



Fisheries New Zealand

Tini a Tangaroa

National Fisheries Plan for Deepwater and Middle-depth Fisheries 2019



Fisheries New Zealand Technical Paper No: 2019/03

Fisheries New Zealand

ISBN No: 978-1-77665-816-9 (online)

ISSN No: 2624-0246 (online)

May 2019

Disclaimer

While every effort has been made to ensure the information in this publication is accurate, Fisheries New Zealand does not accept any responsibility or liability for error of fact, omission, interpretation or opinion that may be present, nor for the consequences of any decisions based on this information.

Requests for further copies should be directed to:

Publications Logistics Officer
Fisheries New Zealand
PO Box 2526
WELLINGTON 6140

Email: brand@mpi.govt.nz
Telephone: 0800 00 83 33
Facsimile: 04-894 0300

This publication is also available on the Fisheries New Zealand website at <https://www.fisheries.govt.nz/growing-and-harvesting/fisheries/fisheries-management/deepwater-fisheries/>

© Crown Copyright – Fisheries New Zealand

Foreword

The National Fisheries Plan for Deepwater and Middle-depth Fisheries 2018 (Deepwater Fisheries Plan) provides an integrated, transparent way of defining management objectives, actions, and services required to meet relevant legislative obligations and strategic directions for managing New Zealand's deepwater fisheries. The Deepwater Fisheries Plan also provides a reporting mechanism to measure progress towards meeting these objectives.

Since the 2010 Deepwater Fisheries Plan was finalised, the Ministry of Fisheries merged with the Ministry of Agriculture and Forestry, which became the Ministry for Primary Industries (MPI). In 2018 Fisheries New Zealand became a business unit within MPI. All fisheries management and science functions are included in Fisheries New Zealand, while other functions such as policy and compliance are undertaken by other branches within the wider MPI.

Implementation of the 2010 Deepwater Fisheries Plan enabled the management of New Zealand's deepwater fisheries to continue to be recognised as meeting the world's best practice and remain productive and sustainable. Key achievements in the management of deepwater fisheries since the 2010 Plan was implemented include:

- Continuous improvement in procedures to mitigate the impact of deepwater fisheries on seabirds and marine mammals
- Maintenance of a structured research programme directed at ensuring sustainable catch limits for key stocks
- 2012 Second re-certification of New Zealand hoki by the Marine Stewardship Council, now certified with no conditions
- 2012 Certification of New Zealand southern blue whiting by the Marine Stewardship Council
- 2013 Publication of the 'National Plan of Action - 2013 to reduce the incidental capture of seabirds in New Zealand Fisheries'
- 2013 Publication of the 'National Plan of Action for the Conservation and Management of Sharks 2013'
- Passage of the 2014 Fisheries (Foreign Charter Vessels and Other Matters) Amendment Act 2014 requiring all foreign vessels fishing in New Zealand to be New Zealand flagged from 1 May 2016
- 2014 Certification of New Zealand hake and ling by the Marine Stewardship Council
- 2016 Certification of three New Zealand orange roughy fisheries by the Marine Stewardship Council
- Annual production of six Annual Operational Plans and six Annual Review Reports tracking implementation of the Deepwater Fisheries Plan and progress towards meeting objectives
- 2017 publication of the New Zealand sea lion /rāpoka Threat Management Plan 2017-2022

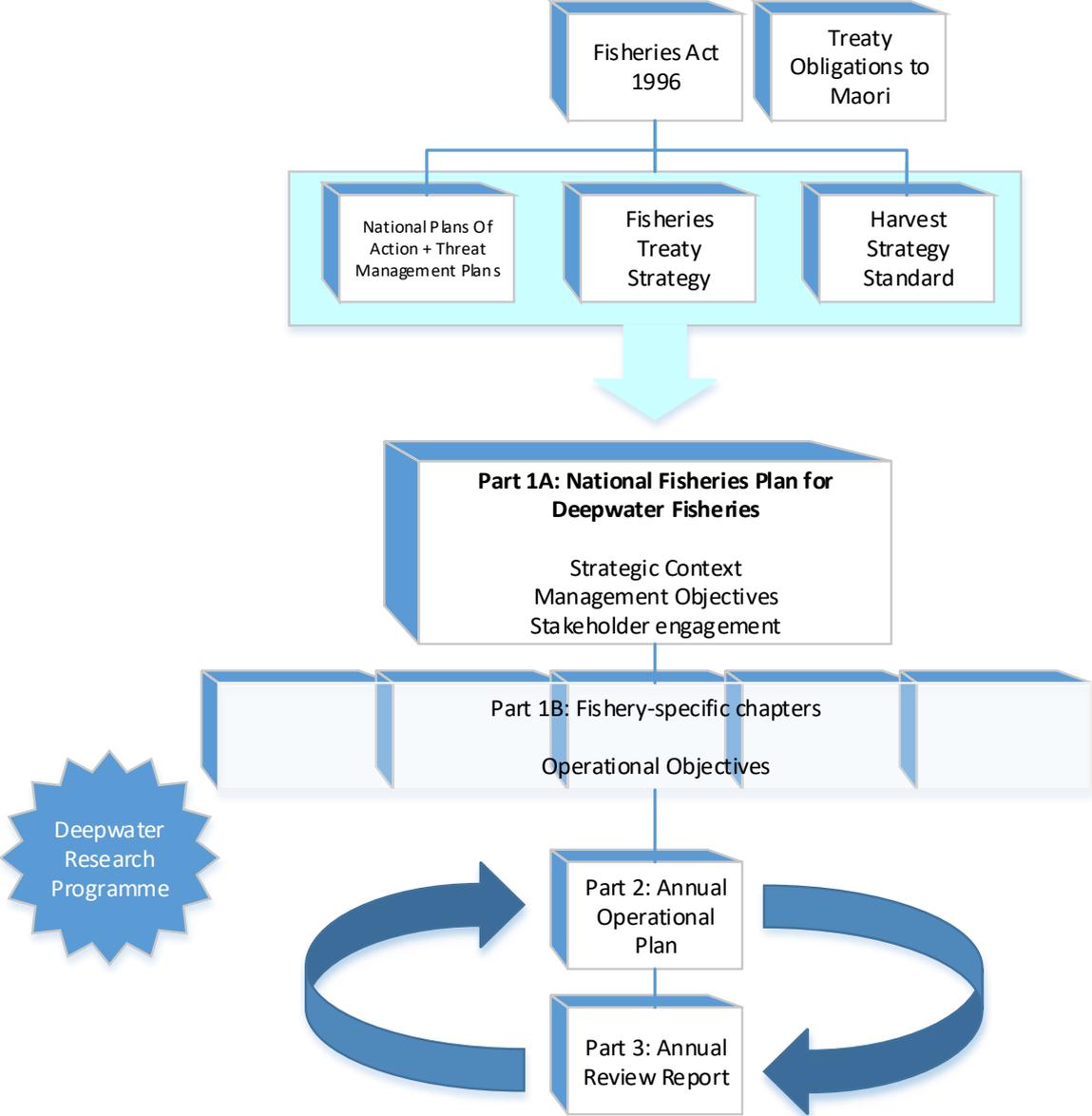
Ongoing challenges in the management of New Zealand's deepwater fisheries include:

- Delivering research across the range of deepwater stocks
- the development of techniques to assess low volume / low knowledge fish stocks
- ensuring that sufficient information is available to manage fisheries and their effects on the aquatic environment including the identification of "adverse" effects
- maximising value of New Zealand's marine resources within sustainable limits
- meeting social expectations with respect to fishing impacts on protected species, and
- providing opportunities for exercising kaitiakitanga and enhancing access to kaimoana

These challenges are the focus of ongoing initiatives designed to identify and implement improvements in the management of New Zealand's fisheries. This includes the use of new technology for tracking, reporting and monitoring of commercial fishing activity.

Foreword	i
1. Overview of the Deepwater Fisheries Plan	2
1.1 Purpose	2
1.2 Scope	2
1.3 Structure	3
1.4 Legal Status of the Deepwater Fisheries Plan	4
1.5 Decision making	4
2. Legislative Context	6
2.1 Domestic Legislation	6
2.2 International Obligations	6
2.3 Treaty of Waitangi Settlement Obligations	7
3. Strategic Context	7
3.1 Fisheries Specific Strategy	7
3.2 Māori Rights and Interests	8
3.3 Harvest Strategy Standard	9
3.4 International Obligations	9
3.5 Environmental National Plans of Action	9
4. Management Objectives of the Deepwater Fisheries Plan	11
4.1 Overview of Management Objectives	11
4.2 Management Objectives - Utilisation	12
4.3 Management Objectives – Environment	17
4.4 Management Objectives – Governance	22
5. The Operating Environment	25
5.1 Profile of New Zealand's Deepwater Fisheries Sector	25
5.2 Tangata Whenua Engagement	28
5.3 Stakeholder Engagement	29
5.4 Management Costs	30
5.5 Third Party Certification	30
5.6 Services to Support Implementation	31
List of Abbreviations and Acronyms	33

Deepwater Fisheries Plan Wider Context and Structure



1. Overview of the Deepwater Fisheries Plan

1.1 PURPOSE

This Deepwater Fisheries Plan sets the objectives to guide the management of deepwater and middle-depth (deepwater) fisheries within New Zealand's waters, consistent with the legislative framework provided by the Fisheries Act 1996.

It also sets a framework for operational planning and performance reporting to assess performance against objectives. The management objectives and the review criteria used to assess performance apply generically to all deepwater fisheries in New Zealand. In contrast, the more detailed operational objectives and their performance indicators are fishery specific.

Implementation of the Deepwater Fisheries Plan is driven through non-statutory Annual Operational Plans developed as part of the Fisheries New Zealand business planning process. These annual plans specify key tasks that will be undertaken to ensure delivery of management objectives, and outline core services required to deliver these tasks. A review against the Annual Operational Plan is done in consultation with stakeholders annually and published in the Annual Review Report.

1.2 SCOPE

This Plan includes criteria and objectives to guide the management of deepwater and middle depth fisheries within New Zealand fisheries waters. For deepwater and middle-depth fisheries, this mainly impacts those fisheries operating within the Exclusive Economic Zone (EEZ) from 12-200 nautical miles (NM) from shore.

The management of deepwater fisheries encompasses all target stocks, bycatch stocks, and the environmental effects of fishing. All deepwater species in the quota management system (QMS) have been categorised into two tiers according to their commercial value and volume of catch (Table 1).¹

Tier 1 fisheries are high volume and/or high value fisheries and are typically targeted. They deliver significant export revenue, which is reflected in the high quota value associated with these species. Tier 2 fisheries are typically less commercially valuable, comprise bycatch fisheries, or are only targeted periodically throughout the year.

Table 1: Categorisation of deepwater fish stocks by tier

	Stocks ²	
Tier 1	Hake: all Hoki : all Jack mackerel: JMA3, JMA7 Ling: LIN3 - LIN7 Orange roughy: all	Oreos: all Scampi: all Southern blue whiting: all Squid: all
Tier 2	Alfonsino: all Barracouta: BAR4, BAR5, BAR7 Black cardinalfish: all Deepwater crabs (CHC/GSC/KIC); all English mackerel: EMA3, EMA7 Frostfish: FRO3-FRO9 Gemfish: SKI3, SKI7 Ghost shark, dark: GSH4-GSH6 Ghost shark, pale: all Lookdown dory: all	Patagonian toothfish: all Prawn killer: all Redbait: all Ribaldo: RIB3-RIB8 Rubyfish: all Sea perch: SPE3-SPE7 Silver warehou: all Spiny dogfish: SPD4, SPD5 White warehou: all
Tier 3	Non-QMS species	

¹ Tier 3 stocks are those outside of the QMS.

² Management of stocks for some species falls under the Deepwater Fisheries Plan while the remainder are managed under the draft National Fisheries Plan for Inshore Finfish.

1.3 STRUCTURE

This Deepwater Fisheries Plan consists of three parts, which are divided into strategic direction and objective-setting (Parts 1A and 1B) and annual operational cycles (Parts 2 and 3).

Part 1: Deepwater Fisheries Plan

Part 1 outlines the framework and objectives for the management of New Zealand's deepwater fisheries. It is divided into Part 1A and Part 1B.

Part 1A details the overall strategic direction for New Zealand's deepwater fisheries. Specifically it describes:

- The strategic context and operating environment that fisheries plans are part of, including legislative requirements and government priorities;
- Management objectives that will apply across all deepwater fisheries; and
- How the fisheries plan will be implemented, including the approach to engaging with stakeholders.

Part 1A has been approved by the Minister of Fisheries under Section 11A of the Fisheries Act 1996.

Part 1B is comprised of the fishery-specific chapters of the Deepwater Fisheries Plan, which provide management objectives at the fishery level, in line with the management objectives outlined in Part 1A. These chapters describe operational objectives for target fisheries and key bycatch species, and how performance against objectives will be assessed at the fishery level.

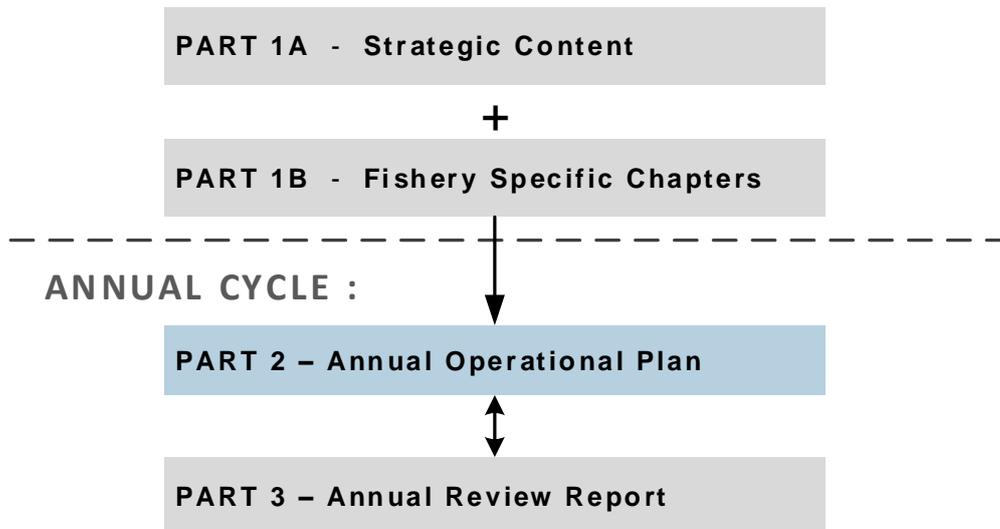
Fishery-specific chapters will be provided to the Minister of Fisheries, as they are developed, for approval.

Part 2: The Annual Operational Plan details the management actions that will be implemented on an annual basis for deepwater fisheries. The Annual Operational Plan includes the required services, delivery mechanisms, and service prioritisation factors that must be considered each financial year.

Part 3: The Annual Review Report assesses the annual performance of deepwater fisheries against the actions specified in the previous Annual Operational Plan and reports on progress towards meeting objectives described in Part 1A.

NATIONAL DEEPWATER PLAN

LONGER TERM CYCLE :



1.4 LEGAL STATUS OF THE DEEPWATER FISHERIES PLAN

Section 11A of the Fisheries Act 1996 (the Act) provides general guidance on what a fisheries plan may contain. Section 11A(2) states that a fisheries plan may relate to one or more stocks, fishing years, or areas, or any combination thereof. Section 11A(3) states that the plan may include fisheries management objectives to support the purpose and the principles of the Act.

Section 11A also provides the legal basis for the development of the Deepwater Fisheries Plan. None of the management objectives or the tasks to support these objectives diminishes the legal requirement to ensure the purpose and principles of the Act are met. Over time, if there are conflicts between any part of this Deepwater Fisheries Plan and legislative obligations as set out in the Act, then the legislative requirements unequivocally take priority.

Part 1A is approved by the Minister of Fisheries (the Minister) under section 11A of the Fisheries Act 1996. In approving Part 1A, the Minister has agreed to the following:

- The fisheries management objectives that will support the purpose and principles of the Act will guide the management of all deepwater fisheries;
- The Deepwater Fisheries Plan structure;
- How this Deepwater Fisheries Plan will be implemented; and
- The process for engaging with stakeholders on the implementation of this Deepwater Fisheries Plan.

1.5 DECISION MAKING

Section 11(2A) of the Act specifies that the Minister must take into account any relevant fisheries plan that has been approved under section 11A before setting or varying any sustainability measure under Part III of the Act (sections 11-16), or when making decisions or recommendations to regulate or control fishing as outlined in section 11(2A).

Any statutory intervention required to regulate deepwater fishing activity will be identified in the Annual Operational Plan wherever possible. It will be linked to the relevant fishery-specific chapter and the high-level management objectives specified in the Deepwater Fisheries Plan. The Minister may also be asked

to approve certain outputs from the Deepwater Fisheries Plan operational objectives, particularly when these outputs relate to their ability to meet statutory responsibilities, such as harvest strategies.

While the Minister must take into account Part 1A of the Deepwater Fisheries Plan, he or she is permitted to make a decision that is different to what is set out in the plan, provided it is clear that in making that decision the content of the fisheries plan was taken into account.

Under section 12 of the Act, the Minister is also required to consult stakeholders and provide for the input and participation of tangata whenua if the plan is amended or revoked. In doing so, the consultation process should provide reasons for the proposed changes.

Finally, nothing contained in Part 1A of the Deepwater Fisheries Plan changes the Crown's obligations to Māori. Rather, the Deepwater Fisheries Plan is a key means of giving effect to the Crown's obligations. With respect to commercial fisheries, the Crown's obligations are specified in legislation such as the Māori Fisheries Act 1989, the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992, and the Fisheries Act 1996. More information on how the Deepwater Fisheries Plan will contribute to Fisheries New Zealand meeting its obligations to Māori is included in the section on 'Tangata whenua Engagement'.

2. Legislative Context

2.1 DOMESTIC LEGISLATION

Section 8 defines the purpose of the Fisheries Act 1996:

(1) The purpose of this Act is to provide for the utilisation of fisheries resources while ensuring sustainability.

(2) In this Act –

ensuring sustainability means

- a) maintaining the potential of fisheries resources to meet the reasonably foreseeable needs of future generations; and
- b) avoiding, remedying, or mitigating any adverse effects of fishing on the aquatic environment

utilisation means conserving, using, enhancing, and developing fisheries resources to enable people to provide for their social, economic, and cultural well-being.

Section 9 of the Act establishes the following environmental principles that shall be taken into account when exercising any powers under the Act in relation to the utilisation of fisheries resources or ensuring sustainability:

- a) Associated or dependent species should be maintained above a level that ensures their long-term viability;
- b) Biological diversity of the aquatic environment should be maintained; and
- c) Habitat of particular significance for fisheries management should be protected.

Section 10 of the Act outlines information principles for decision makers as follows:

- 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; and
- 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.

The Act also acknowledges external obligations, in particular, Part 1, section 5 notes that the Act shall be interpreted in a manner consistent with:

- a) New Zealand's international obligations relating to fishing; and
- b) The provisions of the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992.

Other domestic legislation which contributes to the management of the wider fisheries ecosystem includes the:

- Wildlife Act 1953 which gives partial or full protection to all but one species of seabird; and
- The Marine Mammals Protection Act 1978 which makes provision for the protection, conservation, and management of marine mammals within New Zealand waters.

2.2 INTERNATIONAL OBLIGATIONS

Under the United Nations Convention on the Law of the Sea (UNCLOS) 1982 and its associated agreements, New Zealand has international obligations regarding the management of fish stocks. In deepwater fisheries, the most relevant sections are Articles 61-63 which apply to the management of marine resources within the EEZ and in cases where fish stocks extend beyond the borders of the EEZ.

New Zealand is also a member of a number of international agreements and regional fisheries management organisations (RFMOs) which give rise to additional obligations. For deepwater fisheries, the two most relevant are the South Pacific Regional Fisheries Management Organisation (SPRFMO) and the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR).

SPRFMO provides for collaborative management of non-highly migratory species in the southern waters of the Pacific, including a shared stock of orange roughy which straddles the New Zealand EEZ boundary.

CCAMLR was established with the objective of conserving Antarctic marine life. New Zealand's fisheries interests in the Antarctic region are mainly focused on two species of toothfish (*Dissostichus* spp), one of which (Patagonian toothfish), is occasionally fished within the New Zealand EEZ and is domestically managed within this Deepwater Fisheries Plan.

2.3 TREATY OF WAITANGI SETTLEMENT OBLIGATIONS

Obligations under the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992 (and individual iwi Deeds of Settlement) can be considered in two broad categories:

- Specific obligations relating to use (both commercial and non-commercial); and
- More general obligations relating to the right of tangata whenua to participate in fisheries management decisions and have their values and aspirations given particular regard.

Specific treaty obligations in the Fisheries Act provide for commercial elements of the settlement (through 20% of quota as new species enter the QMS and non-commercial elements through regulations providing for customary use). The more general obligations provide for tangata whenua input and participation, and having particular regard to kaitiakitanga³.

Nothing contained in a fisheries plan changes the Crown's obligations to Māori under the Treaty of Waitangi. The Crown's obligations are specified in legislation, including the Māori Fisheries Act 2004, the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992, individual iwi treaty settlement protocols, and the Fisheries Act.

3. Strategic Context

The strategic direction for fisheries in New Zealand is shaped by a number of strategic documents, including the Māori Fisheries Treaty strategy, Harvest Strategy Standard, National Plans of Action for Sharks and Seabirds, and relevant Threat Management Plans for protected species.

3.1 FISHERIES SPECIFIC STRATEGY

The purpose of the Fisheries Act is focused on achieving a balance between sustainable utilisation of our fisheries resources, and maintenance of the marine environment. The Act implicitly recognises that:

- The biological realities of harvesting deepwater fisheries mean that the future value of these fisheries can only be assured if they are managed sustainably. Measures to increase value must always be considered in the context of ensuring long-term maintenance of both target and bycatch stocks.
- Deepwater target and key bycatch fish stocks exist as part of the broader aquatic environment, and this broader environment has value, including an intrinsic value,⁴ to New Zealanders. It also recognises that, while fishing activities may have an environmental impact, not all environmental impacts have an adverse effect on the aquatic environment (e.g an impact on an individual fish does not constitute an adverse effect on the aquatic environment).
- Avoiding or mitigating adverse effects on the aquatic environment will ensure that the long-term viability of associated or dependent species is assured and that the biological diversity and functionality of marine communities is maintained.

³ This obligation is contained in S12(1)(b) of the Fisheries Act. Fisheries New Zealand considers that obligation to, "provide for the input and participation", is a more active duty than consultation generally requiring earlier engagement with tangata whenua (at the option definition stage, rather than the evaluation of options).

⁴ The value an individual or community places on preserving a resource or environment in its own right.

These bullets are recognised in the strategic direction for deepwater fisheries through the adoption of two outcomes (see boxes below) – use and environment. Both outcomes describe what it will mean to maximise the benefits from the sustainable use of our deepwater fisheries resources and to ensure that the health of the aquatic environment is maintained.

Use Outcome: Fisheries resources are used in a manner that provides the greatest overall economic, social, and cultural benefit

Environment Outcome: The capacity and integrity of the aquatic environment, habitats and species are sustained at levels that provide for current and future use

Robust governance arrangements are necessary to ensure the successful delivery of the outcomes. These arrangements need to be well specified, transparent and support cost-effective and accountable decision making. The management of deepwater fisheries also needs to be well informed and collaborative to ensure that the fisheries are valued by all New Zealanders. Transparent governance structures are critical to ensure that management is credible, both nationally and internationally.

Governance Conditions: Sound governance arrangements that are well specified, transparent, and which support cost-effective and accountable decision-making

Sound governance is achieved through engagement with stakeholders at the Fish Plan Advisory Group⁵ and treaty partnership obligations are exercised through Iwi Fishery Forum meetings, and also through engagement with Te Ohu Kaimoana. This is discussed in more detail in section 5.2.

Finally, the development of Annual Operational Plans and Annual Review Reports, which are made publicly available, also contributes to accountable, responsive, and transparent fisheries management.

3.2 MĀORI RIGHTS AND INTERESTS

It is important to recognise that iwi/Māori have a relationship with fisheries, and to provide for such relationships to be maintained. This is reflected through a number of management objectives within this Deepwater Fisheries Plan, including Objective 6 (to ensure the management of New Zealand's deepwater and middle-depth fisheries meets the Crown's obligations to Māori):

Tangata whenua and the Crown working in partnership to provide for the utilisation of fisheries resources while ensuring sustainability, having particular regard to kaitiakitanga, with the Crown meeting its obligations to Māori.

Equally, this relationship is relevant in the consideration of all other management objectives. These objectives can help to further the relationship of Māori with deepwater fisheries by ensuring that fish stocks remain abundant within healthy ecosystems. Beyond this plan, the Fisheries Treaty Strategy establishes an agreed plan for consultation with Māori on fisheries issues.

⁵ The FPAG is comprised of iwi, eNGO, fishing industry, research provider, and Department of Conservation representatives, along with Fisheries New Zealand staff. Collectively this group has advised on the development of this fisheries plan. Under the 2010 Deepwater Fisheries Plan, this group was called the 'Environmental Engagement Forum'. There are no significant changes proposed to the Terms of Reference for this group other than the name.

3.3 HARVEST STRATEGY STANDARD

The Harvest Strategy Standard (2008)⁶ applies to all New Zealand fish stocks in the QMS. The Harvest Strategy Standard is a policy statement of best practice in relation to setting fishery and stock targets and limits within New Zealand's QMS. It provides guidance as to how fisheries law will be applied in practice by establishing a consistent and transparent framework for decision-making to achieve the objective of providing for utilisation of New Zealand's fisheries resources by ensuring sustainability.

Under the Harvest Strategy Standard, target and limit biological reference points should be set for all QMS fish stocks, but the means by which this is achieved is flexible. The intention is to make best use of available information for each individual stock.

The Harvest Strategy Standard consists of three core components:

1. A specified biomass target about which a fishery or stock should fluctuate
2. A soft biomass limit that triggers a requirement for a formal, time-constrained rebuilding plan
3. A hard biomass limit below which fisheries should be considered for closure

3.4 INTERNATIONAL OBLIGATIONS

In addition to legal obligations under United Nations Convention on the Law of the Sea and its subsidiary agreements, New Zealand is a signatory to a number of international agreements that are focused on maintenance of biodiversity and species conservation which are relevant to fisheries. These include the Convention on Biological Diversity, the International Convention on Trade in Endangered Species, and the Convention on Migratory Species. The Convention on Biological Diversity sets 20 targets, known as the Aichi Biodiversity Targets that Parties should be working towards as part of their implementation of the 2011-2020 Strategic Plan.

3.5 NATIONAL PLANS OF ACTION

As a member of the United Nations Food and Agriculture Organisation (FAO), New Zealand supports International Plans of Action⁷ developed by the FAO. In line with the International Plans of Action, New Zealand has developed National Plans of Action for seabirds and sharks.

National Plan of Action for Seabirds

The National Plan of Action - 2013 to reduce the incidental catch of seabirds in New Zealand Fisheries (National Plan of Action for Seabirds) builds upon and expands work outlined in the NPOA-Seabirds 2004. The 2013 Plan sets out a long term objective that:

New Zealand seabirds thrive without pressure from fishing related mortalities, New Zealand fishers avoid or mitigate against seabird captures and New Zealand fisheries are globally recognised as seabird friendly.

The National Plan of Action for Seabirds 2013 also sets out high-level subsidiary and medium term objectives which focus on reducing the overall level of risk to seabird populations that are most impacted by the effects of fishing. These are complemented by objectives to reduce overall capture rates and will be achieved through the implementation of best practice measures. The objectives also recognise the need to undertake research and development to ensure that these measures undergo continual improvement and that monitoring needs are met.

The National Plan of Action for Seabirds 2013 is underpinned by a risk assessment approach. This identifies the seabird species most at risk from commercial fishing, as well as the fisheries that contribute the greatest risk to these seabirds. This allows for management actions to be prioritised to reduce the overall risk that commercial fishing poses to seabirds. These management actions, which give effect to

⁶ <http://fs.fish.govt.nz/Page.aspx?pk=113&dk=16543>

⁷ International plans of action are voluntary instruments devised within the framework of the FAO Code of Conduct for Responsible Fisheries. They apply to all States and entities and to all fishers. Four IPOAs have been developed to date, including IPOAs specific to seabirds and sharks. Each IPOA provides guidance for states in preparing their own specific national plans of action.

the objectives of the National Plan of Action for Seabirds that are supported by this Deepwater Fisheries Plan, are outlined annually in the Annual Operational Plan. The National Plan of Action for Seabirds is being revised in 2019, and revised objectives and relevant actions will be incorporated into future Annual Operational Plans.

National Plan of Action for Sharks

MPI also published the National Plan of Action for the Conservation and Management of Sharks 2013 (National Plan of Action for Sharks 2013)⁸. New Zealand waters are home to at least 113 species of shark, of which more than 70 have been captured in fisheries. MPI developed the National Plan of Action for Sharks in conjunction with the Department of Conservation (DOC), the Ministry of Foreign Affairs and Trade (MFAT), and a range of stakeholders, all of whom have an interest in the conservation and management of sharks. The overarching goal of the National Plan of Action for Sharks 2013 is to:

Maintain the biodiversity and the long-term viability of all New Zealand shark populations by recognising their role in marine ecosystems, ensuring that any utilisation of sharks is sustainable, and that New Zealand receives positive recognition internationally for its efforts in shark conservation and management.

The National Plan of Action for Sharks 2013 sets out five-year goals and objectives, including maintaining biodiversity, maximising utilisation, maximising domestic and international stakeholder engagement, understanding non-fishing threats, and improving knowledge about sharks through research.

Some species of shark are managed commercially under the QMS (as targeted fisheries or bycatch) and commercial shark fisheries are subject to Fisheries New Zealand's QMS compliance and monitoring regime. New Zealand is committed to the humane treatment of sharks, and removal of fins from live sharks is illegal under the Animal Welfare Act 1999.

Shark species identified as being vulnerable are protected in New Zealand under the Wildlife Act 1953 or the Fisheries Act 1996 (which applies to New Zealand-flagged vessels and nationals on the high seas).

Shark finning (the removal of the fins from a shark and the disposal of the remainder of the shark at sea) has been prohibited since October 2014. It is unlawful to land the fins alone of any shark species. Instead, the full utilisation of dead sharks is encouraged, meaning that fins may be landed legally as a secondary product. Fisheries New Zealand's work on sharks is supported by a qualitative risk assessment⁹, which considered relative risks to shark populations for QMS, non-QMS, and protected shark species.

A revised National Plan of Action for Sharks will be produced during the lifetime of this Plan and relevant objectives and actions will be incorporated into future Annual Operational Plans.

⁸ The first NPOA Sharks was published in 2008 and reviewed in 2013. See: <http://www.fao.org/ipoa-sharks/en/> and <https://fs.fish.govt.nz/Page.aspx?pk=165>

⁹ Ford, R.B *et al.* (2015). Qualitative (Level 1) Risk Assessment of the impact of commercial fishing on New Zealand Chondrichthyans. New Zealand Aquatic Environment and Biodiversity Report No. 157, ISBN 978-1-77665-041-5. Available here: <https://fs.fish.govt.nz/Page.aspx?pk=113&dk=23934>

4. Management Objectives of the Deepwater Fisheries Plan

4.1 OVERVIEW OF MANAGEMENT OBJECTIVES

Use Outcome	1	Ensure the deepwater and middle-depth fisheries resources are managed so as to provide for the needs of future generations
	2	Ensure excellence in the management of New Zealand's deepwater and middle-depth fisheries, so they are consistent with, or exceed, international best practice
	3	Ensure effective management of deepwater and middle-depth fisheries is achieved through the availability of appropriate, accurate and robust information
	4	Ensure deepwater and middle-depth fish stocks and key bycatch fish stocks are managed to an agreed harvest strategy or reference points

Environment Outcome	5	Ensure that maintenance of biological diversity of the aquatic environment and protection of habitats of particular significance for fisheries management are explicitly considered in management
	6	Manage deepwater and middle-depth fisheries to avoid, remedy or mitigate the adverse effects of these fisheries on associated or dependent and incidentally caught fish species
	7	Manage deepwater and middle-depth fisheries to avoid, remedy or mitigate the adverse effects of these fisheries on the benthic habitat
	8	Manage deepwater and middle-depth fisheries to avoid, remedy or mitigate the adverse effects of these fisheries on the long-term viability of endangered, threatened and protected species populations

Governance Conditions	9	Ensure the management of New Zealand's deepwater and middle-depth fisheries meets the Crown's obligations to Māori
	10	Ensure there is consistency and certainty of management measures and processes in the deepwater and middle-depth fisheries
	11	Ensure New Zealand's deepwater and middle-depth fisheries are transparently managed

This section provides the following information for each objective:

- **Description:** What does the objective mean?
- **Current Status:** What is the current status of deepwater fisheries in relation to the objective?
- **Management Initiatives:** What actions or initiatives are proposed to progress towards achievement of the objective?
- **Key Performance Indicators:** What would deepwater fisheries look like when the objectives were achieved?

4.2 MANAGEMENT OBJECTIVES - UTILISATION

These management objectives are focussed on implementing the purpose and principles of the Act providing for utilisation of deepwater fisheries within sustainable limits. This allows industry to collectively and individually realise increased value from deepwater fisheries. Key initiatives include developing harvest strategies for a wider range of deepwater fisheries, taking innovative approaches to monitoring and estimating stock status for fisheries without accepted stock assessments, designing and implementing data collection programmes to support delivery on objectives, and ensuring that the management of New Zealand's deepwater fisheries is consistent with international best practice.

1	Ensure the deepwater and middle-depth fisheries resources are managed so as to provide for the needs of future generations
----------	---

Description

The social and cultural needs of future generations will be met by preserving both the broader ecosystem and commercial fisheries

Preserving the ecosystem will retain both its intrinsic value¹⁰ and the potential future value of associated resources

Current Status

The foreseeable needs of future generations, including intrinsic and bequest values¹¹, have not been specified

Current management focuses on defining sustainable catch limits and avoiding, remedying or mitigating the adverse effects of fishing on the aquatic environment

Stock status is known for 21 of 31 Tier 1 stocks, 18 of those currently above the soft limit

Management Initiatives

- Fisheries management explicitly considers the needs of future generations by managing fish stocks at sustainable levels and avoids, remedies or mitigates undue adverse effects of fishing on the aquatic environment through Ecosystem Based Fisheries Management
- Improved engagement with iwi and stakeholders to determine how best to provide for future generations
- Increased public awareness and knowledge of deepwater fisheries management through a more active internet and social media presence

Key Performance Indicators

- Stocks are maintained at or above management targets
- All management reviews for deepwater fisheries explicitly consider the needs of future generations on a case by case basis consistent with statutory requirements
- There is a greater public acceptance and understanding of New Zealand's deepwater fisheries management, objectives, and how those are delivered as measured by the nature of public reaction to deepwater fisheries management decisions

¹⁰ As referred to throughout this document, 'value' can be what an individual or community places on preserving a resource or environment in its own right, or in the broader sense, can mean but is not necessarily limited to; the cultural, economic, social or spiritual value New Zealand obtains from its deepwater fisheries

¹¹ Bequest value refers to the value of satisfaction from preserving a natural environment for future generations. It is a non-use value, that is, the value that people assign to economic goods even if they never have, and never will use it. It is distinguished from use value, which people derive from direct use of the good, such as the value of quota.

2	Ensure excellence in the management of New Zealand’s deepwater and middle-depth fisheries so they are consistent with, or exceed, international best practice
----------	--

Description

Deepwater fisheries are recognised in New Zealand and internationally as being managed to best practice standards as a minimum. This is being achieved through:

- Ensuring participants in these fisheries operate within the legislative, regulatory and management framework in place; and
- Formally assessing the fishery against international standards or best practice

Current Status

Stocks of five of New Zealand's deepwater Tier 1 species are recognised as sustainable by the Marine Stewardship Council (MSC), considered to represent global best practice

There are areas of public concern about the management of some deepwater fisheries

New Zealand government supports industry to pursue independent verification against best practice standards, such as through MSC certification, when industry wishes to do so

Management Initiatives

- Fisheries New Zealand will continue to provide data and information as requested in support of independent verification of the performance of New Zealand’s deepwater fisheries, such as through MSC certification
- Fisheries compliance and Fisheries New Zealand will continue to work with the fishing industry to enable high levels of performance in regards to compliance with and adherence to regulatory and non-regulatory measures
- Fisheries New Zealand will continue to work with stakeholders, including iwi, the fishing industry, environmental groups, and other government departments to support high levels of performance in regards to the management of the environmental effects of fishing
- Information on the management of New Zealand’s deepwater fisheries will be made easily accessible to the public

Key Performance Indicators

- Deepwater fisheries management enables independent verification of key deepwater fisheries against best practice standards and supports the maintenance of certification
- Annual surveillance audits for third party certifications are successful and no additional conditions, recommendations or issues are raised
- Deepwater fisheries management is recognised both internationally and domestically as world leading. For example, through third party certification or in peer-reviewed publications

3

Effective management of the deepwater and middle-depth fisheries is achieved through the availability of appropriate, accurate and robust information

Description

Effective fisheries management decisions require information and data that is both robust and fit for purpose

Information and data comes from a variety of sources including independent Fisheries New Zealand Observer data, industry reporting, contracted fisheries independent research surveys, and contracted projects

Current Status

The management of the majority of New Zealand's deepwater fisheries takes an evidence-based approach, supported by a robust and comprehensive monitoring and research programme. Stock assessments have been accepted to guide management for around 70% of Tier 1 deepwater fisheries (by both volume and value).

Some information is available to assess the nature and extent of any adverse effects on the marine environment on a case by case basis, and data to support the estimation of effects from fishing is limited to areas with high observer coverage and those issues with a high public profile

Data and information collection is prioritised to reduce uncertainty in formal, quantitative risk assessments for protected species, and to provide information on issues where there is public interest in of risks from fishing to the aquatic environment.

Implementation of a risk-based approach has enabled prioritisation of areas on which to focus mitigation or data collection efforts

Management Initiatives

- Maintain a medium term research plan to provide transparency on planned research
- Ensure observer coverage and sampling is planned and delivered to provide relevant data to support management
- Digital monitoring and associated data is used to add value to fisheries management information systems (e.g. provide more frequent, comprehensive and timely information to guide decision makers) and enable more responsive management action

Key Performance Indicators

- The Medium Term Research Plan for Deepwater Fisheries is updated and published annually
- Robust information is available to assess the status of an increasing number of deepwater QMS stocks – no currently accepted assessments fail because of a lack of available data
- Data are available to support appropriate management of any adverse effects of deepwater fishing on the marine environment – uncertainty in quantitative risk assessments decreases
- The use of digital monitoring data to manage fisheries in real time is increasing
- Research meets required standards and is procured and delivered on time to support responsive management

4	Ensure deepwater and middle-depth fish stocks and key bycatch fish stocks are managed to an agreed harvest strategy or reference points
----------	--

Description

A sound harvest strategy supports sustainable fish stock management guiding the development of advice on catch limit setting. The components of a harvest strategy include:

- Biological reference points (or agreed proxies) against which the performance of the fishery will be monitored, including limits and management targets;
- A harvest control rule (HCR) that will apply to the fishery to ensure the biomass fluctuates within the target range is used to recommend appropriate annual catch limits to meet objectives; and
- A rebuild strategy for the fishery that will be applied if the stock falls below an acceptable level.

Harvest strategies are based on fishery objectives including aspects of sustainability (e.g. management targets), economics (e.g. catch rates or fish size), and environmental factors (e.g. marine biodiversity and impacts on aquatic environment), and are consistent with the Harvest Strategy Standard

Harvest strategies are developed in consultation with key stakeholders to align with their objectives

Current Status

Species specific harvest strategies have been developed and implemented for stocks of hoki, orange roughy, and southern blue whiting which comprise six of 31 Tier 1 stocks

In addition, harvest control rules have been developed for three orange roughy stocks and one southern blue whiting stock that have species-specific harvest strategies

In the absence of a specific harvest strategy, stocks are managed using the harvest strategy from the Harvest Strategy Standard including default reference points

Management Initiatives

- Develop harvest strategies and/or harvest control rules for additional Tier 1 species during the course of the plan
- Where there is no specific harvest strategy or harvest control rule, manage stocks consistent with the Harvest Strategy Standard

Key Performance Indicators

- For Tier 1 stocks, documented species-specific harvest strategies are set, including harvest control rules where appropriate
- For all Tier 2 stocks, management approaches are defined and documented which include harvest strategies consistent with the Harvest Strategy Standard
- The Harvest Strategy Standard default settings remain in place to guide management settings for all stocks where there is no specific harvest strategy

4.3 MANAGEMENT OBJECTIVES – ENVIRONMENT

These management objectives are focussed on ensuring that New Zealand's fisheries are managed for future generations and that adverse effects of fishing are avoided, remedied or mitigated. Key initiatives include:

- Improving understanding of the wider ecosystem to support ecosystem based fisheries management;
- Taking a risk-based approach to identify and manage any adverse effects of fishing on protected species or any other non-target fish species;
- Developing a framework to manage the impacts of fishing on the benthic environment; and
- Continuous improvement in performance in mitigating the impacts of deepwater fisheries on protected species

5	Ensure that maintenance of biological diversity of the aquatic environment and protection of habitat of particular significance for fisheries management is explicitly considered in management
----------	--

Description

United Nations Convention on the Law of the Sea (UNCLOS) gives New Zealand rights to use within-EEZ resources, but only if we also protect biodiversity; and under Aichi Target 11 of the Convention of Biological Diversity (CBD), New Zealand is obliged to protect at least 10% of its marine environment by 2020 ¹²

When making management decisions, maintenance of the biological diversity of the aquatic environment and the protection of habitat of particular significance to fisheries management must be taken into account

The biological diversity of the aquatic environment has intrinsic value, and affecting this diversity may alter the resilience of the ecosystem to environmental change or other pressures

Any changes to habitats of particular significance for fisheries management may have a lasting impact on the distribution and health of deepwater species

Current Status

There is limited information on the diversity of the aquatic environment, although ecosystem modelling approaches to understand trophic linkages are in the early stages of development

More than 30% of the EEZ is protected from fishing impacts of bottom trawl, through Benthic Protection Areas and Seamount Closures, but the biological diversity and importance of these areas to fisheries management is not well understood

The objective of the Sustainable Seas National Science Challenge is to enhance the value of New Zealand's marine resources, while providing a healthy marine environment for future generations. The approach is through a move towards ecosystem based management, including ecosystem approaches to fisheries management

The Fisheries Act requires the consideration of 'habitat of particular significant to fisheries management' which is currently done on a case by case basis

Management Initiatives

- Explore the utility and application of ecosystem based approaches to fisheries management, incorporating work done through the Sustainable Seas National Science Challenge.
- Explore the role of protecting marine biodiversity as a strategy to build the resilience of marine ecosystem and fish stocks to buffer the effects of climate change
- Develop guidance on what constitutes 'habitat of particular significance to fisheries management'

Key Performance Indicators

- Management decisions relevant to deepwater fisheries explicitly take account of biological diversity and protection of habitats of particular significance for fisheries management
- Improved information on the diversity of the aquatic environment is available and effective management approaches are implemented as required

¹² Details of Aichi Target 11 may be found at <https://www.cbd.int/sp/targets/rationale/target-11/>

6	Manage deepwater and middle-depth fisheries to avoid, remedy or mitigate adverse effects on associated or dependent or incidentally caught fish species
----------	--

Description

The Fisheries Act 1996 requires that adverse effects of fishing on the aquatic environment should be avoided, remedied, or mitigated

Deepwater fisheries have some environmental impact on incidental bycatch fish species (species that have limited commercial value and that are typically turned into fishmeal or returned to the sea)

As these species are often information deficient, it can be difficult to assess when impacts from fishing may be having an adverse effect

Regularly assessing bycatch levels and relevant research survey data will ensure that trends in harvest levels and biological characteristics are monitored

Where an adverse environmental effect is identified, the management priority will be to avoid, remedy or mitigate the adverse effect, to ensure that any impact is carefully managed and remains within acceptable limits

Current Status

Data on harvest levels of all fish species collected by Fisheries New Zealand observers is used to regularly estimate total harvest of non-QMS fish species in deepwater fisheries

Some fisheries have had insufficient observer coverage to allow for robust estimation of harvest levels for non-QMS species

A risk-based approach is used to prioritise management of fishing impacts on the aquatic environment. A quantitative risk assessment of fish species is being developed

Management Initiatives

- Finalise and implement risk assessment framework for fish species caught in deepwater fisheries
- Fisheries New Zealand produces an annual summary of information provided by Observers in the Annual Review Report. This includes information about mitigation measures used, age frequency testing and conversion factor information, and non-fish bycatch

Key Performance Indicators

- Risk-based approach is fully implemented based on quantitative risk assessment of all fish species caught in deepwater fisheries
- Impacts of fishing on non-target fish species are understood and managed
- Number of deepwater low information stocks of known status increases

7	Manage deepwater and middle-depth fisheries to avoid, remedy or mitigate the adverse effects of these fisheries on benthic habitats
----------	--

Description

Fishing activity can impact benthic habitats by affecting benthic fauna and modifying habitats

Understanding fishing impacts on benthic habitats can enable assessment of any adverse effects

Where an adverse effect is identified, the management priority will be to avoid, remedy or mitigate the adverse effects so that impacts remain within acceptable limits

Current Status

Benthic Protection Areas prohibit bottom contact active fishing gears (trawl and dredge) in 30% of the New Zealand EEZ

Additional trawling and dredging closures apply to 18 underwater topographic features (including seamounts). This accounts for another 2% of the New Zealand EEZ

Impacts of fishing on the benthic habitat are monitored through annual reporting of the trawl footprint and capture of benthic organisms

There are no clear principles or objectives to guide consideration of what constitutes an adverse effect or guide prioritisation of research and management actions

Management Initiatives

- Engage with stakeholders to develop, document, and implement a clear framework, including objectives for evaluating the nature of the impacts of fishing on benthic habitats and determining adversity
- Finalise and implement a risk assessment framework that will enable effective prioritisation of management actions and research in relation to impacts on benthic habitats

Key Performance Indicators

- Framework developed in collaboration with stakeholders and implemented to drive the management of the impacts of fishing on the benthic environment
- Management of impacts of fishing on benthic habitat is based on robust information

8	Manage deepwater and middle-depth fisheries to avoid, remedy or mitigate the adverse effects of these fisheries on the long-term viability of ‘Endangered, Threatened and Protected species’ (ETP)
----------	---

Description

ETP species such as sea lions, seabirds, some sharks and corals are particularly significant to New Zealanders, both due to their intrinsic value and their threat status

Fishing activity in New Zealand’s deepwater fisheries should not have an adverse effect on the long-term viability of these species

Where they have been developed, National Plans of Action or Threat Management Plans drive and assist with prioritisation of management actions to minimise any adverse effects of fishing

Current Status

A risk-based approach is taken to manage ETP species interactions. Quantitative risk assessments have been completed for seabirds and New Zealand sea lions, and a qualitative risk assessment completed for shark species. These risk assessments enable management resources to be prioritised to where the risk is greatest

Management to avoid, mitigate or remedy interactions with ETP species includes both regulatory and non-regulatory measures

There are National Plans of Action in place for seabirds and sharks which set objectives for managing interactions

The New Zealand sea lion/ rāpoka Threat Management Plan sets objectives and drives actions for management of sea lion interactions

Management Initiatives

- Continue development of and expand implementation of risk assessment frameworks to prioritise and direct management actions in relation to impacts on ETP species
- Implement any updates to National Plans of Action for seabirds and sharks
- Targets and actions developed to meet the objectives of the updated NPOA Seabirds and NPOA Sharks will be detailed in Annual Operational Plans
- Incorporate digital monitoring data to provide additional information and management responses on ETP species interactions

Key Performance Indicators

- Quantitative risk-based approach fully implemented
- The deepwater fleet utilises measures that best minimise the risk of ETP bycatch
- Progress is made toward achieving of objectives of the NPOA Seabirds, NPOA Sharks and the New Zealand sea lion/rāpoka TMP
- Regular reporting of incidental captures and rates to monitor any trends¹³
- It can be demonstrated that deepwater fisheries are not having an adverse impact on ETP species’ populations

¹³ This encompasses at-sea data recording by fishers and observers together with summaries published by Fisheries New Zealand

4.4 MANAGEMENT OBJECTIVES – GOVERNANCE

9	Ensure there is consistency and certainty of management measures and processes in the deepwater and middle-depth fisheries
Description	
<p>Stable overarching objectives set the direction for the management of deepwater fisheries and provide clear processes that deliver the objectives over the long term</p> <p>Management should achieve long-term value rather than short-term gain</p> <p>The value of fisheries resources includes economic, social, cultural, and intrinsic values</p>	
Current Status	
<p>Management decisions are guided by the objectives of this Plan</p> <p>Harvest strategies have been defined and agreed for some Tier 1 deepwater stocks</p> <p>Management approach and decisions are documented and are publicly available for all interested parties</p>	
Management Initiatives	
<ul style="list-style-type: none"> • Work with stakeholders to define clear Harvest Strategies and/or Harvest Control Rules • Engage in wider process to determine monitoring and management of low information stocks (Tier 2 and non-QMS species) • Continue regular formal engagement and communication with iwi and stakeholders by way of forums such as the Fish Plan Advisory Group (FPAG) 	
Key Performance Indicators	
<ul style="list-style-type: none"> • Management decisions are clearly linked to high-level and fishery specific objectives • Harvest Strategies and/or Harvest Control Rules defined and agreed for Tier 2 stocks • Stakeholder engagement is regular, constructive, and transparent • Information on deepwater management approaches, planning, prioritisation and service delivery remains publicly available and easily accessible 	

10	Ensure New Zealand's deepwater and middle-depth fisheries are transparently managed
-----------	--

Description

<p>Information is readily available to all users</p> <p>Agreed processes will be followed should management, environmental or compliance performance fall below the agreed standards, targets or benchmarks</p> <p>Credible fisheries management is achieved when sustainability, value, and environmental objectives consistently and transparently drive management actions</p> <p>Transparency results when the processes around developing and implementing management strategies are communicated to all interested parties</p>
--

Current Status

<p>Regular opportunities are provided for stakeholder engagement on the development of research plans and work plans (including Annual Operational Plans and Annual Review Reports)</p> <p>All research used to inform management must meet Fisheries New Zealand's Research and Science Information Standard for New Zealand Fisheries¹⁴. The standard incorporates peer review input to assess research quality before it is used to inform management decisions</p> <p>All management decisions are subject to statutory consultation requirements and are communicated to stakeholders</p> <p>Comprehensive information describing management approaches and work plans is publicly available through the Fisheries New Zealand website</p> <p>Scientific information guiding management decisions, especially regarding impacts of fishing on the marine environment, is often technical and challenging to understand</p>
--

Management Initiatives

- | |
|--|
| <ul style="list-style-type: none">• Protocols and options are currently being developed for releasing digital monitoring data (DM).• Continued publication of Annual Operational Plans and Annual Review Reports• Ensure Annual Review Reports report on progress against objectives• Maintenance of an easily-accessible website where all deepwater-related information can be found by the public and stakeholders• Consider and develop options for making additional information publicly available |
|--|

Key Performance Indicators

- | |
|---|
| <ul style="list-style-type: none">• All stakeholders are provided with the opportunity to engage in management processes• The process, and rationale for, management decisions or actions is based on publicly available information |
|---|

¹⁴ <http://www.mpi.govt.nz/dmsdocument/3692-research-and-science-information-standard-for-new-zealand-fisheries>

11	Ensure the management of New Zealand’s deepwater and middle-depth fisheries meets the Crown’s obligations to Māori
-----------	---

Description
<p>The Crown’s obligations to Māori influence how deepwater fisheries are managed, and that any measures implemented must not compromise the Crown’s settlement obligations</p> <p>Tangata whenua input and participation in the management of deepwater fisheries is actively enabled, and a clear expression of kaitiakitanga is provided so that it can be given particular regard to by the Minister when fulfilling the Crown’s obligations to Māori</p> <p>Iwi engagement through participatory processes (i.e. Forums) is prioritised</p>

Current Status
<p>The Crown supports responsibly managing iwi quota assets, and maximising sustainable value from iwi quota</p> <p>Iwi Fisheries Plans and Forum Fisheries Plans are explicitly considered when making management decisions</p> <p>There is limited direct engagement on deepwater fisheries issues with non-commercial iwi stakeholders, however opportunity is generally provided through Fisheries Management engagement and attendance at relevant hui</p> <p>Most iwi who own deepwater fisheries quota are engaged primarily through the Deepwater Group Ltd (DWG)</p>

Management Initiatives
<ul style="list-style-type: none"> • Develop and document a clear approach to engagement and consultation with non-commercial iwi • Ensure that engagement and consultation with iwi quota owners is achieved through Te Ohu Kaimoana, their membership in DWG, and any additional mechanisms if required • Ensure relevant objectives from Iwi/Forum Fisheries Plans are clearly considered in management advice

Key Performance Indicators
<ul style="list-style-type: none"> • Engagement mechanisms and processes for iwi with regard to deepwater fisheries are clear and prioritised • Iwi objectives for deepwater fisheries are clearly defined and explicitly considered with appropriate consultation for all management decisions

5. The Operating Environment

5.1 PROFILE OF NEW ZEALAND'S DEEPWATER FISHERIES SECTOR

New Zealand's commercial fisheries are based on the Individual Transferable Quota (ITQ) system operated under the Quota Management System (QMS). This system gives security of tenure to quota owners¹⁵ and considerable flexibility to the operational structure of fisheries businesses.

The focus of New Zealand's deepwater fisheries management is on sustainable commercial utilisation, minimisation of adverse environmental effects, and value maximisation.¹⁶ Unlike inshore fisheries (those largely within the 12NM¹⁷ Territorial Sea), most deepwater fisheries take place within New Zealand's Exclusive Economic Zone (EEZ 12-200NM), though some species overlap spatially with inshore fisheries. Deepwater fisheries have little customary or recreational take as they are either too far offshore, the species are not in high demand, or are inaccessible to non-commercial fishers.

Exports

New Zealand supplies less than 0.5% of global seafood production and less than 1% of global seafood trade. New Zealand does not set the price of seafood in the global seafood commodity market because it supplies a relatively small proportion in each export category. Even for orange roughy, where New Zealand supplies the majority of the world market, New Zealand's influence on price is limited, due to the possibility of product substitution with other seafood products in the same market niche

Seafood, comprising both wild-capture and aquaculture product, was New Zealand's 7th ranked export earner for the year ending December 2018. The total value of seafood exports over this period was NZ\$ 2.0 billion¹⁸ out of a total, main commodity export value of NZ\$57.5 billion.

Total FOB¹⁹ export revenues during the 2018 calendar year from deepwater fisheries were approximately NZ\$585 million.²⁰ Deepwater species are mainly exported to international markets as there is a limited domestic market for these species and the economic return is higher. The top five seafood export destinations by value during 2018 were China, USA, Australia, Japan and Spain.

In 2018, five deepwater fish species (hoki, squid, ling, jack mackerel, and orange roughy) were amongst the ten largest export-earning seafood species (including those produced via aquaculture). Together, these five species represented roughly 28% of seafood export volume and accounted for approximately NZ\$555M in FOB export earnings.

Quota value

The asset value for deepwater and middle depth species is currently estimated to be around NZ\$3.6 billion.²¹ Asset value reflects the anticipated income stream from fishing quota taking into account a range of relevant factors, including market conditions, costs, resource availability, harvest capacity,

¹⁵ As at March 2019, there were 1,290 quota owners in New Zealand for all fisheries

¹⁶ As referred to throughout this document, 'value' can be what an individual or community places on preserving a resource or environment in its own right, or in the broader sense, can mean but is not necessarily limited to; the cultural, economic, social or spiritual value New Zealand obtains from its deepwater fisheries.

¹⁷ A nautical mile (NM) is equivalent to 1.15 statute miles or 1.85 km.

¹⁸ Includes export of commodities from harmonised system (HS) classification group 03 (fish, crustaceans, molluscs, other aquatic invertebrates); HS 16 (preparations of fish, crustaceans, molluscs, other aquatic invertebrates); HS 1504 (fats and oils and their fractions, of fish or marine mammals, whether or not refined, but not chemically modified); HS 2301.20 (flours, meals and pellets of fish, crustaceans, molluscs, other aquatic invertebrates); and HS 0511.91 (products of fish, crustaceans, molluscs, other aquatic invertebrates; dead animals from chapter 3, unfit for human consumption).

¹⁹FOB - Free on board. The value of export goods, including raw material, processing, packaging, storage and transportation up to the point where the goods are about to leave the country as exports. FOB does not include storage, export, transport, or insurance costs to get the goods to the export market

²⁰Figures taken from fish monetary stock accounts provided by StatsNZ: <https://www.stats.govt.nz/information-releases/environmental-economic-accounts-2019-tables> (accessed 12 March 2018)

²¹Figures taken from fish monetary stock accounts provided by StatsNZ: <https://www.stats.govt.nz/information-releases/environmental-economic-accounts-2019-tables> (accessed 12 March 2018)

quality of the fishing right,²² and Total Allowable Commercial Catch (TACC) variability. This quota value estimate provides a useful indicator to assess trends in economic value in the major deepwater species over time.

Fleet configuration

As of 2018, the fleet that operates in the deepwater fisheries in New Zealand comprises trawl and bottom longline vessels. The majority of the deepwater fleet are factory trawlers that use a mixture of bottom and mid-water trawl gear. These vessels are up to 105 metres in length and are capable of spending weeks at sea, processing and freezing fish on board.

Deepwater factory trawlers are generally further categorised based on aspects of the vessels and their operations.

1. Big Autonomous Trawler Reefer (large Soviet-era fishing vessels known by their Russian acronym – BATM; the largest fishing vessels operating in the deepwater fleet) which generally use midwater trawl gear, all have fish meal plants, and can tow gear faster than other vessels.
2. Domestic freezer vessels – these vessels use a mixture of midwater and bottom trawl gear and mostly have fish meal plants on board. These vessels are all owned by domestic fishing companies.
3. Scampi vessels – targeting scampi requires a specific gear set up, and there are around ten vessels that target scampi year-round, freezing product at sea.
4. The last category is made up of older vessels without fish meal plants that generally use only bottom trawl gear and are generally foreign owned.

The deepwater fleet also includes a number of vessels that do not freeze product at sea. Known as ‘freshers’, these vessels often spend less time at sea per trip as product must be offloaded more regularly.

There are generally two categories of bottom longline vessel that operate as part of the deepwater fleet.

1. Autoliners are vessels that use automatic baiting machines to bait the hooks during the setting of bottom longlines. This enables them to set larger numbers of hooks per set/day.
2. Hand-liners are smaller vessels where hooks are baited by hand which can limit the number of hooks per set/day.

Historically, there were a number of squid jig vessels that operated in New Zealand, however, there has not been any squid jig effort since 2016.

Any vessel that is foreign owned (as defined under the Overseas Investment Act 2006) must be registered to fish in New Zealand with the consent of the Director-General of MPI. The trawl fleet has undergone significant changes in recent years, with the passage of legislation requiring that all vessels operating in New Zealand’s EEZ be flagged to New Zealand from 1 May 2016. This change resulted in a number of foreign-flagged vessels leaving New Zealand’s waters.

Deepwater fish stocks

Deepwater fisheries have been ranked into three tiers according to their commercial importance. Tier 1 fisheries are high volume and/or high value target fisheries. They deliver significant export revenue, which is reflected in the high quota value associated with these species. Tier 2 fisheries are typically lower volume or less valuable bycatch fisheries or are only targeted at certain times of the year. Tier 3 species are those caught as bycatch that are not managed through the QMS.

Fish stock management

Reviews of sustainability measures (sustainability rounds) and other management controls for selected fish stocks are conducted regularly to ensure sustainable utilisation of fisheries resources. Separate sustainability rounds are conducted for stocks depending on whether they have an April or October

²² For example, ownership limits (minimum or maximum quantities, nationality of owners) and limits over transfers (divisibility, restrictions on sale, leasing options)

fishing year. Stocks are prioritised for review where new scientific information is available and/or where sustainability or utilisation concerns have arisen and the available information supports a change to management settings.

The proposals for each stock are assessed in the context of the relevant statutory requirements and the best available information, including (where relevant) the latest scientific information on the status of the stocks, and tangata whenua and stakeholder input.

Fisheries New Zealand provides a discussion document for public consultation for each stock reviewed in the sustainability round. The science included in the discussion document is based on the decisions of the science working groups, which are an open forum for peer review and include research providers, Fisheries New Zealand, industry and NGOs. Following consultation and feedback, Fisheries New Zealand provides final advice and recommendations on the proposed changes to the Minister for approval.

When management settings are reviewed, the Minister is required to consider interactions between a fishery and the aquatic environment (including ETP species, fish bycatch and benthic impacts) and how these may change under the proposed settings. Management advice does not explicitly consider trophic interactions between species.

Environmental issues

Currently, there are a number of prominent environmental issues arising from deepwater fisheries, including:

- Impacts of fishing on benthic habitat
- Bycatch of non-target fish species
- Incidental captures of protected species
- Wider effects of deepwater fishing activity on ecosystem functionality

Government agencies continue to work with the fishing industry to manage environmental impacts of fishing. Successful initiatives include Benthic Protection Area closures, initiated by industry and subsequently regulated in April 2007;²³ efforts to reduce sea lion and fur seal mortalities in trawl fisheries; reduction in seabird captures through regulated and non-regulated mitigation tools; reduction in common dolphin captures in the jack mackerel fishery; risk-based vessel-specific management plans; and liaison outreach programmes. Fisheries New Zealand, in conjunction with other agencies and key stakeholders, has also developed NPOA's for both seabirds and sharks, which aim respectively to reduce seabird deaths from fishing and to ensure the conservation and management of sharks and their long-term sustainable use (see section 3.5).

Fisheries New Zealand continues to collaborate with research providers and across government on a range of environmental initiatives, such as development of ecosystem based management under the Sustainable Seas National Science Challenge. This ensures that we are well positioned to respond to advances in research regarding best practice management of environmental impacts.

Climate and oceanographic variability and long-term changes affect the marine environment and can impact on fisheries in a number of ways, including changing spatial and temporal distribution, productivity and growth parameters, and catch rates. In addition, climate variability can impact on non-fish species populations both directly and indirectly. New Zealand's changing oceanic climate is an emerging issue. As with environmental initiatives, Fisheries New Zealand must ensure it is well positioned to respond to research on this issue.

²³ Fisheries (Benthic Protection Areas) Regulations 2007

Tangata whenua as Treaty partners

Customary fishing regulations are part of the fisheries management system, but recognise and provide for access and management by tangata whenua in a way that is appropriate for Māori. Management under customary fishing regulations is aligned with the fisheries management system, and ensures that customary fisheries are achieving the purpose of the Act and the commitments in the 1992 Fisheries Deed of Settlement, and the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992.

5.2 TANGATA WHENUA ENGAGEMENT

The key mechanism to achieve input from tangata whenua is through the development and implementation of Iwi Fisheries Plans (IFPs) and Forum Fisheries Plans (FFPs). These plans identify the customary, commercial, recreational and environmental objectives for fisheries of importance to a specific iwi and are key tools for ensuring tangata whenua are engaged at the appropriate levels of fisheries management decision making. Fisheries New Zealand uses these plans to help its own planning for fisheries and to identify how tangata whenua exercise kaitiakitanga (guardianship and conservation). When making decisions on fisheries sustainability, the Minister must have particular regard to kaitiakitanga, which may be described in IFPs and FFPs.

IFPs provide for input from individual iwi and hapu at a local level by communicating individual iwi objectives that reflect their environmental, commercial and customary non-commercial fisheries interests. To date, the IFPs/FFPs that have been developed have focussed on inshore fisheries, and have not yet incorporated customary commercial and non-commercial deepwater fisheries interests.

The Annual Operational Plan is one mechanism by which the objectives specified in IFPs are taken into account. In the absence of IFPs and FFPs, the process to meet Treaty obligations for deepwater fisheries is achieved by:

- Working with Te Ohu Kaimoana to encourage iwi groups to join and participate in the DWG. To date, 12 iwi companies are members of the DWG.
- Supporting Te Ohu Kaimoana to engage with iwi groups whose deepwater quota portfolio is small, meaning that active participation in the DWG is not feasible. This will be achieved by formalising an arrangement where Te Ohu Kaimoana is nominated to engage with Fisheries New Zealand on behalf of such iwi groups with respect to implementing the Deepwater Fisheries Plan. This support will also take the form of preparing and distributing communication material to iwi providing updates towards implementing this Deepwater Fisheries Plan and meeting objectives.
- Providing an opportunity for iwi to input into the Annual Operational Plan and Annual Review Report and other management actions through presentations at relevant iwi forums.
- Ensuring that iwi have the opportunity to provide input to sustainability and regulatory rounds as part of Section 12 of the Act consultation requirements.

Iwi Regional Fisheries Forums include:

- Te Kupenga Whiturao a Māui (Hawke Bay/Wairarapa)
- Ngāti Waewae (Mid-North)
- Mai i Ngā Kuri A Whārei Ki Tihirau (10 Iwi of FMA1 in the Bay of Plenty)
- Ngā Hapū o Te Uru (Waikato Maniapoto)
- Te Tai Hauāuru (10 Iwi of FMA8 Taranaki/Whanganui)
- Tūranganui a Kiwa (Poverty Bay)
- Te Hinakinui o Kāpiti (Wellington)
- Te Ika a Māui (North Island Freshwater)

- Te Tau Ihu o Te Waka-a-Māui (Nelson/Marlborough)
- Ngāi Tahu (Te Wai Pounamu, Canterbury / West Coast, Otago / Southland)
- Pa Tangaroa (Chatham Islands)

5.3 STAKEHOLDER ENGAGEMENT

Stakeholder engagement with all sectors will continue with the establishment in 2018 of a Fish Plan Advisory Group (FPAG) which replaces the Environmental Engagement Forum (EEF). This will be a transparent forum where Annual Operational Plans, Annual Review Reports, and implementation of the Deepwater Fisheries Plan will be discussed. Stakeholder groups that have a specific interest in New Zealand's deepwater fisheries are environmental non-government organisations (eNGOs), the commercial fishing industry, and the public.

The FPAG will be open to representative stakeholders and meet at least twice annually to seek stakeholder input on annual planning of deepwater fisheries services and management priorities, and to inform stakeholders on performance against annual plans and management objectives.

Environmental stakeholders

Engagement with environmental stakeholders will occur formally through the multi-stakeholder FPAG to ensure their interests in New Zealand's deepwater fisheries are provided for. The FPAG will provide a mechanism for eNGOs to monitor and assess the performance of Fisheries New Zealand deepwater fisheries management against the objectives of this Deepwater Fisheries Plan and statutory requirements. The forum does not in any way affect the consultation requirements of section 12 of the Act. Rather, it establishes a mechanism for more effective engagement with environmental stakeholders before formal consultation.

The eNGOS represented on the FPAG are:

- Environment and Conservation Organisation of Aotearoa New Zealand (ECO)
- Royal Forest and Bird Protection Society of New Zealand (Forest & Bird)
- World Wide Fund for Nature – New Zealand (WWF)

Commercial quota owners

96% of deepwater quota holders by shareholdings are formally represented by the Deepwater Group Ltd (DWG). In 2006, the then Ministry of Fisheries and DWG formed a collaborative agreement to manage New Zealand's deepwater fisheries. This was given effect through a Memorandum of Understanding (MOU) signed by the Chief Executive of the Ministry of Fisheries and the Chair of the DWG.²⁴ The overarching purpose of this collaboration is to increase the value²⁵ New Zealand obtains from its deepwater fisheries by improving management, reducing duplication of effort and resources, reducing inefficiencies in processes, and reducing business costs for both parties. The working relationship is characterised by real-time open communication and information sharing.

The 2010 version of the MOU prescribes the governance arrangements that have developed around the management of deepwater fisheries. It recognises that successfully implementing the Deepwater Fisheries Plan is the joint responsibility of Fisheries New Zealand and industry, and the parties need to co-operate to solve problems effectively.

The MOU does not affect the consultation requirements of section 12 of the Act. Rather, it establishes how Fisheries New Zealand can ensure more effective engagement with the commercial sector before formal consultation. In addition, certain fish stocks included in the Deepwater Fisheries Plan (such as

²⁴ The MOU was updated in 2008 and 2010

²⁵ 'Value' is defined here in a broad sense, which could mean but is not necessarily limited to; the cultural, economic, social or spiritual value New Zealand obtains from its deepwater fisheries

some barracouta and alfonsino stocks) will continue to be represented by inshore commercial stakeholder organisations.

Recreational Fishers

Most deepwater fisheries have nominal recreational allowances in place, typically set at zero or a very small proportion of the Total Allowable Catch (TAC). To account for any interest, Fisheries New Zealand will ensure that the recreational sector is involved in consultation on all sustainability decisions and key management decisions through section 12 of the Act.

5.4 MANAGEMENT COSTS

The costs of managing deepwater fisheries are shared between the Crown and the commercial industry. Provisions in the Fisheries Act 1996 enable the Crown to recover the costs of certain fisheries and conservation services.²⁶

The Crown funds all fisheries services associated with the non-commercial use of fisheries resources, and services that are delivered in the general public interest. In shared fisheries, the costs of stock assessment research are allocated between the Crown and Industry in the same proportion as the TAC is allocated between non-commercial and commercial interests. The low level of non-commercial use of New Zealand's deepwater fisheries results in around 95% of deepwater fisheries costs being recovered from deepwater quota holders via the annual fisheries services levy.

The total quantity recovered from deepwater quota owners varies annually, but has averaged around NZ\$18m per annum during the lifetime of the 2010 Deepwater Fisheries Plan. Included within the annual levy are the costs of MPI's compliance activities, the registry services required to manage the commercial sector, research into the impacts of commercial fishing on protected species and the aquatic environment, and observer services. During the lifetime of the 2010 Deepwater Fisheries Plan, 60-70% of all fisheries science and observer programme levies were recovered from stocks managed under the plan.

5.5 THIRD PARTY CERTIFICATION

Many food retail chains overseas, particularly in the USA, Europe and Asia, are committed to responsible sourcing policies for food. This trend for verification and traceability is increasingly popular and has led to demand for independent verification to confirm that fish are sourced legally from well-managed and sustainable fisheries.

Third-party certification means that an independent organisation²⁷ has reviewed the sustainability of a fishery or product, often through a comprehensive assessment process to verify that they meet an agreed standard of best practice.

At present, the Marine Stewardship Council (MSC) standard is the world leader in third-party certification of fisheries.²⁸ After a fishery is assessed and meets the MSC standard, a five-year certificate is issued, subject to annual surveillance audits.

The long-term goal of DWG is to have all the Tier 1 deepwater stocks performing at a level that meets international best practice standards. To date, five species (comprising 21 fisheries) are certified. New Zealand hoki was certified in 2001, and was recertified in 2007 and 2012. Another three deepwater and middle-depth species gained MSC certification in 2010: hake, ling and southern blue whiting. Three orange roughy stocks (ORH7A, ORH3B Northwest Chatham Rise and ORH3B East & South Chatham Rise) achieved certification at the end of 2016.

²⁶ Part 14 of the Fisheries Act 1996

²⁷ This means an organisation that is independent from both the standard setting body, and the operation and management of the fishery being assessed

²⁸ More information on the Marine Stewardship Council may be found at www.msc.org

5.6 SERVICES TO SUPPORT IMPLEMENTATION

Successful implementation of fisheries plans is an MPI-wide responsibility and requires input and commitment of resources from across MPI. A primary focus of fisheries plans is to provide planning tools to ensure that the Ministry's resources and activities are transparently and efficiently directed towards achieving agreed objectives. This section of the Deepwater Fisheries Plan provides information on other areas within Fisheries New Zealand and across MPI from which services are required to achieve these objectives.

The key services that will contribute to the delivery of the Deepwater Fisheries Plan include:

1. Compliance services
2. Information and Monitoring services
3. Observer services
4. Registry services
5. Corporate services

Compliance services

An extensive regulatory regime under the Act constrains fishing activities. In addition, there is also a range of legislative rules that govern labour, the environment, protected species, and food safety. Changes to any of the laws, regulations, rules or policies in respect of the harvesting, production, processing, preparation, distribution, packaging or labelling of deepwater fisheries products may have a significant business impact.

MPI compliance operates using the voluntary, assisted, directed, and enforcement (VADE) model of informed and assisted compliance²⁹. The application of the VADE model is reflected in the collaborative arrangement between MPI and DWG with respect to fisheries management in the compliance arena. This collaborative arrangement is operational through the formation of a MPI/DWG compliance group, whose purpose is to provide a forum for MPI and vessel operators to work on compliance issues that impact on the management of deepwater fisheries.

Past compliance action has detected offending including misreporting in terms of areas fished ('trucking'), species fished (falsifying returns) and quantities taken (discarding catch and high grading).³⁰ The penalties for offending are high and have resulted in vessel forfeiture, imprisonment and significant monetary penalties.

There are also compliance services that will not be driven by the Deepwater Fisheries Plan although there will be linkages between such activity and the on-going management of deepwater fisheries. These services include targeted investigative activity (likely to be fishery specific) to support prosecution cases.

Information and Monitoring

Data and information are key inputs into the management of deepwater fisheries. The availability of appropriate information defines the ability to meet many of the objectives of the Deepwater Fisheries Plan. Fisheries New Zealand will continue to engage with stakeholders and maintain a medium term research and monitoring plan to ensure that data and information is available to:

1. Monitor key fisheries against stock specific harvest strategies
2. Monitor biomass trends for bycatch species
3. Assess fishery performance against environmental standards, such as the NPOA for Seabirds 2013 and the NPOA for Sharks 2013, and the sea lion/rāpoka Threat Management Plan (TMP)
4. Enable more timely responses to sustainability and environmental impact issues

²⁹ www.planning.org.nz/Attachment?Action=Download&Attachment_id=750

³⁰ 'High grading' is where a more valuable species or size of a given fish species may be retained and a less valuable species or size of a given fish species (e.g. smaller fish) is discarded.

Digital Monitoring

In 2016 MPI began a process to introduce a new digital system for tracking, monitoring and reporting of commercial fishing.

From 1 October 2017 all trawlers over 28m in length were required to comply with electronic reporting requirements. The GPR regulations replaced the existing Fisheries (Satellite Vessel Monitoring) Regulations 1993, with which this class of vessel was already required to comply.

Details of the rollout of digital monitoring are available on Fisheries New Zealand's website.³¹

Observer services

The principal functions of the Fisheries New Zealand Fisheries Observer programme are to collect information for fisheries research, fisheries management, and fisheries enforcement, including the collection of biological samples for stock assessment and monitoring interactions with protected species. Fisheries Observers also monitor adherence with regulatory and non-regulatory measures and they have the ability to collect information on vessel safety and employment, and about compliance with maritime rules relating to pollution.

Observer coverage on deepwater vessels is planned in accordance with a number of factors including the biological data requirements of individual fish stocks, international obligations, compliance-based risk profiles, protected species monitoring requirements and ministerial directives. The objectives of deepwater observer coverage differ according to target species, fishing area and fishing method with observer duties prioritised according to the specific needs of the fishery. Internationally, the current delivery model for observers in New Zealand is well regarded. It is considered to be effective, credible and have the integrity necessary to deliver impartial monitoring data.

Registry services

The Act provides for a range of QMS administration activities (registry services). These activities include: the collection and management of statutory catch reporting from commercial fishers, permitting, vessel registration, cost recovery, quota and ACE trading. Registry services are delivered to Fisheries New Zealand by an external agency (FishServe)³², either under a devolved delivery model where Fisheries New Zealand specifies the quality of service that is funded directly from quota holders; or under contract where Fisheries New Zealand funds the delivery of service and recovers these costs from industry through cost recovery levies.

Reporting on fisheries landings, together with Monthly Harvest Returns and Licensed Fish Receiver Returns is the key mechanism for auditing catch against Total Allowable Commercial Catch limits. Balancing catch against Annual Catch Entitlement (ACE) both at a fisher level and at a fishery level is fundamental to the operation of the QMS.

Other services

MPI provides legal, policy and communication support as necessary to deliver on the Deepwater Fisheries Plan. These services include:

External communications: Preparing media information and public briefing documents to ensure management activity is transparent, and providing media support around sustainability and management decisions.

Legal: Providing expert knowledge and legal opinion on the interpretation of the relevant fisheries legislation to support policy development and management interventions.

³¹ <http://www.mpi.govt.nz/protection-and-response/sustainable-fisheries/strengthening-fisheries-management/future-of-our-fisheries/digital-monitoring-of-commercial-fishing/>

³² FishServe is the trading name of a privately owned company called Commercial Fisheries Services Ltd. It is a wholly owned subsidiary of Seafood New Zealand Ltd.

List of Abbreviations and Acronyms

ACE	Annual Catch Entitlement
AOP	Annual Operational Plan
ARR	Annual Review Report
BATM	Big Autonomous Trawler Reefer (large Soviet-era fishing vessels known by their Russian acronym – BATM; the largest fishing vessels operating in the deepwater fleet)
B _{MSY}	The average stock biomass level that results from taking an average catch of MSY under various types of harvest strategies
BPA	Benthic Protection Area
CSO	Commercial Stakeholder Organisations
DM	Digital Monitoring (formerly referred to as IEMRS)
DOC	Department of Conservation
DWG	Deepwater Group Limited
EEF	Environmental Engagement Forum
EEZ	Exclusive Economic Zone (12-200NM)
eNGOs	Environmental Non-Government Organisations
ETP	Endangered, Threatened and Protected (Species)
FAO	Food and Agriculture Organisation (of the United Nations)
FCVs	Foreign Charter (fishing) Vessels (charter vessels no longer exist in New Zealand)
FFPs	Forum Fisheries Plans
FOVs	Foreign Owned (fishing) Vessels
FPAG	Fish Plan Advisory Group
HCR	Harvest Control Rule
HSS	Harvest Strategy Standard
IEMRS	Integrated Electronic Monitoring and Reporting System (acronym no longer used, now known as Digital Monitoring (DM))
IFPs	Iwi Fisheries Plans
IRFFs	Iwi Regional Fisheries Forums
ITQ	Individual Transferable Quota
MFAT	The Ministry of Foreign Affairs and Trade
MOU	Memorandum of Understanding
MPI	Ministry for Primary Industries
MSC	Marine Stewardship Council
MSY	Maximum sustainable yield
NM	Nautical Mile

NPOA—Seabirds	National Plan of Action to Reduce the Incidental Catch of Seabirds in New Zealand Fisheries
NPOA—Sharks	National Plan Of Action for the Conservation and Management of Sharks
PCBU	Person Conducting a Business or Undertaking (under the Health and Safety at Work Act 2015)
QMS	Quota Management System
SEEA	United Nations System of Integrated Environmental and Economic Accounting
TAC	Total Allowable Catch
TACC	Total Allowable Commercial Catch
TMP	Threat Management Plan
TS	Territorial Sea (out to 12NM)
VADE	Voluntary, Assisted, Directed, Enforcement (model)
