of the recent hoki assessment were noted. MPI are monitoring the fishery footprint and inter-annual changes through statutory reporting of fishing positions and VMS (required on vessels >28m).
- Fishery plans for hake and ling (and SBW, ORH, JMA and HOK) have been approved by the Ministry and relate to management objectives,- The pattern of trawl surveys, as detailed in the 10

year plan, was described. The importance of the surveys in the WCSI to support the fishery-based CPUE time series was noted.

Compliance

- Currently there are no particular compliance concerns with risk in the hake or ling fisheries
- MPI compliance are looking at wider compliance eg FCV reviews, corrective actions and culture on some of the fishing vessels.
- MPI compliance are working collaboratively with DWG to identify risks.
- There have been no recent compliance issues
- In 2007/2008 using MPI profiling and observed vs non observed data, misreporting between LIN 5 and 6 was identified. Three major operations took place involving Korean, Japanese and Russian vessels. This resulted in 3 prosecutions. It was the first time a co Director had been taken to court, sending clear signals that company's and Directors would be held accountable.
-
- Since then observers and profiling have confirmed that there is now minimal risk of this occurring however monitoring still takes place.
- A number of years ago trucking in Hake was identified as an issue involving ~1500t of hake per year, taken in HAK7 but misreported as having been taken in HAK4 and HAK1. An investigation was launched – it involved Korean vessels. Six vessels were prosecuted. There has since been close monitoring with good results. The catches were taken into account in the stock assessments.
- Hake and ling are now considered low risk fisheries; this has been largely attributed to a change in behavior in foreign charters.
- Any minor compliance issues are brought to the attention of the DWG who have the opportunity to work with the company or vessel to resolve an issue. If this is not resolved satisfactorily then target specific vessels will be targeted and if no behavioral change, will be prosecuted if it is a deliberate criminal offence, repetitive or serious.
- the "VADE" (Voluntary, Assisted, Rirected, Enforced) compliance model seems to be working well and it was emphasized that hake and ling are not considered a compliance risk

6. Closing

IMM Lead Assessor:

- Summary of key points – stakeholder to confirm in writing (sign if hard copy)

7. Confirmation of record of meeting:

IMM Lead Assessor Signature: **Stakeholder Signature:**

16/09/13 By email

Stakeholder Interview Record NZ Hake and Ling : NIWA 10th September 2013

Assessment Team	Names
Lead Assessor	Jo Akroyd
P1 Team Member	Graham Pilling
P2 Team Member	Graham Pilling
P3 Team Member	Jo Akroyd

Meeting Location	Wellington	
Date	10th September 2013	
Stakeholders Name		Affiliation
Rosemary Hurst		NIWA
Peter Horn		NIWA
Charles Edwards		NIWA

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

Research providers

3. IMM Assessment Team Questions
Assessment team questions for stakeholders

What are the key updates with the HAK and LIN stock assessments in recent years?
What are the areas of uncertainty within the stock assessments?
Have the assessments been subject to external review?
What analyses are performed for lower tier species?
What is the latest work on cold water coral distribution and status?
What research has been undertaken on ecosystem analyses?
What activities have been undertaken on benthic habitat structure**?**

4. Stakeholder Key Issues and responses

- Recent HAK assessments in regions 1,4 and 7
- General patterns in stock size detailed in the plenary report were detailed, and the frequency of resource fishery-independent surveys noted
- Noted that while Chatham Rise stock has increased in recent years due to better recruitments, projections show the stock is likely to decline in the future
- West Coast South Island stock assessment was the subject of some uncertainty due to the lack of fishery-independent stock assessments. The assessment therefore relied on commercial CPUE data. Two surveys in 2000 and 2012 allowed some 'ground-truthing' of the commercial CPUE time series and reduced (but did not eliminate) the uncertainty. A further survey has recently been completed and will be included in the next assessment.
- Recent LIN assessments in regions 3&4, 5&6, and 7, as well as the Bounty Plateau (part of the LIN6 area) and Cook Strait (overlapping parts of areas LIN2 and 7)
- No stock assessment for LIN2
- LIN7 assessment contained the same uncertainty as HAK7

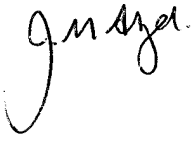
- The Cook Strait assessment was not accepted, and suffered from conflicts in the catch-at-age and CPUE data
- The hoki assessment was externally reviewed, which covered the CASAL modeling approach. However, the specific hake and ling assessments have not been externally reviewed. It was noted that the internal review process of new assessments is quite rigorous
- Tier II and Tier III species are subject to risk assessment approaches (tier III) and characterization analyses (e.g. using trends in CPUE – tier II), as detailed in the 10 year research plan. An internally funded NIWA project is looking into data poor assessment approaches, while others are progressing ageing for non-tier I species (e.g. deepwater shark ageing)
- A summary of cold water coral analyses will be provided
- Trophic studies of the Chatham Rise have supported Ecopath analyses for areas 3&4
- These will also underpin future 'Atlantis' ecosystem modeling of the Chatham Rise region
- There are ongoing discussions on spatial modeling of benthic species, including Vulnerable Marine Ecosystem work. Further analyses to examine the BOMEC activities, including the ocean survey 2020 on Chatham Rise, are ongoing. Relevant camera-based work will be summarized.

6. Closing

IMM Lead Assessor:

- Summary of key points – stakeholder to confirm in writing (sign if hard copy)

7. Confirmation of record of meeting:



16/09/2013

18/9/2013

IMM Lead Assessor Signature: **Stakeholder Signature:**

Site Visit - Stakeholder Meeting Checklist

Stakeholder Interview Record

Meeting Dragonfly for MSC Assessment NZ Hake and Ling : September 10th 2013

Assessment Team	Names
Lead Assessor	Jo Akroyd
P1 Team Member	Graham Pilling
P2 Team Member	Graham Pilling
P3 Team Member	Jo Akroyd

Meeting Location	Dragonfly offices, Wellington	
Date	10/09/2013	
Stakeholders Name		Affiliation
Edward Abraham		Dragonfly
Finlay Thompson		Dragonfly
Philipp Neubauer		Dragonfly

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

Research Providers

4. IMM Assessment Team Questions
Assessment team questions for stakeholders

Please detail the approach, outputs and uncertainties in the modeling of non-target (ETP) species in the hake and ling fisheries

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

- A summary of the results available in the Dragonfly reports was given, broken down by unit of certification
- Noted differences between the autoliner (offshore) and smaller manual setting longliners (inshore)
- Noted that year trend model estimates in the trawl fishery were influenced by the pattern seen in the hoki fishery, as those year effects were modeled across the fishery
- Noted that the 2010 mitigation requirements (e.g. integrated weight line) were integrated into the model (in terms of the capture rates) but not directly taken into account within the model
- The recent coverage of observers within the fleets has been sufficient to estimate interactions, but a greater coverage tends to increase precision in the estimates, and reduce biases due to uneven coverage of fleet units

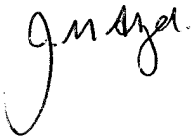
- Model details are available in the 2010/2011 Dragonfly report
- Results are presented and reviewed at the Scientific Working Group and further analysis performed on the basis of feedback
- Noted that the risk assessment for seabirds has been completed, and highlights uncertainty in the estimates for the smaller inshore vessels due to the low observer coverage. Current estimates indicate, for example, a high risk for black petrels
- Analyses for marine mammals were also detailed
- Month-effects were noted with greater movement potential in the winter months as individuals may move further offshore, while pupping activity may constrain activity in summer months
- Links between the Auckland Island and Campbell Island were noted for sea lions based on tagging info
- A risk assessment approach for marine mammals is currently underway
- Uncertainties in the inputs to the PBR calculation were discussed, with Rmax considered reasonably consistent for marine mammals, with population size being viewed as a key area of uncertainty. PBR was viewed more as a figure to provide context rather than a 'critical level' value

6. Closing

IMM Lead Assessor:

- Summary of key points – stakeholder to confirm in writing (sign if hard copy)

7. Confirmation of record of meeting:



16/09/13 Confirmation by email

IMM Lead Assessor Signature: **Stakeholder Signature:**

Site Visit - Stakeholder Meeting Checklist

Stakeholder Interview Record e NGOs 9th September 2013

Assessment Team	Names
Lead Assessor	Jo Akroyd
P1 Team Member	Graham Pilling
P2 Team Member	Graham Pilling
P3 Team Member	Jo Akroyd

Meeting Location	WWF Wellington Offices	
Date	10th September 2013	
Stakeholders Name		Affiliation
Paul Crozier		WWF NZ
Kevin Hackwell		Forest and Bird
Barry Weeber		ECO

Comments:
- The representative from Eco requested that it be clearly noted that his presence at the meeting did not legitimize the MSC process being undertaken in NZ, in particular for these fisheries, and noted concerns over the composition of the audit team and the availability of information for the stakeholders.

2. Status

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

E NGO

3. Stakeholder Key Issues

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

ENGO's concerns
- It was noted by all eNGO representatives that their attendance and involvement at Working Groups, in particular for stock assessment, were hindered by funding and manpower. If possible, they would concentrate on stock assessment meetings for those fisheries under MSC certification, and noted that given industry received Government support for the MSC process that it was unfair that NGOs did not receive the same
- With respect to reference points, it was noted that for particular species (e.g. black cardinalfish) management action may not be taken when limits were reached

- It was noted that changes in TACC tended to take a long time after the stock assessment advice was supplied, and that it appeared easier to increase TACCs than decrease them
- eNGOs felt they and other key stakeholders were not involved sufficiently in the development of the 10 year research plan in recent years
- EFF groups were felt to be useful and engagement on the NPOAs for seabirds and sharks was more successful, but communications between eNGOs and other stakeholders remained limited
- The proposed identification guides for sharks as part of the NPOA sharks was noted as a positive development to improve data collection
- The issue of the charter fleet and the recent Parliamentary Enquiry were noted, which raised management issues such as misreporting
- The limited observer coverage on the inshore longline fleet fishing for ling was noted
- 80% of Benthic Protection Areas were noted to be outside the depth that formed the focus of trawl activities
- A Standards NZ review of benthic impact standards was said to have stalled after 6 months. A report by Leathwick on fisheries captures by habitat types was noted as an important document
- On ecosystem issues, the compendium from the Aquatic Environment Working Group was noted.
- For ETP species, issues with uncertainty in the ling inshore (small) longline fleet was noted, given patchy observer coverage, while fur seals were also noted within the trawl fishery
- Concern was raised that recent decisions to increase the TACC for hoki might lead to increases in the catch of hake and ling to levels above the TACC for those species, or potential discarding
- It was noted that while 100% observer coverage had been achieved on the hoki/hake/ling fishery this year, the 24 hour pattern of activity in these vessels would mean that some tows may be unobserved as the observer must sleep at some point
- concern with the amount of by-catch of deep water sharks in these fisheries, and the fact that they are extremely vulnerable to fishing practices

6. Closing

IMM Lead Assessor:

- Summary of key points – stakeholder to confirm in writing (sign if hard copy)
- Comments not to be attributed to individuals with the exception of Mr Weeber's concern re the process and expertise of the auditors.
- The IMM team would take the eNGOs concerns into account when writing the report and scoring the fishery

7. Confirmation of record of meeting:

16/09/13 Confirmation by email

IMM Lead Assessor Signature: **Stakeholder Signature:**

Appendix 4. Surveillance Frequency

Table C3 CR 27.22.1: Criteria to determine surveillance score

Criteria	Surveillance Score
Default Assessment tree used	0
Number of open conditions	1
Principle level scores	2
Conditions on outcome PIs	0

Table C4 CR 27.22.1: Fishery Surveillance Plan

Score from CR Table C3	Surveillance Category	Year 1	Year 2	Year 3	Year 4
3	[e.g. Normal Surveillance]	On-site surveillance audit]	On-site surveillance audit]	On-site surveillance audit]	On-site surveillance audit & re-certification site visit]

The fishery will require annual onsite surveillance audits**.**

Appendix 5. Client Agreement

From: George Clement <george@clementgroup.co.nz>
Subject: Re: Ling PCR client confirmation
Date: 3 September 2014 4:10:16 pm NZST
To: Jo Akroyd <jakroyd@xtra.co.nz>
Cc: Irving Aaron <aaron@deepwatergroup.org>

Jo

DWG accepts your PCR for ling.

Thank you for all of your hard work on this.

Regards

George

George Clement
Chief Executive

Deepwater Group Ltd
P +64 9 374 4440
E george@deepwatergroup.org
W www.deepwatergroup.org