Fisheries Improvement Plan Orange Roughy Mid East Coast (ORH MEC)

Versions

Version 3: July 2016

Version 2: March 2015

Version 1: March 2014

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Overview

Deepwater Group and the Ministry for Primary Industries are committed to the sustainable management of New Zealand's orange roughy fisheries. To this end we have jointly embarked on a Fisheries Certification Programme (FCP) with the objective of achieving independent certification of New Zealand's key deepwater fisheries, including orange roughy fisheries (Figure 1). Our FCP is a four-staged work programme and a summary of this process to date can be seen on our website (Certification of New Zealand's deepwater fisheries). As part of this programme, four orange roughy fisheries are in formal Fishery Improvement Plans (FIP). This includes East & South Chatham Rise, Northwest Chatham Rise, Mid East Coast and Challenger.

The FIPs were first developed in March 2014 following a series of stakeholder meetings and consideration of a wide range of options, tools and 'templates'. DWG have developed FIPs using tools and templates provided by MSC for orange roughy fisheries to establish a public, transparent, inclusive and stepwise approach towards MSC Certification.

The objective of these four orange roughy FIPs is to ensure management of the fisheries meets the MSC Fisheries Standard and achieves MSC Certification. MSC's FIPs templates and tools provide for the progressive and time-bound implementation of improvements. They provide external observers with the ability to benchmark fisheries improvement, to track progress, and to demonstrate conformance with the MSC Certification requirements. These MSC improvement tools have been coupled with an open, transparent and publically notified pathway to facilitate MSC certification of the orange roughy fisheries.

This FIP is specific to the Orange Roughy Mid East Coast fishery (ORH MEC). The following sections provide further detail on ORH MEC FIP including a Gap Analysis and Remedial Action Plan.

ORH MEC is currently progressing through Stage 2 Phase 2 FIP (see Table 1). This involves remedial management actions and monitoring progress according to a public, time-bound FIP.
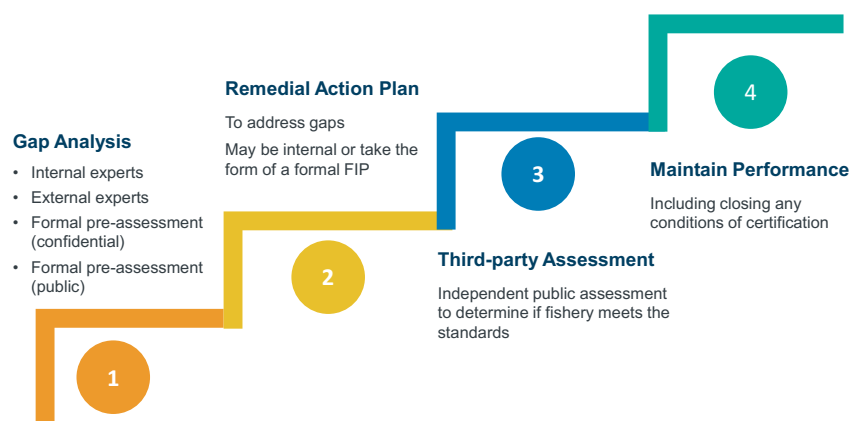
Gap Analysis
- Internal experts
- External experts
- Formal pre-assessment (confidential)
- Formal pre-assessment (public)

Remedial Action Plan

To address gaps

May be internal or take the form of a formal FIP

Third-party Assessment

Independent public assessment to determine if fishery meets the standards

Maintain Performance

Including closing any conditions of certification

Figure 1 Deepwater Group's Fisheries Certification Programme Stages

Table 1 Timelines and milestones for the Fisheries Certification Programme for Orange Roughy Mid East Coast (ORH MEC)

Fisheries Certification Programme Stage	Deliverables and outcomes	Action Lead	Timeline	Progress
Gap Analysis ①	**Phase 1 - Fishery Evaluations:** Completed on the 'Fishsource' template and independently scored by Sustainable Fisheries Partnership.	MPI & DWG	Feb 2013	Completed ✓
	Phase 2 - Fishery Gap Analysis: Deepwater Group & Ministry for Primary Industries to assess orange roughy fisheries against MSC SG80 Performance Indicators to identify potential non-conformities and information gaps.	MPI & DWG	Mar 2013	Completed ✓
	Phase 3 - Develop Orange Roughy Fisheries Pre-Assessment Improvement Action Plan: Develop action plan to address anticipated non-conformities and information gaps. Determine deliverables, timelines, milestones & system for monitoring progress against this plan.	MPI & DWG	Mar 2013	Completed ✓
	Phase 4 - Implementation of Work Programmes: Implement work programmes resulting from the Action Plan.	MPI & DWG	Mar-Jul 2013	Completed ✓
	Phase 5 - Assessment of the Environmental Effects of Fishing: Develop methodology; assemble expert panel; invite participants; hold workshop and produce final report and make publically available.	MPI & DWG	Jul 2013	Completed ✓
	Phase 6 - MSC Pre-assessments: Contract MRAG-Americas to undertake MSC pre-assessments of each of four orange roughy fisheries. Hold Consultation meeting with Stakeholders.	MPI & DWG	Jul 2013 – Jan 2014	Completed ✓
Remedial Action Plan ②	**Phase 1: Fishery Improvement Analysis:** Identify the reasons why the MRAG-Americas pre-assessment identified certain PIs as unlikely to meet the MSC Fisheries Standard and identify remedial management actions.	MPI & DWG	Jan-Feb 2014	Completed ✓
	Phase 2: Fishery Improvement Plan: Implement remedial management actions within an agreed and time-bound plan using the MSC Monitoring and Benchmarking FIP Template. Once finalised, post with SFP for public viewing.	MPI & DWG	Jan 2014 - Jul 2022	Remedial Actions In process (see page 7) ⚙
Third-party assessment ③	**Phase 1 - MSC Assessment**: Undertake formal assessments of the fishery against the MSC Fisheries Standard.	MPI & DWG	Jul-Aug 2022	
	Phase 2 - MSC Certification: Achieve certification of the fishery against the MSC Fisheries Standard.	MPI & DWG	Sep 2023	

Gap Analysis

The first five phases have been completed:

- Phase 1 Fishery Evaluations
- Phase 2 Fishery Gap Analysis
- Phase 3 Develop Orange Roughy Fisheries Pre-Assessment Improvement Action Plan
- Phase 4 Implementation of Work Programmes
- Phase 5 Assessment of the Ecological Effects of Fishing.

This version of the FIP addresses the outcomes of the Pre-Assessments.

Phase 6 MSC Pre-Assessments

On 22 and 23 August 2013, MRAG-Americas undertook detailed pre-assessments of four orange roughy fisheries against the MSC Fisheries Standard in an open workshop forum where all interested parties and MSC Stakeholders were invited to participate.

The pre-assessment workshop was attended by representatives from Deepwater Group, Ministry for Primary Industries, Department of Conservation, World Wildlife Fund, National Institute of Water and Atmospheric Research, Innovative Solutions Ltd, Clement & Associates and Seafood New Zealand.

MRAG-Americas provided Deepwater Group with their Pre-assessment Report for these fisheries on 22 December 2013. Pre-assessment results for each Performance Indicator are categorised as: 'red' (i.e. likely to score below 60); 'orange' (i.e. likely to score between 60 & 80); or 'green' (i.e. likely to score above 80).

Deepwater Group held a consultation meeting with MSC Stakeholders on this Pre-assessment Report on 21 January 2014 to discuss the report's findings.

The outcomes from MRAG-America's Pre-Assessment Report of ORH MEC are summarised in Table 2. This is a snapshot of the fishery as it was in 2013.

Key Documents:

- Pre-assessment Report (MRAG, 2013)
- Minutes of consultation meeting with MSC Stakeholders (DWG, 2013).

Table 2 ORH MEC 2013 pre-assessment results

MSC Component	MSC Performance Indicator	MSC Performance Indicator	Outcome
Outcome	1.1.1	**Stock Status:** Stock at a level which maintains high productivity	60-80
	1.1.2	**Reference Points:** Appropriate limits and reference points for the stock	<60
	1.1.3	**Stock Rebuilding:** Where stock depleted - there is evidence of rebuilding	<60
Management	1.2.1	**Harvest Strategy:** Precautionary and robust harvest strategy in place	60-80
	1.2.2	**Harvest Control Rules & Tools:** Well defined harvest control rules in place	60-80
	1.2.3	**Information & Monitoring:** Relevant Information collected to support harvest strategy	>80
	1.2.4	**Assessment of Stock Status:** Assessment of stock status is adequate	>80
	P1 ALL	**Sustainability of Exploited Stock**	**Fail**
Retained Species	2.1.1	**Retained Species Outcome:** Does not cause serious or irreversible harm to retained species	>80
	2.1.2	**Retained Species Management:** Strategy in place for managing retained species	>80
	2.1.3	**Retained Species Information:** Relevant information to help manage retained species	>80
Bycatch species	2.2.1	**Bycatch Species Outcome:** Does not cause serious or irreversible harm to bycatch species	60-80
	2.2.2	**Bycatch Species Management:** Strategy in place for managing bycatch species	60-80
	2.2.3	**Bycatch Species Information:** Relevant information to help manage bycatch species	>80
ETP species	2.3.1	**ETP Species Outcome:** Meets national and international requirements for EPTs protection	60-80
	2.3.2	**ETP Species Management:** Precautionary management strategies in place	60-80
	2.3.3	**ETP Species Information:** Relevant information to support management of impacts on ETPs	60-80
Habitats	2.4.1	**Habitats Outcome:** Does not cause serious or irreversible harm to habitat structure	60-80
	2.4.2	**Habitats Management:** Information is adequate to determine risk to habitat types	>80
	2.4.3	**Habitats Information:** Information adequate to determine risk to habitats	>80
Ecosystem	2.5.1	**Ecosystem Outcome:** Does not cause serious or irreversible harm to ecosystem	>80
	2.5.2	**Ecosystem Management:** Measures are in place to mitigate risk to ecosystem	>80
	2.5.3	**Ecosystem Information:** Adequate knowledge of impacts of fishery on the ecosystem	>80
	P2 ALL	**Maintenance of Ecosystem**	**Fail**
Governance and Policy	3.1.1	**Legal/Customary Framework:** Management system exists with legal/customary framework	>80
	3.1.2	**Consultation, Roles & Responsibilities:** Management system has clear processes	>80
	3.1.3	**Long Term Objectives:** Management policy contains clear long-term objectives	>80
	3.1.4	**Incentives for Sustainable Fishing:** Management system has sustainability incentives	>80
Fishery specific management system	3.2.1	**Fishery Specific Objectives:** Fishery has clear and specific outcome objectives	>80
	3.2.2	**Decision Making Processes:** Management system includes effective decision making	>80
	3.2.3	**Compliance & Enforcement:** Monitoring, control and surveillance mechanisms in place	>80
	3.2.4	**Research Plan:** Research plan that addresses management needs are in place	>80
	3.2.5	**Management Performance Evaluation:** Performance Evaluation processes in place	>80
	P3 ALL	**Effective Management System**	**Pass**

| Key: | Indicative Assessment Scores | >80 (Pass) | 60-80 (Condition) | <60 (Fail) | Indicative Aggregate Scores | Pass | Fail |

Remedial Action Plan

2

There are two phases to the Remedial Action Plan:

- Phase 1 Fishery Improvement Analysis
- Phase 2 Fishery Improvement Plan

Phase 1 Fishery Improvement Analysis

ORH MEC has been considered against MRAG-America's findings in their Pre-Assessment Report to identify non-conformities and information gaps against the MSC Performance Indicators (SG80).

A Fishery Improvement Analysis, developed in 2014, is used to inform remedial action work programmes as a step towards the Fishery Improvement Plan. A summary of this analysis is provided in Appendix 1.

Phase 2 Fisheries Improvement Plan

This involves implementing the remedial management actions and monitoring progress according to a public, time-bound FIP.

Table 3 provides management actions to remedy identified gaps in Phase 1 of the Remedial Action Plan.

Table 4 provides timelines for each of the remedial management actions.

2016 Progress Update

Refer to Table 5 for an update on progress made to July 2016 towards completing remedial management actions.

Table 3 Remedial management actions and links to MSC Performance Indicators

ACTIONS	ACTION LEAD & PARTNERS	Links to MSC Performance Indicators													
		P1 Target stocks						P2 Ecosystem Components							
		1.1.1	1.1.2	1.1.3	1.2.1	1.2.2	1.2.4	2.2.1	2.2.2	2.2.3	2.3.1	2.3.2	2.4.1	2.4.2	2.4.3
1. Stock assessment															
1.1 Undertake a further biomass survey.	DWG & MPI	█	█		█										
1.2 Update the stock assessment according to agreed methodology.	DWG & MPI	█			█										
1.3 Acceptance of stock assessment outputs by MPI.	DWG & MPI	█			█										
1.4 Conduct and review MSE, HS, and HCR.	DWG & MPI				█	█									
1.5 Undertake a high level review of stock assessment process.	DWG & MPI				█	█									
1.6 Review the need for, and implement if necessary, a rebuilding plan.	DWG & MPI	█		█	█	█	█								
2. Habitats and ecosystems															
2.1 Identify main/secondary bycatch species.	DWG & MPI							█							
2.2 Document management strategy for bycatch species.	DWG & MPI							█	█						
2.3 Quantitatively determine ETP coral distributions within the fishery, the bioregion, and the EEZ.	DWG & MPI										█		█		
2.4 Assess the nature and extent of impact by the fishery on ETP corals.	DWG & MPI										█		█		
2.5 Document the management strategy for impacts on ETP corals.	DWG & MPI										█				
2.6 Assess nature and extent of impact by fishery on habitat structure and function.	DWG & MPI												█	█	
2.7 Document the management strategy for impacts on habitats.	DWG & MPI												█	█	█

Notes: DWG (Deepwater Grup Ltd.) MPI (Ministry for Primary Industries for New Zealand)

Table 4 Timelines for each of the remedial management actions as revised July 2016

	Progress (see key below)																	
	2014		**2015**		**2016**		**2017**		**2018**		**2019**		**2020**		**2021**		**2022**	
	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2
MSC Principle 1: Stock Status																		
1.1 Undertake a further biomass survey.	Completed						In-progress	Planned										
1.2 Update the stock assessment according to agreed methodology.	Completed							In-progress	Planned									
1.3 Acceptance of stock assessment outputs by MPI.	Completed							In-progress	Planned									
1.4 Conduct and review MSE, HS, and HCR.	In-progress	Completed							Planned									
1.5 Undertake a high level review of stock assessment process.			In-progress	Completed														
1.6 Review the need for, and implement if necessary, a rebuilding plan.					In-progress	Completed					Planned							
MSC Principle 2: Ecosystem Management																		
2.1 Identify main/secondary bycatch species.					In-progress	Planned												
2.2 Document management strategy for bycatch species.					In-progress	Planned												
2.3 Quantitatively determine ETP coral distributions within the fishery, the bioregion, and the EEZ.			In-progress	In-progress			In-progress	Planned										
2.4 Assess the nature and extent of impact by the fishery on ETP corals.			In-progress	In-progress			In-progress	Planned										
2.5 Document the management strategy for impacts on ETP corals.							In-progress	Planned										
2.6 Assess nature and extent of impact by fishery on habitat structure and function.							In-progress	Planned										
2.7 Document the management strategy for impacts on habitats.							In-progress	Planned										

Key: In-progress   Completed   Planned completion date

Table 5 2016 update on remedial management actions

MSC Principle 1: Stock Status		Progress Update 2016
1.1	Undertake a further biomass survey.	The next biomass survey is scheduled for July 2017. A biomass survey was conducted in June 2013. See: Fisheries Assessment Plenary May 2014: Volume 2 Stock Assessment and Stock Status (pages 603-607) summarising stock assessment and stock status information (http://fs.fish.govt.nz/Doc/23540/Fisheries%20Assessment%20Plenary%20May%202014%20Volume%202.pdf.ashx).
1.2	Update the stock assessment according to agreed methodology.	An updated stock assessment is scheduled to be completed in early 2018. During 2013-14 a stock assessment was developed, implemented, peer reviewed and accepted by MPI. The stock assessment estimated the stock to be below the soft limit (20% B_0) which triggers implementation of a time-bound rebuilding plan, in line with the New Zealand Harvest Strategy Standard (HSS). Under the HSS, any stock should be rebuilt to the management target in not less than twice the time it would take to rebuild in the absence of fishing. For MEC, this is estimated to be 42 years. The stock assessment and outputs were accepted by MPI's Deepwater Fisheries Assessment Working Group (DWFAWG) and Plenary Processes. The 2014 orange roughy stock assessments – New Zealand Fisheries Assessment Report 2014/50 September 2014 provides a full write-up of the stock assessment (http://www.mpi.govt.nz/document-vault/4399).
1.3	Acceptance of stock assessment outputs by MPI.	
1.4	Conduct and review MSE, HS, and HCR.	A Management Strategy Evaluation (MSE) has been developed and applied to three ORH fisheries. The 2014 MEC stock assessment estimates $B_{Current}$ to <20% B_0 rendering the HCR inappropriate. Instead, a rebuilding plan has been implemented (see Action1.6). Note: A main uncertainty in the 2014 assessment model was the proportion of the ORH MEC stock surveyed in the 2013 biomass survey. A further survey and stock assessment is scheduled for 2017-18 and MSE rerun for ORH MEC in 2018 H1. The rebuilding plan will continue until the stock is at target. The MSE will be reviewed in 2019-20.
1.5	Undertake a high level review of stock assessment process.	WWF-USA asked DWG for a high level review of the ORH stock assessments. During 2013-14 the ORH stock assessments were reviewed during DWFAWG and Plenary by domestic and international experts including: Paul Starr (Canada); Prof. Matthew Dunn (Victoria University, New Zealand); Dr. Pamela Mace (Ministry for Primary Industries, New Zealand); Prof. Ray Hilborn (University of Washington, USA); and, Dr. Malcolm Haddon and Dr. Judy Upston from CSIRO.
1.6	Review the need for, and implement if necessary, a rebuilding plan.	A rebuilding plan has been developed and implemented for MEC that meets the New Zealand Harvest Strategy Standard. The most recent stock assessment for the ORH MEC stock estimates the stock to be < 20% B_0. This triggered implementation of a time-bound rebuilding plan, in line with the New Zealand Harvest Strategy Standard (HSS). The MEC catch limit has been reduced from 1,230 to 525 tonnes to provide for rebuild of the stock. The rebuilding plan will be reviewed once results from the stock assessment are available in 2018 H1. For the Final Advice Paper, see: http://www.fish.govt.nz/en-nz/Consultations/Archive/2014/2014+Review+of+Sustainability+measures+and+management+controls+for+fishstocks.htm. For the Minister's Decision, see: http://www.fish.govt.nz/NR/rdonlyres/CAE54563-C844-4AF7-B5EE-168C6F880225/0/B14059ministersignedletter2.pdf
MSC Principle 2: Ecosystem Management		**Progress Update 2016**
2.1	Identify main/secondary bycatch species.	Fish and invertebrate bycatch and discards are reviewed every five years by MPI. The last review was completed in 2013 see Anderson (2013) (http://www.mpi.govt.nz/document-vault/4295) The update of this is expected October 2016.
2.2	Document management strategy for bycatch species.	Actions are scheduled commence once Action 2.1 is completed.
2.3	Quantitatively determine ETP coral distributions within the fishery, the bioregion, and the EEZ.	A coral distribution model was developed in 2015 (see: http://deepwatergroup.org/wp-content/uploads/2014/08/NIWA-2015-Assessment-of-orange-roughy-and-oreo-trawl-footprint-in-relation-to-protected-coral-species-distribution.pdf). This will be updated for the fishery and completed by 2018 H1.
2.4	Assess the nature and extent of impact by the fishery on ETP corals.	The assessment was completed for the orange roughy fisheries cumulative trawlfootprint within the EEZ and bioregion (see above link). An assessment of the fishery specific impact on ETP corals is scheduled to be conducted by 2018 H1.
2.5	Document the management strategy for impacts on ETP corals.	This is scheduled to take place in 2018-19.
2.6	Assess nature and extent of impact by fishery on habitat structure and function.	The assessment was completed for the orange roughy fisheries cumulative trawlfootprint within the EEZ and bioregion (see above link). An assessment of the fishery specific impact on habitats is scheduled to be conducted in 2018 H1.
2.7	Document the management strategy for impacts on habitats.	This is scheduled to take place in 2018-19.

Third-party assessment

3

MSC Assessment

Stage three of ORH MEC FCP requires the submission of this fishery for full assessment by an accredited MSC Conformance Advisory Body against the MSC Fisheries Standard. It is anticipated that the fishery will be ready (> 20% B_0) for full MSC assessment by July 2022.

MSC Certification

Conformance with each MSC Performance Indicator and the 80 Scoring Guidelines (80SG) will result in the achievement of this final stage which is to achieve MSC certification.

Appendix 1

Orange Roughy Mid East Cost Fishery Improvement Analysis (Actions are referenced to Tables 3 and 4)

PI 1.1.1 – The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing		
MSC SG80 Certification Requirements	a) It is highly likely that the stock is above the point where recruitment would be impaired. b) The stock is at or fluctuating around its target reference point.	
MRAG-America's Findings	MRAG-America's assessors noted: • The lack of quantitative assessments based on fitting population dynamics models.	
Responses	• Demonstrate through an accepted stock assessment that the stock status is highly likely to be above the point at which recruitment would be impaired and at or above B_{MSY}.	**Actions 1.1 – 1.3**
PI 1.1.2 – Limit and target reference points are appropriate for the stock		
MSC SG80 Certification Requirements	a) Reference points are appropriate for the stock and can be estimated. b) The limit reference point is set above the level at which there is an appreciable risk of impairing reproductive capacity. c) 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. d) For key low trophic level species, the target reference point takes into account the ecological role of the stock.	
MRAG America's Findings	MRAG-America's assessors noted: • The lack of rationale for the limit reference point (LRP) which is 20% B_0. • The lack of rationale for the "appropriateness" of the management target range which is 30-40% B_0.	
Responses	• Undertake a Management Strategy Evaluation (MSE) to establish and test a harvest strategy and harvest control rules that meet the requirements of PI 1.1.2.	**Actions 1.4 – 1.5**

PI 1.1.3 – Where the stock is depleted, there is evidence of stock rebuilding within a specified timeframe

MSC SG80 Certification Requirements	a) 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.	
	b) There is evidence that the rebuilding strategies 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 the specified timeframe.	
MRAG-America's Findings	MRAG-America's assessors noted:	
	• The lack of projections given the current stock status relative to B_0.	
	• The lack of evaluation of harvest strategy against rebuild to management target with required 20 years.	
	• The lack of alternative assumptions for how assessment is conducted and provisions for future recruitment.	
Responses	• Develop a rebuilding plan for orange roughy fisheries to be implemented where the stock status is below the management target range that rebuilds the stock to the management target range in the required timeframe.	**Action 1.6**
	• Test the robustness of the rebuilding plan using simulations based on the stock assessment model.	

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

MSC SG80 Certification Requirements	a) The harvest strategy is responsive to the state of the stock and the elements of the harvest strategy work together towards achieving management objectives reflected in the target and limit reference points.	
	b) The harvest strategy may not have been fully tested but monitoring is in place and evidence exists that it is achieving its objectives.	
MRAG-America's Findings	MRAG-America's assessors noted:	
	• The lack of analyses to demonstrate that the harvest strategy is "*responsive to the state of the stock*" or to demonstrate that the harvest strategy elements successfully "*work together towards achieving management objectives reflected in the target and limit reference points.*"	
	• The lack of analyses to demonstrate the efficacy of the harvest strategy in achieving its objectives	
Responses	• Undertake analyses to demonstrate and test the harvest strategy to establish that it is responsive to the state of the stock and the stock management process; "*Such evidence would require either monitoring data which shows direct evidence for an increase in abundance or the results of projections using a stock assessment model*" (MRAG, 2013: p69).	**Action 1.4**
	• Compile and document evidence that demonstrates the harvest strategy will work in achieving its objectives.	

PI 1.2.2 – There are well defined and effective harvest control rules in place		
MSC SG80 Certification Requirements	a) Well defined harvest control rules are in place that are consistent with the harvest strategy and ensure that the exploitation rate is reduced as limit reference points are approached. b) The selection of the harvest control rules takes into account the main uncertainties. c) Available evidence indicates that the tools in use are appropriate and effective in achieving the exploitation levels required under the harvest control rules.	
MRAG's Findings	MRAG-America's assessors noted: • The lack of justification for specific choices for the values of parameters (e.g. FMSY = M). • The lack of documentation of the main uncertainties and the selection of the harvest control rules to address those uncertainties.	
Responses	• Document that the harvest control rules are "*well defined*" and is "*consistent with the harvest strategy and ensure that the exploitation rate is reduced as limit reference points are approached*" SG80. • Demonstrate the appropriateness of the Harvest Strategy in meeting the SG80 highlighting uncertainties and taking them into account.	**Action 1.4**

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		
MSC SG80 Certification Requirements	a) Main bycatch species are highly likely to be within biologically based limits (if not, go to scoring issue (b) below). b) 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.	
MRAG-America's Findings	MRAG-America's assessors noted: • The lack of information to score the stock status of key bycatch species. • The lack of information to determine whether or not a species comprises 5-20% or more of the total catch of that species (e.g. rattails, deepwater dogfish).	
Responses	• Provide information to demonstrate (semi-quantitatively) that bycatch species are highly likely (70%) to be within biologically based limits or there is evidence that the fishery does not hinder recovery and rebuilding (B_{LIM}). • Identify vulnerable species and document impacts of this fishery on those species. • Where possible document bycatches that are recorded under generic codes as species (e.g. rattails, slickheads and deepwater dogfish). • Provide information (semi-quantitatively) to support findings and to demonstrate the nature and extent of the impacts of the orange roughy fishery on bycatch stocks.	**Actions 2.1 & 2.4**

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		
MSC SG80 Certification Requirements	a) There is a partial strategy in place, if necessary, for managing bycatch species at levels which are highly likely to be within biologically based limits or to ensure that the fishery does not hinder their recovery. b) There is some objective basis for confidence that the partial strategy will work, based on some information directly about the fishery and/or the species involved. c) There is some evidence that the partial strategy is being implemented successfully.	
MRAG-America's Findings	MRAG-America's assessors note: • The lack of information for non-QMS species. • The lack of a partial strategy that is expected to maintain bycatch species within biologically based limits. • The lack of evidence that demonstrates confidence in the strategy.	
Responses	• Formalise a bycatch management strategy that provides for *"the [expectation] to maintain main bycatch species at levels which are highly likely (70%) to be within biologically based limits or to ensure that the fishery does not hinder their recovery."* • **QMS Species** 　• Demonstrate how the QMS manages stock status, the role of deemed values, ACE values and ACE availability constrains catches. • **Non-QMS Species** 　• Document the policy for QMS entry (by non-QMS stocks, providing examples of recent QMS entries). 　• Review and document activities and plans being developed under the new (2014) NPOA – Sharks for vulnerable elasmobranch bycatch species.	**Action 2.2**

PI 2.3.1 – The fishery meets national and international requirements for 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.		
MSC SG80 Certification Requirements	a) 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. b) Direct effects are highly unlikely to create unacceptable impacts to ETP species. c) Indirect effects have been considered and are thought to be unlikely to create unacceptable impacts.	
MRAG-America's Findings	MRAG-America's assessors noted: • The lack of robust distributional information of several cold water coral species (that overlap with the ORH Fishery) outside fished areas. • The lack of information defining the level of impacts with fisheries of protected corals, species identification, quantities taken and distribution. • The lack of any rationale to quantitatively determine if any impacts are such that they pose a risk of serious or irreversible harm to ETP coral species.	
Responses	• Document national (and relevant international) requirements for the protection of corals, demonstrating that direct effects (considering also indirect effects) are highly unlikely to create unacceptable impacts (impacts that hinder recovery or rebuilding) to ETP coral species. • Undertake desktop analysis of the nature and extent of information used in modelling coral density distributions, including (where possible) the distribution of corals within fished areas, outside fished areas, and within protected areas (BPAs and Seamount Closures). • Undertake desktop analysis of the distribution of coral genera/species in the New Zealand EEZ and within the ORH MEC fishery, coral taken within the ORH MEC fishery and determine (where possible) which genera/species are affected most by the ORH MEC fishery. • Undertake semi-quantitative analysis to demonstrate the nature and extent of the interactions with corals in areas that are fished (taking into account recovery and closed areas). Determine if effects of the fishery are: highly likely to be within limits of national (and international) requirements for protection of ETP coral species; highly unlikely to create unacceptable impacts to ETP coral species; and, consider indirect effects.	**Actions 2.3 & 2.4**

PI 2.3.2 – The fishery has in place precautionary management strategies designed to (1) meet national and international requirements; (2) ensure the fishery does not pose a risk of serious or irreversible harm to ETP species; (3) ensure the fishery does not hinder recovery of ETP species; and (4) minimise mortality of ETP species.		
MSC SG80 Certification Requirements	a) There is a strategy in place for managing the fishery's impact on ETP species, including measures to minimise mortality that is designed to be highly likely to achieve national and international requirements for the protection of ETP species. b) There is an objective basis for confidence that the strategy will work, based on information directly about the fishery and/or the species involved. c) There is evidence that the strategy is being implemented successfully.	
MRAG-America's Findings	MRAG-America's assessors noted: • That, while there are elements of a precautionary strategy in place (for protected corals), this does not constitute a formal strategy. • The lack of an overall management plan for protected corals. • The lack of a strategy to minimise coral mortality, especially for new areas.	
Responses	Document all relevant information and formalise a management strategy for ETP coral species that provides for management measures that "*minimise mortality, [and] which is designed to be highly likely to achieve national and international requirements for the protection of ETP species*" taken into account: • The principles and mechanism behind: 1) BPAs (i.e. percentages of each marine environmental habitat class (MEC)); and, 2) Seamount Closures (e.g. UTFs of high coral abundance and benthic biodiversity). • Measures that avoid, mitigate or, minimise interactions with corals (including reporting, monitoring and assessment) that is consistent with the requirements of the Fisheries Act 1996. • Demonstrate the "*objective basis for confidence*" the efficacy of this strategy.	**Action 2.5**
PI 2.3.3 – Relevant information is collected to support the management of fishery impacts on ETP species, including: (1) information for the development of the management strategy; (2) information to assess the effectiveness of the management strategy; and (3) information to determine the outcome status of ETP species.		
MSC SG80 Certification Requirements	a) Sufficient data are available to allow fishery related mortality and the impact of fishing to be quantitatively estimated for ETP species. b) Information is sufficient to determine whether the fishery may be a threat to protection and recovery of the ETP species. c) Information is sufficient to measure trends and support a full strategy to manage impacts on ETP species.	
MRAG-America's Findings	MRAG-America's assessors noted: • There is insufficient quantitative information in some areas. • The lack of assessment of the level of threat by the orange roughy fishing on corals generally and on reef-forming stony corals in particular.	
Responses	• Document the management strategy to demonstrate the sufficiency of information "*to allow fishery related mortality and the impact of fishing to be quantitatively estimated for ETP [coral] species*" so as to "*determine whether the fishery may be a threat to protection and recovery of [protected coral] species.*" • Quantitatively determine the distributions of protected species within the New Zealand EEZ (to Generic level). • Quantitatively assess the nature and extent of impact by fishery of these protected coral species.	**Action 2.4 & 2.5**

2.4.1 – The fishery is <u>highly unlikely</u> (within 30% probability) to reduce habitat structure and function to a point where there would be serious or irreversible harm [considered on a regional or bioregional basis].		
MSC SG80 Certification Requirements	a) The fishery is highly unlikely to reduce habitat structure and function to a point where there would be serious or irreversible harm.	
MRAG-America's Findings	MRAG-America's assessors noted: • That although geomorphology and operational aspects of bottom trawling had the effect of confining trawl tows spatially to the orange roughy trawl grounds, bottom trawling could occur outside the trawl grounds anytime. • The lack of robust understanding of the distribution of benthic habitats relative to orange roughy bottom trawl paths. • The lack of robust understanding of the homogeneity/heterogeneity of the benthic habitats on various UTFs. • The lack of information to assess whether unfished areas with remaining habitat is sufficient to prevent serious or irreversible harm to habitats that overlap with fished areas.	

Responses	• Undertake an analysis of the habitats (centred on identifying their structure and function) that overlap with the distributional range of this orange roughy fishery.
	• As New Zealand's orange roughy fisheries fall within the lower bathyal New Zealand Kermadec bio-geographical province (UNESCO (2009), the entire distributional range of orange roughy and the orange roughy fishery within this 'bio-geographic area habitat should be taken into account.
	    • Where changes in substrate type, geomorphology and dominant biota type describe a habitat type that differs from the New Zealand Kermadec bio-geographic area (e.g. UTFs), then any such areas will be considered to be different habitat types.
	    • Summarise information on the extent and homogeneity/heterogeneity of particular habitat types on UTFs.
	• Undertake analyses of the impacts this orange roughy fishery on those habitats, and determine quantitatively whether or not there is "*serious or irreversible harm*" to the *"structure and function"* (i.e. not the habitat itself) taking into account ("*on a regional or bioregional basis"*) the area covered by bottom-trawl tow paths, the areas that are not fished, areas that are no longer fished, and the areas that are closed to fishing for protection of the benthic biodiversity.
		Action 2.6

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.		
MSC SG80 Certification Requirements	a) There is a partial strategy in place, if necessary, that is expected to achieve the Habitat Outcome 80 level of performance or above. b) There is some objective basis for confidence that the partial strategy will work, based on information directly about the fishery and/or habitats involved. c) There is some evidence that the partial strategy is being implemented successfully.	
MRAG-America's Findings	MRAG-America's assessors noted: • The absence of a formal benthic management plan. • The lack of robust understanding of the distribution of benthic habitats relative to the footprint. • The lack of robust understanding of the nature of the benthic habitats on various UTFs (that indicate their homogeneity/heterogeneity). • The lack of information to assess whether unfished areas with remaining habitat is sufficient to prevent serious or irreversible harm to habitats that overlap with fished areas.	

Responses	• Bring together all relevant information and formalise a comprehensive management strategy for managing the impact of the fishery on habitat types:
	  • Articulate the principles and mechanisms behind the strategy, including BPAs (e.g. percentages of each MEC habitat class) and Seamount Closures (e.g. UTFs of high coral abundance and benthic biodiversity), and incorporate these principles and mechanism into the New Zealand's EEZ Spatial Management component of a comprehensive management strategy.
	  • Articulate a precautionary component of the strategy monitoring and assessing the nature and extent of habitat impacts to avoid, minimise or mitigate interactions with new areas of significant abundance benthic habitat (which is consistent with the requirements of the Fisheries Act 1996).
	
	 • Demonstrate that there *"is some objective basis for confidence"* the efficacy of this strategy.
		Action 2.7