



# Bottom Fishing Access Zones in the Hauraki Gulf Marine Park

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## Submission Information

Fisheries New Zealand welcome submissions on any or all of the proposed marine protection measures set out in this consultation document. A set of questions is provided at the end of the description of each option. These questions are intended to stimulate discussion and help guide your submission, but answers are not mandatory. Your submission may support or oppose any aspect of the proposals. All submissions will be received by Fisheries New Zealand and will be taken into account by the Ministers of Fisheries and Oceans under their respective statutory frameworks. The deadline for submissions is 5pm 6 November, 2023.

Online submissions are preferred, as Fisheries New Zealand will be able to collate, analyse and summarise these responses more quickly and efficiently. To make an online submission, visit [Consultations | NZ Government \(mpi.govt.nz\)](https://www.mpi.govt.nz/consultations)

Submissions can also be emailed to [fmsubmissions@mpi.govt.nz](mailto:fmsubmissions@mpi.govt.nz).

If you are unable to make an electronic submission, you may make a written submission, which should include the following information:

- The title of this document
- Your name and title
- Your organisation's name (if you are submitting on behalf of an organisation)
- Your contact details (phone number, address and email)

Written submission should be mailed to:

Fisheries Management  
Fisheries New Zealand  
17 Maurice Wilson Avenue  
PO Box 53030  
Auckland Airport 2022  
New Zealand

## **Official Information Act 1982**

All submissions are subject to the Official Information Act 1982 and can be released (along with personal details of the submitter) under the Act. If you have specific reasons for wanting to have your submission or personal details withheld, please set out your reasons in the submission. Fisheries New Zealand will consider those reasons when making any assessment for the release of submissions if requested under the Official Information Act.

## Problem Definition

1. The Hauraki Gulf / Tīkapa Moana / Te Moananui-ā-Toi (the Gulf) is a taonga with deep rooted historical importance for tangata whenua and a long history of supporting commercial and recreational fisheries. The Gulf's proximity to the largest population centre in the country means that this coastal area is more intensively used relative to the wider fisheries management area within which it sits.
2. A range of human-mediated stressors have led to an ongoing decline in ecosystem health in the Gulf.<sup>1</sup> Amongst a range of other impacts, decades of mobile bottom contact fishing methods have resulted in long-term degradation of benthic habitats. Responding to the adverse impacts of fishing on benthic habitats is the focus of this consultation; other fisheries management actions to respond to environmental degradation in the Gulf are outlined in the Hauraki Gulf Fisheries Plan.<sup>2</sup>

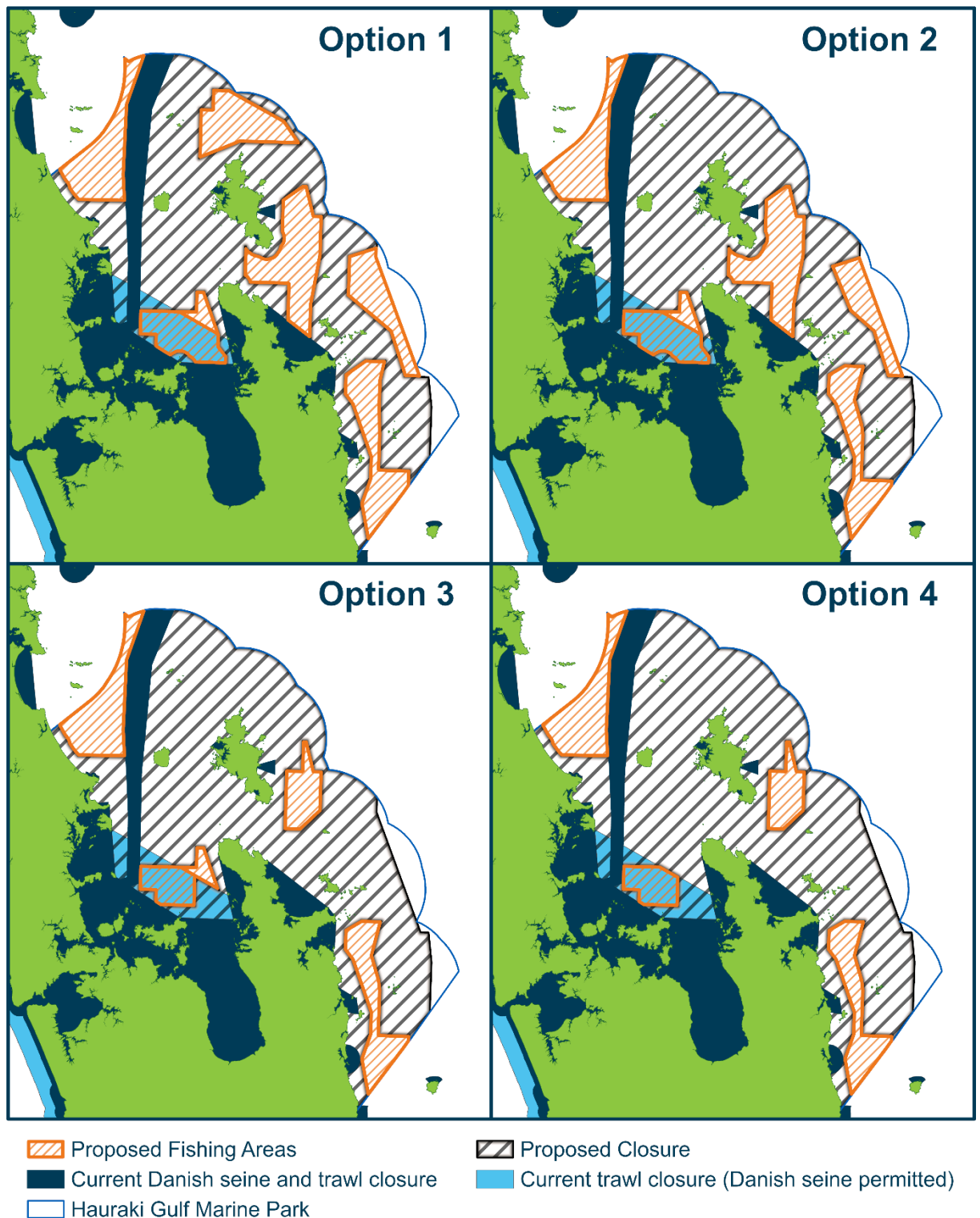
## What we are seeking your views on

3. Fisheries New Zealand is seeking people's views on four options proposed for establishing bottom fishing access zones (BFAZ) or 'trawl corridors': limited areas where the mobile bottom contact fishing methods of trawling and Danish seining can continue to occur in the Gulf (Figure 1). Exclusion of these mobile bottom contact fishing methods from the remainder of the Gulf is intended to protect large areas of marine benthic habitats and enable passive habitat restoration. Option 4 is a variation of Option 3 that would also see bottom trawling removed entirely from the innermost proposed BFAZ, with Danish seining continuing.

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<sup>1</sup> Every three years, the Hauraki Gulf Forum is required to produce a report on the State of the Hauraki Gulf environment. The reports can be found at <https://gulffjournal.org.nz/state-of-the-gulf>

<sup>2</sup> Hauraki Gulf Fisheries Plan – <https://www.mpi.govt.nz/dmsdocument/58396-Hauraki-Gulf-Fisheries-Plan>



**Figure 1. Summary maps of the four options for Bottom Fishing Access Zones (BFAZ) in the Hauraki Gulf. Note: the unmarked area on the map is the area of the Hauraki Gulf Marine Park which is greater than 200m in depth and was not considered for BFAZ as part of this consultation.**

4. Fisheries New Zealand anticipates that trawl corridors would be implemented through the general regulation making provisions under section 297 of the Fisheries Act 1996 (the Act). Section 297 allows the making of regulations for a range of purposes – including ‘regulating or prohibiting any method of fishing’.

5. The status quo or a complete ban of these fishing methods throughout the Hauraki Gulf Marine Park area are not proposed options. Further information about the context leading to these options is described below.

### Relevant Questions for Submitters\*

**Question 1** Which option do you support for proposed Bottom Fishing Access Zones? Why?

**Question 2** If you do not support any of the options listed, what alternative(s) should be considered? Why?

\*A full list of questions for submitters can be found in Section 7 at the end of this document.

## 1 Background

6. The Gulf is one of the most intensively used coastal areas in Aotearoa New Zealand, with deep rooted historical importance for tangata whenua and a long history of commercial and recreational use.
7. Tangata whenua exercise rangatiratanga and kaitiakitanga over the Gulf and its resources; a role often shared amongst a number of iwi who have overlapping interests in the area. The Gulf is significant to the New Zealand economy, with around one-third of Aotearoa's population living in the vicinity of the gulf and its resources supporting the lives and livelihoods of many of these people.
8. The national significance of the Gulf and its life sustaining capacity are recognised under the Hauraki Gulf Marine Park Act 2000 (HGMPA),<sup>3</sup> which established the Gulf as Aotearoa New Zealand's largest marine park. The HGMPA recognises the traditional, cultural and spiritual relationship of tangata whenua with the area, and sets objectives for the management of its waters, islands and catchments that integrate natural, historic and physical elements.
9. The HGMPA also established the Hauraki Gulf Forum, to promote and facilitate integrated management and the protection and enhancement of the Gulf. As part of its statutory function, The Hauraki Gulf Forum is required to produce a triennial assessment of the state of the Gulf and the responsiveness of agencies to strategic issues – this is known as the 'State of Our Gulf Report'.<sup>4</sup>
10. Decades of commercial and recreational fishing, increasing agricultural run-off, urbanisation and industrialisation have resulted in long-term degradation of benthic habitats in the Gulf.<sup>5</sup>
11. In response to the documented decline of the state of the Gulf, in 2017 the Sea Change Stakeholder Working Group developed the *Sea Change – Tai Timu Tai Pari – Hauraki Gulf Marine Spatial Plan (the Sea Change Plan)*.<sup>6</sup> The *Sea Change Plan* put forward a suite of 180 recommendations aimed at collectively improving the waiora (health) and mauri (life force) of the

<sup>3</sup> Hauraki Gulf Marine Park Act 2000 <https://www.legislation.govt.nz/act/public/2000/0001/latest/DLM52558.html>

<sup>4</sup> Every three years, the Hauraki Gulf Forum is required to produce a report on the State of the Hauraki Gulf environment. The reports can be found at <https://gulffjournal.org.nz/state-of-the-gulf>

<sup>5</sup> <https://gulffjournal.org.nz/state-of-the-gulf>

<sup>6</sup> Sea Change – Tai Timu Tai Pari – Hauraki Gulf Marine Spatial Plan <https://seachange.org.nz/wp-content/uploads/2023/02/5086-SCTTTP-Marine-Spatial-Plan-WR.pdf>



Gulf. The plan took a mountains-to-sea approach, with recommendations covering aspects from the land, freshwater systems and the marine environment.

12. As part of the fisheries management recommendations in the *Sea Change Plan*, it was proposed that mobile bottom contact fishing methods (bottom trawling, Danish seining and dredging) in the Gulf be banned through new regulations, in order to enable passive benthic habitat restoration as well as avoid damage to new areas.
13. In response to the *Sea Change Plan*, Government subsequently developed the strategy *Revitalising the Gulf: Government Action on the Sea Change Plan (Revitalising the Gulf)*,<sup>7</sup> which was published in June 2021. *Revitalising the Gulf* built on the aims of the *Sea Change Plan*, setting out the key elements for which the Government had direct oversight and responsibility.
14. The Fisheries Management element of *Revitalising the Gulf* included a commitment to set 'corridors' aside for bottom trawling and Danish seining, to provide for continued use of these fishing methods within the Gulf while allowing for the protection and recovery of benthic habitats in most areas.
15. It also included the development of a Hauraki Gulf specific Fisheries Plan<sup>8</sup> under section 11A of the Act, which sets out a package of discrete management actions that will deliver the desired outcomes and fisheries management objectives. Following an initial draft which was released with *Revitalising the Gulf* in 2021, the Fisheries Plan was further developed and refined through extensive input from tangata whenua, stakeholders and the Hauraki Gulf Fisheries Plan Advisory Group (HGFPAG) – which was set up in May 2022. In August 2023 the finalised and approved Fisheries Plan was released by the Minister for Oceans and Fisheries.
16. To deliver to the commitment made in *Revitalising the Gulf*, the Fisheries Plan includes a key Management Objective (Objective 1.1) *to protect marine benthic habitats from any adverse effects of bottom contact fishing methods, to enable passive and active restoration that support ecosystem services*. To support delivering to this Objective, the Fisheries Plan then sets out management action 1.1.1 to “Exclude bottom trawling and Danish seining in the Hauraki Gulf, except within defined areas.”
17. A total exclusion of bottom fishing methods throughout the Gulf, as proposed by the *Sea Change Plan*, was considered through the development of *Revitalising the Gulf*. In assessing the proposal, attention was paid to the potential for displacement of trawl and Danish seine fishing effort into adjacent areas if a full ban was implemented. Trawling and Danish seining account for a substantial proportion of the catch in the Gulf, and a complete exclusion would therefore have significant impacts on utilisation and displaced effort into the wider Quota Management Area (QMA) could have unintended consequences on wider fisheries management and ecosystems.
18. Consideration was also given to implications for commercial fishing operations and quota holders (including Māori owned quota and fishing operations), recognising a full ban may result in some operations ceasing to be viable.
19. There was concern that the relocation or removal of these fishers could impact on the ability of tangata whenua to exercise commercial and customary non-commercial fishing rights.
20. Consequently, *Revitalising the Gulf* committed to an approach of excluding these fishing methods from the Gulf except for within carefully selected areas. These areas are described as bottom fishing access zones (BFAZ) or 'trawl corridors.'
21. The proposed BFAZ options are designed, in varying degrees, to address the pressures on benthic biodiversity that the Gulf is currently experiencing, while mitigating against any

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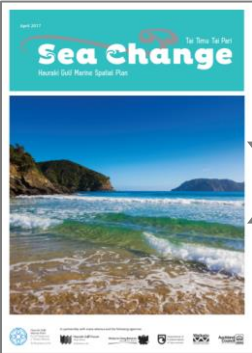
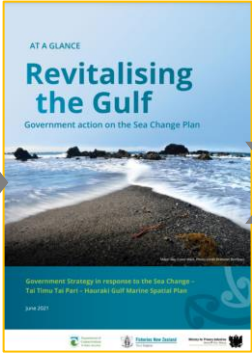

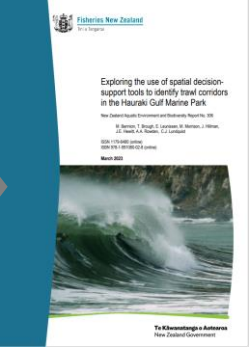
<sup>7</sup> *Revitalising the Gulf: Government Action on the Sea Change Plan* <https://www.mpi.govt.nz/dmsdocument/45550-Revitalising-the-Gulf-Government-action-on-the-Sea-Change-Plan>

<sup>8</sup> Hauraki Gulf Fisheries Plan – <https://www.mpi.govt.nz/dmsdocument/58396-Hauraki-Gulf-Fisheries-Plan>

unintended adverse impacts of spatial reductions in areas where bottom trawling and Danish seine fishing occur.

22. A summary of the broader context that led to the development of trawl corridors is included in Table 1 below.

**Table 1. Summary of the development of bottom fishing access zones**

Sea Change	Revitalising the Gulf Strategy	Hauraki Gulf Fisheries Plan	Bottom Fishing Access Zones – Spatial planning information and approach developed
Released 2017	Released June 2021	Approved August 2023	Published March 2023
			
<p><i>The Sea Change: Tai Timu Tai Pari Hauraki Gulf Marine Spatial Plan</i> was released in 2017 by an independent Stakeholder Working Group. It recommended banning all bottom contact fishing methods from the Hauraki Gulf – with a transitional approach to the removal of these methods.</p>	<p>In 2021 Government released <i>Revitalising the Gulf – Government action on the Sea Change Plan</i>. A commitment is made to restrict trawl and Danish seine fishing to carefully selected areas or ‘trawl corridors’.</p>	<p>A Hauraki Gulf Fisheries plan is developed and approved in August 2023. The plan sets out a management objective to: “protect marine benthic habitats from any adverse effects of fishing” and a management action to “Exclude bottom trawling and Danish seining in the Hauraki Gulf, except within defined areas”</p>	<p>To inform the identification of suitable areas for trawl corridors a dedicated research project was commissioned to collate and develop information and to test spatial planning approaches using the decision support tool, Zonation. The approach was developed with input from experts across Government agencies and stakeholder sectors.</p>

**Relevant Question for Submitters\***

**Question 3** Do you have any ideas or alternative approaches to the management of bottom fishing impacts, apart from the proposed Bottom Fishing Access Zones?

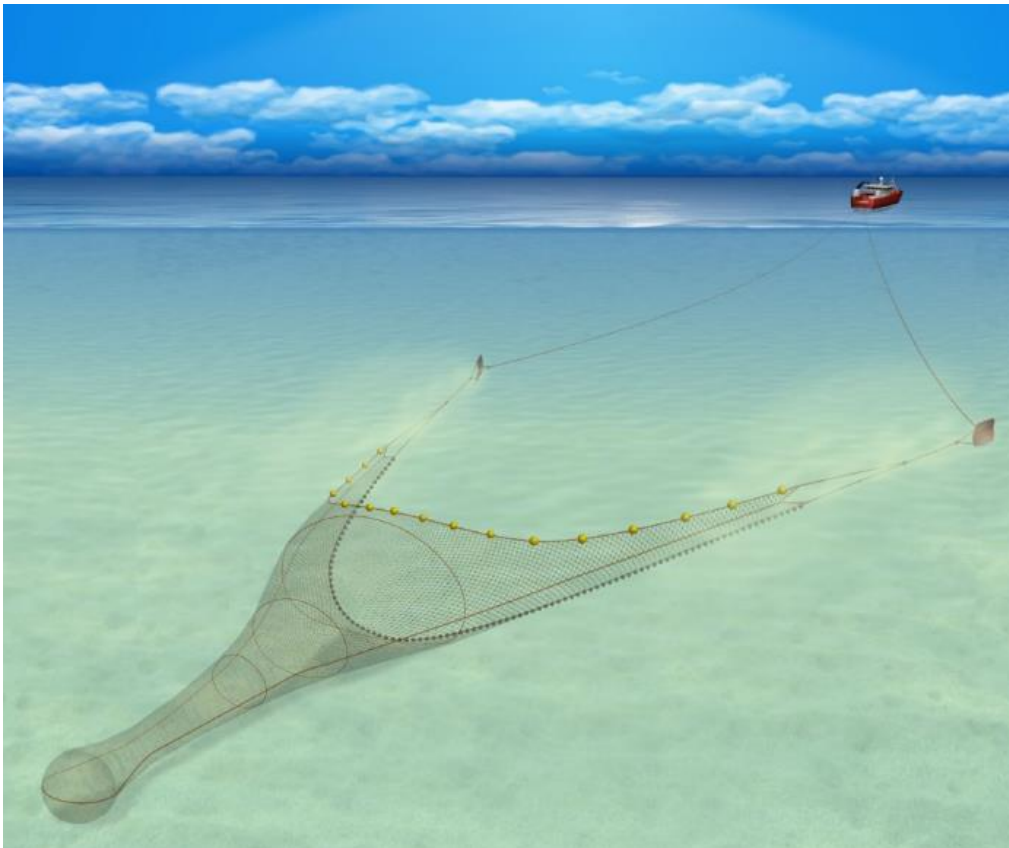
\*A full list of questions for submitters can be found in Section 7 at the end of this document.

## 2 The need for change

### 2.1 Current trawling and Danish seining in the Gulf

*What are bottom trawling and Danish seining?*

23. Bottom trawling is when a fishing net is towed by a boat along the seafloor (Figure 2). Otter trawls are used in New Zealand. Otter trawls are nets with steel 'doors' attached to either side of the net opening that use hydrodynamic forces to spread the net as it is towed. In inshore fisheries, bottom trawling is a common method of fishing as large quantities of fish can be caught in a single tow.



**Figure 2** Diagram of trawl fishing gear, image courtesy of Seafish: [www.seafish.org](http://www.seafish.org)

24. Danish seining uses a net that is set out or 'shot' using long ropes or 'coils' in a diamond shape on the seabed (Figure 3). The ropes are then drawn together to herd fish inside the diamond into the net as it is drawn back to the vessel. While Danish seine fishing does not tow the fishing gear over the seabed in the same manner as trawling, there are impacts to the benthic habitat inside the diamond area as the ropes are drawn in and the net is retrieved.

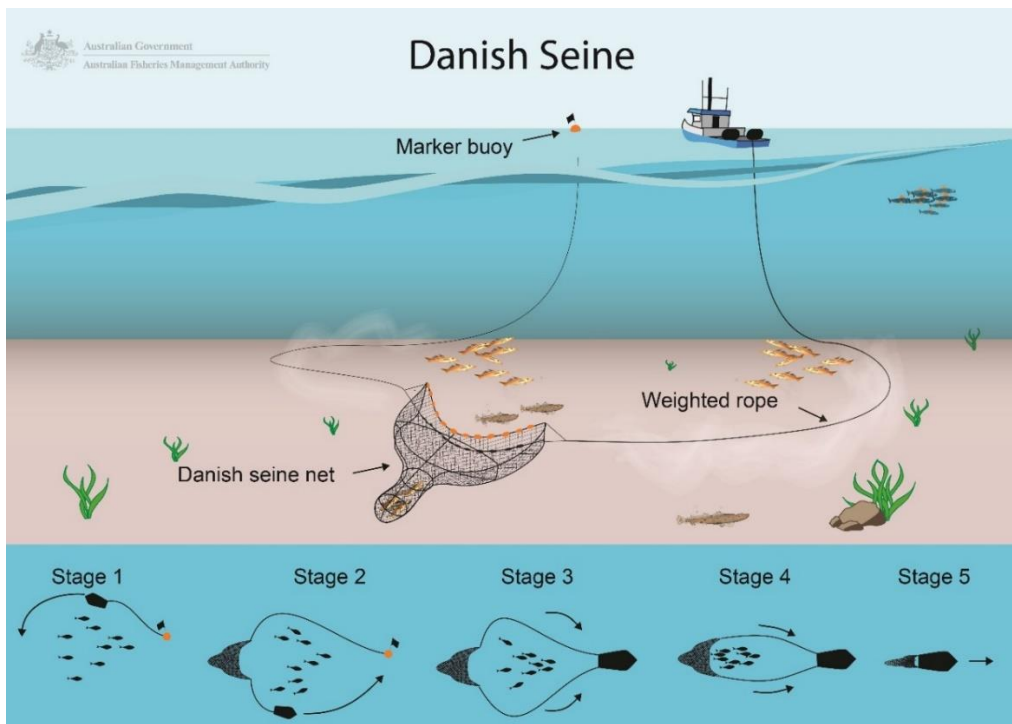


Figure 3 Danish seine fishing method, image courtesy of the Australian Fisheries Management Authority.

25. Typically, within the Gulf, both trawling and Danish seining occurs over flat, soft sediment sea floor as vessels will avoid foul ground that may tangle or snag the fishing gear. Fishing often occurs in the same areas, with vessels returning to known trawl paths, fishing areas or contours on a regular or seasonal basis. As a result, trawl and Danish seine fishing effort can be concentrated in certain areas.

*Where is trawling and Danish seining taking place in the Gulf?*

26. Estimates of the historical footprint indicate the vast majority of available and suitable seafloor in the Gulf has been fished by bottom contact fishing methods at some point in time, with varying levels of intensity. Some areas have never been fished using these methods due to known foul ground or obstructions which would catch or damage the fishing gear.
27. More recent fishing data, since the introduction of electronic reporting from vessels in 2019, shows not all of the area open to trawling in the Gulf is currently being fished. Over the last 3 fishing years trawling is estimated to have occurred in 39% of the open area<sup>9</sup>, with some areas not having been fished for some time.
28. There has also been a noticeable reduction in overall trawl fishing effort within the Gulf since 2018, with some fishers who previously operated in the Gulf making the choice to fish elsewhere.
29. While these changes have been observed, much of the currently unfished area has been fished in the past and, under the current settings, these areas could be fished again in the future if circumstances and/or the dynamic of the fishery were to change again.

*Impacts of trawling and Danish seining*

30. Seafloor habitats and communities within the tow path of bottom trawl gear will be impacted to varying extents depending on a range of factors, including:
- (a) the type of gear used (design and weight) and the towing speed;

<sup>9</sup> Data sourced from: The extent and intensity of bottom contact by commercial trawling and shellfish dredging in NZ waters, 1989-90 to 2020-21. <https://fs.fish.govt.nz/Doc/25518/AEBR-316-Bottom-Contact-Of-Commercial-Trawl-And-Dredge-Fisheries-New-Zealand-1990-2021-4360-2023.pdf>

- (b) features of seafloor habitats, including their natural disturbance regimes;
  - (c) the species present, with those living on or projecting above the seafloor being most sensitive to fishing activity; and
  - (d) the frequency and intensity of impact.
31. Bottom contact fishing can affect seafloor habitats and communities by damaging or removing structure forming species, reducing habitat complexity and altering the seafloor structure. The greatest impacts from bottom trawling are on hard complex grounds. While the effects are less on sandy bottoms, sediment plumes caused by trawl gear contacting the seabed can also have indirect impacts on animals living on the seabed.
  32. Sediment plumes can be 2-4 metres high and disperse over large distances, affecting areas beyond where the trawl occurred. Even very small amounts of sediment (a few millimetres) settling on the bottom can smother small corals and prevent their growth, expansion or recovery. Depending on their biological characteristics, not all taxa are equally sensitive to sediment resuspension and some taxa can potentially cope with a degree of sediment increase caused by trawling.
  33. Bottom trawling can damage or remove animals living on the surface of the seabed within the trawl path. Some seafloor species can withstand bottom trawling due to their size, shape, and where they live. Surface living species are affected more frequently and severely than burrowing species. Species most sensitive to trawl activity are animals that protrude from the seafloor and are structurally fragile, like:
    - (a) stony, gorgonian, and black corals;
    - (b) sponges;
    - (c) hydrocorals; and
    - (d) bryozoans.
  34. Seafloor communities can be altered as a result of bottom trawling, typically with reduced abundances of long-lived species, and lower species richness and diversity. The functioning of these communities may be affected as a result. Recovery from trawl impacts can take from days to centuries, depending on the intensity of trawling, the habitat features, and the species affected.
  35. There have been relatively few assessments of the impacts of Danish seine fishing to benthic habitats and communities. Given that there are no trawl doors, and the ground gear is lighter, it is expected that the impact will be less than that of bottom trawling.

#### *Fisheries economies in the Gulf*

36. The Gulf supports many different people associated with fisheries, including commercial, recreational and customary fishers, quota owners,<sup>10</sup> licensed fish receivers and seafood processing facilities. There are also social and economic benefits derived from non-extractive practices such as sight-seeing and tourism.
37. An estimated 50% of all fish commercially caught in the Gulf is sold in Auckland restaurants, fish shops and take-away shops.<sup>11</sup> Trawling and Danish seine caught fish makes up part of this market.

<sup>10</sup> This includes Māori who own Fisheries Settlement quota shares – a number of iwi and mandated iwi organisations are therefore likely to be impacted by closing of certain areas to trawl and Danish Seine fishing methods. Fisheries New Zealand does not have information to accurately quantify the potential loss in quota value or flow on impacts of this for iwi and their associated communities.

<sup>11</sup> Seafood New Zealand update, June 2023.

38. There are also consumers throughout the wider Auckland area who access and rely on lower cost fish, provided by both bottom trawl and Danish seine fisheries due to their efficiency.
39. Since 2007 location data for individual trawl and Danish seine tows have been reported by the inshore fleet. This has enabled Fisheries New Zealand to map tows<sup>12</sup> and, using fisher reported data and landing data, estimate catch volumes in different locations.
40. The top 10 inshore species caught account for 95% of total catch landed by Danish Seine and bottom trawl in the Gulf. These include, in descending order: snapper, trevally, john dory, gurnard, tarakihi, gemfish, jack mackerel, leatherjacket, school shark and mirror dory.
41. There are 222 entities owning quota for these 10 fish stocks within the Gulf that are most heavily affected by the proposed changes. Of this, 73% of quota is owned by 10 entities, and the remaining 27% of quota is owned by 212 entities.
42. Of the 222 entities that own the primarily affected quota, 21 entities own Settlement Quota,<sup>13</sup> which accounts for 12% of the total quota for these fish stocks.
43. There are 28 Danish Seine or trawl operators (fishing permit holders) that have fished the areas proposed for BFAZ over the last 5 fishing years, operating 22 trawl vessels and 11 Danish Seine vessels. These operators and vessels represent almost all operators and trawl and Danish Seine vessels operating in the Gulf, and around 17% of all commercial fishing vessels operating in the Gulf.
44. There are 21 permit holders who have been landing fish using Danish Seine and trawl in the proposed closure areas over the last 5 years who will be directly affected by the proposed changes, and some will be more heavily affected than others. These permit holders land to 11 licensed fish receivers (LFRs).
45. Based on data from the last 5 fishing years, current revenue generated from Danish Seine and trawl in the Gulf, excluding the deepwater zone, is \$7.2 million based on port price<sup>14</sup>, or \$10.5 million based on export prices of the top 5 key species, which make up 90% of total landings in the Gulf.
46. In 2023, Sanford and Moana announced a proposal to transfer Sanford's North Island inshore fisheries Annual Catch Entitlement (ACE) to Moana for a minimum term of approximately 10 years. The sale of Sanford's ACE may alter the current dynamic of vessels operating in the Gulf.
47. The economic assessments provided for the trawl corridor options proposed is based on historical catch and effort and do not take into account the likely shifts in effort distribution. As such they are indicative figures only.

#### **Relevant Question for Submitters\***

**Question 4** Is there any literature or research that is relevant and has been omitted in this paper?

\*A full list of questions for submitters can be found in Section 7 at the end of this document.

<sup>12</sup> The extent of bottom contact by commercial trawling and dredging in NZ waters, 1989-90 to 2020-21.

<https://fs.fish.govt.nz/Doc/25518/AEBR-316-Bottom-Contact-Of-Commercial-Trawl-And-Dredge-Fisheries-New-Zealand-1990-2021-4360-2023.pdf.ashx>

<sup>13</sup> Quota allocated to Māori in accordance with the Māori Fisheries Act 2004.

<sup>14</sup> Each year, MPI sends a voluntary survey to all licensed fish receivers (LFRs) to calculate the port price index for the year ahead. Port price represents the greenweight (unprocessed) price per kg paid on a particular day and not an average for the whole year. The fishing method is not included in the survey even though a particular method may receive a higher landed price.

## 2.2 Taking an integrated approach to fisheries management

48. The complex range of environmental and human induced pressures facing the Gulf necessitates more integrated and ecosystem focused approaches to managing both fisheries, and the marine ecosystem that supports them.
49. Through *Revitalising the Gulf* and the Fisheries Plan, Government is progressing to an ecosystem-based fisheries management approach in the Gulf. This approach recognises the complex interactions among species and their physical environment and, importantly, considers people, their activities and values as integral parts of the ecosystem. This is a significant shift from the existing fisheries management system that has traditionally focused on single issues or individual species.
50. The implementation of trawl corridors should be considered as one part of the overall management approach being taken to improve the health and mauri of the Gulf. While there will be direct benefits from further restricting the use of bottom trawling and Danish seine fishing within the Gulf, this approach alone will not achieve the overall desired outcomes. The options proposed have taken into consideration the other initiatives that are being progressed both in the Gulf and at a national scale, which include but are not limited to:
  - (a) The wider *Revitalising the Gulf* strategy, in particular the Marine Protection, Ahu Moana, and Active Habitat Restoration elements.
  - (b) The suite of management actions set out in the Fisheries Plan.
  - (c) Changes to the fisheries management system anticipated under the Fisheries Amendment Act 2022.
  - (d) The Fisheries Industry Transformation Plan, including initiatives aimed at improving fishing technologies and environmental performance.
  - (e) The Exclusive Economic Zone (EEZ) bottom trawl forum.
  - (f) The Biosecurity response to the invasive pest seaweed *Caulerpa*.
  - (g) The roll out of onboard cameras for commercial fishing vessels.
51. Implementation of the trawl corridors approach, alongside the large number of other initiatives in progress, will support improving the overall waiora and mauri of the Gulf.

## 3 Legislative context

52. Fisheries New Zealand are responsible for administering the Fisheries Act 1996 and its supporting regulations. The Act gives commercial, recreational, and customary fishers access to resources while ensuring fish stocks are managed sustainably and that effects on the aquatic environment are managed. Sustainable catch levels determine how many fish can be harvested.
53. The Act includes law about:
  - the application and administration of the Quota Management System (QMS)
  - measures that contribute to:
    - the sustainability of fisheries resources
    - avoiding, remedying, or mitigating any adverse effects of fishing on the aquatic environment

- recognition of the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992 (the Settlement Act), and the creation of tools to provide for customary use and fishery management practices
- allocation of total allowable catch (TAC) between:
  - Māori customary fishers
  - recreational fishers
  - commercial fishers.

54. A number of provisions are relevant to decision making for all of the proposed BFAZ options, in particular the requirement to act in a manner consistent with the Settlement Act (section 5), the purpose of the Act to provide for the utilisation of fisheries resources while ensuring sustainability (section 8), environmental principles (section 9) and information principles (section 10). These are discussed in more detail below.
55. Fisheries New Zealand anticipates that trawl corridors would be implemented through the general regulation making provisions under section 297 of the Act. Section 297 allows the making of regulations for a range of purposes – including ‘regulating or prohibiting any method of fishing’.
56. The proposed BFAZ are intended to be part of a suite of tools made under regulation through *Revitalising the Gulf* to protect important benthic biodiversity in the Gulf from bottom contact fishing methods and other benthic disrupting practices.

### 3.1 Purpose – Section 8 of the Act

57. Section 8 sets out the purpose of the Act, which is to provide for the utilisation of fisheries resources while ensuring sustainability:

**Ensuring sustainability** is defined as “maintaining the potential of fisheries resources to meet the reasonably foreseeable needs of future generations and avoiding, remedying or mitigating any adverse effects of fishing on the aquatic environment”.

**Utilisation** is defined as “conserving, using, enhancing, and developing fisheries resources to enable people to provide for their social, economic, and cultural wellbeing.

### 3.2 Treaty of Waitangi (Fisheries Claims) Settlement Act 1992 - Section 5 of the Act

58. Section 5 of the Act requires that the Act be interpreted and people making decisions under the Act to do so in a manner that is consistent with the Settlement Act. The Settlement Act provides that non-commercial customary fishing rights continue to be subject to the Principles of the Treaty of Waitangi and give rise to Treaty obligations on the Crown.
59. Section 10 of the Settlement Act requires the Minister to develop policies and programmes to give effect to the use and management practices of tangata whenua in the exercise of non-commercial fishing rights. Consistent with this Fisheries New Zealand has worked with iwi to develop engagement processes that enable iwi to work together to reach a consensus where possible and to inform the Ministry on how tangata whenua wish to exercise kaitiakitanga in respect of fish stocks in which they share rights and interests and how those rights and interests may be affected by sustainability measures proposed by Fisheries New Zealand.
60. Fisheries New Zealand has engaged with iwi through the development of the *Revitalising the Gulf* strategy which proposed the trawl corridors approach, as well as through refinement and finalisation of the Fisheries Plan, which includes the action to progress excluding bottom trawling and Danish seining in the Gulf, except within defined areas. Further engagement on the



development of the specific trawl corridor proposals was also carried out prior to public consultation. A summary of iwi feedback is provided in section 4 below.

### 3.3 Environmental principles - Section 9 of the Act

61. Section 9 of the Act sets out the environmental principles that must be taken into account when making decisions under the Act. These are as follows:
- a) Associated or dependent species should be maintained above a level that ensures their long-term viability;
  - b) Biological diversity of the aquatic environment should be maintained; and
  - c) Habitats of particular significance for fisheries management should be protected.

#### *Associated or dependent species – section 9(a) of the Act*

62. “Associated or dependent species” means any non-harvested species taken or otherwise affected by the taking of any harvested species.

#### **Protected Species interactions**

63. Associated or dependent species can include various protected species that are sometimes accidentally caught through commercial fishing activity. If protected species are caught, commercial fishers must file a report on the day the capture occurs. Fisheries New Zealand is now releasing a summary of these reports quarterly (from the 2019/20 fishing year onwards) on our [webpage](#).
64. Observer reports are available on some bycatch taken by trawl fisheries; however, observer coverage of inshore fisheries in the Gulf has been low in the past. Between 2012-2022 observers were present on trawl vessels for around 10% of trawl tows in the Gulf.
65. If implemented, BFAZ would change the spatial distribution of bottom trawl and Danish seine effort in the Gulf. These changes, along with fisheries interactions, will continue to be monitored to understand how the implementation of BFAZs may affect the frequency of interactions with and risk to other associated species.

#### **Marine mammals**

66. In the Hauraki Gulf, reports of interactions with marine mammals from bottom trawl and Danish seine vessels are rare, with 0.06% of all fishing events since 2012 having reported marine mammal interactions. These interactions were with the following species:
- Bottlenose dolphin – 6
  - Common dolphin – 12
  - Long-beaked common dolphin – 1
  - NZ fur seal – 4
  - Pilot whale long finned – 1
  - Seals and Sealions (unidentified) – 2
67. Observer bycatch data for the period 2012-2022 reported captures of marine mammals on 0.35% of all observed tows. Observer coverage was 10.1% in the Gulf over this period.
68. A risk-assessment based approach is used to manage the effects of fishing on marine mammals. Based on reported mammal capture rates, the risk to marine mammals in bottom trawl and Danish seine fisheries is low relative to other fisheries.

## Seabirds

69. Management of seabird interactions with New Zealand's commercial fisheries is guided by the National Plan of Action to Reduce the Incidental Captures of Seabirds (NPOA-Seabirds 2020).<sup>15</sup> The NPOA-Seabirds 2020 establishes a risk-based approach to managing fishing interactions with seabirds, targeting management actions at the species most at risk as a priority but also aiming to minimise captures of all species.
70. Additionally, a range of non-regulatory measures have been in place for a similar period of time. The measures are set out in vessel-specific Protected Species Risk Management Plans (PSRMPs) and include measures such as fish waste management practices and the deployment of additional seabird scaring devices at times of heightened risk. Fisheries New Zealand monitors and audits performance against these plans. Information on adherence to PSRMPs by all vessels is reported in Fisheries New Zealand Seabird Annual Reports.
71. The "Mitigation Standards to Reduce the Incidental Captures of Seabirds in New Zealand Commercial Fisheries" suggest that to effectively reduce the risk of seabird captures, trawl vessels less than 28 metres in overall length (<28 metre) need to use a combination of mitigation practices that best address the risks of their individual operations.
72. Based on observed seabird capture rates, the risk to seabirds in these fisheries is low relative to other fisheries. In the 2019/20 year, there was a capture rate of 0.61 birds per 100 tows. In comparison, the seabird capture rate in deep-water trawl fisheries for the same year was 4.21 birds per 100 tows. There is currently very little data on seabird captures for Danish seine in the Gulf, however we do not expect the overall risk to increase with the implementation of BFAZ as the areas identified are already heavily fished.

## Fish, turtle and shark interactions

73. No detailed analyses of fish bycatch and discards from inshore fishing have been completed principally because of low observer coverage of these fisheries.
74. It is expected that electronic monitoring will enable better characterisation and monitoring of fish bycatch by inshore fisheries. Progress has been made with estimating the bycatch of undersized fish, such as sub-legal-sized snapper, but some issues need to be resolved before electronic monitoring can provide all the information required to estimate fish and invertebrate bycatch.
75. There are no records of fisher reported protected species captures using Danish seine methods. Turtle and white shark captures are also exceedingly rare with bottom trawl.

## Protected corals and vulnerable benthic taxa

76. Populations of erect and structurally fragile species, like corals, are most susceptible to the impacts of trawling. Black corals (Antipatharia), gorgonian corals (Octocorallia), stony corals (Scleractinia) and hydrocorals (Stylasteridae) are protected under the Wildlife Act 1953. Other vulnerable benthic organisms include bryozoans, sponges, anemones, and brachiopods.
77. Observer reported and fisher reported bycatch of coral is not always at a suitable taxonomic resolution to determine whether it is a protected coral species. Numerous codes, which group

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<sup>15</sup> National Plan of Action to Reduce the Incidental Capture of Seabirds <https://www.mpi.govt.nz/dmsdocument/40652-National-Plan-Of-Action-Seabirds-2020-Report#:~:text=This%20NPOA%20Seabirds%202020%20establishes,zero%20fishing%2Drelated%20seabird%20mortalities.>

taxa (e.g., COU = coral unspecified) are used to report bycatch, many of which could include protected corals.

78. Under existing management, bycatch of corals and/or vulnerable taxa does occur within the Gulf. Observer bycatch data for the period 2012-2022 reported captures of corals on 6% of all observed tows and captures of other benthic species on 34.4% of all observed tows.
79. Observer reported bycatch is likely to underestimate the extent of the effects of bottom trawling on the seabed as not all tows are observed (e.g., 5.1% of tows in the Gulf were observed in the 2021/22 fishing year), and because many corals and other vulnerable taxa fragment during contact with trawl gear and may be lost through the mesh of the net.
80. Managing the effects of fishing on protected species often uses a risk assessment-based approach. However, spatially explicit risk assessments, as done for seabirds and marine mammals, have not yet been fully developed for benthic habitats and communities, such as protected corals.
81. Spatial management measures that close areas to bottom trawling, have been identified in international reviews as the most effective management measures to limit adverse effects of bottom trawl gear on sensitive seafloor habitats and ecosystems. Recently developed models, which provide an indication of where different groups of habitat-forming species are likely to occur within the Gulf, have enabled a spatial planning process to assess and improve current levels of spatial protection.

#### *Biological diversity of the aquatic environment – section 9(b) of the Act*

82. The Gulf contains a variety of habitats including salt marshes, mussel beds, sand flats, sponge gardens, tubeworm reef fields and kelp forests. These habitats are important for supporting and maintaining biological diversity as they provide a range of important functions such as primary production, habitat provision for fish and invertebrate species, nutrient transfer, sediment stabilisation, predation protection, water filtration and the supply of prey.
83. Numerous stressors to the Gulf, including sedimentation, climate change, fishing and pollution have resulted in the degradation of its habitats<sup>16</sup>.
84. Bottom trawling and Danish seining can damage or remove structure forming species, reduce habitat complexity and alter the structure of the seafloor. These fishing methods are likely to have largely predictable and sometimes substantial effects on benthic community structure and function. Generally, there are decreases in the density and diversity of benthic communities and, especially, the density of large, structure-forming species, and long-lived organisms along gradients of increasing fishing intensity.
85. Biogenic habitats (those formed by plants and animals) are regarded as much more vulnerable to trawling impacts than seafloor habitat types such as sand flats, with their ability to recover being low and likely to occur over much longer time scales.
86. Detailed historical maps are lacking for most biogenic habitat types in the Gulf, making it difficult to get an accurate measure on the extent of impact.
87. Fisheries New Zealand have contracted National Institute for Water and Atmospheric Research (NIWA) to complete a survey of benthic habitats within the Gulf to improve our knowledge on the distribution of habitats and to provide baseline data for the purposes of monitoring changes to habitats and benthic communities following any closure of areas to trawl and Danish seine fishing. The survey is planned to go ahead during 2024.

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<sup>16</sup> Every three years, the Hauraki Gulf Forum is required to produce a report on the State of the Hauraki Gulf environment. The reports can be found at <https://gulfforum.org.nz/state-of-the-gulf>

### *Habitats of particular significance for fisheries management – section 9(c) of the Act*

88. Habitats of particular significance for fisheries management are not defined in the Act. Fisheries New Zealand recently consulted on draft guidelines for identification of habitats of particular significance for fisheries management and the operational proposals to support its application. In this context, protect means taking measures that would avoid, remedy, or mitigate the adverse effect of a decision that could undermine the function the habitat provides for the fisheries resource and ecosystem.
89. At this time, work has not yet been completed that will identify specific habitats of particular significance within the Gulf that could be used as a basis to exclude areas for the placement of trawl corridors.
90. The Fisheries Plan contains actions to identify and document habitats of particular significance in the Gulf and to design and implement a protection and monitoring regime for these habitats. Fisheries New Zealand will commence this work in late 2023/early 2024.

### **3.4 Section 10 - Information principles**

91. Section 10 sets out the information principles that all persons exercising or performing functions, duties, or powers under the Act, in relation to the utilisation of fisheries resources or ensuring sustainability, shall take into account, these are:
  - (a) decisions should be based on the best available information;
  - (b) decision makers should consider any uncertainty in the information available in any case;
  - (c) decision makers should be cautious when information is uncertain, unreliable, or inadequate; and
  - (d) the absence of, or any uncertainty in, any information should not be used as a reason for postponing or failing to take any measure to achieve the purpose of this Act.
92. Fisheries New Zealand considers that the best available information has been used as the basis for proposals in this paper.<sup>17,18</sup> Where information is uncertain, unreliable or inadequate this has been identified and articulated. Fisheries New Zealand welcomes feedback on the information used throughout this document, including if any literature relating to BFAZ has been overlooked.

#### **Relevant Questions for Submitters\***

- Question 5** Do these proposed options adequately provide for Treaty of Waitangi obligations and customary access to fishing? Why?
- Question 6** Do you think these options adequately provide for social, economic, and cultural wellbeing?

<sup>17</sup> Including Bennion et al. 2023: Exploring the use of spatial decision-support tools to identify trawl corridors in the Hauraki gulf Marine Park. New Zealand Aquatic Environment and Biodiversity Report No. 306.  
<https://fs.fish.govt.nz/Doc/25372/AEBR-306-Spatial-Decision-Support-Tools-For-Trawl-Corridors-Hauraki-Gulf-4341-2023.pdf.ashx>

<sup>18</sup> Zonation is a spatial-decision support tool. It enables the consideration of multiple spatial datasets and can be used to identify priority areas for particular objectives.

**Question 7** Do you think the proposed options appropriately consider the sustainability obligations under the Act?

\*A full list of questions for submitters can be found in Section 7 at the end of this document.

## 4 Feedback

### 4.1 Feedback from tangata whenua

93. Fisheries New Zealand and the Department of Conservation jointly met with tangata whenua through two rounds of engagement during the development of *Revitalising the Gulf* and the Fisheries Plan from April 2020 to April 2022. This included discussion on marine protection, fisheries priorities for iwi and managing mobile bottom impact fishing methods in the Gulf, including the proposal to develop trawl corridors. Feedback from tangata whenua through this engagement highlighted concerns with bulk harvest methods and the impacts that they can have. The majority of iwi primarily supported the removal of some or all mobile bottom contact fishing from the Gulf.
94. Fisheries New Zealand identified risks and impacts of implementing trawl corridors to tangata whenua throughout the Gulf and projected displacement of fishing effort into other receiving areas. We are consulting with tangata whenua throughout the Hauraki Gulf region as well as with iwi fisheries forums in areas that may potentially receive displacement of fishing effort to discuss potential impacts and benefits.
95. Feedback from Te Ohu Kaimoana<sup>19</sup> as well as the Mid North, Ngā Hapū o Te Uru o Tainui, Mai I Nga Kuri a Whareki Tihirau and Te Hiku o Te Ika iwi fisheries forums<sup>20</sup> and tangata whenua from throughout the Hauraki Gulf region will be collated to present to the Minister in final advice, along with the feedback that will be received from public consultation.

### 4.2 Hauraki Gulf Fisheries Plan Advisory Group

96. The HGFPAG was established in May 2022 to support the development and monitor the implementation of the Fisheries Plan, as well as to identify issues and collate advice for Fisheries New Zealand on fisheries management issues and priorities in the Gulf on an ongoing basis. Members have expertise in fisheries management, fisheries science, environmental policy and represent a range of fisheries management interests.
97. Of the issues considered by the group, BFAZ was one issue where consensus was not achieved, and divergent views were recorded. Some members supported either a total ban of bottom trawling and Danish seining fishing methods from the Gulf immediately or using trawl corridors temporarily with a commitment to completely phase these methods out by 2025, while other members supported the use of trawl corridors as an endpoint.

### 4.3 Hauraki Gulf Fisheries Plan Submissions

98. A large number of public submissions on the Fisheries Plan (comprised of individuals, environmental organisations and recreational fishing groups) opposed bottom trawling, Danish seining and scallop dredging fishing methods in the Gulf, or the establishment of trawl corridors.

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<sup>19</sup> Te Ohu Kaimoana (the Māori Fisheries Trust) is the representative organisation that works to protect Iwi and Māori customary and commercial interests in fisheries and the marine environment.

<sup>20</sup> Regional forums that enable coordinated approaches to Fisheries planning and implementation of customary regulations.

These submitters commented on the adverse environmental impacts of mobile bottom contact fishing methods, including the resuspension of sediment and long-term damage to biogenic habitats, the impact on the sustainability of stocks such as scallops, and animal welfare issues as a result of fish being stressed and crushed in nets.

99. Submitters with a commercial interest were generally concerned about the impacts of restricting bottom trawling and Danish seining on fishing operations and the potential displacement of effort that could occur. This included the potential for cumulative impacts from the Department of Conservation's marine protection proposals under *Revitalising the Gulf*. Commercial submitters noted that the sector was working towards reducing the impact of bottom trawling through innovative methods and gear trials, and that fishers trawl over soft seabed sediment forms, as opposed to reefs which are areas commonly associated with high biodiversity. It was also considered important for commercial fishers to be able to supply a range of fish to the market throughout the year, including many species which are not readily caught by alternative methods to trawling and Danish seining.

## **5 Taking a spatial planning approach**

### **5.1 Current trawl and Danish seine restrictions**

100. There are currently numerous spatial restrictions within the Gulf under fisheries regulations. These are best understood in conjunction with the map shown in Figure 4. Trawling from any size vessel is prohibited in the inner Gulf. While Danish seining is allowed in parts of the inner Gulf, it is also prohibited in the innermost area, although this does not include the use of Danish seine by a single vessel for a portion of a statistical area (Figure 4).

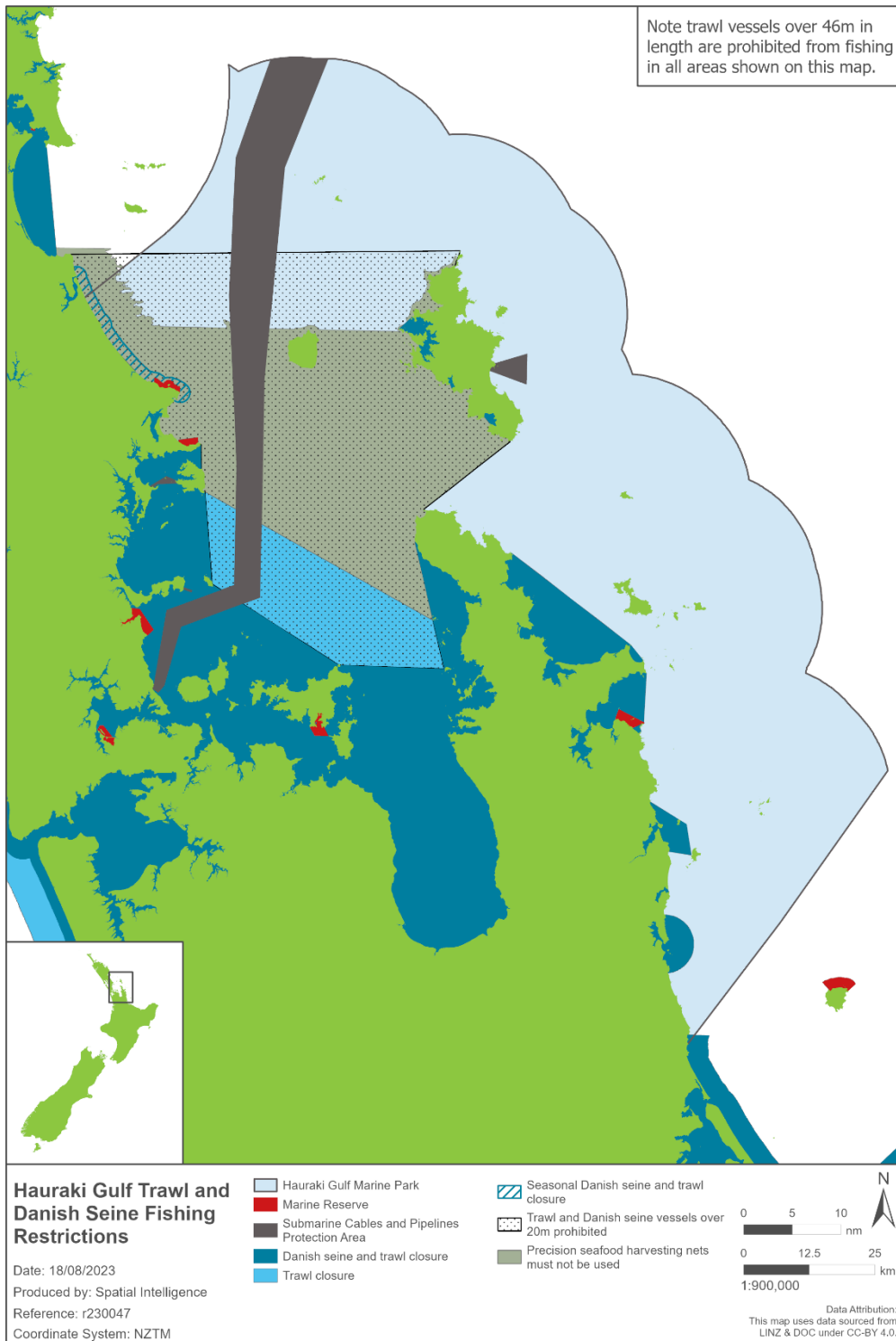


Figure 4. Current spatial restrictions for bottom trawl and Danish seine in the Hauraki Gulf.

## 5.2 Benthic habitats and species

### Biogenic habitats

- To minimise any further loss of biodiversity and support the recovery of biogenic habitats in the Gulf, a commitment was made through *Revitalising the Gulf* to protect a higher proportion of the area in which habitat forming species are likely to exist from the effects of trawl and Danish seine fishing.

102. There are long-term economic benefits associated with resilient habitats that can support complex marine ecosystems. These benefits include (a) assuring consumers that the region is being harvested sustainably, (b) providing for future recreational fishers and consumers of seafood, and (c) sustaining tourism ventures.
103. A Fisheries New Zealand science project (ZBD2020-06) was contracted to NIWA in 2020 to collate spatial information on habitat forming species, to develop models predicting the distribution of biogenic habitats, and to test a spatial planning approach.
104. Information on the reported presence of all habitat forming plants and animals was collated from existing databases, published papers, central and regional government reports, university theses and various one-off projects in the Gulf. The data were used to predict the probability of the occurrence of 20 different habitat forming groups of species across the Gulf.
105. Well established modelling techniques were used, and outputs validated. Using both statistical and expert validation, 17 of the 20 models were considered robust.<sup>21</sup> A description of all the habitat-forming species groups modelled as well as a categorisation based on their vulnerability to the effects of trawling and Danish seine is provided in Table 2 below.

**Table 2. Modelled habitat-forming species groups and their vulnerability to bottom contact fishing methods.**

Group	Group description
<b>Most Vulnerable (Erect and structure-forming)</b>	
Corals and sea pens	Group includes hard corals, sea pens, soft corals, black corals, gorgonians etc. (All Cnidarian/Anthozoa records except for sea anemones, cup corals and Hydrozoa)
Cup corals	Separate group for Cup corals (Order Scleractinia).
Sponges (Erect/upright)	Erect/upright sponge taxa.
Bryozoa (Erect/frame-building)	Erect/frame building bryozoan taxa.
Bryozoa (Erect and rooted)	Erect and rooted bryozoan taxa (soft sediment associated).
Non-calcareous tubeworms	Mainly Sabellidae (feather duster worms), often associate with hard substrate.
Horse mussels	<i>Atrina</i> spp. ( <i>A. zelandica</i> ).
Oysters	Oysters.
Rhodoliths	Rhodoliths. Dominant taxa: <i>Lithothamnion</i> , <i>Sporolithon</i> . Erect and structure-forming (highly vulnerable, though often low relief)
<b>Less Vulnerable (Low relief structure typically extending &lt;1 cm above sediment surface)</b>	
Sea anemones	Sea anemone taxa. Primarily taxa with low relief structure
Hydrozoa	Class Hydrozoa. Considered opportunistic or low sensitivity
Encrusting sponges	Encrusting sponge taxa.
Encrusting Bryozoa	Encrusting bryozoan taxa.
Miscellaneous annelid assemblages	Other polychaetes - typically soft sediment associated taxa, some tube forming..
Biogenic patches/lumps or multi-species aggregations	Multi-species aggregations that indicate biogenic habitat. Models created with records for 'biogenic lumps', dog cockles and dead shell debris, primarily records from video datasets with no detailed species identifications.
<b>Rocky reef taxa with low/no overlap with trawled areas</b>	
Canopy-forming macroalgae	Large brown canopy-forming macroalgae, primarily <i>Ecklonia</i> & <i>Carpophyllum</i> spp.
Miscellaneous macroalgae	All other macroalgae taxa records (excluding canopy-forming macroalgae and rhodoliths).
<b>Experts assessment of model as poor representation of reality - Not used to inform BFAZ placement</b>	
Calcareous tubeworms	All calcareous tubeworm records.
Mussels	Other mussels (not horse mussels).
Brachiopoda	Brachiopoda (Phylum) - lampshells.

<sup>21</sup> For more information on the sources of data, modelling approaches and outputs please refer to <https://www.mpi.govt.nz/dmsdocument/55972-AEBR-306-Exploring-the-use-of-spatial-decision-support-tools-to-identify-trawl-corridors-in-the-Hauraki-Gulf-Marine-Park>



106. Predictions of the occurrence of habitat forming species were developed taking into account the effect that historical trawling would have had on any habitat and communities present. This is the best available information on the likely occurrence of habitat forming species at the scale of the Gulf.
107. Current closures protect on average 35% of predicted suitable habitat for the 20 biogenic habitat groups. This ranged from 10% to 94% for the 9 most vulnerable biogenic habitat groups (Table 3).

**Table 3. Predicted suitable habitat (%) in current closed areas for the most vulnerable taxa.**

	Status quo
Corals and sea pens	22%
Cup corals	15%
Sponges (Erect/upright)	32%
Bryozoa (Erect/frame-building)	15%
Bryozoa (Erect and rooted)	25%
Horse mussels	94%
Oysters	58%
Rhodoliths	10%
Non-calcareous tubeworms	35%

#### *Protected species*

108. The habitat suitability models developed for habitat-forming species in the Gulf use data captured from within the Gulf and includes all records of protected coral species. Distribution models for individual protected species could not be developed at the scale of the Gulf as there were too few records.
109. Models predicting the likely distribution of 24 protected coral taxa have been developed for the New Zealand Territorial Sea and EEZ.<sup>22</sup> Most of the records used to inform the protected coral taxa habitat suitability models were collected in the EEZ.
110. A very small percentage of the suitable habitat for each protected species (ranging from 0 – 4.2%) is predicted to fall within the Gulf (Table 4). For all except one species, 80% or more of their predicted suitable habitat within New Zealand waters falls within the EEZ. The individual protected species models were not used to inform the design of BFAZ given the low level of predicted occurrence for most species within the Gulf.

**Table 4. Estimates of the percent (%) of suitable habitat for protected coral taxa (as defined in Schedule 7A of the Wildlife Act 1953) that falls within the Gulf.**

Taxonomic Group	Protected Coral Taxa	Percent (%) of total suitable habitat falling within the Gulf
Black coral (Antipatharia)	<i>Bathypathes</i> spp.	0
Hydrocorals (Stylasteridae)	<i>Conopora</i>	<0.1
	<i>Errina</i> spp.	0
	<i>Stylaster</i> spp.	<0.1
Gorgonian <sup>23</sup> Corals (Octocorallia)	<i>Acanella</i>	0
	<i>Acanthogorgia</i>	0
	<i>Chrysogorgia</i>	0

<sup>22</sup> Stephenson et al., 2022. The atlas of seabed biodiversity for Aotearoa New Zealand <https://doi.org/10.5281/zenodo.7083642>

<sup>23</sup> The Wildlife Act refers to Gorgonacea, which is no longer an accepted taxonomic designation and the accepted name is Octocorallia

	<i>Keratoisis</i> spp.	0
	<i>Metafannyella</i>	1
	<i>Narella</i>	0
	<i>Paragorgia</i> spp.	0
	<i>Telesto</i>	0
	<i>Anthoptilum</i>	0.2
	<i>Anthomastus</i>	0
	<i>Heteropolypus</i>	0
Stony coral (Scleractinia)	<i>Caryophyllia</i>	0.2
	<i>Desmophyllum</i>	0
	<i>Enallopsammia rostrata</i>	0
	<i>Flabellum</i>	0
	<i>Goniocorella dumosa</i>	<0.1
	<i>Madrepora oculata</i>	0
	<i>Monomyces</i>	4.1
	<i>Solenosmilia variabilis</i>	0
	<i>Stephanocyathus</i>	0

### 5.3 Spatial planning approach

111. The Hauraki Gulf Benthic Spatial Planning Advisory Group (HGBSPAG) was formed in 2022 to facilitate collaboration on the process of collating spatial information on, modelling the distribution of and testing spatial planning approaches for managing habitat forming species (FNZ project ZBD2020-06). The HGBSPAG comprised technical experts from Fisheries New Zealand, the Department of Conservation, Auckland Council, Waikato Regional Council, Industry (Fisheries Inshore New Zealand, Moana, Sanford) and environmental NGOs (Environment and Conservation Organisations, Revive our Gulf, Environmental Defence Society). The function of the HGBSPAG was to review the collated information and the model outputs, to collaboratively design a variety of scenarios to develop and test a spatial planning approach, and to consider metrics to measure the costs and benefits of different scenarios. Workshops with the HGBSPAG were held between March and July of 2022.
112. A spatial decision-support tool, Zonation, was used as part of the spatial planning approach. The tool enables the consideration of multiple spatial datasets and can be used to identify priority areas for particular objectives.
113. The tool was used by the HGBSPAG to identify priority areas for biogenic habitats, based on the distribution models, and to identify priority areas for trawl and Danish fisheries based on historical catch records. In addition, the tool has the ability to consider multiple objectives (e.g., protecting benthic habitats and providing for sustainable fisheries). This function was used by the HGBSPAG to identify and prioritise areas with high fisheries importance and low importance for biogenic habitats.
114. The HGBSPAG considered different approaches to utilise the prioritisations produced using Zonation and assessed the costs and benefits of various scenarios based on these approaches. These are summarised in a final report produced for the project.<sup>24</sup> The final report was reviewed by the HGBSPAG and presented to and reviewed by the Aquatic Environment Science Working Group.

<sup>24</sup> Bennion et al. 2023: Exploring the use of spatial decision-support tools to identify trawl corridors in the Hauraki gulf Marine Park. New Zealand Aquatic Environment and Biodiversity Report No. 306. <https://fs.fish.govt.nz/Doc/25372/AEBr-306-Spatial-Decision-Support-Tools-For-Trawl-Corridors-Hauraki-Gulf-4341-2023.pdf.ashx>

## 5.4 Criteria for developing bottom fishing access zones

115. Following completion of the Zonation science project, a process was commenced by Fisheries New Zealand officials to develop BFAZ options.
116. The areas in which BFAZ were to be considered were constrained by the following principles:
  - (a) BFAZ will not be placed in areas currently closed to trawl and Danish seine fishing, and will not change gear or vessel restrictions to allow for those gear or vessel types to be used in currently restricted areas,
  - (b) BFAZ will not be placed in previously unfished areas,
  - (c) BFAZ will not be placed in areas currently proposed for protection, and
  - (d) BFAZ will not be placed in areas deeper than 200m in the HGMP. These areas will be assessed in a separate process by a group that includes representation of deep water fisheries.
117. Priority areas for biogenic habitats and priority areas for trawl and Danish seine fisheries were then identified within the remaining area considered for BFAZ.
118. The findings of the science project were presented to key stakeholders through the HGFPAG in August 2022. In March of 2023 the HGFPAG provided a broad recommendation that groups of biogenic habitat-forming species which form structures standing erect from the seafloor and are more vulnerable to trawling should be prioritised.
119. Based on findings from the science project and input from the HGFPAG, Fisheries New Zealand used Zonation to identify priority areas for biogenic habitats.
120. Guidance was sought from trawl and Danish seine fisheries representatives to inform the development of a spatial prioritisation, using Zonation, for trawl and Danish seine fisheries in the Gulf.
121. The biogenic habitat prioritisation and the trawl and Danish seine prioritisation were used in Zonation to identify and prioritise areas with high fisheries importance and low importance as biogenic habitats. Placement of BFAZ within these areas would minimise impacts of trawl and Danish seine fisheries to biogenic habitats whilst allowing for fishing to continue in areas which have historically supported high proportions of fisheries catch.
122. Fisheries New Zealand and the Department of Conservation considered the prioritisations and used these alongside maps of current fisheries closures, protected areas, proposed protected areas and high-resolution trawl and Danish seine tow tracks, to develop a first iteration of BFAZ options.
123. To reduce the indirect effects of trawling on protected areas and coastal communities, a buffer of 1nm was applied around all proposed protected areas and no BFAZ were placed within 2nm of the coastline or major islands.
124. The HGFPAG provided feedback on the first iteration of BFAZ options. A key recommendation to come from this was that the shape of BFAZ should be informed by trawl tow paths to ensure the BFAZ were operationally feasible.

125. Fisheries New Zealand and the Department of Conservation revised the BFAZ boundaries and developed options with differing levels of closure proposed.

### Relevant Questions for Submitters\*

**Question 8** Do you think the criteria outlined in section 5 will provide a suitable basis to assess the options and their impacts?

\*A full list of questions for submitters can be found in Section 7 at the end of this document.

## 6 Options for consideration

126. There are four options proposed which vary in degrees of protection to biodiversity and impact to bottom trawl and Danish seine fisheries. Ordered in increasing level of impact to trawl and Danish seine fisheries the options are:

<b>Option 1</b>	Close <b>74.1%</b> of the Hauraki Gulf Marine Park shallower than 200m to Danish seine and <b>77.1%</b> to trawl fishing methods and establish <b>6 BFAZ</b> .
<b>Option 2</b>	Close <b>79.4%</b> of the Hauraki Gulf Marine Park shallower than 200m to Danish seine and <b>82.4%</b> to trawl fishing methods and establish <b>5 BFAZ</b> .
<b>Option 3</b>	Close <b>86.6%</b> of the Hauraki Gulf Marine Park shallower than 200m to Danish seine and <b>88.5%</b> to trawl fishing methods and establish <b>4 BFAZ</b> .
<b>Option 4</b>	Close <b>87.3%</b> of the Gulf shallower than 200m to Danish seine and <b>89.2%</b> to trawl fishing methods and establish <b>4 BFAZ</b> .

127. The status quo or a complete ban are not proposed options. In 2021, Cabinet agreed to *Revitalising the Gulf* and the actions contained within it, which included progressing the trawl corridors approach.
128. The Options do not prevent fish being caught outside of the closed areas and do not alter the Total Allowable Catch (TAC). Given the estimated catch and revenue reductions discussed in the sections below do not account for displacement of effort to other areas or fishing methods, it is possible that impacts may be overestimated. For example, fishers may be able to compensate for lost catch in areas closed to fishing by increasing their catch in areas that remain open to fishing, although the ability to compensate by successfully shifting fishing effort may vary with fish stock and operator. The relocation of operations, or adaptation through other fishing methods, may incur additional costs such the cost of converting fishing vessels and increased fuel costs.
129. With the information currently available, Fisheries New Zealand considers that each of the four proposed options addresses the problem of adverse impacts of bottom contact fishing on benthic habitats in the Gulf. They each also address the Crown's obligations under section 5 (Treaty of Waitangi), section 8 (the Purpose), section 9 (environmental principles) and section 10 (information principles) of the Act by allowing for continued sustainable utilisation.

130. The options differ in no other way than in the scale of the proposed spatial reductions to current bottom contact fishing access in the Gulf and each option therefore addresses the problem definition and meets the range of legislative obligations to differing degrees. Each option provides for different levels of fishing utilisation and has different potential resulting impacts depending on the scale of reduced access. How each option specifically addresses protection to benthic biodiversity is addressed in greater detail below and compared to the relative impact this would have on fishing utilisation in each case as well as potential economic impacts.
131. There remains uncertainty around expected changes to landings and revenue, displacement of fishing effort to other areas not affected by the closures and the substitution of fishing methods other than Danish Seine and trawl. Therefore, whilst Fisheries New Zealand considers that we are using the best information currently available, we would specifically like to invite feedback on how the proposed options address the problem definition:

#### Relevant Questions for Submitters\*

- Question 9** Do these proposed options adequately provide for Treaty of Waitangi obligations and customary access to fishing? Why?
- Question 10** Do you think these options adequately provide for social, economic, and cultural wellbeing?
- Question 11** Do you think the proposed options appropriately consider the sustainability obligations under the Act?

\*A full list of questions for submitters can be found in Section 7 at the end of this document.

## 6.1 Option 1: Close a total of 74.1% of the Gulf shallower than 200m to Danish seine and 77.1% to trawl fishing methods and establish 6 BFAZ.

132. Option 1 proposes to exclude Danish seining and bottom trawling from 74.1% and 77.1% of the entire Gulf shallower than 200m, respectively. It proposes these methods be allowed to continue within 6 BFAZ (Figure 5).
133. This option will reduce the size of the area currently open to trawl and Danish Seine by 64%. It is important to note that trawling will continue to be restricted in the area within the innermost proposed BFAZ in this option (labelled A, Figure 5), where the current trawl prohibition applies. As such this portion of the BFAZ would allow Danish seine but exclude bottom trawling. The area labelled B would be open to both Danish seine and trawl fishing.

### *Biodiversity outcomes*

134. Option 1 will protect on average 90% (ranging from 82% to 100%) of predicted suitable habitat for the 20 biogenic habitat groups (Table 8).
135. At least 87% of the predicted suitable habitat for the most vulnerable groups of habitat-forming species is protected by Option 1 (Table 5).

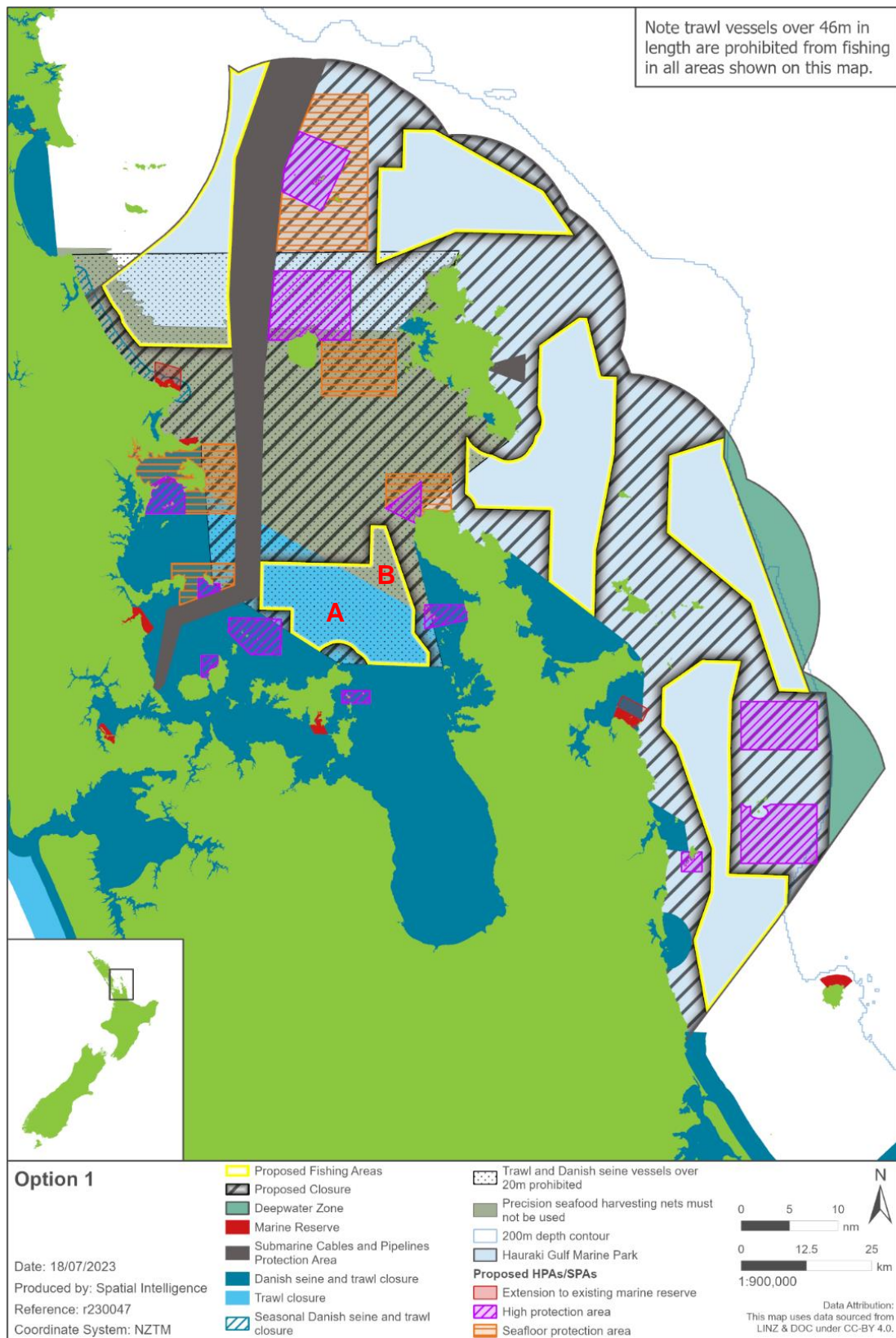
**Table 5. Predicted suitable habitat (%) in proposed closed areas for the most vulnerable taxa**

	Status quo	Option 1
Corals and sea pens	22%	87%
Cup corals	15%	87%
Sponges (Erect/upright)	32%	90%
Bryozoa (Erect/frame-building)	15%	88%
Bryozoa (Erect and rooted)	25%	92%
Horse mussels	94%	100%
Oysters	58%	96%
Rhodoliths	10%	88%
Tubeworms (Non-calcareous)	35%	92%

### *Economic outcomes*

136. Based on data from the last 5 fishing years, Option 1 would result in an estimated reduction in landings of approximately 632 tonnes of fish per year. This represents a reduction in approximately \$2.7 million in annual revenue (a 38% reduction) based on port prices from the last 5 years or an estimated reduction of \$3.9 million in annual export revenue (a 37% reduction) of the top 5 export species (Table 9). It is important to note that port price is an average of what commercial fishers receive across a QMA, not what the fish is worth at market (which is higher). Nor does it reflect the income for LFRs (including, wholesalers and/or processors) and retailers. These changes to landings and revenue do not account for displacement of fishing effort to other areas not affected by the closures, substitution of fishing methods other than Danish Seine and trawl, or any flow on effects.

137. To put this change in context, the landings affected represent 32% of all Danish Seine & Bottom Trawl landings in the Hauraki Gulf, 0.42% of total annual landings from New Zealand's Inshore Fisheries, 0.37% of total annual landings using Danish Seine or bottom trawl in New Zealand, and around 0.19% of annual landings across New Zealand.
138. Based on data from the last 5 fishing years, of the 21 permit holders currently landing catch from the area, Option 1 would result in 10 permit holders with a less than 10% reduction in their landings, 10 permit holders with a 10-30% reduction in their landings, and 1 permit holder with a greater than 30% reduction in their landings. Impacts may therefore fall disproportionately, and significantly impact a small number of permit holders.



**Figure 5. Option 1, Close a total of 74.1% of the Gulf shallower than 200m to Danish seine and 77.1% to trawl fishing methods and establish 6 BFAZ. Note the area labelled A in the innermost Hauraki Gulf BFAZ would be Danish seine only based on existing restrictions. The area labelled B would be open to both trawl and Danish seine.**



## 6.2 Option 2: Close a total of 79.4% of the Gulf shallower than 200m to Danish seine and 82.4% to trawl fishing methods and establish 5 BFAZ.

139. Option 2 proposes to exclude Danish seining from 79.4% and bottom trawling from 82.4% of the entire Gulf shallower than 200m. It proposes these methods be allowed to continue within 5 BFAZ (Figure 6).
140. This option will reduce the size of the area currently open to trawl and Danish Seine by 72%. As with Option 1 trawling will continue to be restricted in the area within the innermost proposed BFAZ for this option (labelled A, Figure 6), where the current trawl prohibition applies. As such this portion of the BFAZ would be Danish seine only. The area labelled B would be open to both Danish seine and trawl fishing.

### *Biodiversity outcomes*

141. Option 2 will protect on average 95% (ranging from 86% to 100%) of predicted suitable habitat for the 20 biogenic habitat groups (Table 8).
142. At least 91% of the predicted suitable habitat for the most vulnerable groups of habitat-forming species is protected by option 2 (Table 6).

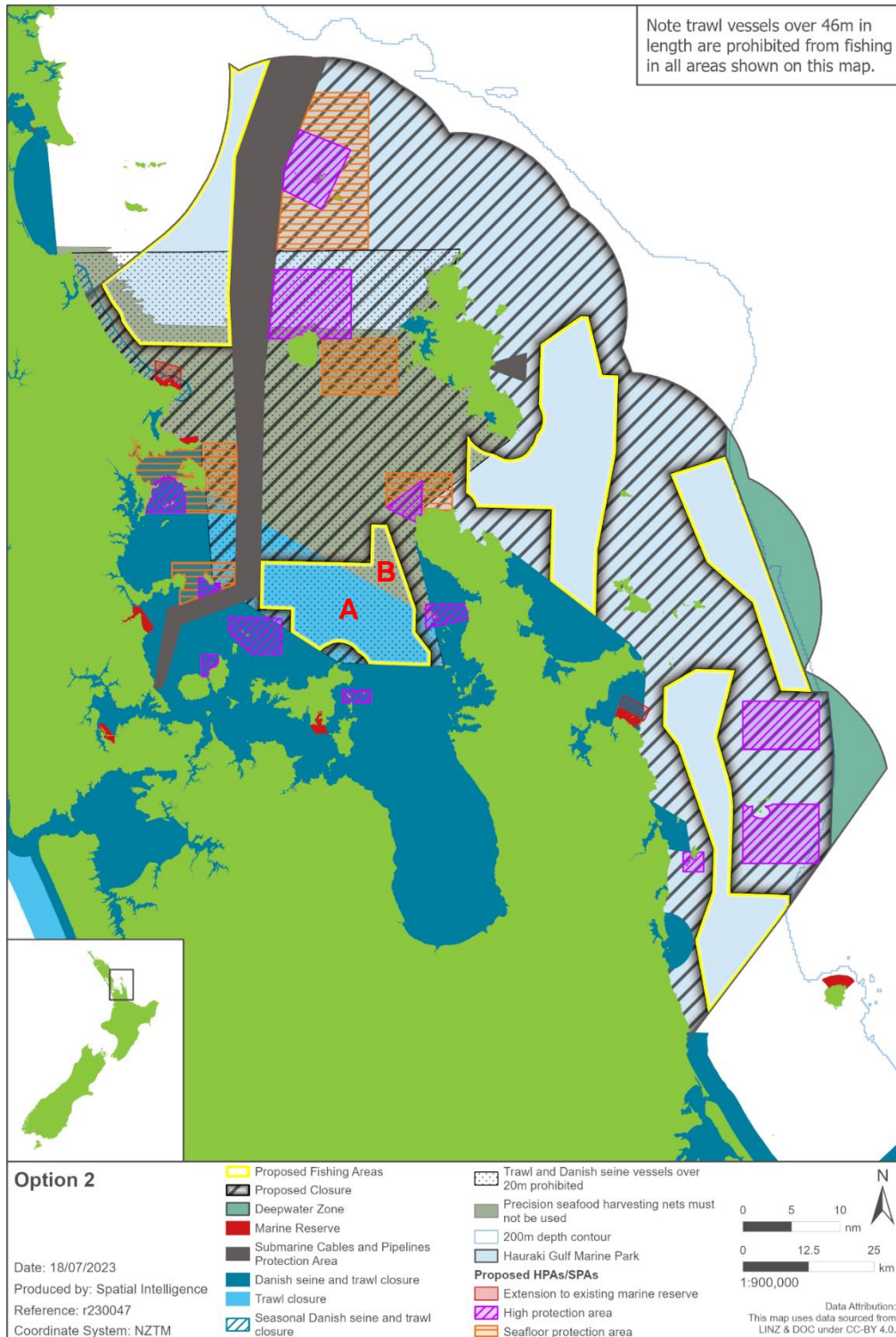
**Table 6. Predicted suitable habitat (%) in proposed closed areas for the most vulnerable taxa**

	Status quo	Option 2
Corals and sea pens	22%	95%
Cup corals	15%	95%
Sponges (Erect/upright)	32%	91%
Bryozoa (Erect/frame-building)	15%	93%
Bryozoa (Erect and rooted)	25%	97%
Horse mussels	94%	100%
Oysters	58%	98%
Rhodoliths	10%	94%
Non-calcareous tubeworms	35%	96%

### *Economic outcomes*

143. Based on data from the last 5 fishing years, Option 2 would result in an estimated reduction in landings of approximately 723 tonnes of fish per year. This represents a reduction in approximately \$3.1 million in annual revenue (a 43% decrease) based on port prices from the last 5 years or an estimated reduction of \$4.4 million of export revenue (a 42% decrease) of the top 5 export species. It is important to note that port price is an average of what commercial fishers receive across a QMA, not what the fish is worth at market (which is higher). Nor does it reflect the income for LFRs (including, wholesalers and/or processors) and retailers. These changes to landings and revenue do not account for displacement of fishing effort to other areas not affected by the closures, substitution of fishing methods other than Danish Seine and trawl, or any flow on effects.
144. To put this change in context, the landings affected represent 37% of all Danish Seine & Bottom Trawl landings in the Hauraki Gulf, 0.48% of total annual landings from Inshore Fisheries, 0.43% of total annual landings using Danish Seine or bottom trawl in New Zealand, and around 0.22% of annual landings across New Zealand Fisheries.

145. Based on data from the last 5 fishing years, of the 21 permit holders currently landing catch from the area, Option 2 would result in 9 permit holders with a less than 10% reduction in their landings, 10 permit holders with a 10-30% reduction in their landings, and 2 permit holders with a greater than 30% reduction in their landings. Impacts may therefore fall disproportionately on a small number of permit holders.



**Figure 6. Option 2: Close a total of 79.4% of the Gulf shallower than 200m to Danish seine and 82.4% to bottom trawl fishing methods and establish 5 BFAZ. Note the area labelled A in the innermost Hauraki Gulf BFAZ would be Danish seine only based on existing restrictions. The area labelled B would be open to both trawl and Danish seine.**

### 6.3 Option 3: Close a total of 86.6% of the Gulf shallower than 200m to Danish seine and 88.5% to trawl fishing methods and establish 4 BFAZ.

146. Option 3 proposes to exclude Danish seining from 86.6% and bottom trawling from 88.5% of the entire Gulf shallower than 200m. It proposes these methods be allowed to continue within 4 BFAZ (Figure 7).
147. This option will reduce the size of the area currently open to trawl and Danish Seine by 82%. As with the other options trawling will continue to be restricted in the area within the innermost proposed BFAZ for this option (labelled A, Figure 7), where the current trawl prohibition applies. As such this portion of the BFAZ would be Danish seine only. The area labelled B would be open to both Danish seine and trawl fishing.

#### *Biodiversity outcomes*

148. Option 3 will protect on average 97% (ranging from 89% to 100%) of predicted suitable habitat for the 20 biogenic habitat groups (Table 8).
149. At least 94% of the predicted suitable habitat for the most vulnerable groups of habitat-forming species is protected by option 3 (Table 7).

**Table 7. Predicted suitable habitat (%) in closed areas for the most vulnerable taxa**

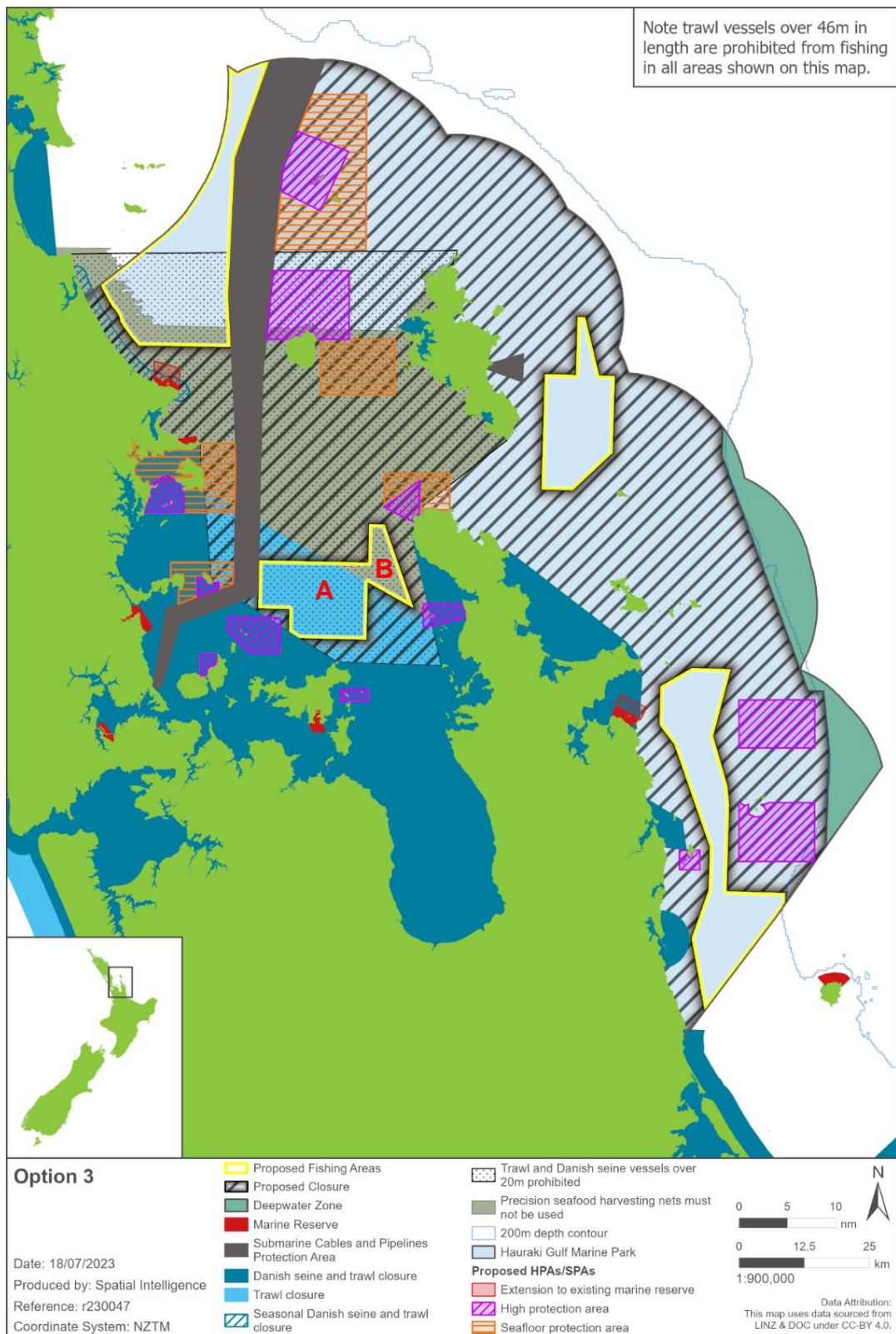
	Status quo	Option 3
Corals and sea pens	22%	97%
Cup corals	15%	98%
Sponges (Erect/upright)	32%	97%
Bryozoa (Erect/frame-building)	15%	94%
Bryozoa (Erect and rooted)	25%	99%
Horse mussels	94%	100%
Oysters	58%	98%
Rhodoliths	10%	100%
Non-calcareous tubeworms	35%	97%

#### *Economic outcomes*

150. Based on data from the last 5 fishing years, Option 3 would result in an estimated reduction in landings of approximately 978 tonnes of fish per year. This represents a reduction in approximately \$4.1 million in annual revenue (a 57% decrease) based on port prices from the last 5 years or an estimated reduction of \$5.9 million in annual export revenue (a 57% decrease) of the top 5 export species. It is important to note that port price is an average of what commercial fishers receive across a QMA, not what the fish is worth at market (which is higher). Nor does it reflect the income for LFRs (including, wholesalers and/or processors) and retailers. These changes to landings and revenue do not account for displacement of fishing effort to other areas not affected by the closures, substitution of fishing methods other than Danish Seine and trawl, or any flow on effects.
151. To put this change in context, the landings affected represent 50% of all Danish Seine and bottom trawl landings in the Hauraki Gulf, 0.66% of total annual landings from Inshore Fisheries,

0.58% of total annual landings using Danish Seine or bottom trawl in New Zealand, and around 0.29% of annual landings across New Zealand Fisheries.

152. Based on data from the last 5 fishing years, of the 21 permit holders currently landing catch from the area, Option 3 would result in 8 permit holders with a less than 10% reduction in their landings, 9 permit holders with a 10-30% reduction in their landings, and 4 permit holders with a greater than 30% reduction in their landings by green weight. Impacts of this Option may also fall disproportionately on some permit holders.



**Figure 7. Option 3: Close a total of 86.6% of the Gulf shallower than 200m to Danish seine and 88.5% to bottom trawl fishing methods and establish 4 BFAZ. Note the area labelled A in the innermost Hauraki Gulf BFAZ would be Danish seine only based on existing restrictions. The area labelled B would be open to both trawl and Danish seine.**

#### 6.4 Option 4. Close a total of 87.3% of the Gulf shallower than 200m to Danish seine and 89.2% to trawl fishing methods and establish 4 BFAZ.

153. Option 4 proposes to exclude Danish seining from 87.3% and bottom trawling from 89.2% of the entire Gulf shallower than 200m. It proposes to these methods be allowed to continue within 4 BFAZ (Figure 8).
154. Option 4 would see bottom trawling restricted entirely from the inner Gulf area by removing the areas labelled B within the innermost proposed BFAZ, while continuing to allow for Danish seine fishing within the areas labelled A in Figures 5 to 7.

##### *Biodiversity outcomes*

155. Prohibiting trawl and Danish seine fishing from area B would see an additional 88 km<sup>2</sup> protected. However, analysis of available spatial data indicates that, aside from a potential reduction in impact to localised scallop habitat, minimal benefits to biogenic habitats would be achieved.
156. Specifically, Option 4 will protect on average 97% (ranging from 89% to 100%) of predicted suitable habitat for the 20 biogenic habitat groups (Table 8).
157. At least 94% of the predicted suitable habitat for the most vulnerable groups of habitat-forming species is protected by option 2 (Table 8).

**Table 8. Predicted suitable habitat (%) in proposed closed areas for the most vulnerable taxa**

	Status quo	Option 4
Corals and sea pens	22%	97%
Cup corals	15%	98%
Sponges (Erect/upright)	32%	97%
Bryozoa (Erect/frame-building)	15%	94%
Bryozoa (Erect and rooted)	25%	99%
Horse mussels	94%	100%
Oysters	58%	98%
Rhodoliths	10%	100%
Non-calcareous tubeworms	35%	97%

##### *Economic outcomes*

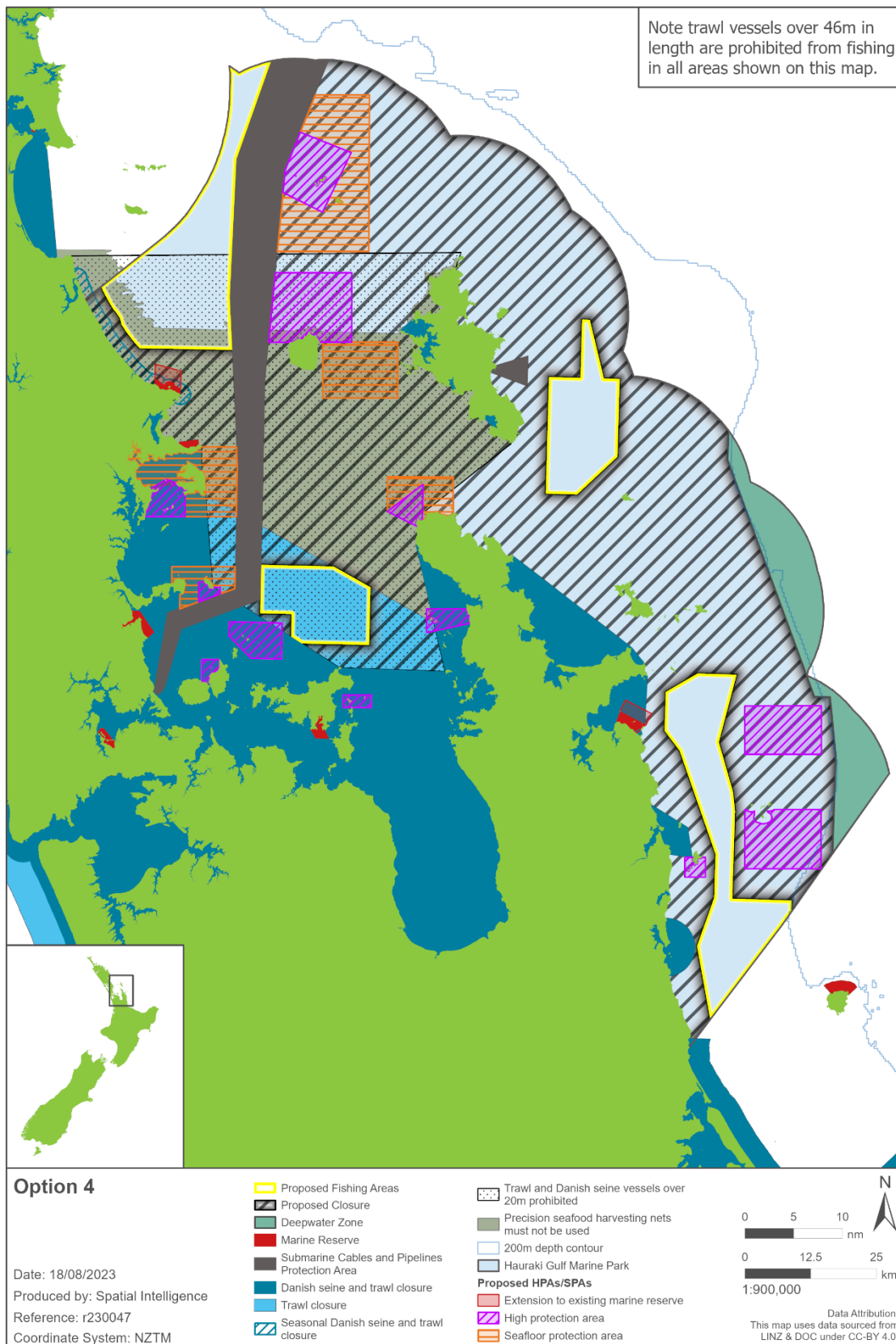
158. The additional removal of area B from the innermost proposed BFAZ would mean a further reduction in landings on top of Option 3 of approximately 39 tonnes and a reduction in total annual export revenue of approximately \$275,000, or the displacement of this fishing effort elsewhere.
159. Based on data from the last 5 fishing years, Option 4 would therefore result in an estimated reduction in landings of approximately 1017 tonnes of fish per year. This represents a reduction in approximately \$4.3 million in annual revenue (a 60% decrease) based on port prices from the last 5 years or an estimated reduction of \$6.2 million in annual export revenue (a 59% decrease) of the top 5 export species. It is important to note that port price is an average of what commercial fishers receive across a QMA, not what the fish is worth at market (which is higher). Nor does it reflect the income for LFRs (including, wholesalers and/or processors) and retailers. These changes to landings and revenue do not account for displacement of fishing effort to other areas

not affected by the closures, substitution of fishing methods other than Danish Seine and trawl, or any flow on effects.

#### **Relevant Questions for Submitters\***

- Question 11** Do you think the proposed options appropriately consider the effects on the benthic environment?
- Question 12** Do you think the proposed options adequately mitigate the adverse effects of mobile bottom contact fishing methods on the benthic environment?
- Question 13** Do you have any ideas or alternative approaches to the management of bottom fishing impacts, apart from the proposed Bottom Fishing Access Zones?

\*A full list of questions for submitters can be found in Section 7 at the end of this document.



**Figure 8. Option 4: Close a total of 87.3% of the Gulf shallower than 200m to Danish Seine and a total of 89.2% to trawl fishing methods and establish 4 BFAZ. Note the innermost BFAZ in the option would allow for Danish seine fishing to continue whereas the three outer BFAZ would provide for both trawl and Danish seine methods.**



## 6.5 Comparison of options

160. Of the three substantive options, the largest gain in the protection provided by the proposed options to biogenic habitats is between Option 1 and 2, with Option 2 providing an average of 5% more protection of suitable habitat compared to Option 1. Option 3 provides a smaller gain over Option 2 by providing an average 2% increase in protection of suitable habitat for habitat-forming species.
161. The largest difference between the proposed Options 1 – 3 in terms of impacts to trawl and Danish seine fisheries, is between Options 2 and 3, with Option 3 impacting 255t more of total annual landings compared to Option 2 and approximately \$1 million more in total annual revenue and \$1.5 million more in total annual export revenue. The difference between Option 1 and 2 is smaller with Option 2 impacting 91 tonnes more of total annual landings compared to Option 1 and approximately \$0.4 million more in total annual revenue and \$0.5 million more in total annual export revenue.
162. With respect to Option 4, commercial fishers have indicated there is considerable operational value in this innermost proposed BFAZ (labelled B in figures 5-7) as it provides for fishing opportunities in the lee of the Coromandel peninsula, particularly in easterly weather conditions. This area provides the ability to maintain continued fishing operations during bad weather events, which supports continued supply to the market.
163. While these operational considerations are a factor, overall trawl catch in area B is relatively low compared to the other BFAZ areas proposed. The Zonation model indicates that there are limited additional benefits to biogenic habitats from protecting this area, however it is an area identified as supporting historical scallop beds, which warrants consideration as to whether the protection or utilisation opportunities of this area should be prioritised. Removing trawling from the inner Gulf BFAZ will also mitigate overlap with recreational fishers who also regularly utilise this area.
164. It is proposed that the area labelled A in figures 5 – 7 remains available for Danish seine fishing, as assessment of the area indicates it is of significant value and supports a large proportion of the overall Danish seine catch in the region. These generally smaller vessels tend to concentrate their fishing effort in the more sheltered waters of the inner Gulf as the nature of their fishing method means they can be restricted in their ability to operate in more exposed conditions. This area also does not overlap with trawl vessels due to the existing restrictions that are in place. More localised Danish seine operations also benefit from the accessibility of the inner Gulf, which reduces travel time and costs to and from port, allowing smaller scale operations to be viable.
165. The biodiversity value identified in the area labelled A is also lower relative to those areas which have been prioritised for protection. While the benthic impacts from Danish seine fishing are known to be lower than that of bottom trawl fishing, there have been relatively few assessments of the impacts of Danish seine fishing to benthic habitats and communities<sup>25</sup>. Given that there are no trawl doors, and the ground gear is lighter, it is expected that the impact will be less than that of bottom trawling.

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<sup>25</sup> Estimating seabed pressure from demersal trawls, seines, and dredges based on gear design and dimensions. [https://academic.oup.com/icesjms/article/73/suppl\\_1/i27/2573989](https://academic.oup.com/icesjms/article/73/suppl_1/i27/2573989)

### **Key metrics for comparing options in Table 8 and Table 9 (below)**

**Closure area:** Reported as the proportion of area in the HGMP shallower than 200m and relative to the currently open to trawl and/or Danish seine fishing methods.

**Predicted suitable habitat in closures:** This is the primary metric to assess the biodiversity value protected by the different options. The focus is on protection of habitat forming taxa as these support diverse species assemblages and in many cases are vulnerable to the effects of bottom contact fishing. This shows the percentage of the total predicted suitable habitat in the Gulf (<200m) for biogenic habitat groups falling within closures to bottom trawl and Danish seine fishing. An average percentage is provided for the 20 biogenic habitat groups as well as the range across all groups. The lower end of the range shows the minimum level of protection for any single biogenic habitat type.

**Predicted suitable habitat in closures – most vulnerable taxa:** This shows the percentage of the total predicted suitable habitat in the Gulf (<200m) for biogenic habitat groups most vulnerable to the effects of trawl and Danish seine fishing that fall within closures to both methods.

**Percentage reductions of revenue from key species in the Hauraki Gulf, based on catch previously taken in proposed closures:** Revenue is an indicative measure using change in quantity landed multiplied by port price. Each year, the Ministry for Primary Industries sends a voluntary survey to all LFRs to calculate the port price index for the year ahead. Port price represents the greenweight price per kg paid on a particular day and not an average for the whole year. The fishing method is not included in the survey even though a particular method may receive a higher landed price. The export revenue calculated is based on the top 5 export species, calculating a greenweight per kg price equivalent using publicly available conversion factors,<sup>26</sup> assuming the same product format of exports from the last 5 years, and assuming the full catch of these species are exported.

**Number of Permit holders affected, based on catch previously taken in closures:**

The percentage shift shows the extent of changes in landings of the permit holders affected by the closure options, based on their total landings data over 5 years. This gives a percentage of the permit holders total catch in Fisheries Management Area 1, using either Danish seine or Trawl that is affected by the proposed closures.

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<sup>26</sup> [FishServe - Conversion Factors](#)

**Table 9. Key Biodiversity Metrics for comparing options for bottom fishing access zones in the Hauraki Gulf.**

Spatial Management Options					
	Current	Option 1	Option 2	Option 3	Option 4
<b>Closure area</b>					
Extent (km <sup>2</sup> )	3,759	6,291	7,008	7,989	8,076
Percentage of HGMP (< 200m)	27%	77.1% (trawl) 74.1% (Danish seine)	82.4% (trawl) 79.4% (Danish seine)	88.5% (trawl) 86.6% (Danish seine)	89.2% (trawl) 87.3% (Danish seine)
Percentage of current area open to fishing that will now be closed	-	64.2%	71.5%	81.5%	82.4%
<b>Predicted suitable habitat in closures</b>					
Average percentage predicted suitable habitat for 20 biogenic habitat groups (range across groups)	35% (10 – 94)	90% (82 – 100)	95% (86 – 100)	97% (89 – 100)	97% (89 – 100)
<b>Predicted suitable habitat in closures – most vulnerable taxa</b>					
Corals and sea pens	22%	87%	95%	97%	97%
Cup corals	15%	87%	95%	98%	98%
Sponges (Erect/upright)	32%	90%	91%	97%	97%
Bryozoa (Erect/frame-building)	15%	88%	93%	94%	94%
Bryozoa (Erect and rooted)	25%	92%	97%	99%	99%
Horse mussels	94%	100%	100%	100%	100%
Oysters	58%	96%	98%	99%	99%
Rhodoliths	10%	88%	94%	100%	100%
Tubeworms (Non-calcareous)	35%	92%	96%	97%	97%

Table 9. Key Economic Metrics for comparing options for bottom fishing access zones in the Hauraki Gulf

		Spatial Management Options			
		Option 1	Option 2	Option 3	Option 4
<b>Percentage reductions of revenue from key species, based on catch previously taken in proposed closure areas</b>					
Overall		38%	43%	57%	60%
Snapper		38%	43%	58%	60%
Trevally		32%	36%	52%	56%
John Dory		39%	43%	54%	52%
Gurnard		25%	36%	50%	51%
Tarakihi		43%	54%	80%	80%
<b>Number of permit holders affected by closures to various extents, based on catch previously taken in closures</b>					
No. of fishing permit holders with:	<10% landings affected	10	9	8	8
	10-30% landings affected	10	10	9	9
	≥30% landings affected	1	2	4	4
<b>Reductions to average annual landings and revenue in closures</b>					
Estimate of total reduction in annual landings (tonnes)		632 (37%)	723 (42%)	978 (57%)	1017 (60%)
- Trawl		435 t	519 t	705 t	725 t
- Danish Seine		198 t	205 t	273 t	293 t
Estimate of total reduction in annual revenue		\$2.7mil (38%)	\$3.1mil (43%)	\$4.1 mil (57%)	\$4.3 mil (60%)
- Trawl		\$1.7 mil (24%)	\$2.0 mil (28%)	\$2.7 mil (38%)	\$2.8 mil (39%)
- Danish Seine		\$1.0 mil (14%)	\$1.0 mil (15%)	\$1.4 mil (19%)	\$1.5 mil (21%)
Estimate of total reduction in annual export revenue		\$3.9 mil (37%)	\$4.4 mil (42%)	\$5.9 mil (57%)	\$6.2 mil (59%)
- Trawl		\$2.5 mil	\$2.9 mil	\$4.0 mil	\$4.1 mil
- Danish Seine		\$1.4 mil	\$1.5 mil	\$1.9 mil	\$2.1 mil

## 7. Questions for submitters

1. Which option do you support for proposed Bottom Fishing Access Zones? Why?
2. If you do not support any of the options listed, what alternative(s) should be considered? Why?
3. Do you have any ideas or alternative approaches to the management of bottom fishing impacts, apart from the proposed Bottom Fishing Access Zones?
4. Is there any literature or research that is relevant and has been omitted in this paper?
5. Do these proposed options adequately provide for Treaty of Waitangi obligations and customary access to fishing? Why?
6. Do you think these options adequately provide for social, economic, and cultural wellbeing?
7. Do you think the proposed options appropriately consider the sustainability obligations under the Act?
8. Do you think the criteria outlined in section 5 will provide a suitable basis to assess the options and their impacts?
9. Do these proposed options adequately provide for Treaty of Waitangi obligations and customary access to fishing? Why?
10. Do you think these options adequately provide for social, economic, and cultural wellbeing?
11. Do you think the proposed options appropriately consider the sustainability obligations under the Act?
12. Do you think the proposed options appropriately consider the effects on the benthic environment?
13. Do you think the proposed options adequately mitigate the adverse effects of mobile bottom contact fishing methods on the benthic environment?

We welcome your views on these proposals. Please provide detailed information and sources to support your views where possible.

## 8. How to get more information and have your say

- Fisheries New Zealand invites you to make a submission on the proposals set out in this discussion document. Consultation closes at 5pm on 6 November 2023.
- Please see the Fisheries New Zealand consultation webpage ([Consultations | NZ Government \(mpi.govt.nz\)](https://www.mpi.govt.nz/consultations/)) for related information, a helpful submissions template, and information on how to submit your feedback. If you cannot access to the webpage or require hard copies of documents or any other information, please email [FMSubmissions@mpi.govt.nz](mailto:FMSubmissions@mpi.govt.nz).

## 9. Glossary of terms

Annual Catch Entitlement	An entitlement to harvest a quantity of fish, aquatic life, seaweed or other stock, taken in accordance with a fishing permit and any conditions and limitations imposed by or under the Fisheries Act 1996. This term is defined in the Fisheries Act 1996.
Aquatic environment	The natural and biological resources that make up the aquatic ecosystem, including all aquatic life and the oceans, seas, coastal areas, intertidal areas, estuaries, rivers, lakes and other places where aquatic life exists. This term is defined in the Fisheries Act 1996.
Associated and/or dependent species	Species taken or otherwise affected by the taking of any harvested species. This term is defined in the Fisheries Act 1996
Benthic	The bottom of a sea, lake or river.
Benthic species	Animals, plants, or other organisms living near, on, or within the seafloor sediments.
Biodiversity	The variety and diversity of all life on land, in freshwater and in the sea, including the places where they live. This term is defined in the Resource Management Act 1991 and the Fisheries Act 1996.
Biogenic	Biogenic habitats are habitats created by plants and animals, that can form on both hard and soft substrate (e.g., canopy-forming macroalgae, calcium carbonate shellfish reefs, habitats created by tube-forming worms, 'clumps' created by encrusting species like bryozoans and sponges).
Biomass	The size of the stock in units of weight. Often, biomass refers to only one part of the stock (e.g., spawning biomass, recruited biomass or vulnerable biomass, the latter two of which are essentially equivalent).
Bycatch	Fish species, or size classes of those species, that are caught in association with key target species.
Catch	The total weight (or sometimes number) of fish caught by fishing operations.
Catch per unit of effort (CPUE)	The quantity of fish caught with one standard unit of fishing effort e.g., the number of fish taken per 1000 hooks per day; or the weight of fish taken per hour of trawling. CPUE is often assumed to be an abundance index. A declining CPUE may mean that more effort e.g., metres of net set and/or length of soak time, is required to catch a given volume of fish. This in turn may indicate that a fish stock has declined (although other factors can also influence rates of CPUE,

	particularly for species that have patchy or clumped distributions).
Closed areas	Areas where a form of fishing restriction applies. For example, some areas may be closed to all fishers to protect juvenile fish and local reef species. Other areas may be closed to certain types of commercial bulk fishing methods eg trawling, but not to other more targeted types of fishing such as longlining.
Commercial fishing	Taking fish, aquatic life, or seaweed in circumstances where a fishing permit is required. This term is defined in the Fisheries Act 1996.
Commercial value	The value of landings to commercial fishers.
Cost	Includes both direct and indirect costs.
Customary catch	Catch taken by tangata whenua to meet their customary needs.
Customary fishing	The traditional rights confirmed by the Treaty of Waitangi and the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992, being the taking of fish, aquatic life, or seaweed or managing of fisheries resources, for a purpose authorised by Tangata Kaitiaki / Tiaki, including koha, to the extent that such purpose is consistent with Tikanga Maori and is neither commercial in any way nor for monetary gain or trade. This term is defined in the Fisheries (Kaimoana Customary Fishing) Regulations 1998.
Customary food gathering	The traditional rights confirmed by the Treaty of Waitangi and the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992, being the taking of fish, aquatic life, or seaweed or managing of fisheries resources, for a purpose authorised by Tangata Kaitiaki / Tiaki, including koha, to the extent that such purpose is consistent with Tikanga Maori and is neither commercial in any way nor for monetary gain or trade. This term is defined in the Fisheries (Kaimoana Customary Fishing) Regulations 1998.
Deepwater species	Species that are harvested at depths ranging from 500-1000 metres. The main concentrations of deep-water species in NZs EEZ are between 40-55 degrees South. Key species include orange roughy, oreos and cardinal fish.
Demersal fish	Bottom feeding fish.
Department of Conservation	The central government organisation charged with conserving the natural and historic heritage of New Zealand on behalf of and for the benefit of present and future New Zealanders. Refer to <a href="http://www.doc.govt.nz">www.doc.govt.nz</a> for more information.
Dependent and/or associated species	Species taken or otherwise affected by the taking of any harvested species.

Depletion	Reducing the biomass of a fish stock through fishing.
Discarding	A less emotive description for the disposal (or 'dumping' or 'trashing') of unsaleable catch, dead or alive, during or after fishing operations.
Dredging	A fishing method used to target scallops and oysters. When dredging for scallops, a rigid steel framed dredge is towed along the sea floor. When dredging for oysters, a steel ring mesh is used. Dredge is defined in various commercial and amateur fishing regulations.
Ecosystem	An interacting system of living and non-living parts such as sunlight, air, water, minerals, nutrients, plants and animals.
Exclusive Economic Zone (EEZ)	A maritime zone over which the coastal state has sovereign rights over the exploration and use of marine resources. Usually, a state's EEZ extends to a distance of 200 nautical miles (nm) (approx. 370 km) out from its coast, except where resulting points would be closer to another country. New Zealand has a 200nm EEZ that was declared in 1978. The EEZ formally extends from the Territorial Sea at 12nm (from the coastline) to 200nm. This term is defined in the Territorial Sea and Exclusive Zone Act 1977.
Final Advice Paper	Following an initial position paper developed for consultation purposes, the Minister of Fisheries is provided with a document outlining MFish's final advice, recommendations and summary of submissions.
Finfish	Fish with fins, as distinguished from shellfish. It includes bony fishes, cartilaginous fishes and jawless fishes. This term is defined in the Fisheries Act 1996 and in some regulations.
Fisheries Management Area (FMA)	The New Zealand 200 nm EEZ is divided into 10 areas, each known as a Fishery Management Area. FMAs are based on likely stock boundaries as well as administrative considerations. The standard FMAs are the basis of QMAs for most fish stocks. This term is defined in the Fisheries Act 1996.
Fisheries stakeholders	Groups who derive value from the use of fisheries resources or have a strong interest in the sustainable utilisation of fisheries resources. This includes tangata whenua, commercial, customary, and recreational fishers and environmental interests.
Fishing year	For most fish stocks, the fishing year runs from 1 October in one year to 30 September in the next. The second year is often used as shorthand for the split years e.g. 2005 is shorthand for 2004-05. Some shellfish and rock lobster have a



	fishing year that commences on 1 April. This term is defined in the Fisheries Act.
GIS	An organised collection of computer hardware, software, geographic data, and personnel designed to efficiently capture, store, update, manipulate, analyse, and display all forms of geographically referenced information. A GIS can combine relational databases with spatial interpretation and outputs often in form of maps.
Global Positioning System	A satellite-based navigation system made up of a network of 24 satellites placed into orbit by the U.S. Department of Defense.
Greenweight	The weight of fish, aquatic life, or seaweed before any processing commences and before any part is removed. This term is defined in the Fisheries Act.
Illegal, unreported and unregulated [fishing]	Illegal, unreported and unregulated fishing activity.
Inshore fishery	Inshore fishery habitats extend from the shore out to depths of about 200 metres at the edge of the continental shelf. Dominant inshore species include snapper, tarakihi, blue cod and trevally.
Iwi	Tribe. This term is defined in the Māori Fisheries Act 2004.
Kaimoana	Seafood. This term is defined in a Fisheries notice.
Kaitiaki	Local guardian or trustee of a specific area. Tangata Kaitiaki/Tiaki means any person appointed as Tangata Kaitiaki/Tiaki under the Fisheries (Kaimoana Customary Fishing) Regulations 1998 or the Fisheries (South Island Customary Fishing) Regulations 1999, being a member of the Tangata Whenua or a tangata whenua organisation or their notified representative. A Tangata Kaitiaki/Tiaki appointed under the Fisheries (Kaimoana Customary Fishing) Regulations 1998 or the Fisheries (South Island Customary Fishing) Regulations 1999 may authorise any individuals, in accordance with these regulations, to take any fish, aquatic life, or seaweed for customary food gathering purposes from within the whole or any part of the area/rohe moana, for which the Tangata Kaitiaki/Tiaki has been appointed.
Limit	A biomass or fishing mortality reference point that should be avoided with high probability. The Harvest Strategy Standard defines both soft limits and hard limits.
National Institute of Water and Atmospheric Research	A Crown Research Institute that carries out a large amount of fisheries research under contract to the Ministry of Fisheries.

National Plan of Action (NPOA)	An NPOA sets out national strategic approaches, goals and objectives to conserve, reduce and manage the impacts on a given species or subject, in New Zealand, to ensure long-term sustainability, eg seabirds and sharks. An NPOA may be developed from an International Plan of Action.
Non-fish bycatch	Anything that is not a fish that fishers may accidentally catch while targeting a specific fish or invertebrate species. This includes, but is not limited to, turtles, bryozoans and protected species.
Non-target species	Species that are unintentionally taken by a fishery or not routinely assessed for fisheries management.
Productivity	Productivity is a function of the biology of a species and the environment in which it lives. It depends on growth rates, natural mortality, age of maturity, maximum average age and other relevant life history characteristics. Species with high productivity are able to sustain higher rates of fishing mortality than species with lower productivity. Generally, species with high productivity are more resilient and take less time to rebuild from a depleted state.
Quota Management System (QMS)	The QMS was introduced in October 1986 and controls the overall catches for virtually all the main fish stocks found within New Zealand's 200nm EEZ. In the QMS, a total catch limit is set at a sustainable level. Within the TAC, recreational and customary take is allowed for, and other mortality, and a TACC is set. Commercial fishing rights are allocated as ITQ giving the ITQ owner a property right.
Quota	Quota is a right which allows people to own a share of the 100 million shares available for a particular species in a defined area. Quota can be bought or sold. Ownership of quota generates an annual catch entitlement to catch that fish stock. Within the commercial catch limit, access is determined by ownership of ACE and the possession of a fishing permit. This term is defined in the Fisheries Act.
Quota Management Area (QMA)	Species within the QMS are managed by QMAs. QMAs are geographic areas within the EEZ. The standard fishery management areas are the basis of quota management areas for most fish stocks. This term is defined in the Fisheries Act.
Recreational fishing	Fishing under the provisions available for amateur fishers i.e., the Fisheries (Amateur Fishing) Regulations 1986; and any relevant regional amateur fishing regulations.

Regulation	Laws made by the Governor-General, Ministers of the Crown, or certain other bodies under powers conferred by an Act of Parliament, as defined in the Acts and Regulations Publication Act 1989 and the Regulations (Disallowance) Act 1989.
Stock	For the purposes of the Fisheries Act 1996, a stock is any fish, aquatic life or seaweed of one or more species that are treated as a unit for the purposes of fisheries management. For the purposes of the Harvest Strategy Standard, a biological stock is a population of a given species that forms a reproductive unit and spawns little if at all with other units. However, there are many uncertainties in defining spatial and temporal geographical boundaries for such biological units that are compatible with established data collection systems. For this reason, the term “stock” is often synonymous with an assessment / management unit, even if there is migration or mixing of some components of the assessment/management unit between areas. This term is defined in the Fisheries Act.
Sustainability	The ability of a fish stock to persist in the long-term. Because fish populations exhibit natural variability, it is not possible to keep all stock and fishery attributes at a constant level simultaneously, thus sustainable fishing does not imply that the fishery and stock will persist in a constant equilibrium state. Because of natural variability, even if FMSY could be achieved exactly each year, catches and stock biomass will oscillate around their average MSY and BMSY levels, respectively. In a more general sense, sustainability refers to providing for the needs of the present generation while not compromising the ability of future generations to meet theirs. In the Fisheries Act 1996, section 8 outlines the purpose of the Act, to “provide for the utilisation of fisheries resources while ensuring sustainability.” The Fisheries Act defines ensuring sustainability as “(a) Maintaining the potential of fisheries resources to meet the reasonably foreseeable needs of future generations; and (b) Avoiding, remedying, or mitigating any adverse effects of fishing on the aquatic environment.”
Total Allowable Catch (TAC)	Total quantity of each fish stock that can be taken by commercial, customary Maori interests, recreational fishery interests and other sources of fishing-related mortality, to ensure sustainability

	of that fishery in a given period, usually a year. This term is defined in the Fisheries Act.
Total Allowable Commercial Catch (TACC)	Total quantity of each fish stock that the commercial fishing industry can catch in a given year. The TACC is a portion of the TAC that is set after allowances have been made for customary and recreational fishing, and for other sources of fishing-related mortality. This term is defined in the Fisheries Act.
Tangata Whenua	Local people. In relation to a particular area means the whanau, hapū or iwi, being Maori, which hold mana whenua and/or mana moana. This term is defined in the Fisheries Act and various Fisheries regulations.
Te Ohu Kaimoana (Treaty of Waitangi Fisheries Commission)	Te Ohu Kaimoana is a statutory organisation dedicated to future advancement of Māori interests in the marine environment. This term is defined in the Maori Fisheries Act 2004 and the Fisheries Act. Refer to <a href="http://www.teohu.maori.nz">www.teohu.maori.nz</a> for more information.
Treaty of Waitangi (Fisheries Claims) Settlement Act 1992	The Treaty of Waitangi (Fisheries Claims) Settlement Act became law in late 1992, and gave effect to the Deed of Settlement, signed in September 1992. This deed (1) settled Māori claims to commercial fishing; (2) clarified Māori rights to customary or non-commercial fishing; and (3) discharged the Crown's obligations in respect of Māori commercial fishing interests under the Treaty of Waitangi.
Yield	Catch expressed in terms of weight.