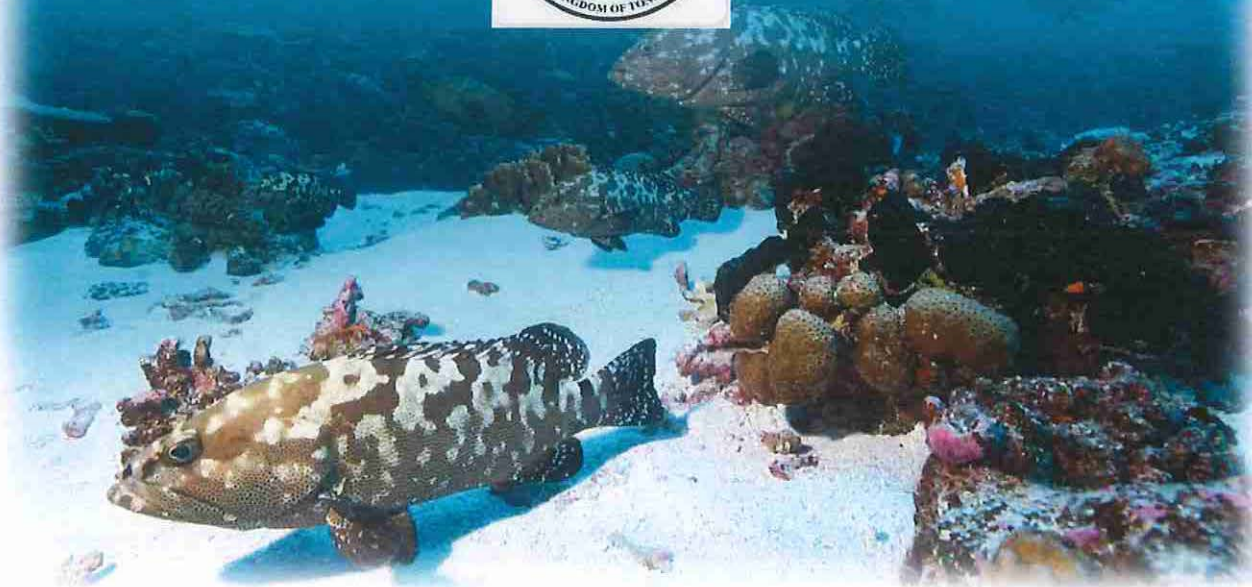


# Tonga Deepwater Fishery Management and Development Plan

2024-2026



TONGA





## FOREWORD

Tonga is a small island developing state with limited land and natural resources. However, our nation is blessed with a vast ocean abundant with a diverse array of fisheries resources. Our deepwater fishery is one of the most important marine resources that continues to contribute to our nation's social and economic development.

The Tonga Deepwater Fishery Management and Development Plan is a high-level policy document that provides guidance for the conservation, management, sustainable utilisation and development of our deepwater fisheries resources. It reflects the Government's priority areas in this sub-sector and serves to ensure sustainable growth and development in the fishery is consistent with Tonga's Strategic Development Framework, Strategic Development Goal and the National Laws of Tonga. This plan has a lifespan of three years and serves as a vehicle of information dissemination on the fishery to its stakeholders and government agencies. The Ministry of Fisheries continues to play the leading role of managing this fishery under the Fisheries Management Act 2002.

I would like to acknowledge and thank the New Zealand's Ministry for Primary Industries and the National Institute of Water and Atmospheric Research for their technical guidance towards the development of this plan. I would also like to sincerely acknowledge the effort put forth by the Ministry of Fisheries staff and stakeholders towards the preparation of this plan.

It is therefore my pleasure to present this plan to the Government and the people of Tonga, and to invite all to practice this plan as we strive for the common good of the fishery.



**Hon. Acting Minister for Ministry  
of Fisheries**



28/11/23  
Date

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## DEFINITIONS

In this Plan –

- a) the terms and references defined in the Fisheries Management Act 2002 shall be given the same meaning; and
- b) unless the context requires otherwise –

**“Act”** means the Fisheries Management Act 2002 (amended 2020)

**“Chief Executive Officer”** means the Government Chief Executive Officer responsible for fisheries

**“Export”** means to take or cause to be taken out of the Kingdom of Tonga for commercial or potentially commercial purposes, and includes providing commercial samples, but does not include the export for the purpose of home consumption

**“Ministry”** means the Ministry of Fisheries (MOF)

**“Seamount”** means an underwater mountain with steep sides rising from the seafloor

**“Total allowable catch”** means the annual catch limit for deepwater fishstocks

**“Local licensed vessels”** means a fishing vessel registered or licenced under Part III of the Shipping Act or the regulations made under the Shipping Act 2008

**“Related activity”** means —

- (a) trans-shipping fish to or from any vessel;
- (b) storing, processing or transporting fish taken from the fisheries waters up to the time it is first landed;
- (c) refuelling or supplying fishing vessels or performing other activities in support of fishing operations; or
- (d) attempting or preparing to do any of the above

## ABBREVIATIONS

|          |                                                                    |
|----------|--------------------------------------------------------------------|
| CEO      | Chief Executive Officer                                            |
| CPUE     | Catch Per Unit Effort                                              |
| DFMC     | Deepwater Fisheries Management Committee                           |
| EEZ      | Exclusive Economic Zone                                            |
| FAD      | Fish Aggregation Device                                            |
| FMA 2002 | Fisheries Management Act 2002                                      |
| HACCP    | Hazard Analysis Critical Control Point                             |
| HOD      | Heads of Divisions (Ministry of Fisheries)                         |
| LOA      | Length overall of a vessel                                         |
| MCS      | Monitoring, Control and Surveillance                               |
| MEL      | Monitoring, Evaluation and Learning                                |
| MOF      | Ministry of Fisheries                                              |
| MPI      | Ministry for Primary Industries (New Zealand)                      |
| mt       | metric tons                                                        |
| NFC      | National Fisheries Council                                         |
| NIWA     | National Institute of Water and Atmospheric Research (New Zealand) |
| SDG      | Sustainable Development Goals                                      |
| SOP      | Standard Operation Procedures                                      |
| SPC      | The Pacific Community                                              |
| TAC      | Total Allowable Catch                                              |
| TDFMP    | Tonga Deepwater Fishery Management and Development Plan            |
| VMS      | Vessel Monitoring System                                           |

## PART 1: PRELIMINARY

### 1.1: Context

The Tonga Deepwater Fishery Management and Development Plan [The Plan] provides guidance for the conservation, management, sustainable utilisation and development of our deepwater fisheries resources within the 200 nm Exclusive Economic Zone (EEZ). This Plan applies to those finfish species listed in Appendix 2 including diamondback squid.

The Plan contributes to identify priority areas of the Ministry of Fisheries (MOF) in relation to sustainable growth of the fishery consistent with the Government's Development Plans, Sustainable Development Goals (SDG) and National Laws of Tonga.

The deepwater fishery operates in depths of 50–450 m and is restricted to the method of drop-lines. Catches are broadly spread throughout banks and seamounts, but catch rates are typically highest to the north and south—and lowest at 19–22° S around Tongatapu.

Only domestically owned licensed and registered vessels are allowed to fish deepwater species within the EEZ. Most vessels are about 23 meters long and mainly use Samoan hand reels to target the valuable flametail snapper in deeper water (100-200 m) on the slopes of the seamounts, as well as bluenose in deep waters (400m) at the southern edge of the EEZ using hydraulic winches to safely fish the deeper and more distant waters. The smaller vessels tend to fish the shallower banks (<100 m depth) closest to port and often target less preferred species such as saddleback snapper. On average, catch levels have fluctuated throughout the years.

Supporting activities within the fishery includes onshore repacking of fish landed for fresh exports, as well as selling fresh catch in the local fish markets. Flametail snapper is the main deepwater species exported due to its high value and demand by overseas markets such as Australia and Hawaii.

Over the past 30 years, the deepwater fishery has contributed to social and economic development of Tonga's economy. Based on its importance, the Ministry intends to ensure its long-term sustainable use. For example, the Ministry continues to provide support to the fishery through initiatives such as the fuel concession scheme and tax exemption on all fishing equipment to support the development of the fishery.

This Plan builds on the Tonga Deepwater Snapper Fishery Management and Development Plan 2020-2023, using lessons learnt on the successes and challenges faced during its three-year term. A review of the Plan was conducted in June 2023 and identified key achievements of strategies and measures set under the Plan. While large parts of that Plan

were successfully implemented, key ongoing challenges were also identified and will be addressed under this revised Plan.

## 1.2 Scope

1.2.1 The Plan applies to the deepwater finfish fishery within the Tongan EEZ as follows:

- a) Any target species as listed in **Appendix 2** (List of Species) using fishing gear prescribed in the Management Measures Section (2)
- b) Any species taken as bycatch in the course of fishing for species listed in **Appendix 2**, except those species listed in CITIES list as shown in the License Terms and Conditions.
- c) Vessels licensed to operate in the deepwater regions of banks and seamounts at the depth of 50 meters and more.
- d) Fishing to supply bait for deepwater fishing activities.
- e) Provisioning and all other services relating to this fishery.
- f) All "related activity", as per the Fisheries Management Act 2002, noting trans-shipping is not permitted in the deepwater fishery except with the written authorization of the Chief Executive Officer (CEO).
- g) All commercial activities relating to the processing and exporting of the deepwater fishery within Tongan EEZ.
- h) Chief Executive Officer (CEO) shall consider this Plan when scientific research and test fishing authorizations are granted to any applicant for any kind of deepwater fishing activity, which will affect this fishery.

1.2.2 This Plan does not apply to artisanal fishers that fish for deepwater species.

## 1.3 Vision

To ensure conservation, management, sustainable utilisation and development of Tonga's deepwater fishery resources.

## 1.4 Goal

An ecologically and economically sustainable managed deepwater fishery, enhancing food security and livelihoods to maximise benefits for the people of Tonga.

## 1.5 Authorities and Roles

The Ministry plays a primary role in promoting conservation, management, sustainable utilization and development of deepwater fishery resources.

The Minister of Fisheries will manage the fishery in cooperation with stakeholders through a co-management approach to facilitate the sharing of information, promotion of voluntary compliance, and engagement to assist with monitoring the fishery.

Section 7 (4) of the Act states that there may be a management committee established under a fishery plan. The functions and roles of the Deepwater Fisheries Management Committee (DFMC) are appended in Appendix 3.

## 1.6 Institutional, legal, and policy framework

The Ministry is mandated under the Act to manage and develop the deepwater fishery in Tonga.

Section 7 of The Act requires the CEO for Fisheries to “*progressively prepare and keep under review plans for the conservation, management, sustainable utilization and development of fisheries in the fisheries waters and ensure implementation of such fishery plans.*” This provides the platform to progress fisheries management and development in Tonga.

This legal tool provides the regulatory framework for effective implementation of the Plan and to ensure responsible fishing, equitable participation by stakeholders, sustainable utilization and an economically viable fisheries sector for the benefit of Tonga.

Other relevant legislative instruments that contribute to the sustainable management and development of the fishery includes the Fisheries Management (Processing and Export) Regulation 2008, the Shipping Act 2008, Fisheries Management (Conservation) Regulations 2008, Fisheries (Local Fishing) Regulations 2009 and Fisheries Snapper Notice 2007 (amended 2020).

## 1.7 Commencement and Review

The Plan will be effective for a period of three-years following date of endorsement by the Minister of Fisheries.

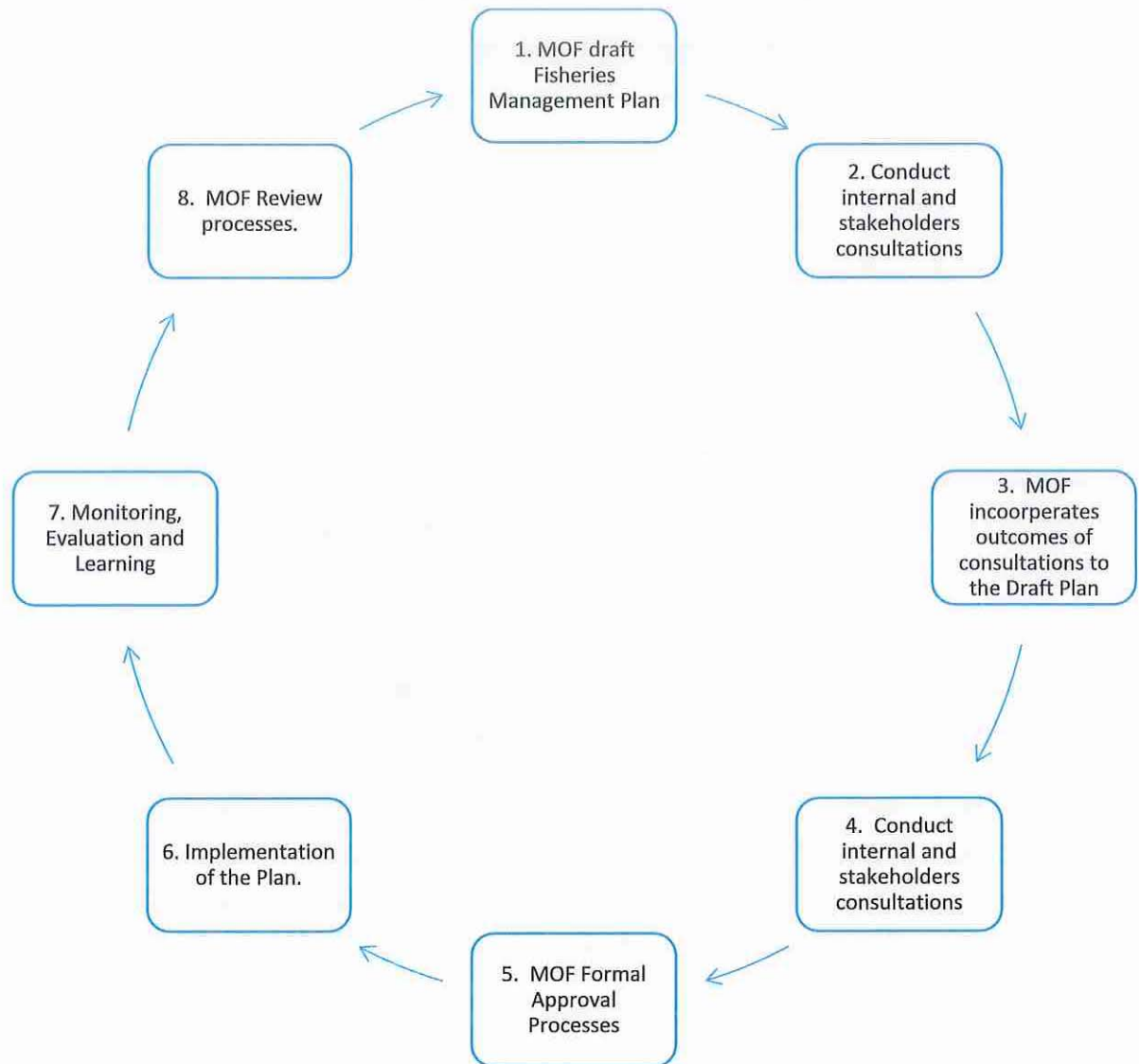
The progress of implementing the Plan shall be reported in the Ministry's annual report

A mid-term review of The Plan will take place in mid-2025 and the full review will take place in 2026.

## 1.8 Development Process

The development of a new fisheries management plan is guided by the Act. The Act requires the Ministry to present the current state of the fishery, and if that fishery is exploited, a management plan is required.

## Management Plan Development Processes



## PART 2: OVERVIEW OF THE FISHERY

This fishery continues to take mainly deepwater species of the snapper (*Lutjanidae*), emperors (*Lethrinidae*) and groupers (*Serranidae*). Fishing typically occurs using dropline bottom fishing to depths ranging from 50 to 450 m (Bell et al, 1995) from both banks and seamounts.

These species are long longevity, slow-growing; low rates of natural mortality, large size at sexual maturity, and form spawning aggregations. Their characteristics make them vulnerable to over-fishing and exploitation. As such, the Ministry, in collaboration with NIWA, has led a programme to diversify the fishery by trailing the targeting of other species such as Bluenose, Ocean Blue eye, Kingfish and Diamondback squid. This was an ongoing trial where squid was successful caught during the trial period.

### Vessels and Total Allowable Catch:

As a sustainable management strategy, the Ministry applies a maximum number of licensed vessels permitted to operate within this fishery. This limit is set at a total of 30 vessels. This also includes ensuring that vessels of 15 - 23 meters in length are registered. The current number of licenses is 28.

The TAC for the deepwater fishery is 200 mt, which includes a maximum catch of 80 mt for the flametail snapper. Monitoring of catches is ongoing to ensure that it does not exceed the TAC. Collection of catch and effort, and biological sampling data is effective due to the use of the Fuel Concession Scheme, which provides a mechanism for encouraging the supply of fishing logsheets and offloading data from licensed fishers.

Figure 1 displays catches in this fishery and the number of license vessels for the past four years. The trend of activity show vessel numbers peaked in 2017 with 31 vessels and then decrease in 2018-2019. In 2018 most vessels were badly affected by Cyclone Gita, which contribute to the decline in vessel numbers during this period. The same trend shows in the catch history which highlight the highest catch in 2017 and then a slow drop in 2018-2019. This was possibly the result of high exploitation in this fishery which also led the Ministry to strictly monitor the catch levels not to exceed TAC.

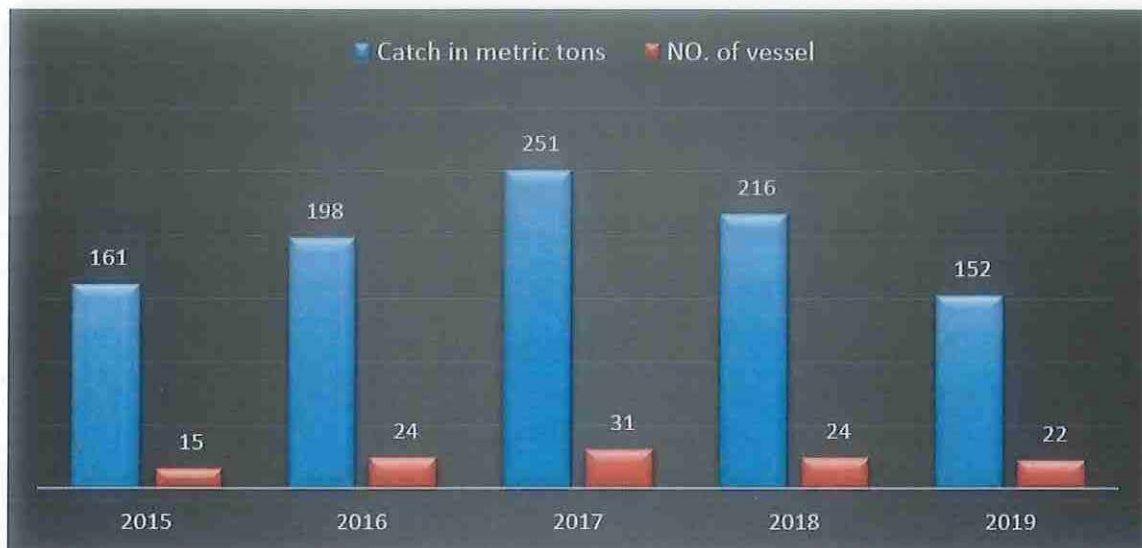


Figure 1. Catch in metric tons per year

To effectively monitor and track fishing locations, vessels are required to install VMS as per the condition of their license. The Ministry has installed VMS on 10 licensed fishing vessels and continue to seek FFA's assistance in providing additional VMS to track vessels in the near future.

To encourage economic efficiency of vessels and maximisation of export revenue in the fishery, small loans have been provided through the Tonga Development Bank to assist in fleet maintenance. The government also provides initiatives to exempt customs duty and consumption tax on fuel, baits, fishing gears and equipment related to fishing activities.

The Ministry in collaboration with NIWA has encouraged the improvement of the quality of fish for export, by funding a fish handling training programme in March 2019. This programme includes the participation of the Women Association, as a significant number of Tongan women are employed within the fishery in selling fish to the local markets.

Fishery diversification such as the newly promoted Diamondback squid has contributed to increased employment opportunities. In April 2019, a squid promotion initiative was conducted with the National Fisheries Council (NFC) where Women Association showcased different ways of how to cook squid.

## PART 3: OBJECTIVES AND STRATEGIES

1. To ensure biologically sustainable deepwater fish stocks
2. To promote an ecologically sustainable approach to ensure healthy marine ecosystems.
3. To ensure an economically sustainable fishery, maximizing benefits for the people of Tonga.
4. To ensure the fishery contributes to food security and livelihoods for the Tongan people.
5. To promote and encourage diversification of the deepwater fishery and associated development activities.
6. To strengthen development of effective monitoring, compliance, and surveillance activities.
7. To enhance engagement and cooperative management of the fishery.

The following table forms the key element of The Plan.

| OBJECTIVES                                                             | STRATEGIES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Objective 1: To ensure biologically sustainable deepwater fish stocks. | <p><b>Strategy 1.1:</b> Limit the total amount of deepwater fish taken by setting an annual total allowable catch (TAC).</p> <p><b>Strategy 1.2:</b> Limit the total amount of flametail snapper taken by setting a species-specific annual TAC.</p> <p><b>Strategy 1.3:</b> Apply and enforce minimum size limits when in place.</p> <p><b>Strategy 1.4:</b> Investigate if minimum size limits for species, other than flametail snapper, may be appropriate within the fishery.</p> <p><b>Strategy 1.5:</b> Limit the number of vessels permitted within this fishery, only allowing local vessels.</p> <p><b>Strategy 1.6:</b> Effectively monitor and report fishing activities and utilise that information to manage the fishery.</p> |
| Objective 2: To promote an ecologically sustainable                    | <p><b>Strategy 2.1:</b> Identify and protect key seamounts from fishing.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

|                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                            |
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| approach to ensure healthy marine ecosystems.                                                                          | <p><b>Strategy 2.2:</b> Collaborate with other agencies to understand environmental impacts on the fishery, including the effects of climate change.</p> <p><b>Strategy 2.3:</b> Encourage ways to reduce the impacts of the fishery on the environment.</p>                                                                                                                                               |
| Objective 3: To ensure an economically sustainable fishery, maximizing benefits for Tonga.                             | <p><b>Strategy 3.1:</b> Investigate and monitor the economic performance of the fishery.</p> <p><b>Strategy 3.2:</b> Build Ministry capacity to undertake economic analysis and marketing research.</p> <p><b>Strategy 3.3:</b> Continue to explore potential markets, both domestic and international, including access procedures.</p>                                                                   |
| Objective 4: To ensure the fishery contributes to food security and livelihoods for the Tongan people.                 | <p><b>Strategy 4.1:</b> Encourage participation in the Deepwater fishery.</p> <p><b>Strategy 4.2:</b> Initiate/promote deepwater value added products.</p> <p><b>Strategy 4.3:</b> Provide public awareness of the availability of deep-water species, particularly squid, for consuming as part of a healthy diet.</p> <p><b>Strategy 4.4:</b> Promote gender and youth inclusiveness in the fishery.</p> |
| Objective 5: To promote and encourage diversification of the deep-water fishery and associated development activities. | <p><b>Strategy 5.1:</b> Continue to explore and promote diversification opportunities for other deepwater species, particularly Diamondback squid and pelagic species including development of new markets.</p> <p><b>Strategy 5.2:</b> Update database for fishery catch, effort data for diversification species and activities.</p>                                                                     |
| Objective 6: To strengthen development of effective monitoring, compliance, and surveillance activities.               | <p><b>Strategy 6.1:</b> Promote and encourage awareness of the fisheries rules and regulations.</p> <p><b>Strategy 6.2:</b> Ensure all license holders comply with Terms and conditions of their license.</p> <p><b>Strategy 6.3:</b> Review and update MCS policies and procedures.</p>                                                                                                                   |
| Objective 7: To enhance engagement and cooperative management of the fishery.                                          | <p><b>Strategy 7.1:</b> Encourage transparency across the fishery to improve informed management decisions.</p>                                                                                                                                                                                                                                                                                            |

|  |                                                                                                                                                                                                                                                                                                                                                                                         |
|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <p><b>Strategy 7.2:</b> Continue to collaborate and communicate with stakeholders to ensure relevant operational needs are understood and implemented.</p> <p><b>Strategy 7.3:</b> Develop public awareness programmes and materials for further understanding of the fishery.</p> <p><b>Strategy 7.4:</b> Support efforts to improve capacity of deepwater fishery's stakeholders.</p> |
|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## PART 4: MANAGEMENT MEASURES

The following management measures will be implemented to sustainably manage the utilisation and development of the fishery, through limiting access and effort.

### 1. Catch

- 1.1. The annual total allowable catch (TAC) for the deepwater fishery is 200 metric tonnes (mt) within which an annual limit of 80 mt for flametail snapper applies (ETC).
- 1.2. The TAC only includes species specified in Appendix 2 excluding squid species, kingfish, bluenose, and ocean blueeye.
- 1.3. The minimum size limit for flametail snapper is 48 cm fork length.
- 1.4. No more than 20% of the total number of flametail snapper catch per trip can be under 48 cm fork length.
- 1.5. If 10 or less flametail snapper (pieces) are caught per trip, then Management Measure 1.4 does not apply.
- 1.6. Vessels must avoid and move away from areas where more than 10 juvenile flametail snapper are caught at any one time.

### 2. Fishing gear

- 2.1. Fishing for deepwater species listed in Appendix 2 is restricted to droplines (machine and manually operated) with a maximum of 15 hooks per line.
- 2.2. Fishing for squid is restricted to jigging and vertical longlines.

### **3. Licensing**

- 3.1. All fishing vessels must be licensed to fish for deepwater species in accordance with the Act and the Fisheries (Local Fishing) Regulations 2009.
- 3.2. Deepwater fishery licences are:
  - i. limited to 30 vessel licences per year; (however, we need to monitor and have something on the Term and Condition to determine a fishing time for active and something to remove the inactive one);
  - ii. issued for a one-year term from when that licence was granted;
  - iii. non-transferable; and
  - iv. granted after all relevant licence fees have been paid.
- 3.3. All fishing vessels must comply with its licence terms and conditions (Appendix 4);
- 3.4. Licences will be suspended for breaking laws and rules. Penalties, as set out in the Act, will be applied.
- 3.5. Any exporter of deepwater fish must hold a valid Export Licence (Appendix 6).

### **4 Vessels**

- 4.1. All licensed fishing vessels must be registered to fish for deepwater species in accordance with The Act and the Fisheries (Local Fishing) Regulations 2009;
- 4.2. Fishing vessels can be no more than 23 metres in overall length (LOA).
- 4.3. All vessels fishing in the fishery are to be fitted with a functioning VMS and/or an approved tracking device.

### **5. Reporting Requirements**

- 5.1. An approved Deepwater Fishery Catch Log Sheet must:
  - i. be completed by the Master;
  - i. be submitted to a port sampler / inspection officer in their original and unaltered form upon arrival and not later than one (1) working day after the completion of the fishing trip to which the log sheet relates; and
  - ii. include all catch and bycatch by species and quantities.
- 5.2. The Deepwater Fishery Export Packing List must list:
  - i. all species and quantities;
  - ii. destination; and
  - iii. other information as requested by the Ministry and/or the importing country.

- 5.3. Once the Deepwater Fishery Export Packing List is submitted, an Export Permit will be issued by MOF which is required for each shipment.
- 5.6. The fuel concession will be provided to fishers after they provide the necessary data and information required to MOF.

## **6. Processing**

- 6.1. Any establishment used for processing any deepwater fishery product must comply with Part 4 of the Fisheries Management (Processing and Export) Regulations 2008 (the Processing and Export Regulations).
- 6.2. All fish processing establishments must comply with its licence terms and conditions.

## **PART 5: MONITORING, CONTROL, SURVEILLANCE AND ENFORCEMENT**

The Ministry is currently utilizing the Catch Monitoring Tool (Appendix 8) to ensure the TACs does not exceed both flametail and all deepwater species combined.

The Ministry will follow the Standard Operational Procedures (Appendix 9) to ensure compliance with all management measures as stipulated in The Plan. In case of non-compliance, relevant actions and penalties will be enforced as stipulated in The Act.

## **PART 6: MONITORING, EVALUATION AND LEARNING**

Monitoring, Evaluation, and Learning (MEL) are critical to ensure that The Plan is achieving what it sets out to achieve (monitoring), achieving the right results (evaluation) and lessons learnt for improvement (learning).

The Ministry will develop a MEL plan after endorsement of The Plan.

## **PART 7: APPENDICES**

### **List of Appendices:**

Appendix 1: Implementation Schedule

Appendix 2: Biological Characteristics of Deepwater Species

Appendix 3: Function of the Deepwater Fishery Management Committee

Appendix 4: Licence Terms and Conditions

Appendix 5: Process of License Registration

Appendix 6: Process of Licence to Process and Export License Registration

Appendix 7: List of Associated Fees for the Deepwater Fishery

Appendix 8: Catch Monitoring Tool

Appendix 9: Standard Operational Procedures for MCS

## Appendix 1: Implementation Schedule

| Strategies                                                                                        | Actions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Indicators                                                        | Responsible            | Resources                 | Timeline | Funding<br>(Where is source funding?) | Risks<br>potential delays reasons for not achieving step |
|---------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|------------------------|---------------------------|----------|---------------------------------------|----------------------------------------------------------|
| <b>Objective 1: To ensure biologically sustainable deepwater fishstocks</b>                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                   |                        |                           |          |                                       |                                                          |
| 1.1 Limit the total amount of deepwater fish taken by setting an annual total allowable catch TAC | <ul style="list-style-type: none"> <li>Collect log sheets from vessel master and offloading data,</li> <li>Enter data, and monitor catch against TAC, and report provided to DWG at least quarterly.</li> <li>When 75% TAC threshold is reached, inform CEO and send memo to Deepwater license holders.</li> <li>When 90% of TAC is reached, the Ministry advises all operators and prepares all documents for Minister to issue a notice to cease fishing</li> <li>When 100% of TAC is reached, MoF will issue a fishing notice and send advice to all licence holders that landing flametail OR any deepwater species is prohibited</li> </ul> | TAC is maintained at 200mt annually for all species in Appendix 2 | FSD - Offshore Section | data collection materials | Y1 Y2 Y3 | Offshore overtime vote                | If fishing vessels do not report their arrival time.     |
| 1.2 Limit the total amount of flametail snapper taken by setting a                                | <ul style="list-style-type: none"> <li>Collect log sheets from vessel master and offloading data,</li> <li>Enter data, and monitor catch against TAC and report provided to DWG at least quarterly.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                   | TAC for ETC is 80mt                                               | FSD-Offshore Section   | ,                         |          | Overtime vote Fuel                    | Incomplete data and possible depletion in                |

|                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                         |                           |                                                      |  |  |               |                                                                                           |
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| species-specific annual TAC                            | <ul style="list-style-type: none"> <li>When 75% threshold is reached, inform CEO and send memo to Deepwater license holders.</li> <li>When 90% of flametail TAC is reached, MoF advises all operators and prepares all documents for Minister to issue a notice to cease fishing</li> <li>When 100% of flametail TAC is reached MoF will issue a fishing notice and send advice to all licence holders that landing flametail OR any DWS is prohibited</li> </ul>      |                                                                                         | FCD – Enforcement Section | Staff and scientific instruments for collecting data |  |  |               | deepwater species fish stock if data is not collected.                                    |
| 1.3 Apply and enforce minimum size limit when in place | <ul style="list-style-type: none"> <li>Collect offloading and port sampling data</li> <li>Analyse minimum size limit data</li> <li>Report minimum size limit data to FCD/Enforcement.</li> <li>When the vessel had fish &amp; land undersize flametail snapper more than 20% of total ETC catch in her last trip, enforcement actions prescribed in Appendix 4 (Standard of Procedures when non-compliance with flametail measures occurs) will be applied.</li> </ul> | Flametail snapper (ETC) minimum size limit is maintained at 48cm and catch is monitored | FSD-Offshore Section      |                                                      |  |  | Overtime vote | If not manage, more undersize flametail will be caught and not given the chance to spawn. |

|                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                             |                        |                                         |  |  |                                                    |                                                            |
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| 1.4 investigate if minimum size limits for species, other than flametail snapper, may be appropriate within the fishery | <ul style="list-style-type: none"> <li>One month per quarter, size of every species is measured during offloading.</li> <li>Collect biological sampling on key species targeted.</li> <li>Report quarterly of biological sampling of all species to HOD.</li> <li>Investigate opportunities for biological sampling including training.</li> </ul> | <p>Information on fish length of other species is monitored at least one month per quarter.</p> <p>Opportunities for biological sampling are investigated and reported.</p> | FSD – Offshore Section | FSD resources for measuring fish length |  |  | Overtime Fuel                                      | Other species expose to possibilities of decrease in stock |
| 1.5 Limit the number of vessels permitted within this fishery, only allowing locally owned fishing vessels              | <ul style="list-style-type: none"> <li>Maintain and update the Fishing Vessels Register</li> <li>Ensure all vessels registered and licensed are locally owned.</li> <li>Explore ways to remove inactive vessels from holding the licenses with no intention of using it and report back findings to HOD</li> </ul>                                 | <p>Number of licenses set maintained at 30 per year</p> <p>100% of vessels are registered, licensed, and locally owned.</p>                                                 | FCD-Licensing Section  | License register                        |  |  | <p>License register</p> <p>Term and conditions</p> | We might not be able to control fishing effort             |

|                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                    |                                                                                      |                                                                            |  |                 |                                                                               |
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| <p>1.6 Effectively monitor and report fishing activities and utilise that information to manage the fishery</p> | <ul style="list-style-type: none"> <li>Record boarding and inspections activities.</li> <li>Update Boarding and Inspection System database.</li> <li>Install VMS system unit onboard vessel.</li> <li>Monitor and report to DWG.</li> <li>Explore funding mechanisms for VMS maintenance and operation.</li> <li>Record, collect, and report on fuel exemptions certificates on volume (litres) and value (\$\$) issued to fishers. Update database.</li> <li>Prepare non-compliance reports for quarterly DWG.</li> </ul> | <p>Catch and fishing activity is monitored, analysed and reported on a quarterly to DWG.</p> <p>All 100% vessels have VMS and/or tracking device that is fully functioned</p> <p>Fuel concessions database is maintained provided to fishers who return completed reporting requirements</p> <p>Number of non-compliance activities reported quarterly to DWG.</p> | <p>FCD-Observer Section</p> <p>FSD-Offshore Section</p> <p>FCD-Licensing Section</p> | <p>Boarding and inspection form</p> <p>Standard operational procedures</p> |  | <p>Overtime</p> | <p>Will increase IUU if monitoring of fishing activities is not conducted</p> |
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Objective 2: To promote an ecologically sustainable approach to ensure healthy marine ecosystems.

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| 2.1 Identify and protect key seamounts from fishing.                                                                             | <ul style="list-style-type: none"> <li>Hold workshops with license holders and other stakeholders to identify key seamounts for protection</li> <li>Prepare workshops report on key findings with potential recommendations to protect key seamounts to HODs</li> </ul>                                                                                                                                                                     | <p>Workshops with license holders and other stakeholders conducted.</p> <p>Key seamounts identified and protected where appropriate</p>                    | FSD-Offshore Section | Seamount map layout |  |  | Funding for workshop                 | Decrease in fishing ground                                              |
| 2.2 Collaborate with other agencies to understand environmental impacts on the fishery, including the effects of climate change. | <ul style="list-style-type: none"> <li>Network with other agencies to better understand the impacts of environmental change on the deepwater fishery, including climate change.</li> <li>Attend workshops to understand the regional impacts of environmental change.</li> <li>Draft and develop awareness materials</li> <li>Prepare report on key findings on the impacts of environmental change in deepwater fishery to HOD.</li> </ul> | <p>Awareness material is produced to increase public knowledge on the environmental impact on the deepwater fishery.</p> <p>Report presented to HOD on</p> | FMDD-Plan and Policy | Awareness materials |  |  | Funding to print awareness materials | Other agencies will not understand environmental impacts on the fishery |

|                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                   |                                                                 |                     |  |  |                                                   |                                                                                    |
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|                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                               | environmental change impacts on the fishery.                                                                                                      |                                                                 |                     |  |  |                                                   |                                                                                    |
| 2.3 Encourage ways to reduce the impacts of the fishery on the environment.                      | <ul style="list-style-type: none"> <li>Draft and develop awareness materials on the impacts of overfishing and fishing undersize snapper species</li> <li>Explore ways to encourage fishers to reduce disposing wastage from fishing activities into the marine environment, including bringing back unwanted fishing gear and plastic rubbish to shore and dispose appropriately.</li> </ul> | <p>Awareness material is produced to increase public knowledge on fishing environmental impact</p> <p>Rubbish bins placed in the docking area</p> | <p>FMDD Plan and Policy</p> <p>Marketing Officer</p> <p>NFC</p> | Awareness materials |  |  | Fund to print and disseminate awareness materials | Fishers will not reduce the impacts of their fishing activities on the environment |
| <b>Objective 3: To ensure an economically sustainable fishery, maximising benefits for Tonga</b> |                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                   |                                                                 |                     |  |  |                                                   |                                                                                    |
| 3.1 Investigate and monitor the economic performance of the fishery                              | <ul style="list-style-type: none"> <li>Collaborate with Science Offshore Section to develop an economic data logsheet for economic data collection.</li> <li>Collect economic data from snapper fishers.</li> <li>Analyze economic data and produce economic performance report to HOD and CEO for the fishery in a quarterly basis.</li> </ul>                                               | <p>Economic data logsheet developed.</p> <p>Number of economic data logsheet collected.</p>                                                       | FMDD-Economic Section                                           | Fuel/overtime       |  |  | Funding to train FMDD staff for economic analysis | Economic performance of the fishery will not be identified.                        |

|                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                          |                        |                  |  |  |                                    |                                                                 |
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|                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Quarterly economic performance report submitted.                                                                                                                                         |                        |                  |  |  |                                    |                                                                 |
| 3.2 Build MOF capacity to undertake economic analysis and marketing research                            | <ul style="list-style-type: none"> <li>Network with other regional agencies (FFA, SPC, MPI, USP) for any economic analysis trainings and market research.</li> <li>Include training on economic analysis for Component 3 (Pathway to Sustainable Ocean Project) training plan for the next 6 months</li> </ul>                                                                                                                                                                                                                                                                                               | <p>1. Regional trainings on economic analysis and market research are identified.</p> <p>2. Economic analysis local training conducted.</p>                                              | FMDD-Economic Section  | Training budget  |  |  | Travel budget                      | Economic analysis cannot be conducted if capacity is not build. |
| 3.3 Continue to explore potential markets, both domestic and international, including access procedures | <ul style="list-style-type: none"> <li>Marketing Officer to conduct market research on domestic and international potential markets.</li> <li>Produce report of findings on potential markets to HOD.</li> <li>Engage in potential markets to facilitate international access procedures.</li> <li>Collate, record, analyse and report on marine exports on a quarterly basis.</li> <li>Support domestic marketing by promoting deepwater species to restaurants and other customers.</li> <li>Conduct capacity training for fisheries staffs on best practices used in handling of ice and fish.</li> </ul> | <p>1. Market research conducted.</p> <p>2. A report submitted to HOD.</p> <p>3. Established access to international markets.</p> <p>4. Quarterly bulletin reports on marine exports.</p> | FMDD-Marketing Section | Market resources |  |  | Funding to support domestic market | No market to export                                             |

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|                                                                                                            |                                                                                                                                                                                                                                                        | 5.Number of outreach programs developed and conducted.                                                              |                         |                     |  |  |                                   |                                                                  |
| Objective 4: To ensure the fishery contributes to food security and livelihoods for Tongan people.         |                                                                                                                                                                                                                                                        |                                                                                                                     |                         |                     |  |  |                                   |                                                                  |
| 4.1 Encourage participation in the Deepwater fishery.                                                      | <ul style="list-style-type: none"><li>Encourage license holders to create employment opportunities for the Tongan people.</li></ul>                                                                                                                    | Number of Tongan people trained and employed within the fishery                                                     | FMDD-Economic Section   | License register    |  |  | No funding                        | No risk                                                          |
| 4.2 Initiate/promote deepwater value added products                                                        | <ul style="list-style-type: none"><li>Engage with regional agencies or stakeholders to support value added activities.</li><li>Provide support and capacity training for National Fisheries Council (NFC) in producing value added products.</li></ul> | Capacity building conducted with NFC.<br><br>Capacity training on deepwater species value added products conducted. | FMDD-Economic/Marketing | Training fund       |  |  | Funding for value added trainings | Market prices will be very expensive if not include value added. |
| 4.3 Provide public awareness of the availability of deepwater species, particularly Diamondback squid, for | <ul style="list-style-type: none"><li>Prepare and publish public awareness materials on deepwater species (Diamondback squid).</li><li>Disseminate the awareness materials to the public.</li></ul>                                                    | Awareness materials prepared, published and disseminated.                                                           | FMDD-Plan and Policy    | Awareness materials |  |  | Funding for awareness materials   | No risk                                                          |

|                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                |                                                         |                                                    |  |  |                                               |         |
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| consuming as part of a healthy diet                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                |                                                         |                                                    |  |  |                                               |         |
| 4.4 Promote gender and youth inclusiveness in the fishery                                                                                                    | <ul style="list-style-type: none"> <li>Encourage youth and women participation in relevant trainings and workshops on deepwater fishery.</li> <li>Encourage youth and women participation in consultations and decision making.</li> </ul>                                                                                                                                                                                                                                                                                  | <p>Number of women and youth participated in trainings and workshops.</p> <p>Number of women and youth participated in consultations and decision making.</p>  | FMDD-Plan and Policy                                    | Training materials                                 |  |  | Training fund                                 | No risk |
| <b>Objective 5: To promote and encourage diversification of the deepwater fishery and associated development activities.</b>                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                |                                                         |                                                    |  |  |                                               |         |
| 5.1 Continue to explore and promote diversification opportunities for other deepwater species, particularly Diamondback squid and pelagic species, including | <ul style="list-style-type: none"> <li>Liaise with regional agencies about development and potential new opportunities for alternative fishing techniques and species.</li> <li>Conduct feasibility studies of potential candidate species and stakeholder engagement and draft report and present to CEO and HODs.</li> <li>Conduct Market Research to explore potential new markets for existing species and diversification targets.</li> <li>Consult and develop on new species for marketing opportunities.</li> </ul> | <p>Training, capacity building and funding opportunities is provided</p> <p>Feasibility studies are reported to the CEO and HODs</p> <p>Market research is</p> | <p>FMDD-Plan and Policy</p> <p>FSD-Offshore Section</p> | Resources for feasibility studies, market research |  |  | Funding for trial new diversification methods | No risk |

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| development of new markets.                                                                    | <ul style="list-style-type: none"> <li>Promotion of existing species particularly Diamondback squid, for example through media campaigns, Royal Agricultural Show, World Food Day, Restaurants and market demonstrations.</li> <li>Store and maintain diversification gears on behalf of the NFC and distribute to interested fishers when requested.</li> </ul> | <p>conducted and reported to CEO and HOD.</p> <p>Number of awareness materials produced and marketing campaign supported</p> <p>Access to fishing gear is provided to deepwater license fishers.</p> <p>Diversification gear register is maintained and updated</p> |                      |           |  |          |                                                            |
| 5.2 Update database for fishery catch, effort data for diversification species and activities. | <ul style="list-style-type: none"> <li>Collect log sheets from vessel master and offloading data,</li> <li>Enter and analyze catch and effort data for diversification species</li> <li>Submit report of fishery catch and effort data for diversification species to DWG quarterly.</li> </ul>                                                                  | <p>Fishers submit Log sheets and offloading data to Offshore Section one day after the trip.</p>                                                                                                                                                                    | FSD-Offshore Section | Databases |  | Overtime | Data will be incomplete if this activity is not conducted. |

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|                                                                                                                |                                                                                                                                                                                                                                                                                                      | Report to DWG submitted quarterly.                                                                            |                               |                                           |  |  |                                 |                                                                                       |
| <b>Objective 6: To strengthen development of effective monitoring, compliance, and surveillance activities</b> |                                                                                                                                                                                                                                                                                                      |                                                                                                               |                               |                                           |  |  |                                 |                                                                                       |
| 6.1 Promote and encourage awareness of the fisheries rules and regulations                                     | <ul style="list-style-type: none"> <li>Conduct awareness program on TV on deepwater fishery rules and regulations.</li> <li>Conduct consultations with relevant stakeholders on existing and new deepwater fishery rules and regulations.</li> </ul>                                                 | <p>Awareness programmes is developed.</p> <p>Consultations with relevant stakeholders conducted.</p>          | FCD-Enforcement Legal Officer | Regulations                               |  |  | Fund to conduct TV program etc. | Increase illegal fishing if the public is not aware of the rules and regulations.     |
| 6.2: Ensure all license holders comply with Terms and conditions of their license.                             | <ul style="list-style-type: none"> <li>Educate new license holders on Terms and conditions in their license where appropriate.</li> <li>Inform license holders of the importance of VMS</li> </ul>                                                                                                   | <p>New License holders informed on their T&amp;C.</p> <p>License holders are informed, and VMS installed.</p> | FCD – Enforcement             | License holders term and conditions       |  |  | VMS funding                     | More illegal fishing if they do not comply with their T&C                             |
| 6.3: Review and update MCS policies and procedures.                                                            | <ul style="list-style-type: none"> <li>Review SOP for non-compliance activities in line with the revised Deepwater Management Plan.</li> <li>Conduct internal training to inform updated SOP</li> <li>Review T&amp;C for each license in line with the revised Deepwater Management Plan.</li> </ul> | <p>Existing SOP reviewed and updated.</p> <p>Compliance staff are informed on revised SOP.</p>                | FCD – Enforcement Section     | SOP and other relevant training materials |  |  | No funding                      | Staff will not have the common understanding of procedures to carry out this activity |

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|                                                                                        | <ul style="list-style-type: none"> <li>Inform license holders of new changes to their T&amp;C.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                     | <p>Existing T&amp;C reviewed and revised T&amp;C developed.</p> <p>License holders are informed on revised T&amp;C</p>                                                                                                    |                                       |                                     |  |  |                            |                                                                                   |
| <b>Objective 7: To enhance engagement and cooperative management of the fishery</b>    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                           |                                       |                                     |  |  |                            |                                                                                   |
| 7.1 Encourage transparency across the fishery to improve informed management decisions | <ul style="list-style-type: none"> <li>Publish Quarterly Bulletin Report on MOF website.</li> <li>Inform license holders and stakeholders through invitation letter from CEO on upcoming consultations.</li> <li>Consult license holders and stakeholders through consultation meetings on proposed changes to the fishery.</li> <li>Ensure license holders and stakeholders are made aware of changes and decisions to the fishery through consultation meetings.</li> </ul> | <p>1. Quarterly Bulletin Report published.</p> <p>2. License holders and stakeholders are informed on upcoming consultations.</p> <p>3. Consultation report submitted.</p> <p>4. Informed decisions are disseminated.</p> | FMDD-Policy                           | Quarterly bulletin report           |  |  | No funding                 | We may not be transparent in our decisions if Quarterly bulletin is not reported. |
| 7.2 Continue to collaborate and communicate with                                       | <ul style="list-style-type: none"> <li>Develop a terms of reference for Deepwater Fishery Management Committee (DFMC) in consultations with relevant stakeholders.</li> </ul>                                                                                                                                                                                                                                                                                                 | 1. Term of Reference for DFMC has                                                                                                                                                                                         | FMDD-Plan and Policy/Economics/Market | Catering vote<br><br>Meeting agenda |  |  | Catering fund for meetings | Fishers will not be updated on                                                    |

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| stakeholders to ensure relevant operational needs are understood and implemented.              | <ul style="list-style-type: none"> <li>Re-establish the DFMC</li> <li>Encourage active participation of license holders in DFMC, to discuss needs in the fishery when appropriate.</li> </ul>                                                                                                                                                                        | <p>been adopted.</p> <p>2. DFMC has been established.</p> <p>3. Number of license holders participating in DFMC.</p>                                                            | FCD-Enforcement<br>FSD- Offshore                                               |                              |  |  | Meeting fee                       | changes and issues arise.                                         |
| 7.3 Develop public awareness programmes and materials for further understanding of the fishery | <ul style="list-style-type: none"> <li>Prepare awareness materials such as posters and billboard for deepwater species.</li> </ul>                                                                                                                                                                                                                                   | Number of posters and billboard publicly displayed.                                                                                                                             | FMDD-Plan and Policy<br>FMDD – Offshore Section                                | Awareness materials          |  |  | Fund to print awareness materials | Fishers may not understand why we use management measures.        |
| 7.4 Support efforts to Improve capacity of deepwater fishery's stakeholders.                   | <ul style="list-style-type: none"> <li>Conduct a refresher workshop with deepwater licensed holders, including filling out logbooks, species Identification, waste management etc.)</li> <li>Liaise with regional and local organizations to determine training opportunities and support stakeholder participation.</li> <li>Conduct training activities</li> </ul> | <p>1. Number of trainings provided.</p> <p>2. Number of participants attended the trainings.</p> <p>3. Access training opportunities from regional and local organizations.</p> | FMDD-Plan& Policy/Economic/Market<br>FSD - Offshore<br>FCD-Enforcement Section | Refresher training materials |  |  | Fund to conduct trainings         | New staff might not familiar with species ID and other logistics. |

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|  |  | 4. Number of trainings conducted. |  |  |  |  |  |  |
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## Appendix 2: Biological Characteristics of Deepwater Species

TL – total length; SL – standard length; K – growth rate;  $t_m$  – the age at first maturity;  $t_{max}$  – life span; target species \*\* (major export species (Langi et al, 1992)).

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                            |
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| <b>1. Rusty jobfish / palu polosi</b>  |                                                                                                                                                                                                                                                                                                                                                                                                            |
| Family                                 | Lutjanidae (Snappers)                                                                                                                                                                                                                                                                                                                                                                                      |
| Scientific name                        | <i>Aphareus rutilans</i>                                                                                                                                                                                                                                                                                                                                                                                   |
| Max. size                              | 110 cm TL (male/unsexed); max. published weight: 11.3 kg<br>Spawning months are from September through to February                                                                                                                                                                                                                                                                                         |
| Environment                            | Reef-associated; marine; depth range 100 – 330 m                                                                                                                                                                                                                                                                                                                                                           |
| Resilience                             | Medium, minimum population doubling time 1.4 - 4.4 years ( $K=0.16$ )                                                                                                                                                                                                                                                                                                                                      |
| Biology                                | Inhabits reefs and rocky bottom areas to depths of at least 100 m.<br>Feeds on fishes, squids and crustaceans.                                                                                                                                                                                                                                                                                             |
| <b>2. Green jobfish / 'utu</b>         |                                                                                                                                                                                                                                                                                                                                                                                                            |
| Family                                 | Lutianidae (Snappers)                                                                                                                                                                                                                                                                                                                                                                                      |
| Scientific name                        | <i>Aprion virescens</i>                                                                                                                                                                                                                                                                                                                                                                                    |
| Max. size                              | 112 cm TL (male/unsexed); max. published weight: 15.4 kg                                                                                                                                                                                                                                                                                                                                                   |
| Sexual maturity                        | Both males and females generally reach spawning condition between 24 to 30 inches (over 2.6 years but under 5 years)                                                                                                                                                                                                                                                                                       |
| Environment                            | reef-associated; marine; depth range 0 - 180 m                                                                                                                                                                                                                                                                                                                                                             |
| Resilience                             | Medium, minimum population doubling time 1.4 - 4.4 years ( $K=0.29$ ; $t_m=4-5$ )                                                                                                                                                                                                                                                                                                                          |
| Biology                                | Inhabits open waters of deep lagoons, channels, or seaward reefs. Usually seen singly, but also in groups. Feeds mainly on fishes, but also on shrimps, crabs, cephalopods and planktonic organisms. Large individuals may be ciguateric. Reports of ciguatera poisoning                                                                                                                                   |
| <b>3. Bluefin trevally / lupo</b>      |                                                                                                                                                                                                                                                                                                                                                                                                            |
| Family                                 | Carangidae (Jacks and pompanos)                                                                                                                                                                                                                                                                                                                                                                            |
| Scientific name                        | <i>Caranx melampygus</i>                                                                                                                                                                                                                                                                                                                                                                                   |
| Max. size                              | 117 cm FL (male/unsexed); max. published weight: 43.5 kg                                                                                                                                                                                                                                                                                                                                                   |
| Environment                            | reef-associated; brackish; marine; depth range 0 – 190 m                                                                                                                                                                                                                                                                                                                                                   |
| Resilience                             | Medium, minimum population doubling time 1.4 - 4.4 years ( $K=0.23$ ; $t_m=2$ ; $Fec=49,700$ )                                                                                                                                                                                                                                                                                                             |
| Biology                                | A coastal and oceanic species associated with reefs. Juveniles occur seasonally in shallow sandy inshore waters. Found in rivers. Occasionally in schools. Feed mainly on other fishes, also crustaceans. Often toxic when it reaches a length of more than 50 cm.                                                                                                                                         |
| <b>4. Red grouper / ngatala kula</b>   |                                                                                                                                                                                                                                                                                                                                                                                                            |
| Family                                 | Serranidae (Sea basses: groupers and fairy basslets), subfamily: Epinephelinae                                                                                                                                                                                                                                                                                                                             |
| Max. size                              | 125 cm TL (male/unsexed); max. published weight: 23.0 kg; max. reported age: 25 years                                                                                                                                                                                                                                                                                                                      |
| Environment                            | Reef-associated; non-migratory; marine; depth range 5 – 300 m                                                                                                                                                                                                                                                                                                                                              |
| Resilience                             | Low, minimum population doubling time 4.5 - 14 years ( $K=0.1-0.18$ ; $t_m=4-6$ ; $t_{max}=25$ ; $Fec=1.4$ million)                                                                                                                                                                                                                                                                                        |
| Biology                                | Occurs mainly over rocky and muddy bottoms. Uncommon around coral reefs. Usually rests on the bottom. Juveniles may be found in shallow water, but adults are usually taken from depths of 70-330 m. Feeds on a wide variety of fishes and invertebrates. A protogynous hermaphrodite. Most females transform to males between ages 7 to 14. Susceptible to red tide toxin ( <i>Ptychodiscus brevis</i> ). |
| <b>5. Comet grouper / ngatala pusi</b> |                                                                                                                                                                                                                                                                                                                                                                                                            |
| Family                                 | Serranidae (Sea basses: groupers and fairy basslets), subfamily: Epinephelinae                                                                                                                                                                                                                                                                                                                             |
| Scientific name                        | <i>Epinephelus morrhua</i>                                                                                                                                                                                                                                                                                                                                                                                 |
| Max. size                              | 90.0 cm TL (male/unsexed); max published weight: 6,700 g                                                                                                                                                                                                                                                                                                                                                   |
| Environment                            | Reef-associated; non-migratory; marine ; depth range 80 - 370 m                                                                                                                                                                                                                                                                                                                                            |

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| <b>Resilience</b>                                          | Low, minimum population doubling time 4.5 - 14 years (Preliminary K or Fecundity)                                                                                                                                                                                                                                        |
| <b>Biology</b>                                             | Deepwater habitat. Considered rare in Tahiti but quite common in atolls. The species is easily confused with <i>E. poecilonotus</i> , <i>E. radiatus</i> , or <i>E. tuamotuensis</i> , three closely related deepwater groupers. Known to be ciguatera toxic at Mauritius. Reports of ciguatera poisoning.               |
| <b>6. Eightbar grouper / mohuafi</b>                       |                                                                                                                                                                                                                                                                                                                          |
| <b>Family</b>                                              | Serranidae (Sea basses: groupers and fairy basslets) , subfamily: Epinephelinae                                                                                                                                                                                                                                          |
| <b>Scientific name</b>                                     | <i>Epinephelus octofasciatus</i>                                                                                                                                                                                                                                                                                         |
| <b>Max. size</b>                                           | 130 cm TL (male/unsexed); max. published weight: 80.0 kg                                                                                                                                                                                                                                                                 |
| <b>Environment</b>                                         | Bathydemersal; marine; depth range 150 – 300 m                                                                                                                                                                                                                                                                           |
| <b>Resilience</b>                                          | Very low, minimum population doubling time more than 14 years (Preliminary K or Fecundity)                                                                                                                                                                                                                               |
| <b>Biology</b>                                             | Probably occurs in rocky reefs. Its apparent rarity may be due to its preference for relatively deep water. Reports of ciguatera poisoning.                                                                                                                                                                              |
| <b>7. Flame snapper / longtail snapper / palu tavake**</b> |                                                                                                                                                                                                                                                                                                                          |
| <b>Family</b>                                              | Lutjanidae (Snappers), subfamily: Etelinae                                                                                                                                                                                                                                                                               |
| <b>Scientific name</b>                                     | <i>Etelis coruscans</i>                                                                                                                                                                                                                                                                                                  |
| <b>Max. size</b>                                           | 120 cm TL (male/unsexed)                                                                                                                                                                                                                                                                                                 |
| <b>Sexual maturity</b>                                     | One fish reported to reach sexual maturity at about 20.6 inches; 55-80 cm FL (5 years) and spawning season from May to October similar to <i>Etelis carbunculus</i>                                                                                                                                                      |
| <b>Environment</b>                                         | Reef-associated; marine ; depth range 90 - 400 m                                                                                                                                                                                                                                                                         |
| <b>Resilience</b>                                          | Low, minimum population doubling time 4.5 - 14 years (k=0.12)                                                                                                                                                                                                                                                            |
| <b>Biology</b>                                             | Inhabits rocky bottoms. Feeds on small fishes, squids and crustaceans.                                                                                                                                                                                                                                                   |
| <b>8. Longnose emperor / ngutukao</b>                      |                                                                                                                                                                                                                                                                                                                          |
| <b>Family</b>                                              | Lethrinidae (Emperors or scavengers), subfamily: Lethrininae                                                                                                                                                                                                                                                             |
| <b>Scientific name</b>                                     | <i>Lethrinus miniatus</i>                                                                                                                                                                                                                                                                                                |
| <b>Max. size</b>                                           | 90.0 cm TL (male/unsexed); max. published weight: 9,600 g; max. reported age: 22 years                                                                                                                                                                                                                                   |
| <b>Environment</b>                                         | Reef-associated; non-migratory; brackish; marine; depth range 5 –30 m                                                                                                                                                                                                                                                    |
| <b>Resilience</b>                                          | Medium, minimum population doubling time 1.4 - 4.4 years (K=0.06-0.17; tm=2-3; tmax=22)                                                                                                                                                                                                                                  |
| <b>Biology</b>                                             | Inhabit coral reefs during daytime where they feed occasionally in sand and rubble areas between coral heads. At night, they move out over the sandy sea floor and forage actively. Usually occur in small schools. Feed mainly on crustaceans, echinoderms, molluscs and fish, with crabs and sea urchins predominating |
| <b>9. Saddle-back snapper / sea bream / palu mutumutu</b>  |                                                                                                                                                                                                                                                                                                                          |
| <b>Family</b>                                              | Lutjanidae (Snappers) , subfamily: Apsilinae                                                                                                                                                                                                                                                                             |
| <b>Scientific name</b>                                     | <i>Paracaesio kusakarii</i>                                                                                                                                                                                                                                                                                              |
| <b>Max. size</b>                                           | 60.0 cm SL (male/unsexed)                                                                                                                                                                                                                                                                                                |
| <b>Environment</b>                                         | Reef-associated; marine ; depth range 100 - 310 m                                                                                                                                                                                                                                                                        |
| <b>Resilience</b>                                          | Medium, minimum population doubling time 1.4 - 4.4 years (Preliminary K or Fecundity)                                                                                                                                                                                                                                    |
| <b>Biology</b>                                             | Occurs over rocky bottoms.                                                                                                                                                                                                                                                                                               |
| <b>10. Ornate jobfish / 'utu</b>                           |                                                                                                                                                                                                                                                                                                                          |
| <b>Family</b>                                              | Lutjanidae (Snappers), subfamily: Etelinae                                                                                                                                                                                                                                                                               |
| <b>Family</b>                                              | Lutjanidae (Snappers)                                                                                                                                                                                                                                                                                                    |
| <b>Scientific name</b>                                     | <i>Pristipomoides argyrogrammicus</i>                                                                                                                                                                                                                                                                                    |
| <b>Max. size</b>                                           | 40.0 cm SL (male/unsexed)                                                                                                                                                                                                                                                                                                |
| <b>Environment</b>                                         | Reef-associated; marine; depth range 70 – 350 m                                                                                                                                                                                                                                                                          |

|                                                                               |                                                                                                                                                                                                                                      |
|-------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Resilience</b>                                                             | Medium, minimum population doubling time 1.4 - 4.4 years (Preliminary K or Fecundity)                                                                                                                                                |
| <b>Biology</b>                                                                | Occurs over rocky bottoms. Feeds on small fishes, crustaceans and squids.                                                                                                                                                            |
| <b>11. Crimson jobfish / palu hina*</b>                                       |                                                                                                                                                                                                                                      |
| <b>Family</b>                                                                 | Lutjanidae (Snappers) , subfamily: Etelinae                                                                                                                                                                                          |
| <b>Scientific name</b>                                                        | <i>Pristipomoides filamentosus</i>                                                                                                                                                                                                   |
| <b>Max. size</b>                                                              | 100.0 cm TL (male/unsexed); max. published weight: 8,154 g; max                                                                                                                                                                      |
| <b>Sexual maturity</b>                                                        | Females generally reach spawning condition at a fork length of 19.2 inches. Reach sexual maturity at about 1.8 years and generally at about 2.2 years.                                                                               |
| <b>Environment</b>                                                            | benthopelagic; marine ; depth range 40 - 400 m                                                                                                                                                                                       |
| <b>Resilience</b>                                                             | Medium, minimum population doubling time 1.4 - 4.4 years (K=0.16-0.31; tmax=18)                                                                                                                                                      |
| <b>Biology</b>                                                                | Occurs over rocky bottoms; off Guam, caught most abundantly between 180 and 270 m. At night, it migrates vertically to the upper part of its habitat to feed. Feeds on small fishes, shrimps, crabs, amphipods, ascidians and salps. |
| <b>12. Golden eye jobfish / palu sio'ata</b>                                  |                                                                                                                                                                                                                                      |
| <b>Family</b>                                                                 | Lutjanidae (Snappers) , subfamily: Etelinae                                                                                                                                                                                          |
| <b>Scientific name</b>                                                        | <i>Pristipomoides flavipinnis</i>                                                                                                                                                                                                    |
| <b>Max. size</b>                                                              | 50.0 cm SL (male/unsexed)                                                                                                                                                                                                            |
| <b>Environment</b>                                                            | Reef-associated; marine ; depth range 90 - 360                                                                                                                                                                                       |
| <b>Resilience</b>                                                             | Medium, minimum population doubling time 1.4 - 4.4 years (K=0.27-0.36)                                                                                                                                                               |
| <b>Biology</b>                                                                | Occurs over rocky bottoms; off Guam, caught most abundantly between 180-270 m. Feeds primarily on benthic fishes and to a lesser extent on crustaceans, squids, and pelagic tunicates.                                               |
| <b>13. Ruby snapper / red snapper / short-tailed red snapper / palu malau</b> |                                                                                                                                                                                                                                      |
| <b>Family</b>                                                                 | Lutjanidae (Snappers) , subfamily: Etelinae                                                                                                                                                                                          |
| <b>Scientific name</b>                                                        | <i>Etelis carbunculus</i>                                                                                                                                                                                                            |
| <b>Max. size</b>                                                              | 127 cm FL (male/unsexed)                                                                                                                                                                                                             |
| <b>Sexual maturity</b>                                                        | Reach this at about 11.7 inches fork length (2.8years). A fish 20 inches in fork length can release over 1.3 million eggs per spawn and may release 2 or more batches during a spawning season. Spawn in May to October              |
| <b>Environment</b>                                                            | Reef-associated; marine ; depth range 90 - 400 m                                                                                                                                                                                     |
| <b>Resilience</b>                                                             | Medium, minimum population doubling time 1.4 - 4.4 years (K=0.13-0.31)                                                                                                                                                               |
| <b>Biology</b>                                                                | Inhabits rocky bottoms. Feeds on fishes and larger invertebrates such as squids, shrimps and crabs; also takes planktonic organisms, including pelagic urochordates.                                                                 |
| <b>14. Convict grouper / mohuafi</b>                                          |                                                                                                                                                                                                                                      |
| <b>Family</b>                                                                 | Serranidae (Sea basses: groupers and fairy basslets) , sub-family: Epinephelinae                                                                                                                                                     |
| <b>Scientific name</b>                                                        | <i>Epinephelus septemfasciatus</i>                                                                                                                                                                                                   |
| <b>Max. size</b>                                                              | 155 cm TL (male/unsexed); max. published weight: 62.8 kg                                                                                                                                                                             |
| <b>Environment</b>                                                            | Reef-associated; non-migratory; marine; depth range 5 – 30 m                                                                                                                                                                         |
| <b>Resilience</b>                                                             | Very low, minimum population doubling time more than 14 years (Preliminary K or Fecundity.)                                                                                                                                          |
| <b>Biology</b>                                                                | Occurs near shore, including semi-enclosed sea areas in rocky reefs in shallow waters.                                                                                                                                               |

(Sources: FishBase, Current Line Fish Facts for Bottom Fishes of Hawaii)

### Appendix 3: Function of the Deepwater Fishery Management Committee

The functions of the DFMC will be to:

- a) Review the performance of the DFMP annually and, in consultation with all stakeholders, provide feedback on changes to the Plan;
- b) Provide a forum to discuss issues, objectives, and strategies with input from stakeholders in regard to the fishery;
- c) Advice on the effective management and administration of the fishery;
- d) Provide information relating to the fishery operations;
- e) Ensure transparent decision making in regards to the fishery.

#### **Memberships**

The DFMC will have representation from all major stakeholders and should include the following representatives:

- Three representatives from Tongatapu deepwater licence holders; one representative from the Vava'u and one from Ha'apai deepwater fisheries licence holders;
- A representative of the small-scale fisheries sub-sector;
- Ad hoc advisors and members as determined by the Chair;
- Fisheries Management representative from the Ministry;
- Compliance representative from the Ministry;
- Representatives from such other government ministries/departments as selected by the Chair.

#### **Chair**

Meetings of the DFMC will be chaired by the CEO for the Ministry of Fisheries.

#### **Frequency of Meetings**

The DFMC shall meet every six months, and further as required by the Chair to address specific matters.

## Appendix 4: Licence Terms and Conditions

### Appendix 4a: Fishing Licence Terms and Conditions (Local Fishing vessels)

1. The Licence Holder and the Master of the vessel shall comply with the following terms and conditions at all times:
2. The Master shall keep this licence or certified copy on board at all times and shall produce the licence for inspection upon the request of an authorized officer, high seas inspector or foreign high seas inspector.
3. The Licence Holder is encouraged to employ crew that are Tongan with the exception of the senior officers (Captain, Chief Engineer and Fishing Master).
4. The vessel must not fish for deepwater species (Appendix 2);
  - i. within 3 nautical miles of a Fish Aggregating Device (FAD) except without the specific written permission of the CEO;
  - ii. in other Designated closed areas or Special Management Areas (SMA) of the Kingdom of Tonga.
5. The fishing gear of local fishing vessel must be stowed in such a manner that it is not immediately available for fishing whenever the vessel is present in a part of the fisheries waters in which it is not authorized to fish.
6. The minimum size limit for flametail snapper is 48 cm fork length. The Master shall not fish and unload catch that more than 20% of the total number of flametail snapper catch are under 48cm fork length in very trip. If 10 or less flametail snapper (pieces) are caught per trip, then this measure may not apply.
7. The Master shall report to the CEO (telephone (676) 7401201 and to the Fisheries Office at Tu'imatamoana market at the following times -
  - i. at least 24 hours prior to departure from port; (for boarding and inspection purposes).
  - ii. (ii) at least 24 hours prior to entry into any port in Tonga for boarding and inspection & port sampling purposes).
8. Each such report shall contain the following information –
  - i. name of vessel;
  - ii. estimated total catch on board
9. The Master shall complete an accurate written log (approved logsheets) of everyday that it spends at sea on board the vessel in the form approved by the CEO, Ministry responsible for Fisheries as follows;

- i. for days with fishing operations, the log must be completed by recording the effort and catch at the end of each fishing operation (i.e. at the end of the day); or
- ii. for days with no fishing operations but where any other "fishing effort" occurred, then the relevant activities (e.g. searching, transit) must be entered in the log at the end of the day; or
- iii. the master of each vessel shall keep an accurate and unaltered original or copy of the required information pertaining to the current trip on board the vessel at all times during the course of a trip.

And, shall submit them to the CEO in their original and unaltered form not later than 3 days after the completion of the fishing trip to which the log sheet relates. Log sheets shall include all bycatch by species and quantities.

10. The master shall submit the vessel unloading catch record, in the form approved by the CEO, Ministry of Fisheries, and one (1) working day after the unloading.
11. All data collect by Fisheries is confidential and will not give to anyone until it authorize to.
12. The Master shall not unload any fish unless inspected for port sampling purposes by the Authorized Officers and port samplers. The agent, master and crew members shall allow and assist any port samplers to carry out their duties. The master and crew members shall not assault, obstruct, resists, delays, refuse boarding or entry, intimidate, interfere with, or use threatening or abusive language or behave in a threatening manner towards any port samplers while in the execution of their duties
13. There shall be no directed fishing for sharks and all bycatch of sharks shall be recorded.
14. Fishing, storing or retaining on board, transshipping or landing in whole or in part, any of the following sharks listed below shall be prohibited:

| Common Name                               | Scientific name (Appendix ii, CITES list) & CMMs UPDATE |
|-------------------------------------------|---------------------------------------------------------|
| Oceanic whitetip shark (also CMM 2011-04) | <i>Carcharhinus longimanus</i>                          |
| Smooth hammerhead                         | <i>S.zygaena</i>                                        |
| Great hammerhead                          | <i>S. mokarran</i>                                      |
| Scalloped hammerhead                      | <i>Sphyrnalewini</i>                                    |
| Porbeagle shark                           | <i>Lamna nasus</i>                                      |

15. The Master shall allow authorized officers and observer(s) to participate fully in any research or survey project both on board the vessel and elsewhere. All costs for the placement of authorized observer(s) will be borne by the Licence Holder of the vessel concerned in accordance with instructions provided by the CEO.
16. The Master and each of the crew members shall allow and assist any observer to carry out his duties. The Master and crew members shall not assault, obstruct, resist, delays, refuse boarding or entry, intimidate, interfere with, or use threatening or abusive language or behave in a threatening manner towards any observer while in the execution of his duties.
17. The Licence Holder shall install, maintain and operate a registered VMS or such other approved ALC/MTU at all times and in accordance with the manufacturer's specifications and operating instructions and FFA standards.
18. The Licence Holder shall ensure that no person tampers or interferes with the automatic location communicator or mobile transceiver unit and that the unit is not altered, damaged or disabled.
19. The Licence Holder shall ensure that the automatic location communicator or mobile transceiver unit is switched on and is operational at all times during the period of validity of this licence. In order to ensure the unit is working at all times, the Licenced Holder shall provide separate power to the unit to ensure that it can operate with its own battery when other electronic equipment is shut down.
20. The above terms and conditions shall be reviewed when necessary. Failure to comply with the above and all other terms and conditions of the licence, the Fisheries Management Act 2002 and Regulations made there under, may, in addition to any judicial penalties that may be incurred, result in the suspension or cancellation of this licence.

#### **Appendix 4b: Licence Terms and Conditions for a Fish Processing Establishment**

In accordance with s.33(1) of the Act, and as provided in regulation 5(5) of the Fisheries (Processing and Export) Regulations, the holder of a fish processing establishment licence shall-

- i. complete the Fish Processing Log sheet in Form 1 of Schedule 3;
- ii. submit all completed Fish Processing Log sheets to the Ministry in their original and unaltered form, weekly after the completion of the week to which the log sheet relates; and
- iii. ensure that the fish processed at such establishment shall not exceed the total quotas allowed to that establishment, including those relating to species and quantity.

#### **Appendix 4c: Licence Terms and Conditions for Export of Fish**

In accordance with s. 35(4) of the Act, and as provided in regulations 10-11 of the Fisheries (Processing and Export) Regulations 2008, the following applies:

(1) A licence to export fish for commercial purposes shall be subject to the following conditions in addition to any other conditions required under the Act –

- i. the objectives of the relevant management and development plan;
- ii. fish products are processed in a licensed fish processing establishment pursuant to an effective HACCP system;
- iii. the HACCP Plan was prepared and is monitored by a person who received training in the application of HACCP Principles or by a seafood safety inspector;
- iv. the exporter demonstrating that they can consistently meet the appropriate standards regarding microbial and natural toxin contamination, chemical contamination and physical contamination;
- v. every consignment of fish to be exported shall be accompanied by a health certificate which has been prescribed by the Secretary and published by Notice in the Gazette; and
- vi. comply with the export restrictions on selected species made in the Fisheries (Conservation and Management) Regulations 2008.

(2) Where a HACCP Plan has been prepared by a seafood safety inspector or where other work applicable is incurred, the fee specified in Schedule 2 shall be paid by the licence holder.

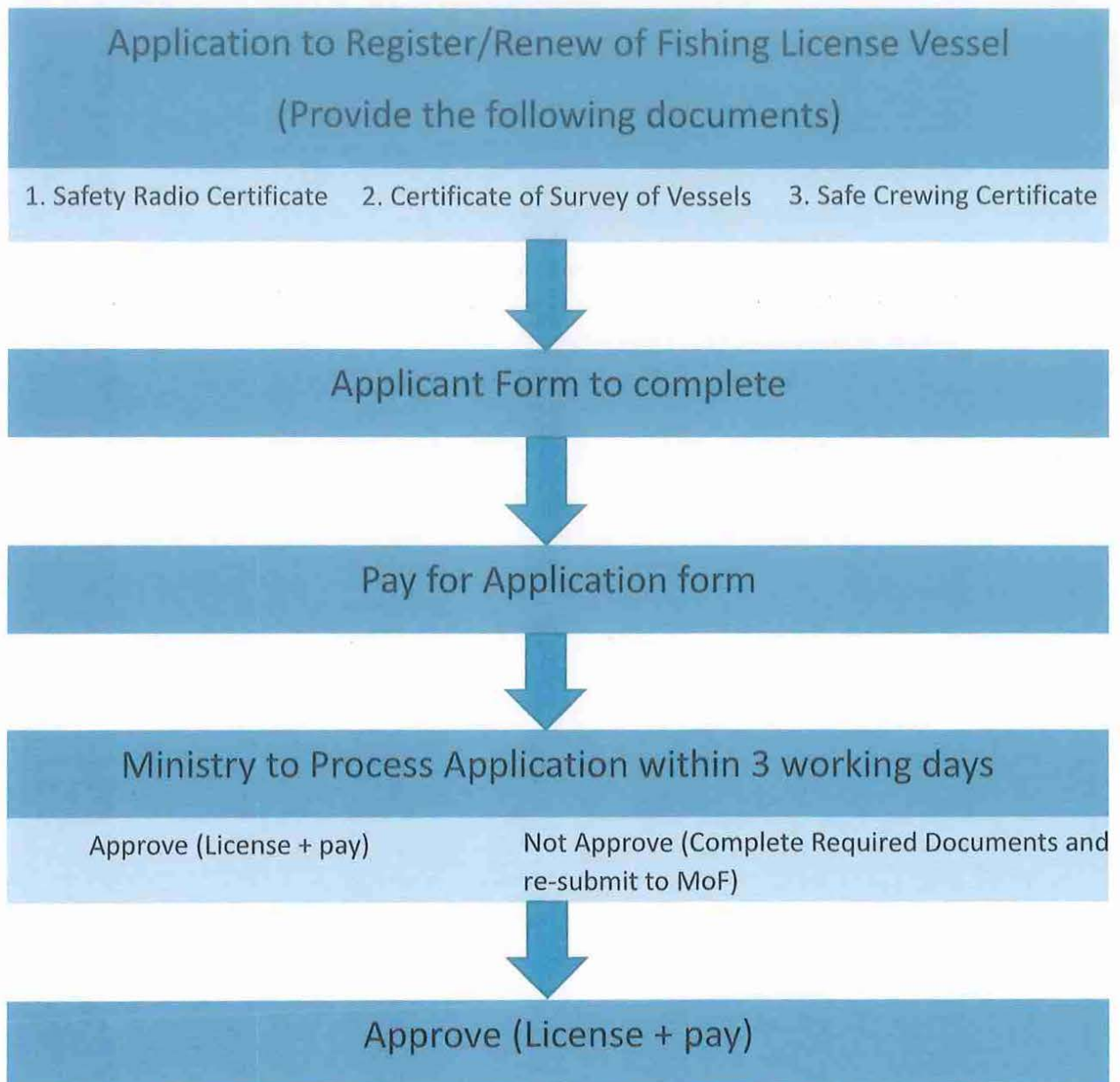
(3) A licence to export fish for domestic purposes shall be subject to –

- a) any restrictions on export of selected species made in the Fisheries (Conservation and Management) Regulations 2008; and
- b) any other conditions required under the Act.

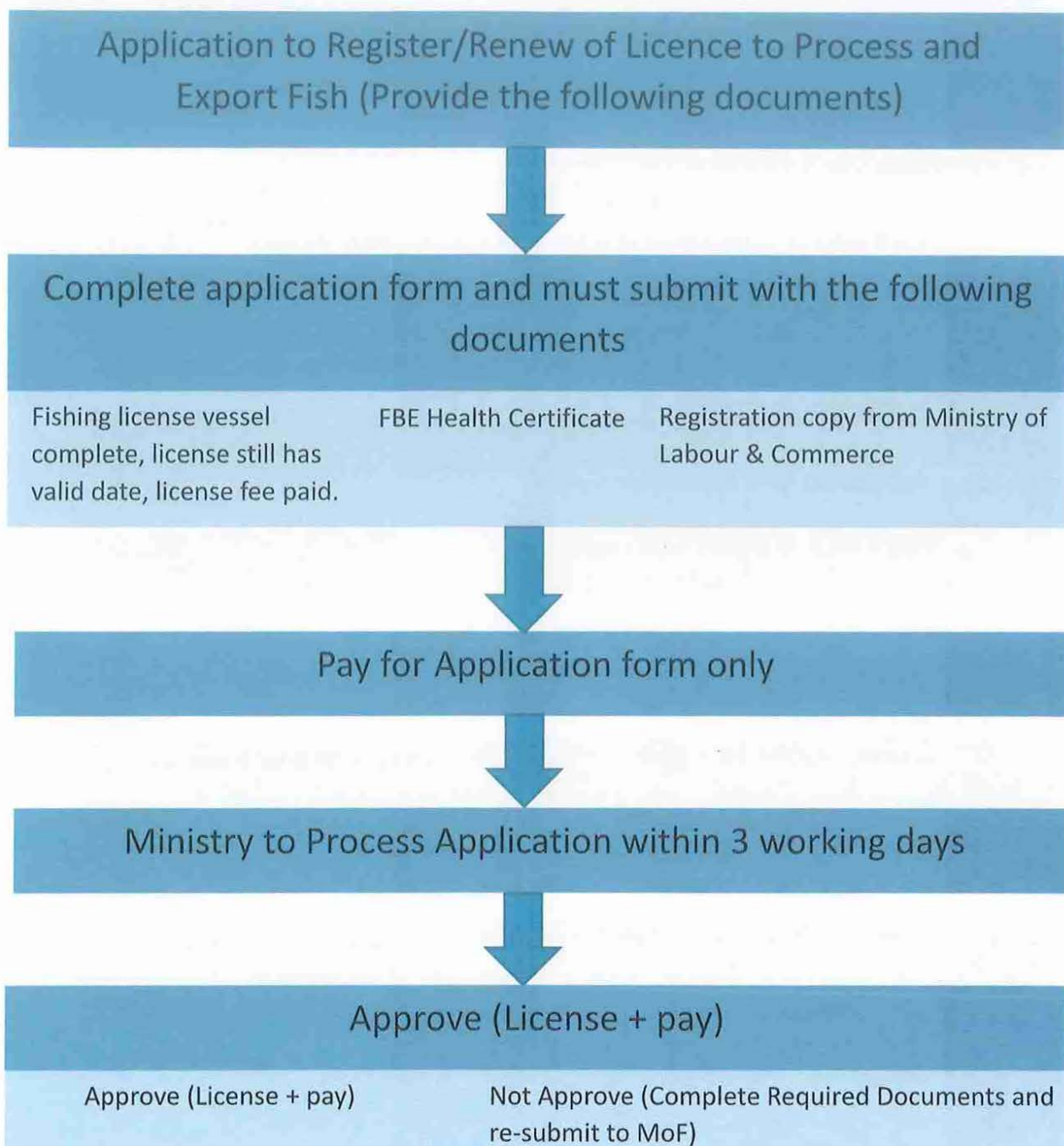
(4) A holder of a licence to export fish for commercial purposes shall-

- a) complete the Marine Products Export Log sheet, in Form 2 of Schedule 3, for every day of export of marine product for commercial purposes, including-
  - i. Licence holder's name;
  - ii. Date of export;
  - iii. Destination;
  - iv. Scientific or common name of each species to export;
  - v. Number of fish by species;
  - vi. Total weight by species; and
- b) submit all completed Marine Products Log sheets to the Secretary in their original and unaltered form no later than 24 hours after the completion of the day to which the log sheet relates.

## Appendix 5: Process of License Registration



## Appendix 6: Process of Licence to Process and Export License Registration



## Appendix 7: List of Associated Fees for the Deepwater Fishery

As in accordance with the Fisheries Management (Processing & Export) Regulations 2008, Section and its subsequent sub paragraph in 4, 5, 6, 7, 8, 9 and 12 stipulates associated fees in regard to Export.

### SCHEDULE 4A FEES

|    |                                                                 |          |
|----|-----------------------------------------------------------------|----------|
| 1. | Application for registration of a fish processing establishment | \$5.00   |
| 2. | Certificate of registration of a fish processing establishment  | \$10.00  |
| 3. | Application for a fish processing establishment licence         | \$50.00  |
| 4. | Application to renew a fish processing establishment licence    | \$10.00  |
| 5. | Fish Processing Establishment Licence                           | \$100.00 |
| 6. | Application for a fish export licence                           | \$50.00  |
| 7. | Application to renew a fish export licence                      | \$10.00  |

|                                                                                                      |
|------------------------------------------------------------------------------------------------------|
| <b>Licence for a local fishing vessel</b>                                                            |
| Up to 10 metres - \$200.00 for the first 6 metres and every additional metre shall be \$5.00         |
| Between 10 - 20 metres - \$500.00 for the first 6 metres and every additional metre shall be \$10.00 |
| Over 20 metres - \$800.00 for the first 6 metres and every additional metres shall be \$20.00        |

## APPENDIX 8: Catch Monitoring Tool

MOF will use the following process to monitor the TAC of both flametail snapper and the deepwater species, and communicate the results to the Minister and stakeholders.

A. Strict enforcement of a timely submission of data as a License condition. Fishing logs must be collected from all vessels no later than 1 day after each fishing trip.

B. Analyse data regularly to provide information every two weeks on catch and utilization of each TAC.

C. Provide data on the level of catch to HOD for FCD after one week of the vessel arrival in port

D. When 75% of each TAC is reached, inform CEO and send memo to Deepwater license holders that 75% of the quota has been landed

E. MoF staff monitoring of the fishery to provide weekly updates of the total catch to CEO and HoD

F. When 90% of either TAC is reached, MoF advises all operators and prepares all documents for Minister to issue a notice to cease fishing

G. When 100% of either TAC is reached MoF will issue a fishing notice and send advice to all licence holders that landing flametail OR any DWS is prohibited.

G. When 100% of either TAC is reached MoF will issue a fishing notice and send advice to all licence holders that landing flametail OR any DWS is prohibited.

## Appendix 9: Standard Operational Procedures for MCS.

a. Strict enforcement of a timely submission of data as a License condition. Fishing logs must be collected from all vessels no later than 1 day after each fishing trip

b. Enter/Analyse data to provide information (one week of fishing vessel arrival in port) on level of catch of flametail snapper and size limit.

c. Provide data on the level of catch of flametail snapper and size limit to HOD FCD and staff of Licensing Section after one week of the vessel's arrival in ports after the fishing trip.

d. When the vessel had fish & land undersize flametail snapper more than 20% of total ETC catch in her last trip, a warning letter will be issued to the Deepwater license holder to inform that the vessel has caught more than 20% of undersize flametail snapper

e. MOF staff will closely monitor the vessel's catch of undersize flametail in the fishing vessel's subsequent fishing trips

f. When the vessel continues to fish and land undersize flametail snapper more than 20% of total ETC catch in her next two fishing trips, a 2nd and 3rd warning letter will be issued to the Deepwater license holder to inform that the vessel has continued to fish and unload more than 20% of undersize flametail snapper.

g. Should the license holder continue to fish and land undersize flametail snapper more than 20% of total ETC after the 3rd warning letter is issued, MOF may suspend the deepwater fishing license for one (1) month.

h. MOF will cancel the deepwater fishing license when non-compliance with the flametail measure continues to occur after the one-month suspension of the fishing license.