

Departmental Briefing

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To: Minister of Conservation
Minister of Fisheries

Date: 19 October 2018

Subject: **Joint agency advice on the South-East Marine Protection Forum recommendations**

Action sought: Your decision on the South-East Marine Protection Forum's Marine Protected Area network recommendations.

Time frame: No deadline

Security classification: **In Confidence** **Department's priority:** High

Risk assessment: Deciding in favour of or declining any recommendation has the risk of opposition from different sectors or Iwi. **Level of risk:** High

Contact	Mobile	First contact	Principal author
s9(2)(a) (Senior Issues Manager)	s9(2)(a)	✓	
s9(2)(a) (Senior Policy Analyst)			✓
s9(2)(a) (Manager Customary Fisheries & Spatial Allocations)	s9(2)(a)	✓	
s9(2)(a) (Senior Analyst)			✓

Executive summary

1. Biological resources are essential for people's lives and health. The development of networks of marine protected areas fosters the marine environment's natural resilience. Other benefits include educational and scientific research opportunities, tourism and associated economic benefits and community values.
2. The Department of Conservation (DOC) and the Ministry of Fisheries developed the 2005 Marine Protected Areas Policy and Implementation Plan (MPA Policy), and the 2008 Marine Protected Areas Classification, Protection Standard and Implementation Guidelines (MPA Guidelines). They provide a framework to help meet objective 3.6 of the New Zealand Biodiversity Strategy 2000 to: "protect marine biodiversity by establishing a network of MPAs that is comprehensive and representative of New Zealand's marine habitats and ecosystems".
3. In 2014, the then Minister of Conservation and the then Minister for Primary Industries established the South-East Marine Protection Forum (the Forum) to design an MPA network consistent with the MPA Policy. The Forum engaged with the community, stakeholders and Iwi. It took into account the requirement of minimising adverse effects on users and used a gifts and gains approach. The Forum compromised, amended or discarded proposals with a view to balancing the effects on users versus biodiversity protection outcomes.
4. In the final stages of developing their recommendations, the Forum could not reach consensus and recommended two alternative marine protected area networks:
 - Network 1, encompassing six marine reserves¹ and five Type 2² areas, covering 1,267 km² (14.2% of the Forum area); and
 - Network 2, encompassing three marine reserves and two Type 2 areas, covering 366 km² (4.1% of the Forum area).
5. On 23 February 2018, the South-East Marine Protection Forum provided you with its Recommendations Report for developing marine protected areas on the south-east coast of the South Island. You requested that DOC and Fisheries New Zealand provide joint advice on the Forum's recommendations.
6. Network 1 was supported by the representatives of the science, tourism, environmental and community sectors, as well as one of the two recreational fishing representatives. Network 2 was supported by the three commercial fishing representatives and the other recreational fishing representative on the Forum.
7. Using the best available information, officials have analysed the two networks proposed by the Forum in relation to the Marine Protected Area Policy and Guidelines, and undertaken a preliminary assessment of the existing regulatory framework, and potential costs and benefits.
8. Neither network represents the full range of habitats in the Forum region. Agencies consider that Network 1 is aligned with the MPA Policy to a higher degree than Network 2. However, Network 2 would have less impact on resource users.
9. The Forum's Recommendations Report notes that Kāi Tahu does not oppose either network. Kāi Tahu's position on either network is conditional on a generational review and co-management of the marine protected areas jointly by the Crown and Kāi Tahu. However, the report also says that the Kāi Tahu position is determined by the individual papatipu rūnaka, who do not hold a uniform position on their respective areas³.

¹ Type 1 Marine Protected Areas (MPA) are marine reserves which are typically established under the Marine Reserves Act 1971. In this briefing, Type 1 MPAs are referred to as marine reserves.

² Type 2 MPAs are other marine protected areas that meet the protection standard that are not marine reserves.

³ Forum's Recommendations Report, pages 23 and 57.

10. The proponents of Network 1 included in their recommendations one marine reserve at Irihuka/Long Point (Site O1) in addition to Network 1, but Kāi Tahu opposes this proposal for a marine reserve at Site O1.
11. Both agencies agree Network 1 is the preferred network. Apart from differing views on the extent of boundaries for some sites in the network, the main differences between the agencies relate to the level of fishing restrictions that should be put in place for Type 2 MPAs. Both agencies agree that bottom trawling, Danish seining, and dredging will be prohibited in all of the areas proposed to be Type 2 MPAs, however the agencies differ on whether further fishing method prohibitions are warranted, in particular Fisheries New Zealand questions whether the evidence is strong enough to justify these being implemented under the Fisheries Act 1996.
12. Whilst both agencies agree on Network 1 as the preferred network, they have differing views on the progression of Network 1:
 - a. DOC recommends progressing the establishment of Network 1 in its entirety⁴, noting that Site O1 is not part of the network and should be treated separately.
 - b. Fisheries New Zealand supports the establishment of Network 1, but notes that there are some aspects that require further consideration, in particular the level of fishing restrictions that can be imposed in Type 2 MPAs on a case-by-case basis as per the MPA Policy guidelines. Fisheries New Zealand therefore recommends you direct agencies to provide further advice on some possible modifications to Network 1 to minimise adverse impacts on existing users, and to ensure that Type 2 MPAs can be implemented in a manner consistent with the purpose and principles of the Fisheries Act 1996. Fisheries New Zealand considers that the majority of the outcomes sought under Network 1 can be delivered, subject to further consideration and modification to ensure that protection measures in line with the MPA Policy are considered carefully and based on sound evidence.
13. The agencies and Kāi Tahu representatives participated in a scoping meeting on 31 July 2018 to clarify Kāi Tahu's expectations for co-management of any marine protected areas. Agencies recommend continuing to work with Kāi Tahu to explore how their aspirations could be implemented, and that their concerns regarding Site O1 are addressed.
14. It is important to note that the creation of MPAs, is by its very nature, an exercise in compromise. Any potential MPA will have at least some impact on existing users and a key issue therefore becomes an assessment of the scale of that impact.
15. You are not bound by the Forum's recommendations. However, if you agree with progressing the establishment of either of the networks, we will brief you further on next steps. This will include further analysis around the benefits of the MPAs, what impact the establishment of an MPA network would have on existing users, and the scale of such an impact at a local and nationwide level.
16. In the absence of dedicated legislation to establish marine protected areas, the main legislative options for implementing MPAs in previous MPA processes have been either the Marine Reserves Act, the Fisheries Act, or special legislation. Where the Forum's recommendations may not be able to be delivered through the Fisheries Act, the MPA Policy outlines further legislation that could be considered.
17. The Forum also made some recommendations on broader issues. We are not seeking your decisions on those recommendations at this stage.

⁴ While Agencies note that Site T1 does not meet the requirements for consideration as an MPA (as it does not meet the protection standard), it is included in Network 1 as an 'other protection tool'. Therefore, while it does not contribute to representation or replication of habitats, it still forms part of the Network 1 recommendation.

It is recommended that you:

		Minister of Conservation Decision	Minister of Fisheries Decision
1.	<u>Note</u> that on 23 February 2018 the Forum provided you with a report with recommendations for marine protection on the south-east coast of the South Island.		
2.	<u>Note</u> that the Forum could not reach consensus on a single network of marine protected areas, and has recommended two alternative networks.		
3.	<u>Note</u> that Network 1 was supported by the science, tourism environmental and community representatives on the Forum (as well as one recreational fishing representative), and Network 2 was supported by the commercial fishing representatives and the other recreational fishing representative.		
4.	<u>Note</u> that Kāi Tahu does not oppose either network (on the condition of co-management and generational review).		
5.	<u>Note</u> that the proponents of Network 1 included in their recommendations one marine reserve at Irihuka/Long Point (Site O1) in addition to Network 1, but that Kāi Tahu opposes Site O1.		
6.	<u>Note</u> that Site T1 is not an MPA but a proposed restriction on the commercial harvest of bladder kelp, and therefore has not been included in Network 1.		
7.	<u>Note</u> that Fisheries New Zealand supports progressing Network 1 in a modified form using existing legislation.		
8.	<u>Note</u> that Fisheries New Zealand considers that adjustments should be made to some of the Network 1 MPA proposals to ensure they can be successfully implemented. These are: <ul style="list-style-type: none"> • Changing the boundaries of two prospective MPAs to limit their impact on commercial fishers; and • Adjusting the number of fishing restrictions applied in proposed Type 2 MPAs to limit them to bottom impacting fishing methods to ensure these can be implemented in a manner that is consistent with the purpose and principles of the Fisheries Act 1996. 		
9.	<u>Note</u> that DOC considers the proponents of Network 1 have considered the MPA Policy requirements, including minimising effects on existing users as far as practicable, and therefore DOC supports progressing the establishment of Network 1.		
10.	<u>Note</u> that MPA networks can be established using existing and/or special legislation.		

11.	<u>Note</u> that once we have your direction, officials will provide a separate briefing on implementation options using existing and/or special legislation.		
12.	<u>Agree</u> to discuss the options below with each other prior to making your preferences known.	Yes / No	Yes / No
13.	<u>Agree</u> to progress the establishment of Network 1, including the inclusion of Site O1. OR	Yes / No	Yes / No
	<u>Agree</u> to progress the establishment of Network 1, with the exclusion of Site O1 and with the inclusion of Site T1 (this is the option supported by DOC). OR	Yes / No	Yes / No
	<u>Agree</u> to progress the establishment of Network 1, subject to: i. Limiting fisheries restrictions of Type 2 MPAs to bottom impacting fishing methods and excluding Site T1; ii. Consider modifying the boundaries of Sites A1 and D1 to minimise the effect on users; iii. Excluding Site O1 (this is the option supported by Fisheries New Zealand). AND <u>Direct</u> officials to provide further advice on options for modifications of Network 1. OR <u>Agree</u> to progress the establishment of Network 2. OR <u>Direct</u> officials to provide further advice on an alternative network.	Yes / No	Yes / No
14.	<u>Direct</u> officials to work with Kāi Tahu to explore their aspirations for Site O1.	Yes / No	Yes / No
15.	<u>Direct</u> officials to continue work with Kāi Tahu to explore their aspirations for co-management and generational review of MPAs.	Yes / No	Yes / No
16.	<u>Direct</u> officials to provide any further advice to support your decisions.	Yes / No	Yes / No

s9(2)(a) [Redacted]

s9(2)(a) [Redacted]
Deputy Director-General, Operations
For Director-General of Conservation

Hon. Eugenie Sage
Minister of Conservation

s9(2)(a) [Redacted]

s9(2)(a) [Redacted]
Head of Fisheries New Zealand

Hon. Stuart Nash
Minister of Fisheries

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Purpose

1. This paper provides you with the joint views of the Department of Conservation (DOC) and Fisheries New Zealand (the agencies) on the South-East Marine Protection Forum's (the Forum) recommendations concerning the establishment of a marine protected area (MPA) network, and seeks your decisions.

Background and context

The role of MPAs in biodiversity protection

2. Biological resources provide essential ecosystem services, including supporting human health, lifestyle, culture and the economy, including through fisheries, aquaculture, tourism, shipping and mining.
3. New Zealand has a large marine environment that is rich in biodiversity and is a taonga for all New Zealanders, but it is increasingly under pressure. Stressors can be addressed through integrated management of use (e.g. fisheries) and impacts (e.g. by-catch of protected species, runoff from the land). Climate change-related impacts, such as rising temperatures and sea level, and ocean acidification, further add urgency to implementing appropriate management measures.
4. Healthy and diverse ecosystems can better withstand and recover from stressors, contributing to sustainability. MPA networks protect and restore marine biodiversity (including promoting recovery of lost or degraded habitats), ensure the maintenance of key ecological processes, foster resilience to stressors, and are a cornerstone of global marine biodiversity protection efforts.
5. Other benefits associated with marine protection include educational and scientific research opportunities, tourism and associated economic benefits, and enhanced community values (civic pride, recreation and general enjoyment).

Treaty obligations

6. The Crown has obligations to Māori including those arising through the Treaty of Waitangi, deeds of settlement, legislation, protocols and regulations. These include, among others, an obligation to:
 - give effect to the principles of the Treaty of Waitangi
 - act in a manner consistent with the provisions of the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992 which requires that tangata whenua are given the opportunity for input and participation in fisheries management and that their Kaitiakitanga is recognised. In the Forum region, the Ngāi Tahu Claims Settlement Act 1998 and Te Rūnanga o Ngāi Tahu (Declaration of Membership) Order 2001 are of particular relevance (see paragraphs 150-162 for the details of these obligations).

International obligations

7. New Zealand has international commitments to protect and manage its marine environment and associated resources under the United Nations Convention on the Law of the Sea (UNCLOS) and fisheries conventions such as the UN Fish Stocks Agreement. As a signatory to the UN Convention on Biological Diversity (the Convention), New Zealand has committed to protecting at least 10% of our coastal and marine environment in an ecologically representative network of MPAs and other conservation measures by 2020.

8. This commitment is included within the New Zealand Biodiversity Strategy 2000⁵ (the Strategy). This includes Objective 3.6, to “protect a full range of natural marine habitats and ecosystems to effectively conserve marine biodiversity, using a range of mechanisms, including legal protection”.

The Marine Protected Areas Policy

9. DOC and the Ministry of Fisheries developed the 2005 Marine Protected Areas Policy and Implementation Plan (MPA Policy) and the 2008 Marine Protected Areas Classification, Protection Standard and Implementation Guidelines to provide a framework to help meet Objective 3.6 of the Strategy and New Zealand’s commitment under the Convention.
10. The objective of the MPA Policy is to: “protect marine biodiversity by establishing a network of MPAs that is comprehensive and representative of New Zealand’s marine habitats and ecosystems”.
11. The MPA policy recommends an integrated approach for meeting this objective, and provides direction on the following matters:
 - network design and planning principles
 - a protection standard, which must be met for areas to be recognised as contributing to a national MPA network; and
 - guidance on the use of a habitat classification.
12. Two forms of MPA are recognised: marine reserves (Type 1) and other areas that meet the protection standard (Type 2). Marine reserves automatically meet the protection standard, whereas determining whether sufficient protection has been achieved to establish a Type 2 MPA requires an assessment against criteria set out in the MPA Guidelines. All extractive activities (e.g. fishing and mining) are generally excluded from marine reserves, whereas some forms of fishing are allowed in Type 2 MPAs (provided they are consistent with the maintenance and recovery of biodiversity).
13. The agencies agreed in 2008 to use the following interpretation when assessing whether options that propose fisheries management measures under the Fisheries Act 1996 provide sufficient protection to be considered Type 2 MPAs⁶ (by meeting the protection standard):

‘With respect to fishing, to establish an MPA under the Fisheries Act, the following measures are required for an area to meet the protection standard:

- *a prohibition on the following mobile bottom-contacting methods: bottom trawling; Danish seining, and dredging*
- *a prohibition on stationary bottom-impacting methods such as potting, bottom longlining and bottom set netting where those methods are actively being deployed on fragile, biogenic habitats⁷ such as corals (the additional prohibitions being confined to the fragile area, not extending to the entire MPA); and*

⁵ New Zealand Biodiversity Strategy 2000 (Department of Conservation and Ministry for the Environment), page 67.

⁶ This agreement has guided the use of the Fisheries Act for marine protection in previous regional MPA planning process jointly administered by DOC and Fisheries New Zealand, for the West Coast of the South Island and the Sub-Antarctic Islands (both culminating with establishment of MPAs in 2014).

⁷ Biogenic habitats are those habitats created by living organisms (e.g. bryozoan thickets, sponge gardens, kelp forests, seagrass meadows etc)

- *restrictions on fishing, including a prohibition on any other fishing methods if they are actively being used in that area and, under the Fisheries Act, have an adverse effect on the aquatic environment*.
14. This agreement provides guidance where it is preferred that Fisheries Act tools are used to establish a prospective MPA. In this context, (with the exception of mobile bottom-contacting methods) a case-by-case assessment of a prospective MPA is needed to determine whether the use of particular fishing methods is having an adverse effect on the aquatic environment as defined by the Fisheries Act 1996. If such an effect is identified, then the method will need to be prohibited for the area to be called an MPA.
 15. While there is a policy presumption that bottom trawling, Danish seining, and dredging must be prohibited in all cases, Fisheries New Zealand considers that no further prohibitions on particular fishing methods need to be applied to establish a Type 2 MPA under the Fisheries Act 1996, unless there is sufficient evidence to enable the Minister of Fisheries to be satisfied that their prohibition is warranted. DOC considers that further prohibitions on particular fishing methods may be warranted given the Policy's direction, including the direction to take a precautionary approach.
 16. In analysing the networks, sites and proposed tools recommended by the Forum, the agencies have considered consistency with the MPA Policy, the provisions of the Marine Reserves Act 1971 and the Fisheries Act 1996, and expected costs and benefits.
 17. The MPA Policy and MPA Guidelines are attached as Appendix 1.

South-East Marine Protection Forum

18. In 2014, the then Minister of Conservation and the then Minister for Primary Industries established the South-East Marine Protection Forum (the Forum)⁸ to design an MPA network consistent with the MPA Policy.
19. The Forum engaged with the community, stakeholders and Iwi to develop proposals taking into account the requirement of minimising adverse effects on users and using a gifts and gains approach. The Forum compromised and amended or discarded proposals, with a view to balancing effects on users with biodiversity protection outcomes.
20. The Forum's main objective, as set out in its Terms of Reference, was: 'to provide a report for ministers recommending levels of marine protection for the Otago subregion of the (Southern Coastal) biogeographic region, consistent with the MPA Policy and MPA Guidelines'.
21. The Forum considered the marine area from Waipapa Point in Southland to Timaru in South Canterbury, including the internal waters⁹, and out to the 12 nm limit of the territorial sea. This is the Forum region where 22 coastal, three biogenic and 11 estuarine habitats have been identified.
22. The Forum region was prioritised because the region is the largest stretch of New Zealand's coast that has no MPAs.
23. The Forum region is entirely within the Kāi Tahu¹⁰ takiwā, comprising six Kāi Tahu papatipu rūnaka: Te Rūnaka o Arowhenua, Te Rūnaka o Waihao, Te Rūnaka o Moeraki, Kāti Huirapa Rūnaka ki Puketeraki, Te Rūnaka o Ōtākou and Awarua Rūnaka.

⁸ We refer you to previous briefings (DOC 18-B-0157/MPI B18-0132 and DOC 18-B-0270/MPI B18-0216) for information on how the Forum was formed, the process it followed and its recommendations.

⁹ Under s 4 of the Territorial Sea, Contiguous Zone, and Exclusive Economic Zone Act 1997, "...internal waters...include any areas of the sea that are on the landward side of the baseline of the territorial sea...".

¹⁰ Kāi Tahu and Ngāi Tahu are interchangeable; the use of the 'k' in place of the 'ng' is a dialectical difference.

24. The Forum's members represented customary interests, commercial and recreational fishing, the environmental, scientific and tourism sectors, and the community. There was an independent Chair.
25. The Terms of Reference required the Forum to engage with the south-east South Island community and others with an interest in the area. This occurred through public meetings, an online survey, formal consultation, and through Forum members' direct engagement with each member's sector of interest.
26. On 23 February 2018, the Forum provided you with their recommendations on marine protection for the south-east South Island (attached as Appendix 2). You have requested a joint briefing on the Forum's recommendations from DOC and Fisheries New Zealand.

The network proposals

Development of the networks

27. During the Forum process, there was an inherent tension between developing MPAs that are large enough to represent a full range of marine habitats and ecosystems, and minimising adverse impacts on existing users of the marine environment and Treaty Settlement Obligations.
28. The Forum could not reach a consensus, and two alternate networks have been recommended (see Figure 1 and Figure 2).

Network 1

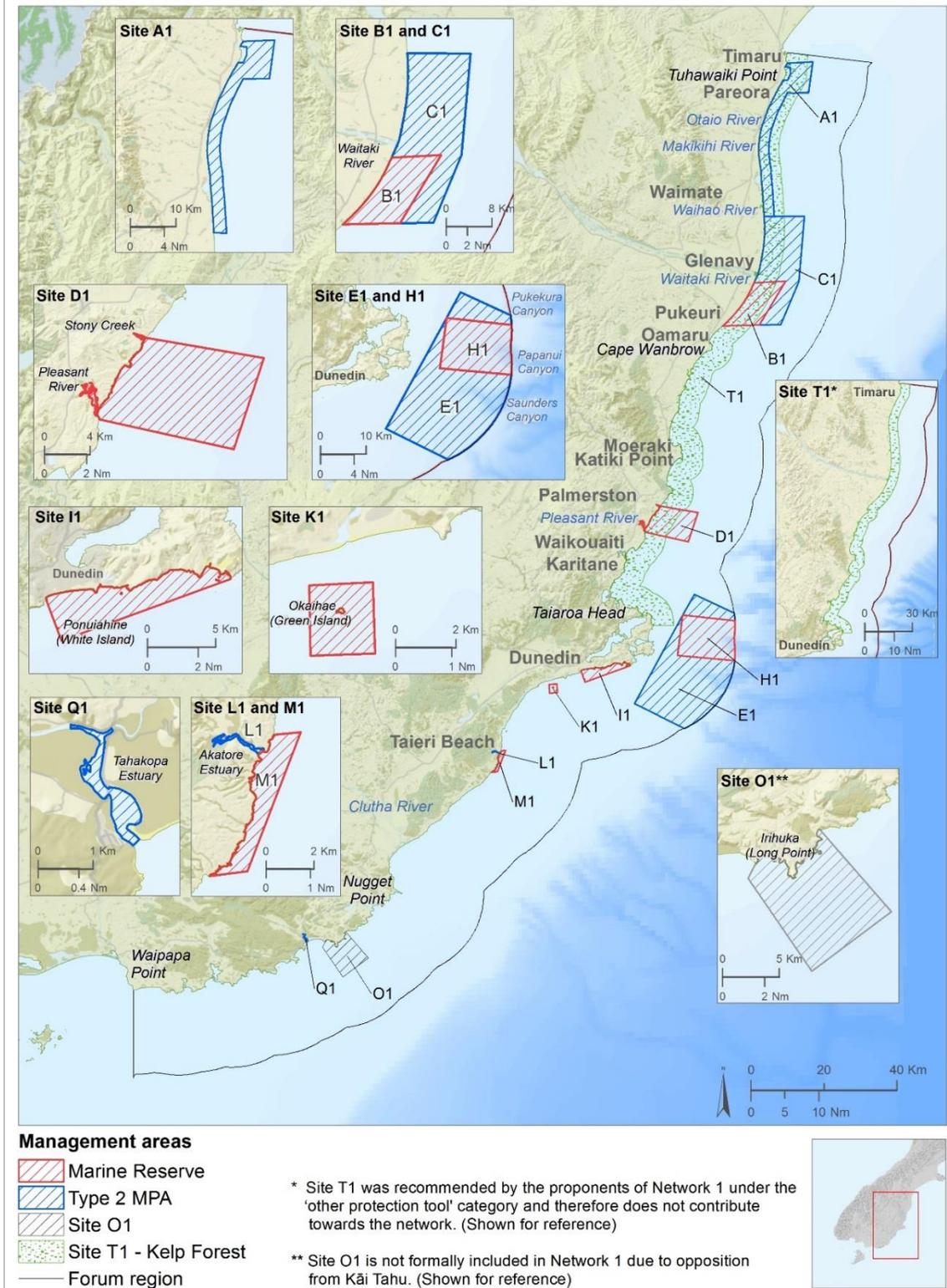


Figure 1: Network 1. Sites O1 and T1 shown for reference.

Network 2

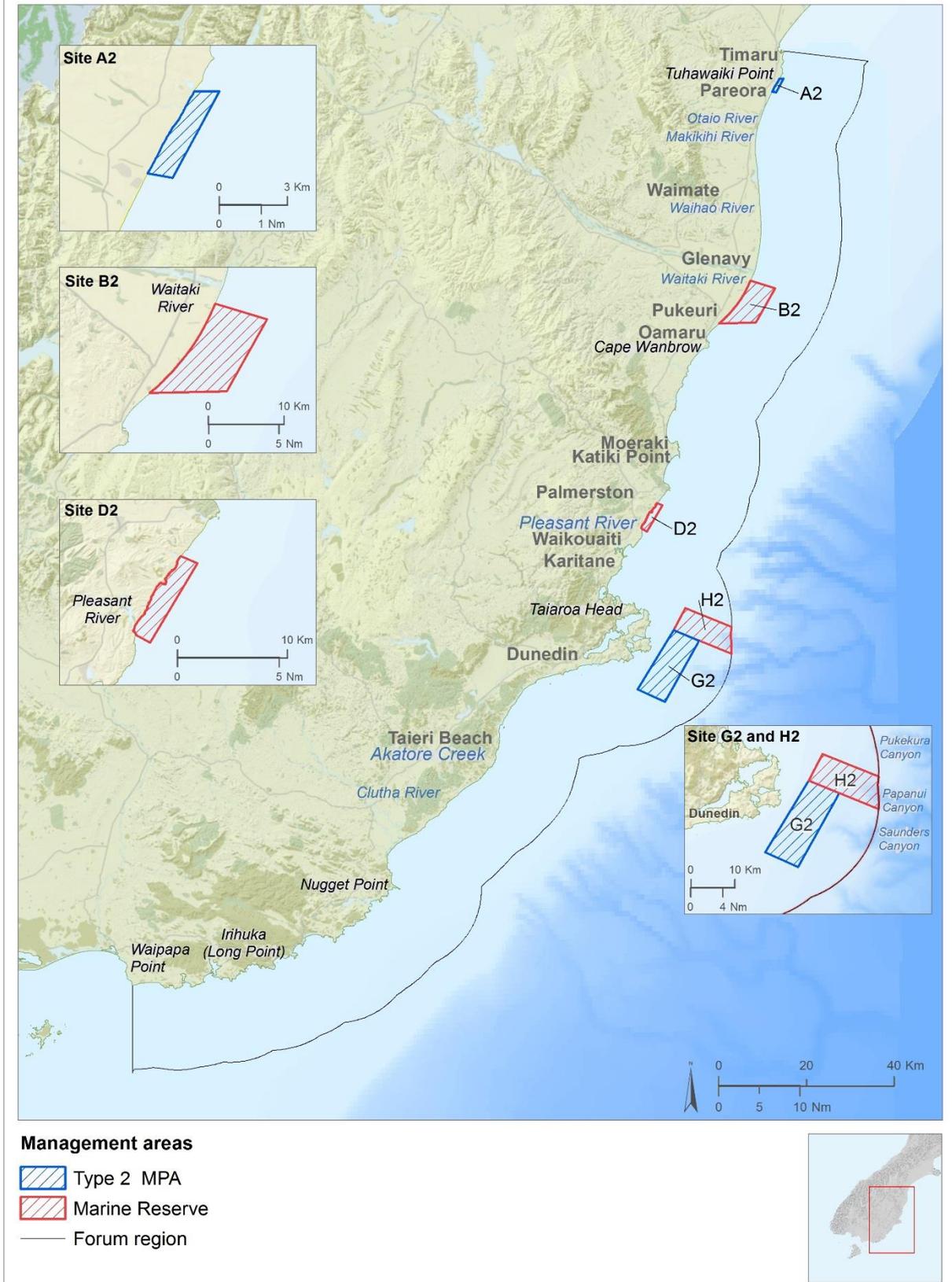


Figure 2: Network 2.

29. The alternate networks are:
 - Network 1: six marine reserves and five Type 2 areas, covering 1,267 km² (14.2% of the Forum area).
 - Network 2: three marine reserves and two Type 2 areas, covering 366 km² (4.1% of the Forum area).
30. Neither network achieves comprehensive representation of habitats in the Forum region. This is explained in the following section on the agency assessment process.

Agency assessment process

31. The agencies have undertaken an initial assessment of both networks in terms of meeting the Policy. The following summarises the full network analysis attached as Appendix 3.
32. In determining whether the MPA Policy objective of creating a representative network of MPAs has been met, the networks are assessed against the following design criteria:
 - **Viability:** to be viable, habitat patches must be of sufficient size and quality to allow for maintenance and/or recovery.
 - **Representative of habitat types within a region:** this requires protection of the same habitat type across two or more sites within a network of protected areas. There is no policy requirement for how much of each habitat type should be protected in order for it to be 'representative', but using 10% allows a useful reference point.
 - **Connectivity:** populations in different parts of a species' range are linked by the movement of eggs, larvae or other propagules, juveniles or adults.
33. Adverse impacts on existing users and Treaty obligations must be taken into account when planning the MPA network. Where there are choices of several sites that would add a similar ecosystem or habitat to the protected area network, the sites chosen should minimise adverse impacts on existing users and Treaty obligations.
34. Fisheries New Zealand undertook an initial assessment of the proposed networks in terms of likely impacts on existing fishers (commercial, recreational and customary). Some of the factors considered in the analysis include: the major fish species and estimated catch taken in the proposed areas¹¹, the number and type of fishers operating in the proposed areas, and the likely consequences of displacement of fishing effort. The assessment includes the consideration of the likely impact on customary fishing interests.
35. Fisheries New Zealand also considered if any of the proposed areas in the networks are of high importance for recreational fishers.
36. Appendix 4 provides a site-by-site assessment of the level of effect of each of the network proposals on existing fisheries users.

¹¹ Commercial fishing catch rates were estimated using information contained within fishing catch effort and landings returns reported to Fisheries New Zealand. Individual fishing events were mapped following the methodologies listed in Appendix 1.2.2 of the Forum's Recommendations Report, species catch weights for each fishing event were then estimated based on the proportional area of the mapped fishing event which intersects with the various MPA options proposed.

37. While there are some limitations to the information used in the assessment, particularly issues with the habitat classification and fisheries data, assessment is based on best available information (see section 6.6 of the Forum's Recommendations Report).
38. Each network is assessed separately, followed by the agency views.

Kāi Tahu perspective

39. At a network level, Kāi Tahu does not oppose Network 1 or 2. However, the Forum's Recommendations Report states that the Kāi Tahu position is determined by the individual papatipu rūnaka, who do not hold a uniform position on their respective areas. Therefore, it cannot be assumed that Kāi Tahu holds a single position on any particular MPA. Kāi Tahu, individual rūnaka and other tangata whenua groups will have further opportunities to be involved if you decide to progress any proposal to establish MPAs in the region.

Network 1 assessment

Representation of habitats, replication and connectivity

40. The MPAs proposed for Network 1 cover 14.2% of the Forum region (including 4.5% in marine reserves).
41. In Network 1, seven of the 22 coastal habitat types have at least 10% of their area represented and replicated within the recommended MPAs. A further three have at least 5% of their area represented and replicated within the recommended MPAs, and a further habitat type has at least 1% of its area represented and replicated (for a detailed breakdown see Table 3 in Appendix 3).
42. While Network 1 represents 17 of 22 coastal habitats to some degree, the absence of coastal MPAs in the southern part of the region for Network 1 does not account well for regional variation¹² in biodiversity, which is expected to occur (see Appendix 3, paragraphs 12-14).
43. Network 1 represents estuarine habitats by including four out of 30 estuaries within the Forum region, equating to 2.4% of the overall estuarine area.
44. All three habitats that were considered to meet the definition of "outstanding, rare, distinctive or internationally or nationally important" are represented in Network 1. These include:
 - Protection for the wider bryozoan¹³ habitat in a marine reserve, and replicated in a Type 2 MPA
 - Protection to giant kelp forest, but not replicated
 - Some protection to seagrass in a marine reserve¹⁴, but not replicated.
45. In terms of connectivity between MPAs, individual subtidal rocky reef habitats along the length of the Forum region appear to be largely connected at the 50–100 km level. However, there are connectivity gaps in the northern and southern parts of the region at this scale (Figure 3a, Appendix 3), where reefs are further than 100km away from the nearest proposed MPA that represents reef.

¹² The MPA Policy guidelines provide for the representation of latitudinal (north-south) and longitudinal (west-east) variation. A summary of the factors important in contributing to regional variation are described in Appendix 3.

¹³ Bryozoans are colonial animals that live on the seafloor, encrusting surfaces – rocks, seaweeds, other animals – but also grow independent from these substrates forming three-dimensional structures. Bryozoans are fragile animals and easily damaged by disturbance of the seafloor (e.g. trawling and dredging).

¹⁴ Seagrass is reported to occur in Pleasant River Estuary (Site D1), however, there is no information on the extent or quality of the seagrass present.

46. Areas of soft sediment habitat are connected across multiple scales (25, 50 and 100 km) between proposed MPAs, although a gap remains at the south of the region (Figure 3b, Appendix 3), with no coastal MPA south of Site M1.
47. Agencies note that Site T1 does not meet the requirements for consideration as an MPA. It is a proposed prohibition on the commercial harvest of bladder kelp (*Macrocystis pyrifera*) extending over the known range of this species in the northern part of the Forum's area. Because T1 is not capable of meeting the MPA protection standard, and therefore does not contribute towards the representation of the habitat in the network, the analysis of Network 1 does not include Site T1.
48. Bladder kelp is managed by Fisheries New Zealand under the quota management system¹⁵. There are six holders of bladder kelp quota, which entitles them to harvest bladder kelp within quota management area KBB3G which extends from the southern boundary of the Forum's planning area northwards to the Clarence River mouth. No commercial harvest of bladder kelp is currently taking place within the Forum area.
49. The MPA Policy provides the latitude for the Forum to recommend 'other marine protection tools' which are defined as "*Tools similar to those for MPAs, but which in particular cases, do not protect sufficient biodiversity to meet the protection standard*".
50. The agencies have different views as to whether the proposal to ban harvest of bladder kelp across Site T1 is within scope of the Forum's Terms of Reference.
51. DOC regards Site T1 as falling within the ambit of 'other marine protection tools' as mentioned in the MPA Policy, in particular because of its importance as a biogenic habitat. DOC notes that the Forum has not proposed this restriction in terms of the sustainability of bladder kelp, but on the potential for effects on the kelp forest ecosystem (should the fishery become fully utilised).
52. Fisheries New Zealand regards the proposed ban on commercial harvest of bladder kelp as unjustified, given that there is little (if any) commercial harvest of this species is currently occurring within the Forum's planning area. Rather than pre-emptively banning harvest and risking legal action from affected quota owners, Fisheries New Zealand considers that a more appropriate course of action for addressing the Forum's concerns about sustainability of future harvest would be to review the TACC and other harvest controls that are in place.

Affected users of Network 1 – Fisheries

Commercial fishers

53. The following is a high-level account of the commercial fisheries that would be displaced by establishment of Network 1 (further detail is in Appendix 3):
 - The sites of proposed MPAs that make up Network 1 are used by around 170 commercial fishers each year, a subset of whom will be affected by the establishment of the recommended MPAs.
 - Based on estimated average annual affected catch and export value, Network 1 potentially displaces approximately 240 tonnes of greenweight fish catch per annum. This is approximately 5.6% of the total 4,297 tonne catch in the Forum region and has an estimated export value¹⁶ of approximately \$NZ 3.1 million (9.1% of the total of \$NZ 34.3 million for the Forum region).¹⁷

¹⁵ Bladder kelp (*Macrocystis pyrifera*) was introduced into the quota management system in 2010.

¹⁶ Estimates of the export value are based on 2017 export prices per kg. Domestic "port" prices for landed catch are substituted for some stocks for which export price data is unavailable.

¹⁷ Free on Board - The value of export goods, including raw material, processing, packaging, storage and transportation up to the point where the goods are about to leave the country as exports. FOB does not include storage, export transport, or insurance cost to get the goods to the export market.

- There are no quantitative estimates of affected catch or export value for fisheries in the four estuaries proposed for protection in Network 1 due to the scale at which catch is reported. However, Fisheries New Zealand is aware that there is some commercial fishing activity for shortfin eels occurring in the estuaries.
54. Based on estimated average annual affected catch and export value of each fish stock, the biggest potential impacts would be on kōura papatea (rock lobster) and those finfish species that are caught by trawling.
 55. The impact of MPAs on the trawl fishery will be ameliorated by the fact that the fish species being targeted by trawlers disperse widely throughout the Forum's planning area. Consequently, trawler operators displaced from MPAs are likely to be able to take their catch entitlement in the adjacent areas that remain open to them.
 56. The consequences of displaced fishing effort are likely to be more severe for the rock lobster fishers because the fishery is focused on discrete areas of suitable rocky coast and reef habitat.
 57. Approximately 23% (20 tonnes) of the average annual CRA7¹⁸ catch¹⁹ comes from the proposed MPAs in Network 1. Across Network 1 kōura papatea (rock lobster) are particularly abundant at Site D1. Fisheries New Zealand estimates that 20.7% (17.7 tonnes) of the kōura papatea (rock lobster) catch taken within CRA7 would be displaced by the establishment of the marine reserve proposed for this site.
 58. This displacement will increase fishing pressure on adjacent areas of rocky reef and has the potential to lead to localised depletion outside the closed areas as fishers compete for a limited resource. Such localised depletion could in turn create a risk to the sustainability of the CRA7 fishery unless the TACC is reduced, further impacting on quota owners.

Customary fishers

59. Kāi Tahu has a management plan to create a network of mātaihai reserves²⁰ over its most important customary fishing grounds. The effect of MPAs may be to restrict available areas where mātaihai reserves can be established. The implications of this will require further careful consideration, and ongoing dialogue with Kāi Tahu will be essential.

Recreational fishers

60. Some of the proposed sites in Network 1 include areas of importance to recreational fishers. In particular, Sites K1, I1 and D1 receive a relatively high level of use by recreational fishers relative to other sites. The importance of particular MPA proposals in Network 1 for recreational fishers is outlined in Appendix 3.

¹⁸ CRA7 is the quota management area (QMA) for kōura papatea (rock lobster) within which this Forum region falls.

¹⁹ Estimates of displaced catch are based on the average of annual catches taken over ten consecutive fishing years (2007/08 to 2016/17 inclusive).

²⁰ Mātaihai reserves can be established to provide for customary fishing and recognise the special relationship of tangata whenua with their traditional fishing grounds. Commercial fishing is prohibited in mātaihai upon their establishment, but Tangata Tiaki/Kaitiaki appointed for the reserve may request the making of regulations to re-admit some commercial fishing. Tangata Tiaki/Kaitiaki may also make bylaws (in collaboration with the Minister of Fisheries) to manage the taking of fish and other aquatic life within the reserve.

¹⁶ Percentage of the estimated value of catch taken from the Forum's planning area, total estimated value of which is \$NZ34.3 million per annum.

Table 1: Network 1 summary of MPA size, habitats included, and commercial fisheries displacement

MPA		Area		Habitat types	Catch		Export value	
Site	Tool	Area	% Area		Catch (kg)	% Catch	Export value (\$NZ)	% Forum value ²¹
A1	Type 2	157.5	1.8	4 coastal habitats	109,880	2.6	462,597	1.4
B1	MR	101.3	1.1	3 coastal habitats	4,766	0.1	21,491	0.1
C1	Type 2	254.1	2.9	5 coastal habitats	34,492	0.8	148,145	0.4
D1	MR	96.0	1.1	7 coastal habitats, two estuaries, kelp forest & seagrass	40,526	0.9	1,992,476	5.8
E1	Type 2	449.8	5.0	3 coastal habitats, bryozoan	17,764	0.4	77,445	0.2
H1	MR	167.4	1.9	3 coastal habitats, bryozoan	20,959	0.5	122,241	0.4
I1	MR	28.8	0.3	6 coastal habitats	2,584	0.1	27,303	0.1
K1	MR	5.0	0.1	4 coastal habitats	689	0.0	19,111	0.1
L1	Type1	0.3	0.0	Estuarine habitats incl. saltmarsh and mudflats.	no data	--	no data	--
M1	MR	5.9	0.1	3 coastal habitats	6,858	0.2	239,303	0.7
Q1	Type 2	0.7	0.0	Estuarine habitats incl. saltmarsh and mudflats.	no data	--	no data	--
Total		1,266.7	14.2		238,518	5.6	3,110,112	9.1

Forum support for Network 1

61. Network 1 was supported by the representatives of the science, tourism, environmental and community sectors, as well as one of the two recreational fishing representatives. The proponents of Network 1 also considered a site at Irihuka/Long Point (Site O1). However, Site O1 was opposed by Kāi Tahu and was not included in the Forum's analysis of Network 1.

Additional notes on Irihuka/Long Point (Site O1)

62. Agencies note that in the Forum's Recommendations Report, Irihuka/Long Point (Site O1) was not included in the analysis of Network 1 as it was opposed by Kāi Tahu representatives of the Forum. If Site O1 is included without further engagement with Kāi Tahu, there is a significant risk of opposition to the outcome of this process.
63. The agencies consider that Network 1 currently has gaps in representing the diversity of habitats in the region that could be partially addressed by including Site O1, or an alternative site that provides similar habitat representation (subject to agreement by Kāi Tahu). Site O1 would provide for replication and representation of habitats that would allow Network 1 to better meet the Policy requirements.
64. We recommend continuing to work with Kāi Tahu to clarify their concerns regarding Site O1 and potential options for addressing those concerns, and explore options for the protection of other sites that could provide representation of habitats in the southern part of the Forum's planning area.

²¹ Over the total of \$NZ 34.4 million export value for the Forum region.

Agencies' view of Network 1

Department of Conservation

65. DOC supports Network 1 in its entirety and considers that each site contained in Network 1 has been reached through consideration of the Policy requirements and adds unique value to the network.
66. DOC considers that the proponents of Network 1 have demonstrated that they have considered minimising effects on existing users as far as practicable, using best available information and through a gifts and gains approach. The task of minimising adverse effects on users is embedded in the process, and the Consultation Document and Forum's Recommendations Report provide numerous instances where the proponents of Network 1 have compromised and amended or discarded proposals with a view of balancing effects on users with biodiversity protection outcomes.
67. Notably, the proponents of Network 1 put forward recommendations that excluded areas such as Tow Rock (associated with Site I1) for the specific purpose of minimising effects on existing customary, commercial and recreational users. Other sites that were consulted on were also removed from the recommendations based on the gifts and gains approach taken to meet the Policy objective (consultation sites F, J, N and P). DOC notes that of the six estuarine sites that were put forward for consultation, proposed MPAs in the two estuaries that are purported to have the highest potential impact on the eel fishing industry were omitted from the recommendations. DOC also notes that prior to consultation, numerous concessions on areas for protection were also discussed and removed due to the perceived impacts on existing users (e. g., The Nuggets, as referred to in the Consultation Document).
68. DOC considers that there may be benefits from MPAs that have not been accounted for in the assessment of potential effects on fisheries. Benefits such as the recovery of habitat important for fisheries in the absence of fishing disturbance of the seafloor, and spillover of both adults and larvae from the MPAs, have the potential to benefit fisheries and/or offset some impacts created through displacement. These potential benefits are both species and habitat specific, and are ecologically difficult to predict. The establishment of MPAs with various levels of protection (i.e. marine reserves and Type 2 MPA) will allow greater understanding of these factors and their contribution to both impacts and benefits on the wider environment and its utilisation.
69. DOC notes that when assessing whether particular fishing restrictions are required in establishing a Type 2 MPA, in order to meet the protection standard (Planning Principle 2), a large amount of information would be required to show ecosystem effects of fishing. This assessment cannot take place as this information is not available and the work to collect this information is not currently being undertaken. In the absence of this information, DOC considers that taking a precautionary approach (Planning Principle 8) is warranted.
70. DOC notes that the agencies have differing views concerning the requirements and interpretation of Planning Principle 2 (the protection standard) and Planning Principle 5 (minimising adverse effects on existing users). DOC notes that Network 1 includes five MPAs with various fisheries restrictions and further, notes that the agencies have differing views on the application of these two Planning Principles, and considers that the assessment of effects contained in the following section has conflated these two Planning Principles.
71. Planning Principle 5 requires that the Forum minimises effects on existing users where there is a choice between sites that add the same biodiversity values. DOC, as stated above, considers that the proponents of Network 1 have demonstrated they have accounted for this principle in their decision making.

72. Planning Principle 2 refers to the level of protection that is required to be considered an MPA, at an individual site. As Planning Principle 5 is specifically about minimising effects when comparing two sites, it is therefore inappropriate to consider the implications of protection tools under Planning Principle 5. That is, either the restrictions are warranted to be included or not, there is no 'minimising impacts' test on proposed restrictions to meet the definition of an MPA.
73. DOC notes that Fisheries New Zealand considers that Sites A1, C1, E1, L1, and Q1 propose fishing restrictions that could be difficult to implement under the Fisheries Act. Fisheries New Zealand considers that there is insufficient information available to determine if the current levels of fishing activity are having an adverse ecological effect at these sites or not, that would warrant the level of restrictions recommended. If you decide to progress marine protection through existing legislation, DOC notes that there are mechanisms available other than the Fisheries Act, such as the Marine Reserves Act, that may be utilised to include some restrictions. You may also decide to use special legislation. Agencies can provide further advice should these sites be progressed as recommended.
74. DOC notes that altering any of the recommended sites with regards to protection level or boundaries would entail that certain habitats would no longer be afforded the minimum requirements for protection (the minimum requirement for representation under the MPA Policy is protection in a marine reserve, and replication in another MPA), a flow-on shortcoming that would subsequently need to be addressed elsewhere.
75. DOC further notes that addressing any perceived undue impacts on fisheries would require addressing gaps in representation, such as sheltered habitats that are completely unrepresented (noting that these habitats were discussed and not progressed by the Forum, to minimise impacts as part of the gifts and gains approach).
76. DOC notes that Fisheries New Zealand recommends modifying or assessing options for reconfiguring Site D1 (see paragraph 88). DOC notes that Site D1 holds the greatest representativity of habitats of any recommended Network 1 site with seven coastal habitats, two estuaries, and two biogenic habitats. As the Recommendation Report acknowledges this site was selected due to its reduced impacts on nearby commercial fishing areas.
77. DOC acknowledges that it is important to minimise impacts on existing users but notes that the integrity of the network must be maintained. DOC has concern with how the potential impact on the fishery is being presented due to the dynamic and variable nature of the fishery, the year-to-year variability in the TAC and that catch location is not reported at a scale suitable for MPA planning.

Fisheries New Zealand

78. Fisheries New Zealand supports Network 1 in principle as recommended by the Forum and agrees that this network best aligns with the objectives of the MPA Policy. However, Fisheries New Zealand considers that, if the Fisheries Act 1996 is to be used to implement the proposed Type 2 MPAs, some modifications would be necessary to ensure that Type 2 MPAs can be implemented in a manner that is consistent with the purpose and principles of the Fisheries Act 1996.
79. Fisheries New Zealand also considers that some modifications to Network 1 are necessary to minimise adverse impacts on existing users. The level of impact on existing users (see Tables 2a and 2b) of marine areas is a relevant consideration for decisions that need to be taken by the Minister of Fisheries to establish both marine reserves using the Marine Reserves Act 1971, and Type 2 MPAs using the Fisheries Act 1996.
80. Fisheries New Zealand's view on the design of proposed MPA boundaries and the appropriate level of restriction of fishing in Type 2 MPAs (Table 2a and 2b) differs from

DOC's view with respect to some of the MPA proposals within Network 1. However there is agreement between the agencies on other components of Network 1.

81. Tables 2a and 2b set out specific points on which Fisheries New Zealand recommends you should consider amending particular MPA proposals to ensure that they can be successfully implemented.
82. More detail on points of concern for Fisheries New Zealand regarding specific MPA proposals put forward by proponents of Network 1 are set out below (see paras 90-98).

Table 2a Fisheries New Zealand's assessment of boundary modifications to proposed Network 1 MPAs necessary to minimise impacts on existing users.

MPA		Fisheries New Zealand	Fisheries New Zealand comments
Site	Type		
A1	Type 2	Proceed with smaller area.	<ul style="list-style-type: none"> • Southern extension (included after consultation) increases adverse impacts on fishers by 27% (29 t). • Southern extension is not necessary to ensure the representation of the habitats. • Fisheries New Zealand recommends eliminating this southern extension from the MPA proposal for Site A1 that is taken forward for further public consultation and your subsequent implementation decision.
B1	Marine reserve	✓	
C1	Type 2	✓	
D1	Marine reserve	Proceed with smaller area.	<ul style="list-style-type: none"> • High level of potential impacts on commercial rock lobster fishers (20.7% (17.7 t) of CRA7 catch). • Site D1 is significantly larger than the site consulted on (extended further from 6km to 10km offshore). • Fisheries New Zealand recommends that you either: <ul style="list-style-type: none"> • Progress the proposal for Site D1 in the form that the Forum originally consulted on it (i.e.: with a seaward boundary situated 6km offshore); OR; • Direct officials to undertake further work to assess the options for re-configuring the boundaries of Site D1 to reduce the impacts on the rock lobster fishery, while also ensuring adequate habitat representation.
E1	Type 2	✓	
H1	Marine reserve	✓	
I1	Marine reserve	✓	
K1	Marine reserve	✓	
L1	Type 2	✓	
M1	Marine reserve	✓	
Q1	Type 2	✓	

Table 3b Fisheries New Zealand's assessment of modifications to recommended fisheries restrictions to ensure that they can be successfully implemented under the Fisheries Act 1996.

MPA		Fisheries New Zealand	Fisheries New Zealand comments
Site	Type		
B1	Marine reserve	✓ All fishing methods	* High potential impact on recreational fishers
D1	Marine reserve	✓ All fishing methods	
H1	Marine reserve	✓ All fishing methods	
I1*	Marine reserve	✓ All fishing methods	
K1	Marine reserve	✓ All fishing methods	
M1	Marine reserve	✓ All fishing methods	
A1	Type 2	BOTTOM IMPACTING METHODS: ✓ Bottom trawling ✓ Dredging ✓ Danish seining ▲ Set netting × Commercial long lining × Five hook limit for line fishing × Mid-water trawling	* Lack of sufficient evidence to support prohibiting these fishing methods under the Fisheries Act. ▲ Rather than consider restricting set net use at the scale of individual MPAs, Fisheries New Zealand considers it would be more appropriate to consider restrictions at a regional scale that aligns with the range of protected species (like Hoiho (yellow-eyed penguin)) that are impacted by set net use.
C1	Type 2	BOTTOM IMPACTING METHODS: ✓ Bottom trawling ✓ Dredging ✓ Danish seining ▲ Set netting × Mid-water trawling	
E1	Type 2	BOTTOM IMPACTING METHODS: ✓ Dredging ✓ Bottom Trawling ✓ Danish seining ▲ Set netting × Mid-water trawling × Purse seining	
L1	Type 2	BOTTOM IMPACTING METHODS: ✓ Dredging ▲ Set netting × Commercial line fishing × Mechanical harvesting (including spades for collecting shellfish) × Fyke net fishing	
Q1	Type 2	BOTTOM IMPACTING METHODS: ✓ Dredging ▲ Set netting × Commercial line fishing × Mechanical harvesting (including spades for collecting shellfish) × Fyke net fishing	

Cumulative effects of displacing fishing effort from new proposed MPAs

83. Fisheries New Zealand notes that, while some individual sites have a relatively low impact on commercial fishing, there may be a cumulative impact of all proposed sites in combination. The cumulative effect of closing areas to commercial fishing puts pressure on the remaining open areas, as fishers are entitled to take the same volume of fish but from a smaller area. Effects could include: an increased cost of fishing, localised depletion, and a reduction of total allowable catch settings.
84. In fully utilised fisheries with a strong spatial dependency (such as kōura papatea (rock lobster) and pāua, where fish are concentrated on areas of suitable habitat), displacement of fishing effort has potential to lead to localised depletion outside the closed areas as fishers compete for a limited resource. Fishing closures and other restrictions may have less impact on relatively mobile species (such as most finfish species) compared with less mobile species that are localised to areas of suitable habitat (such as blue cod, and oysters), due to the often restricted habitat in which these species reside. Further detail is provided in Appendix 3.

Effects of displaced fishing effort on the CRA7 rock lobster fishery

85. Of particular note are the consequences of displacing fishers currently targeting kōura papatea (rock lobster) at Site D1. The need to relocate their operations to alternative fishing grounds could affect the operating costs and profitability of some operations, particularly if increased competition with other fishers reduces catch rates.
86. Given the size of the catch currently taken within this site (estimated at 20.7% of the average annual CRA7 catch), the magnitude of displaced fishing effort could have associated implications for the remainder of the CRA7 fishery.
87. Fisheries New Zealand notes that, in some years there is a significant directed along-shore migration of kōura papatea (rock lobster) from CRA7 towards CRA8 in the south. This mass movement is likely to reduce catch rates as lobsters move off reef areas and disperse across areas of open sand or gravel substrate where fishers cannot target them efficiently. This is likely to exacerbate the difficulty of fishers displaced from site D1 being able to take their catch entitlements. In Fisheries New Zealand's view, the sporadic and unpredictable nature of such migrations out of CRA7 fishing grounds also exacerbates the risk of unsustainable catch rates occurring at a localised or QMA scale.
88. To manage the potential risks posed by displacement of kōura papatea (rock lobster) fishing effort from site D1, Fisheries New Zealand recommends that you either:
 - Progress the proposal for Site D1 in the form that the Forum originally consulted on it (i.e.: with a seaward boundary situated 6km offshore); or;
 - Direct officials to undertake further work to assess the options for reconfiguring the boundaries of Site D1 to reduce the impacts on the kōura papatea (rock lobster) fishery, while also ensuring adequate habitat representation.

Implementation of fishing restrictions within proposed Type 2 MPAs in Network 1

89. Fisheries New Zealand is concerned that if the Forum's recommendation on the proposed extent of prohibition of fishing methods across Sites A1, C1, E1, L1 and Q1 are to be implemented using the Fisheries Act, agencies should draw guidance from the 2008 Agreement between the agencies, specifying how Type 2 MPAs would be established using the Fisheries Act.

90. Fisheries New Zealand notes that this agreement ensures that, in giving effect to the MPA Policy, the Minister of Fisheries can use the Fisheries Act 1996 to establish MPAs in a manner that is lawful, defensible and resilient to legal challenge.
91. The 2008 agreement on establishment of Type 2 MPAs makes it clear that the application of the Fisheries Act to manage the adverse environmental effects of fishing is an evidence-driven process. Methods that impact upon the seafloor can be pre-emptively prohibited as a general case, because there is a strong body of scientific evidence that supports the presumption that their use will adversely affect marine life on the seafloor.
92. This means that bottom trawling, Danish seining, and dredging must be prohibited in all Type 2 MPAs. However, drawing guidance from the 2008 agreement, the Minister of Fisheries would need sufficient evidence to be satisfied that no further prohibitions on particular fishing methods can be applied, unless there is sufficient evidence to enable the Minister of Fisheries to be satisfied that their prohibition is warranted.
93. The proponents of Network 1 recommended that further prohibitions on fishing methods are warranted in the proposed Type 2 MPAs. Fisheries New Zealand is concerned that no substantive evidence that these methods have adverse effects on the ecosystems and habitat was provided to support the need for these prohibitions.
94. Fisheries New Zealand considers that this, as recommended by proponents of Network 1 and without further evidence to support the need for them, is inconsistent with the joint agency approach applied during previous regional MPA planning processes that have been implemented for the Sub-Antarctic Islands and on the West Coast of the South Island. Through these planning processes, the application of the evidence-based approach agreed between the agencies in 2008 culminated in the establishment of 56 separate Type 2 MPAs, all of which were deemed to have met the MPA protection standard based on prohibitions on only three commercial fishing methods (bottom trawling, Danish seining and dredging).
95. To impose fishing restrictions using the Fisheries Act over and above the three mobile bottom-fishing methods (bottom trawling, Danish seining and dredging) requires evidence that they are having an adverse effect on the aquatic environment. Fisheries New Zealand does not consider that there is sufficient evidence to justify the full range of fishing methods recommended for prohibition at Sites A1, C1, E1, L1 and Q1, and therefore questions whether these proposed prohibitions should be implemented using the Act. The particular method prohibitions which are of concern to Fisheries New Zealand are set out in Table 3.

Table 3 Proposals for fishing method prohibitions in Type 2 MPAs across Network 1 and 2 which Fisheries New Zealand considers could be difficult to implement. Note that these proposed prohibitions are in addition to the prohibitions that FNZ consider is required to meet the protection standard for the establishment of a Type 2 MPA in these sites (being a prohibition of bottom trawling, Danish seining and dredging)".

Site	Proposed Fishing method prohibitions
A1 & A2	<ul style="list-style-type: none"> • Recreational and commercial set netting • Commercial longlining • 5-hook limit • Mid-water trawling (A1 only)
C1	<ul style="list-style-type: none"> • Recreational and commercial set netting • Mid-water trawling
E1	<ul style="list-style-type: none"> • Midwater trawling • Set netting • Purse seining
L1 & Q1	<ul style="list-style-type: none"> • Set net fishing • Commercial line fishing • Mechanical harvesting (including spades for collecting shellfish) • Fyke net fishing

96. The purpose of the Fisheries Act is to provide for the utilisation of fisheries resources while ensuring sustainability. Ensuring sustainability includes avoiding, remedying or mitigating any adverse effects of fishing on the aquatic environment. The proponents of Network 1 have recommended restrictions on fishing at Sites A1, C1, E1, L1 and Q1 on the basis that these may be required to maintain the functional integrity of habitats and ecosystems. This could involve protecting organisms with a particular ecological role (such as predators, or prey species) where direct fishing impacts on them could have ‘flow on’ effects for other components of the ecosystem.
97. Fisheries New Zealand considers that the maintenance of fish stocks at levels which ensure their sustainability also serves to maintain the functional role of those stocks in marine ecosystems and helps to maintain ecosystem integrity. For this reason, and without further evidence, Fisheries New Zealand considers that it is difficult to demonstrate that the fishing methods set out in Table 3 have an effect on marine and estuarine ecosystems at Sites A1, C1, E1, L1 and Q1 that is of sufficient magnitude to justify prohibiting these methods under the Fisheries Act.
98. Fisheries New Zealand suggests that, should you wish to pursue the full range of protection measures included in the recommended Sites (A1, A2, C1, E1, L1, and Q1), agencies can provide you with further advice on alternative options for doing so.
99. Proposals to prohibit Fyke netting at Sites L1 and Q1 in order to limit fishing impacts on shortfin eels, could be given effect by reviewing the total allowable catch (TAC) for the fisheries management area in which these sites are located (SFE 15).
100. With regard to proposed prohibitions on set netting at Sites E1 and L1, Fisheries New Zealand recommends that you consider the issue of set net use at a wider geographic scale that better reflects the particular ecological risks posed by this fishing method. Fisheries New Zealand is undertaking a national review of set net use to address ongoing public concerns regarding bycatch of protected species in set nets. This review presents an opportunity to consider specific measures that could be taken to address the Forum’s particular concerns with set nets across parts of Network 1.

Impact of southward extension of proposed Type 2 MPA at Site A1

101. The Forum’s Recommendations Report states that during their consultation on Network proposals, several science submitters called for an extension of MPA coverage at this site as they saw the Type 2 MPA that was initially proposed as being too small. Consequently, the smaller site consulted on was extended north up to Patiti Point,

eastward by 6km in its northern section and by 30 km southward along the coast (Site A1).

102. Fisheries New Zealand notes the southern extension includes additional habitats, however, some of the habitats in the southern extension are already proposed to be protected and replicated at Sites B1, C1 and D1. In addition, the southern extension increases the likely magnitude of adverse impacts on fishers using the area. Fisheries New Zealand estimates that the southern extension of Site A1 contributes 27% (29 of 110 tonnes) of the estimated total catch of finfish species displaced by the site with extension. Fisheries New Zealand considers that this additional cost could be mitigated by reconsidering the boundaries for this site and striking a better balance between protecting habitats and limiting costs to fishers. To achieve this, Fisheries New Zealand recommends eliminating the southern extension from the MPA proposal for Site A1 that is taken forward for further public consultation and your subsequent implementation decision.

Effect of proposed marine reserve at Site I1 on recreational fishers

103. Fisheries New Zealand supports inclusion of Site I1 in the network in principle, but notes that recreational fishers could be adversely impacted. Due to its proximity to Ōtepoti (Dunedin) city and popularity with recreational fishers, Fisheries New Zealand considers that a marine reserve at this site will impact recreational fishers to a greater extent than other proposed marine reserves in Network 1.

Effect of proposed MPAs at Sites D1 and Q1 on eel fishers

104. With respect to the impact of the proposed prohibition of eel fishing at the Stony Creek (Site D1) and Tahakopa estuaries (Site Q1), Fisheries New Zealand notes that commercial eel fishers' ability to take their shortfin eel catch elsewhere in the Forum region may be limited, given that there are other estuaries that are already closed or restricted to commercial fishing activity.

Proposed prohibition on commercial harvest of bladder kelp - Site T1

105. Fisheries New Zealand agrees with DOC that kelp is an important biogenic habitat, deserving protection. However, Fisheries New Zealand does not support the recommendation with respect to Site T1 put forward by proponents of Network 1. The commercial harvest of kelp is managed under the Fisheries Act. Rather than pre-emptively ban kelp harvest across Site T1, Fisheries New Zealand considers that concerns about the sustainability of any future kelp harvesting that may develop in this area can be better addressed by considering adjusting controls on commercial harvest. These measures could include a review of commercial harvest limits, or adjustment of other harvest controls needed to ensure the ecological integrity of kelp forest habitat is maintained.

Network 2 assessment

Representation of habitats, replication and connectivity

106. The MPAs proposed for Network 2 cover 4.1% of the Forum region (including 2.4% in marine reserves). In Network 2, one of the 22 coastal habitat types has at least 10% of its area represented and replicated within the proposed MPAs, a further habitat type has at least 5% of its area represented and replicated and a further two have at least 1% of their area represented and replicated.

107. While Network 2 represents nine of 22 coastal habitats to some degree, the absence of MPAs in the southern half of the region does not account for regional variation²² of biodiversity, which is expected to occur (see Appendix 3, paragraphs 12-14).
108. Network 2 does not include representation of estuarine habitats.
109. Two of the three habitats that were considered to meet the definition of “outstanding, rare, distinctive or internationally or nationally important” are represented in Network 2:
- Protection for the wider bryozoan habitat in a marine reserve, and replicated in a Type 2 MPA, and
 - Protection of giant kelp forest, but not replicated.
 - The third of these important habitats (seagrass) is not present in Network 2 sites.
110. In terms of connectivity between MPAs, subtidal rocky reef habitats are not connected across the region for Network 2 (see Figure 4a, Appendix 3), with only one site containing subtidal reef that contributes to the Network (Site D2).
111. Areas of soft sediment habitats are connected across multiple scales (25, 50 and 100 km) in the north of the region for the MPAs proposed. However, there are no MPAs proposed south of Ōtepoti (Dunedin), limiting the connectivity across the region as a whole (see Figure 4b, Appendix 3).

Affected users of Network 2 – Fisheries

Commercial fishers

112. The following is a high-level account of the commercial fisheries displaced (further details are in Appendix 3):
- Network 2 is used by around 80 commercial fishers each year, a subset of whom will be affected by the establishment of MPAs.
 - Fisheries New Zealand estimates that Network 2 potentially displaces approximately 36 tonnes of greenweight fish caught per annum. This is approximately 0.8% of the total 4,297 tonnes caught in the Forum region and has an estimated export value of \$NZ 1 million (3% of the Forum region).
113. Based on estimated average annual affected catch and export value of each fish stock, the biggest potential impacts of Network 2 would be on kōura papatea (rock lobster) and species caught by trawling methods. Approximately 10% (8.5 tonnes) of the average annual CRA7 catch comes from the proposed MPAs in Network 2. In particular, Site D2 contains an area of high density kōura papatea (rock lobster) of importance to the fishery.

Customary fishers

114. Kāi Tahu has a management plan to create a network of mātaihai reserves over its most important customary fishing grounds. The effect of MPAs may be to restrict available areas where mātaihai reserves can be established. The implications of this will require further careful consideration and ongoing dialogue with Kāi Tahu on this point will be essential.

Recreational fishers

²² The MPA Policy guidelines provide for the representation of latitudinal (north-south) and longitudinal (west-east) variation. A summary of the factors important in contributing to regional variation are described in Appendix 3.

115. Some of the proposed sites in Network 2 include areas of importance to recreational fishers. Most of the sites proposed in Network 2 have low impacts on recreational fishers (see Appendix 3).

Table 4 Network 2 summary of MPA size, habitats included, and commercial fisheries displacement

MPA		Size		Habitat types	Catch		Export value	
Site	Tool	Area	% Area		Catch (kg)	% Catch	Export value (\$NZ)	% Forum value ²³
A2	Type 2	4.4	0.1	2 coastal habitats	8,129	0.2	37,086	0.1
B2	MR	88.4	1	3 coastal habitats	3,700	0.1	17,052	0.1
D2	MR	15.3	0.2	3 coastal habitats, kelp	11,097	0.3	914,356	2.7
G2	Type 2	151.8	1.7	2 coastal habitats, bryozoan	759	0.0	2,841	0.0
H2	MR	106.3	1.2	3 coastal habitats, bryozoan	11,833	0.3	70,032	0.2
Total		366.1	4.1		35,518	0.8	1,041,367	3

Forum support for network proposals

116. Network 2 was supported by the three commercial fishing representatives and the other recreational fishing representative on the Forum.

Agencies view of Network 2

Department of Conservation

117. DOC considers Network 2 does not give adequate effect to the Policy and provides minimal contribution to the development of a comprehensive and representative network of marine protected areas. As such, DOC does not support Network 2.

Fisheries New Zealand

118. Fisheries New Zealand notes that while Network 2 has less effect on existing users than Network 1, it is less satisfactory in terms of its contribution to the Policy objective of developing a comprehensive and representative network of marine protected areas.

Effects of displaced fishing effort on the CRA7 rock lobster fishery

119. Fisheries New Zealand notes the potential for displacement of kōura papatea (rock lobster) fishing effort at Site D2, the magnitude of which could have associated implications for the remainder of the CRA7 fishery.

Implementation of fishing restrictions within proposed Type 2 MPAs in Network 2

120. Fisheries New Zealand considers there is insufficient evidence to justify the full range of fishing methods recommended for prohibition at Site A2. The particular prohibition methods which are of concern to Fisheries New Zealand are set out in Appendix 4.

Overall agency assessment of the proposed networks

121. The agencies consider that Network 1 fulfils the MPA Policy more completely than Network 2 does. Agencies also agree that Network 2 does not demonstrate the balance between protecting habitats and minimising impacts in this context.

²³ Over the total of \$NZ 34.4 million export value for the Forum region.

122. Agencies note that Network 1 will likely have greater impact than Network 2 on customary interests, and Fisheries New Zealand notes that Network 1 will have significantly more impact on commercial fishers than Network 2.
123. While acknowledging gaps in representation, DOC supports Network 1 and considers that each site contained in Network 1 adds unique value to the Network and has been reached through consideration of the Policy requirements. DOC does not support Network 2.
124. Fisheries New Zealand supports Network 1 in principle, but considers that you should consider some modifications to ensure that:
 - Potential adverse impacts of some MPA proposals on fishers are addressed; and
 - If you decide to use the Fisheries Act to implement the proposed Type 2 MPAs, you can do so in a manner that is consistent with the purpose and principles of the Fisheries Act 1996.
125. DOC notes that the policy considerations on adverse impacts on users is in the context of choosing between sites that add a similar ecosystem or habitat to the protected area network.
126. Fisheries New Zealand notes that consideration of the impact of both Type 1 (marine reserve) and Type 2 MPA proposals on existing fisheries users is a relevant consideration for the Minister of Fisheries' decisions on the establishment of both these forms of marine protection.

Summary of the site by site analysis

127. Please refer to the A3 pull-out summary of the site by site analysis. This includes:
 - Representation of habitats (i.e. Planning Principle 1) and benefits of protection
 - Alignment with protection standard (i.e. Planning Principle 2)
 - Effects on existing users, and
 - Impact on Treaty settlement obligations/tangata whenua (i.e. Planning Principles 3 and 5).
128. The full site by site analysis is also attached in Appendix 4.

Best available information

129. The Forum's Recommendations Report states that habitat maps used in the MPA planning within the Forum region were derived from a national-scale classification that has been modelled on best available information. Concerns around the accuracy of habitat information have been raised throughout the process.
130. MPI has provided estimates of catches within the proposed sites, but actual losses as a result of establishing an MPA will depend on variables such as whether catch can be taken elsewhere, and costs incurred.
131. In its Recommendations Report, the Forum alerted ministers to note that these discrepancies may alter the level of representation for some habitats and may result in uncertainty as to impacts on current users and conservation outcomes.

The Forum's management recommendations for either network

132. In addition to the two networks, the Forum has provided other recommendations on the management of MPAs relating to:
 - Kāi Tahu
 - monitoring and review

- compliance and enforcement, and
 - vessel transiting and seismic surveying.
133. These additional recommendations would apply to either network. The analysis of the recommendations relating to Kāi Tahu follows below but the assessment of the other recommendations listed above is attached as Appendix 5.
134. The report also includes recommendations on broader issues, such as land-based effects and fisheries management. You are not required to make decisions on these recommendations. The analysis of those is attached as Appendix 6.

Management recommendations relating to Kāi Tahu

135. Kāi Tahu does not oppose either network. However, this position is conditional on a generational review and co-management of the MPAs between the Crown and Kāi Tahu.

Generational review

136. The Forum recommended a review of all MPAs in the selected network 25 years after implementation of the proposed MPAs (generational review). The effectiveness, performance and future direction of the MPAs would be reviewed and any significant changes to the management regime would be consulted on. The generational review would also include consideration of customary use. The Forum noted that the issue of generational review was raised in submissions, and that there was consensus amongst all Forum members for this recommendation.
137. The agencies consider that a review after 25 years is reasonable. Periodic reviews allow any adjustments to be made so that the goal of protecting marine habitats and ecosystems can be reached.
138. Marine reserves are usually established in perpetuity because the object of the Marine Reserves Act 1971 is more aligned with such an approach.
139. However, there are examples where a review mechanism has been included when marine reserves were established through special legislation, such as the Subantarctic Islands Marine Reserves Act 2014 and the Kaikōura Marine Management Act 2014²⁴.
140. For a meaningful generational review to occur, monitoring of the reserves and their performance will be essential. A full assessment of monitoring arrangements can be provided should you decide to implement this recommendation.

Co-management

141. In its report, the Forum recommended co-management of marine protected areas, as it would enhance the retention and transfer of mātauraka (knowledge) through generations and maintain the connection to the rohe moana.
142. Agencies and Kāi Tahu representatives participated in a scoping meeting on 31 July 2018 to clarify co-management aspirations. Discussions helped clarify principles for co-management that would reflect rangatiratanga and a recognition of true partnership.
143. Kāi Tahu seeks to participate in the management of MPAs in their area and to be able to undertake activities in MPAs which are compatible with the purpose of the particular MPA, such as research and the operation of non-extractive activities. This is similar to the current role they hold in taiāpure reserves where the management committee is composed of hapū/lwi and persons nominated by the local Māori community. The co-

²⁴ The agencies note that the purpose of the review included in the Subantarctic Islands Marine Reserves Act 2014 was to ascertain whether to include an additional area in the Campbell Island Marine Reserve. The Subantarctic Act did not include a “generational” review.

management committee has the authority to conduct research in the area and to recommend rules to the Minister to manage fishing in the area.

Compliance

144. Kāi Tahu recommends that rangers be appointed to manage compliance with any rules established for marine protected areas.
145. Agencies recommend continuing to work with Kāi Tahu to explore how co-management could be implemented (including compliance).

Kōiwi Tākata

146. The Forum recommends that Kāi Tahu's right to retrieve unidentified human remains unearthed by natural or other means be explicitly included in the establishment of any MPAs.
147. The agencies support this recommendation and can provide further advice at a later date.

Cultural materials

148. The Forum recommends that Kāi Tahu's right to retrieve cultural materials (such as bone from stranded marine mammals) be provided for in the MPAs.
149. The agencies support this recommendation and can provide further advice at a later date.

Providing for the special relationship between the Crown and Māori

Overview

150. The Crown has obligations to Māori including those arising through the Treaty of Waitangi, deeds of settlement, legislation, protocols and regulations.

Conservation Act 1987

151. The Conservation Act 1987 and the Marine Reserves Act 1971 must be interpreted and administered as to give effect to the principles of the Treaty of Waitangi.
152. In order to contribute towards giving effect to the principles of the Treaty of Waitangi, the agencies recommend continuing to work with Kāi Tahu to explore how their co-management aspirations could be implemented, and how their concerns regarding Irihuka/Long Point (Site O1) could be addressed.

The Ngāi Tahu Claims Settlement Act 1998 and Te Rūnanga o Ngāi Tahu (Declaration of Membership) Order 2001

153. The Ngāi Tahu Claims Settlement Act 1998 records the apology given by the Crown to Ngāi Tahu in the deed of settlement executed on 21 November 1997 and gives effect to certain provisions of the deed of settlement to settle the Ngāi Tahu claims. Under this Act the Crown acknowledges the cultural, spiritual, historic, and traditional association of Te Rūnanga o Ngāi Tahu with a number of areas along the Forum region.
154. Te Rūnanga o Ngāi Tahu (Declaration of Membership) Order 2001 declares 18 Papatipu (marae-based) Rūnanga of Ngāi Tahu Whānui²⁵ and their respective takiwā (area). The Forum region overlaps with the takiwā of six of these Rūnanga.

Fisheries Act and Deed of Settlement

²⁵ Ngāi Tahu Whānui means the collective of the individuals who descend from the primary hapū of Waitaha, Kāti Mamoe, and Ngāi Tahu, namely, Kāti Kuri, Kāti Irakehu, Kāti Huirapa, Ngāi Tuahuriri, and Kāti Te Ruahikihiki (Te Rūnanga o Ngāi Tahu Act 1996).

155. The 1992 Fisheries Deed of Settlement provided a full and final settlement of all claims by Māori to commercial fishing rights. The Treaty of Waitangi (Fisheries Claims) Settlement Act 1992 was enacted to give effect to the agreements expressed in the Deed of Settlement. In accordance with this Act, the Crown has also made regulations to recognise and provide for customary food gathering by Māori and the special relationship between tangata whenua and places of food gathering importance.
156. There is an obligation under the Fisheries Act 1996 for the Minister of Fisheries to consult with people the Minister considers to be representative of Māori, to provide for the input and participation of tangata whenua and have particular regard to kaitiakitanga.
157. The agencies note that Kāi Tahu and local rūnaka representatives have been involved throughout the process, and the Forum membership included these representatives. In addition, the agencies met with Kāi Tahu and local rūnaka representatives to discuss their co-management aspirations on 31 July 2018.
158. The agencies support the Forum's recommendations to continue to involve Kāi Tahu in the establishment, management and monitoring of any new MPAs in the Forum region that result from this process.

MPA Policy

159. The MPA Policy includes the following principle:

That the special relationship between the Crown and Māori will be provided for, including kaitiakitanga, customary use and mātauranga Māori.
160. The Policy notes that this means that tangata whenua should be involved in MPA planning from an early stage and that the process must consider the impacts of MPAs on customary use and management practices.
161. Kāi Tahu and local rūnaka representatives have been involved throughout the process. The Forum membership initially included two representatives, this was later increased to three upon the request of Kāi Tahu. Kāi Tahu representatives conducted a series of hui during the development of the network proposals.
162. In addition, the agencies met with Kāi Tahu and local rūnaka representatives to discuss their co-management aspirations on 31 July 2018.

Risk assessment

163. Network 1 was supported by the representatives of the science, tourism, environmental and community sectors as well as one of two recreational fishing representatives. If you agree with this option, there is a risk of opposition from commercial and recreational fishers. Conversely, the environmental and scientific sectors may consider that Network 1 does not go far enough in terms of protecting the biodiversity of the region.
164. Network 2 was supported by the three commercial fishing representatives and the other recreational representative on the Forum. If you agree with this option, there is a risk of opposition from the sectors who supported Network 1.
165. If Irihuka/Long Point (Site O1) is included in Network 1 without further engagement with Kāi Tahu, there is a risk of opposition to the outcome of the MPA process as a whole. This risk will be managed by maintaining ongoing dialogue with Kāi Tahu, including understanding their aspirations for the future management of Irihuka/Long Point (Site O1).
166. Kāi Tahu's lack of opposition is conditional on a generational review and co-management of the MPAs between the Crown and Kāi Tahu. This means it will be essential to maintain an ongoing dialogue with representatives of Kāi Tahu papatipu rūnaka regarding these matters.

167. The Forum process has involved considerable investment of time and resources from agencies, Forum members, Treaty partners and stakeholders. The process has attracted significant public interest. As such, there are potential reputational and political risks if what is implemented is significantly different from what the Forum recommended.
168. A summary of stakeholder and iwi perspectives received during the Forum's consultation phase can be found in the Summary of Submissions, which is attached as Appendix 7.

Implementation options

169. MPAs can be implemented using existing statutory tools or through special legislation. For example, under current legislation:
 - marine reserves could be implemented under the Marine Reserves Act 1971; and
 - fisheries regulations (for Type 2 MPAs) made under the Fisheries Act 1996.
170. If you decide to use existing legislation, further public consultation and assessment against the regulatory framework will be needed before any areas can be declared as MPAs. This is because the main options for creating MPAs are marine reserve status or the introduction of fisheries regulations; both of which involve statutory consultation requirements, and legal tests.
171. Alternatively, special legislation could be passed that establishes MPAs in the Forum region. Examples of special legislation used in the past for marine protection are the Subantarctic Islands Marine Reserves Act 2014, and the Kaikōura (Te Tai o Marokura) Marine Management Act 2014.
172. Some recommendations and Kāi Tahu's conditions on their position of not opposing Network 1 or Network 2 (generational review and co-management) will need to be analysed to determine whether they can be implemented through existing legislation or whether special legislation would be required.
173. Note that via the legislative process, there are opportunities for public consultation on any special legislation to promulgate the establishment of MPAs.

Next steps

174. If you agree with progressing the establishment of either network, we will provide you with a further briefing on what the next steps for implementing any MPA options that you decide to progress.
175. Officials are available to discuss any aspects of this briefing to assist your decision on the implementation of an MPA network.

Summary of Appendix 4 site by site analysis – Alignment of Forum recommendations with relevant MPA Policy Planning Principles (PPs)

MPA site description				PP1 – Representation	PP2 – Protection standard	PP3 & PP5 – customary significance	PP5 – Minimising adverse impacts on existing users				Agency view/ assessment		
Site	Area (km ²)	% Forum area	Coastline (km)	Recommended restrictions	Site's contribution towards representation of habitats and ecosystems. (Percentage of total habitat in Forum region included in the Site. Ordered high to low)	Meeting the protection standard ¹	Impact on Treaty settlement obligations and tangata whenua	Displacement of commercial fisheries				Other users	
								Catch (kg) ²	Export value (\$NZ) ³	% Forum region export value ⁴		Fisheries displaced (top three by catch and export value)	i.e. recreational fishing, consents and permits, etc.
A1 Type 2 	158	1.8	40.6	<ul style="list-style-type: none"> Bottom trawling Dredging Danish seining Set netting Commercial long lining Five hook limit for line fishing Mid-water trawling Bottom disturbance and seismic testing associated with any activity 	4 coastal habitat types: <ul style="list-style-type: none"> Moderate gravel beach (57.4%) Moderate shallow mud (33.4%) Moderate shallow sand (9.8%) Moderate shallow gravel (3.7%) 	Agencies consider that requirement a) of the protection standard ('Provide for maintenance and recovery of physical features and biogenic structures that support biodiversity') is being met.	<ul style="list-style-type: none"> Sites are within an area of customary significance, with two historical pā sites in the vicinity, as well as customary fishing areas adjacent. Te Rūnaka o Arowhenua exercises kaitiakitanga for the northern part of Site A1 and all of Site A2 and administers a mātaītai at Tuhawaiki Point. Te Rūnanga o Waihao exercises kaitiakitanga for the southern part of Site A1. Agencies note that Kāi Tahu's position is at a network level, not at a site level. The Recommendations Report states that Kāi Tahu does not oppose either Network 1 or 2. 	109,880	462,597	1.4	<ul style="list-style-type: none"> Trawling for elephant fish, flatfish and rough skate (affected catch, kg); Trawling for flatfish, elephant fish and red gurnard (export value \$NZD). 	<ul style="list-style-type: none"> Impact on recreational fishers considered likely to be low. No resource consents⁵ or oil and gas permits in immediate vicinity. 	Key: Agencies support proposal DOC supports proposal, Fisheries New Zealand supports proposal in principle
								8,129	37,086	0.1	<ul style="list-style-type: none"> Red cod, elephant fish and red gurnard (affected catch, kg); Red gurnard, elephant fish and rig (export value \$NZD). 	<ul style="list-style-type: none"> Impact on recreational fishers considered likely to be low. Resource consents in vicinity.⁵ 	
A2 Type 2 	4.4	0.1	4.2	<ul style="list-style-type: none"> Bottom trawling Dredging Danish seining Set netting Commercial long lining Five hook limit for line fishing Bottom disturbance and seismic testing associated with any activity 	2 coastal habitat types: <ul style="list-style-type: none"> Moderate gravel beach (3.8%) Moderate shallow gravel (3.8%) 	The Agencies consider that as a marine reserve both sites meet the protection standard as defined in the MPA Guidelines.	<ul style="list-style-type: none"> Sites are in close proximity to the Waitaki River, which is central to the cultural identity of Kāi Tahu and a taonga. The design of both sites avoids the river mouth and the area immediate around it in order to recognise and provide for customary fishing interests. 	8,129	37,086	0.1	<ul style="list-style-type: none"> Red cod, elephant fish and red gurnard (affected catch, kg); Red gurnard, elephant fish and rig (export value \$NZD). 	<ul style="list-style-type: none"> Impact on recreational fishers considered likely to be low. Resource consents in vicinity.⁵ 	DOC <ul style="list-style-type: none"> DOC supports the inclusion of Site A1 in the network. It acknowledges that issues have been raised regarding part of the recommendations, but on the whole considers the site to be a necessary inclusion in the network. Site A1 would benefit the network by contributing to the representation of four habitats. Being one of only two MPAs that contain moderate shallow sand habitat, Site A1 would therefore be required to replicate this habitat. Fisheries New Zealand <ul style="list-style-type: none"> Fisheries New Zealand supports in principle the inclusion of Site A1 however does not support the restrictions (beyond bottom-impacting methods) of set netting, commercial long lining, five hook limit for line fishing, mid-water trawling as it does not consider that these are warranted. Fisheries New Zealand does not support the boundaries of Site A1 as recommended. Agencies <ul style="list-style-type: none"> While Site A2 would have less adverse impacts on existing users than Site A1, the agencies consider that it would contribute little to an MPA network, due to the very limited amounts of the habitats present. Agencies note the Recommendations Report states that Kāi Tahu does not oppose either Network 1 or 2.
B1 Marine Reserve 	101	1.1	14.8	No-take	3 coastal habitat types: <ul style="list-style-type: none"> moderate gravel beach (13.2%) moderate shallow mud (10.4%) moderate shallow gravel (9.7%) 			The Agencies consider that as a marine reserve both sites meet the protection standard as defined in the MPA Guidelines.	<ul style="list-style-type: none"> Sites are in close proximity to the Waitaki River, which is central to the cultural identity of Kāi Tahu and a taonga. The design of both sites avoids the river mouth and the area immediate around it in order to recognise and provide for customary fishing interests. 	4,766	21,491	0.1	
B2 Marine Reserve 	88.4	1	14.8	No-take	3 coastal habitat types: <ul style="list-style-type: none"> moderate gravel beach (13.2%) moderate shallow mud (10.2%) moderate shallow gravel (8.2%) 	3 coastal habitat types: <ul style="list-style-type: none"> moderate gravel beach (13.2%) moderate shallow mud (10.2%) moderate shallow gravel (8.2%) 	3,700			17,052	0.1	<ul style="list-style-type: none"> Red cod, elephant fish and red gurnard (affected catch, kg); Red gurnard, elephant fish and rig (export value \$NZD). 	<ul style="list-style-type: none"> Impact on recreational fishers considered likely to be low. Resource consents in vicinity.⁵

¹ Provide for maintenance and recovery of: a) physical features and biogenic structures that support biodiversity, b) ecological systems, natural species composition (incl. all life-supporting stages), and trophic linkages; and, c) potential for the biodiversity to adapt and recover in response to perturbation. (MPA Policy, page 18)
² Estimated average annual affected catch (kg) based on the annual catches from 2007/08 fishing year to the 2016/17 fishing year (and on information in the CatchMapper database).
³ FOB (Free on Board) export value estimates (\$NZ) based on export prices for 2017 calendar year.
⁴ Based on the total \$NZ 34.3 million export value for the Forum Region based on 2017 FOB export prices.
⁵ Agencies note that MPA status does not in itself affect existing resource consents located outside an MPA but it may be a relevant matter for consideration when a consent or permit is being renewed.

MPA Site description				PP1 – Representation	PP2 – Protection standard	PP3 & PP5 – customary significance	PP5 – Minimising adverse impacts on existing users				Agency view/ assessment			
Site	Area (km ²)	% Forum area	Coastline (km)	Recommended restrictions	Site's contribution towards representation of habitats and ecosystems. (Percentage of total habitat in Forum region included in the Site. Ordered high to low)	Meeting the protection standard ¹	Impact on Treaty settlement obligations and tangata whenua	Displacement of commercial fisheries				Other users		
								Catch (kg) ²	Export Value (\$NZ) ³	% Forum region export value ⁴		Fisheries displaced (top three by catch and export value)	i.e. recreational fishing, consents and permits, etc.	
C1 Type 2 	254	2.9	19.2	<ul style="list-style-type: none"> Bottom trawling Dredging Danish seining Set netting Mid-water trawling Bottom disturbance and seismic testing associated with any activity 	5 coastal habitat types: <ul style="list-style-type: none"> Moderate gravel beach (20.4%) Moderate shallow gravel (17.1%) Moderate shallow mud (13.8%) Moderate shallow sand (2.7%) Deep gravel (1.5%) 	Agencies consider that requirement a) of the protection standard ('Provide for maintenance and recovery of physical features and biogenic structures that support biodiversity') is being met.	<ul style="list-style-type: none"> There are high customary fisheries interests immediately in and around the Waitaki River mouth. The Waihao marae and Māori Reserve lands are located just to the north of Site C1. This area and the waterways are of high cultural importance to Kāi Tahu hapū associated with this area (represented by traditional settlements and rich mahika kai resources). 	34,492	148,145	0.4	<ul style="list-style-type: none"> Danish seining for red gurnard and red cod, set netting for school shark (affected catch, kg). Red gurnard, rig and school shark (export value \$NZ). 	<ul style="list-style-type: none"> No resource consents or oil and gas permits in immediate vicinity. 	DOC <ul style="list-style-type: none"> DOC supports the inclusion of Site C1 in the network. It acknowledges that issues have been raised regarding part of the recommendation, but on the whole considers the site to be a necessary inclusion in the network. Site C1 would benefit the network by contributing to the representation of five habitats; and would be required for replication of moderate shallow sand habitat. Agencies <ul style="list-style-type: none"> Agencies note the Recommendations Report states that Kāi Tahu does not oppose either Network 1 or 2. 	Fisheries New Zealand <ul style="list-style-type: none"> Fisheries New Zealand supports in principle the inclusion of Site C1 however does not support the recreational and commercial set netting, and mid-water trawling restrictions as proposed by the Forum, as it does not consider that these are warranted. Fisheries New Zealand considers that Site C1 would have a displacement impact to commercial fishing interests in this area. But would likely have a low potential impact on recreational fishing interests.
D1 Marine Reserve 	96	1.1	10.4	No-take In the Stony Creek and Pleasant River estuaries: <ul style="list-style-type: none"> Trout fishing Whitebaiting Duck shooting 	1 biogenic habitat type: <ul style="list-style-type: none"> Kelp (32.7%) 7 coastal habitat types: <ul style="list-style-type: none"> Moderate shallow reef (24.8%) Moderate shallow mud (7.6%) Deep mud (7.4%) Deep reef (4.5%) Moderate intertidal reef (3.6%) Moderate sandy beach (3.2%) Deep sand (0.8%) Estuarine habitat: (1.2%) 	The agencies consider that as a marine reserve Site D1 meets the protection standard as defined in the MPA Guidelines.	<ul style="list-style-type: none"> There is a significant pā site at the Huriawa Peninsula (Karitāne). To the north of Sites D1 and D2 there is a prominent reef and fishery off the mouth of the Waihemo (Shag River) known as Arai-te-uru (Danger Reef). This is an area that is steeped in tradition and associated with the wreck of the Arai-te-uru waka. There are high customary fisheries interests to the north of Sites D1 and D2 and to the south of the proposed area. 	40,526	1,992,476	5.8	<ul style="list-style-type: none"> Potting for rock lobster, trawling for flatfish and potting for blue cod (affected catch, kg and export value, \$NZ). 	<ul style="list-style-type: none"> Resource consents⁵ Trout fishing Whitebaiting Duck shooting 	DOC <ul style="list-style-type: none"> DOC supports the inclusion of Site D1 in the network and considers the site to be a necessary inclusion in the network. Site D1 would hold the greatest representativity of any recommended site, with seven coastal habitats, plus estuarine habitats and two biogenic habitats, being represented in one site. For five of the coastal habitats and the two biogenic habitats, Site D1 is the only site in Network 1 that represents these habitats. In addition, it is the only site to include estuarine habitats in a marine reserve (including 2 vastly different estuarine ecosystems in one MPA). DOC also considers it contributes to the representation of deep sand habitat that is otherwise poorly represented north of the Site E1. DOC acknowledges that Site D1 has a likely higher displacement than D2 (or the extension that was consulted on). DOC notes that the habitat afforded protection in Site D1 (deep reef) was specifically excluded from Site I1 (Tow Rock) in order to reduce potential impacts on existing commercial, recreational and customary users. Agencies <ul style="list-style-type: none"> The agencies note that site D1 better meets the considerations of the Policy than D2. In particular, agencies consider that Site D2 exhibits poor reserve design. Agencies note that rock lobster potting would be the primary fishing activity affected by both sites. The agencies note that Site D1 would result in greater displacement of rock lobster catch than Site D2. Agencies note the Recommendations Report states that Kāi Tahu does not oppose either Network 1 or 2. 	Fisheries New Zealand <ul style="list-style-type: none"> Fisheries New Zealand supports in principle the inclusion of Site D1, but has concerns regarding the extent of the boundary change following consultation. Fisheries New Zealand notes the high potential impact on commercial fishers of establishing a marine reserve in this area. To manage the potential risks posed by displacement of kōura papatea (rock lobster) fishing effort from site D1, Fisheries New Zealand recommends that you either: <ul style="list-style-type: none"> Progress the proposal for Site D1 in the form that the Forum originally consulted on it (i.e.: with a seaward boundary situated 6km offshore); or; Direct officials to undertake further work to assess the options for reconfiguring the boundaries of Site D1 to reduce the impacts on the kōura papatea (rock lobster) fishery, while also ensuring adequate habitat representation.
D2 Marine Reserve 	15.3	0.2	10.4	No-take	1 biogenic habitat types: <ul style="list-style-type: none"> Kelp (32.4%) 3 coastal habitat types: <ul style="list-style-type: none"> Moderate shallow reef (12.6%) Moderate intertidal reef (3.6%) Moderate sandy beach (3.2%) 	The agencies consider that as a marine reserve Site D2 meets the protection standard as defined in the MPA Guidelines. Agencies however consider that Site D2 exhibits poor reserve design and likely compromises its effectiveness in affording adequate protection to the kelp forest ecosystem and the natural species composition and trophic linkages associated with it.	<ul style="list-style-type: none"> There is a significant pā site at the Huriawa Peninsula (Karitāne). To the north of Sites D1 and D2 there is a prominent reef and fishery off the mouth of the Waihemo (Shag River) known as Arai-te-uru (Danger Reef). This is an area that is steeped in tradition and associated with the wreck of the Arai-te-uru waka. There are high customary fisheries interests to the north of Sites D1 and D2 and to the south of the proposed area. 	11,097	914,356	2.7	<ul style="list-style-type: none"> Potting for rock lobster, potting for octopus, Potting for blue cod (affected catch, kg). Potting for rock lobster, hand gathering pāua and potting for blue cod (export value, \$NZ). 	<ul style="list-style-type: none"> Resource consents in vicinity.⁵ 	DOC <ul style="list-style-type: none"> DOC supports the inclusion of Site E1 in the network. It acknowledges that issues have been raised regarding part of the recommendation, but on the whole considers the site to be a necessary inclusion in the network. Site E1 would benefit the network by contributing to the representation of four habitats, including the regionally important bryozoan thickets off the Otago Peninsula; and would be required to replicate canyon and bryozoan habitats in Network 1 (in association with H1). DOC also notes that Site E1 is particularly important for adequately representing deep gravel and deep sand habitats within the region. Agencies <ul style="list-style-type: none"> The agencies note that the Recommendations Report states that Kāi Tahu does not oppose either Network 1 or 2. 	Fisheries New Zealand <ul style="list-style-type: none"> Fisheries New Zealand supports in principle the inclusion of Site E1 however does not support the mid-water trawling, set netting and purse seining restrictions as proposed by the Forum, as it does not consider that these are warranted. Fisheries New Zealand considers that Site E1 is likely to have greater impacts on commercial fishing than Site G2, largely due to the proposed prohibitions on set netting in Site E1. Fisheries New Zealand considers that effects to recreational fishers (of both sites) will likely be low.
E1 Type 2 	450	5	0	<ul style="list-style-type: none"> Dredging Trawling (bottom and mid-water trawling) Danish seining Set netting Purse seining Bottom disturbance and seismic testing associated with any activity 	1 biogenic habitat type: <ul style="list-style-type: none"> Bryozoan (64.1%) 3 coastal habitat types: <ul style="list-style-type: none"> Deep water sand (72.1%) Deep sand (7.3%) Deep gravel (4.3%) 	Agencies consider that requirement a) of the protection standard ('Provide for maintenance and recovery of physical features and biogenic structures that support biodiversity') is being met.	<ul style="list-style-type: none"> Traditional settlements in the Cape Saunders area utilised sheltered anchorages to access the rich fishery in this region. Maintaining and enhancing marine ecosystems that contribute to the biodiversity of Te Tai o Araitereu is an important issue for Kāi Tahu. The shelf and canyons are similarly considered in terms of customary fisheries. The local rūnaka has established a mātaītai reserve in the outer Otago Harbour. However this does not define the extent of such interest. Ōtākou whanau and hapū have maintained a continuous and active role in all facets of the fishery activity, be it customary, commercial or recreational. Agencies note that Kāi Tahu's position is at a network level, not at a site level. The Recommendations Report states that Kāi Tahu does not oppose either Network 1 or 2. 	17,764	77,445	0.2	<ul style="list-style-type: none"> Set netting for school shark, rig and spiny dogfish (affected catch, kg). Set netting for school shark and rig, and trawling for flatfish (export value, \$NZ). 	<ul style="list-style-type: none"> Minimal overlap with mineral exploration permit. Likely to have a low impact on recreational fishers. 	DOC <ul style="list-style-type: none"> DOC supports the inclusion of Site E1 in the network. It acknowledges that issues have been raised regarding part of the recommendation, but on the whole considers the site to be a necessary inclusion in the network. Site E1 would benefit the network by contributing to the representation of four habitats, including the regionally important bryozoan thickets off the Otago Peninsula; and would be required to replicate canyon and bryozoan habitats in Network 1 (in association with H1). DOC also notes that Site E1 is particularly important for adequately representing deep gravel and deep sand habitats within the region. Agencies <ul style="list-style-type: none"> The agencies note that the Recommendations Report states that Kāi Tahu does not oppose either Network 1 or 2. 	Fisheries New Zealand <ul style="list-style-type: none"> Fisheries New Zealand supports in principle the inclusion of Site E1 however does not support the mid-water trawling, set netting and purse seining restrictions as proposed by the Forum, as it does not consider that these are warranted. Fisheries New Zealand considers that Site E1 is likely to have greater impacts on commercial fishing than Site G2, largely due to the proposed prohibitions on set netting in Site E1. Fisheries New Zealand considers that effects to recreational fishers (of both sites) will likely be low.
G2 Type 2 	152	1.7	0	<ul style="list-style-type: none"> Dredging Bottom trawling Danish seining Bottom disturbance and seismic testing associated with any activity 	1 Biogenic habitat type: <ul style="list-style-type: none"> Bryozoan (32%) 2 coastal habitat types: <ul style="list-style-type: none"> Deep sand (2.6%) Deep gravel (2.3%) 	Agencies consider that requirement a) of the protection standard ('Provide for maintenance and recovery of physical features and biogenic structures that support biodiversity') is being met.	<ul style="list-style-type: none"> Traditional settlements in the Cape Saunders area utilised sheltered anchorages to access the rich fishery in this region. Maintaining and enhancing marine ecosystems that contribute to the biodiversity of Te Tai o Araitereu is an important issue for Kāi Tahu. The shelf and canyons are similarly considered in terms of customary fisheries. The local rūnaka has established a mātaītai reserve in the outer Otago Harbour. However this does not define the extent of such interest. Ōtākou whanau and hapū have maintained a continuous and active role in all facets of the fishery activity, be it customary, commercial or recreational. Agencies note that Kāi Tahu's position is at a network level, not at a site level. The Recommendations Report states that Kāi Tahu does not oppose either Network 1 or 2. 	759	2,841	0.0	<ul style="list-style-type: none"> Trawling for flatfish, rough skate, tarakihi (affected catch, kg) Trawling for flatfish, tarakihi and red gurnard (export value, \$NZ). 	<ul style="list-style-type: none"> Likely to have a low impact on recreational fishers. 	DOC <ul style="list-style-type: none"> DOC supports the inclusion of Site E1 in the network. It acknowledges that issues have been raised regarding part of the recommendation, but on the whole considers the site to be a necessary inclusion in the network. Site E1 would benefit the network by contributing to the representation of four habitats, including the regionally important bryozoan thickets off the Otago Peninsula; and would be required to replicate canyon and bryozoan habitats in Network 1 (in association with H1). DOC also notes that Site E1 is particularly important for adequately representing deep gravel and deep sand habitats within the region. Agencies <ul style="list-style-type: none"> The agencies note that the Recommendations Report states that Kāi Tahu does not oppose either Network 1 or 2. 	Fisheries New Zealand <ul style="list-style-type: none"> Fisheries New Zealand supports in principle the inclusion of Site E1 however does not support the mid-water trawling, set netting and purse seining restrictions as proposed by the Forum, as it does not consider that these are warranted. Fisheries New Zealand considers that Site E1 is likely to have greater impacts on commercial fishing than Site G2, largely due to the proposed prohibitions on set netting in Site E1. Fisheries New Zealand considers that effects to recreational fishers (of both sites) will likely be low.

¹ Provide for maintenance and recovery of: a) physical features and biogenic structures that support biodiversity, b) ecological systems, natural species composition (incl. all life-supporting stages), and trophic linkages; and, c) potential for the biodiversity to adapt and recover in response to perturbation. (MPA Policy, page 18).

² Estimated average annual affected catch (kg) based on the annual catches from 2007/08 fishing year to the 2016/17 fishing year (and on information in the CatchMapper database).

³ FOB (Free on Board) export value estimates (\$NZ) based on export prices for 2017 calendar year.

⁴ Based on the total \$NZ 34.3 million export value for the Forum Region based on 2017 FOB export prices.

⁵ Agencies note that MPA status does not in itself affect existing resource consents located outside an MPA but it may be a relevant matter for consideration when a consent or permit is being renewed.

MPA Site description				PP1 – Representation	PP2 – Protection standard	PP3 & PP5 – customary significance	PP5 – Minimising adverse impacts on existing users				Agency view/ assessment			
Site	Area (km ²)	% Forum area	Coastline (km)	Recommended restrictions	Site's contribution towards representation of habitats and ecosystems. (Percentage of total habitat in Forum region included in the Site. Ordered high to low)	Meeting the protection standard ¹	Impact on Treaty settlement obligations and tangata whenua Customary use incl. fishing and other	Displacement of commercial fisheries				Other users		
								Catch (kg) ²	Export Value (\$NZ) ³	% Forum region export value ⁴	Fisheries displaced (top three by catch and export value)	i.e. recreational fishing, consents and permits, etc.		
H1 Marine Reserve 	167	1.9	0	No-take	1 biogenic habitat type: • Bryozoan (29.9%) 3 coastal habitat types: • Deep water sand (25%) • Deep sand (2.7%) • Deep gravel (1.9%)	The agencies consider that as a marine reserve Site H1 meets the protection standard as defined in the MPA Guidelines.	<ul style="list-style-type: none"> Traditional settlements in the Cape Saunders area utilised sheltered anchorages to access the rich fishery in this region. Maintaining and enhancing marine ecosystems that contribute to the biodiversity of Te Tai o Araiteuru is an important issue for Kāi Tahu. The shelf and canyons are similarly considered in terms of customary fisheries. The local rūnaka has established a mātaītai reserve in the outer Otago Harbour. However this does not define the extent of such interest. Ōtākou whānau and hapū have maintained a continuous and active role in all facets of the fishery activity, be it customary, commercial or recreational. 	20,959	122,241	0.4	<ul style="list-style-type: none"> Jigging for arrow squid, potting for blue cod, and ling (various methods). Blue cod, arrow squid and rig (export value, \$NZ). 	<ul style="list-style-type: none"> Minimal overlap with mineral exploration permit. 	Key: Agencies support proposal DOC supports proposal, Fisheries New Zealand supports proposal in principle Agencies <ul style="list-style-type: none"> The agencies support Site H1 being included as recommended in Network 1. The agencies consider that Site H1 better contributes towards representation of habitats than Site H2. H1 is required to replicate canyon and bryozoan habitat (in association with Site E1). DOC also notes that Site H1 is particularly important for adequately representing deep gravel and deep sand habitats within the region. Agencies note the Recommendations Report states that Kāi Tahu does not oppose either Network 1 or 2. 	
	H2 Marine Reserve 	106	1.2	0	No-take	1 biogenic habitat type: • Bryozoan (17.4%) 3 coastal habitat types: • Deep water sand (24.7%) • Deep sand (1.7%) • Deep gravel (0.5%)	The agencies consider that as a marine reserve Site H2 meet the protection standard as defined in the MPA Guidelines.	<ul style="list-style-type: none"> Agencies note that Kāi Tahu's position is at a network level, not at a site level. The Recommendations Report states that Kāi Tahu does not oppose either Network 1 or 2. 	11,833	70,032	0.2			<ul style="list-style-type: none"> Minimal overlap with mineral exploration permit.
I1 Marine Reserve 	28.8	0.3	19.5	No-take	6 coastal habitat types: • Exposed boulder beach (80.3%) • Exposed sandy beach (9.0%) • Exposed intertidal reef (6.2%) • Exposed shallow sand (3.1%) • Exposed shallow reef (2.7%) • Deep sand (0.1%)	The agencies consider that as a marine reserve Site I1 meets the protection standard as defined in the MPA Guidelines.	<ul style="list-style-type: none"> The coastal area is rich in traditional association. Site I1 falls within the rohe of Te Rūnaka o Ōtākou and is part of their traditional food gathering area. In 2016, the Ōtākou Mātaītai Reserve was established in outer Otago Harbour, which recognises and provides for part of their traditional food gathering areas. Te Rūnaka o Ōtākou does not oppose Site I1 on the basis that the impacts on customary and commercial fishing are manageable. As noted, Te Rūnanga o Ngāi Tahu supports Site I1 in principle. 	2,584	27,303	0.1	<ul style="list-style-type: none"> Potting for blue cod, red cod (various methods) and trawling for flatfish (affected catch, kg). Potting for rock lobster, potting for blue cod and Hapuku/bass (various methods) (export value, \$NZ). 	<ul style="list-style-type: none"> Site may displace a significant amount of recreational fishing. Resource consents in vicinity. 	DOC <ul style="list-style-type: none"> DOC supports the inclusion of Site I1 in the network and considers the site to be a necessary inclusion in the network. Site I1 would benefit the network by contributing to the representation of six habitats; two of which are required for representation and/or replication in the network. DOC also notes that Site I1 is particularly important for adequately representing exposed shallow sand and exposed rocky reef within the network. At Dunedin's doorstep, Site I1 would be the most prominent MPA within the network. DOC considers that a high level of protection is required to adequately allow for the maintenance and recovery of rocky reef ecosystems. 	Fisheries New Zealand <ul style="list-style-type: none"> Fisheries New Zealand supports Site I1 in principle but has concerns regarding the potential for impacts on recreational fishers. Fisheries New Zealand considers that Site I1 will likely have a low impact on commercial fishers.
K1 Marine Reserve 	5	0.1	0.7	No-take	4 coastal habitat types: • Exposed shallow sand (0.6%) • Exposed intertidal reef (0.4%) • Exposed shallow reef (0.2%) • Deep sand (0.03%)	The agencies consider that as a marine reserve Site K1 meets the protection standard as defined in the MPA Guidelines.	<ul style="list-style-type: none"> Okaihāe (Green Island) traditionally supported customary fishing and birding activity and was part of the mahika kai network. Ōtākou whānau and hapū have maintained a continuous and active role in all facets of fishery activity, including customary, commercial and recreational, within their rohe moana. Kāi Tahu commercial fishers oppose Site K1 due to the impact the proposal has on that part of their commercial fishing grounds. Te Rūnanga o Ōtākou does not oppose Site K1 due to the manageable impact on the customary commercial fishery. Agencies note the Recommendations Report states that Te Rūnanga o Ngāi Tahu supports Site K1 in principle. 	689	19,111	0.1	<ul style="list-style-type: none"> Potting for rock lobster, trawling for flatfish; potting for blue cod (affected catch, kg). Potting for rock lobster and blue cod, and hapuku/bass (various methods) (export value, \$NZ). 	<ul style="list-style-type: none"> Potential for notable impact on recreational fishing. Resource consents in vicinity.⁵ 	Agencies <ul style="list-style-type: none"> The agencies support the inclusion of Site K1 in the network. They acknowledge that issues remain regarding the size of the site, however based on best available information consider the site to be a valuable inclusion in the network. Site K1 would benefit the network by increasing representation for four habitats, but in particular through the addition of an offshore island (a unique feature of the network). Agencies note the Recommendations Report states that Te Rūnanga o Ngāi Tahu supports Site K1 in principle. 	Fisheries New Zealand <ul style="list-style-type: none"> Fisheries New Zealand considers that this site will likely have a relatively low impact on commercial fishing, but may potentially incur a high impact on recreational fishing since it is a known popular recreational fishing location. Fisheries New Zealand notes the report states there is conflicting information regarding impacts (positive or negative) on recreational fishers from submissions, and cannot definitively state the scale of impact on recreational fishers/users of this site.
L1 Type 2 	0.3	<0.1	6.9	<ul style="list-style-type: none"> Dredging Set net fishing Commercial line fishing Mechanical harvesting (incl. spades for collecting shellfish) Fyke net fishing Kohikohi inaka (whitebaiting) Bottom disturbance and seismic testing associated with any activity 	Akatore estuary is a tidal lagoon and includes 0.28 km ² of estuarine habitat (0.3% of the Forum region's estuarine area). Provides representation of mud flats, sand flats and estuarine sandy beach habitat.	Agencies consider that requirement a) of the protection standard ('Provide for maintenance and recovery of physical features and biogenic structures that support biodiversity') is being met.	<ul style="list-style-type: none"> The Akatore (Akatorea) Estuary is a customary mahika kai resource for whānau and hapū associated with this area of coast. It is of particular interest to Taieri-based whānau of Te Rūnaka o Ōtākou who utilise the estuary for customary gathering of tuaki (shellfish). The whānau and hapū who remain in the Taieri Mouth area have maintained a continuous and active role in all facets of fishery activity, be it customary, commercial or recreational. Agencies note that Kāi Tahu's position is at a network level, not at a site level. The Recommendations Report states that Kāi Tahu does not oppose either Network 1 or 2. 	no data	N/A	N/A	<ul style="list-style-type: none"> Shortfin eel catch (no data) 	<ul style="list-style-type: none"> Minimal impact on recreational fishing, with the exception of net fishing for flounder. No existing oil and gas permit in the vicinity. One Resource consent in vicinity.⁵ 	DOC <ul style="list-style-type: none"> DOC supports the inclusion of Site L1 in the network. It acknowledges that issues have been raised regarding the level of protection recommended by the Forum, but on the whole considers the site to be a valuable inclusion in the network. Site L1 would benefit the network by contributing to the representation of estuarine habitats; and would provide a replicate example of an estuarine system (in association with Pleasant River estuary in Site D1 and Tahakopa Estuary in Site Q1). 	Fisheries New Zealand <ul style="list-style-type: none"> Fisheries New Zealand supports in principle the inclusion of Site L1 however does not support the set net and commercial line fishing, mechanical harvesting (incl. spades for collecting shellfish), fyke net fishing and kohiko inaka (whitebaiting) restrictions as proposed by the Forum, as it does not consider that these are warranted.
Agencies <ul style="list-style-type: none"> The agencies note that the Recommendations Report states that Kāi Tahu does not oppose either Network 1 or 2. 														

¹ Provide for maintenance and recovery of: a) physical features and biogenic structures that support biodiversity, b) ecological systems, natural species composition (incl. all life-supporting stages), and trophic linkages; and, c) potential for the biodiversity to adapt and recover in response to perturbation. (MPA Policy, page 18).

² Estimated average annual affected catch (kg) based on the annual catches from 2007/08 fishing year to the 2016/17 fishing year (and on information in the CatchMapper database).

³ FOB (Free on Board) export value estimates (\$NZ) based on export prices for 2017 calendar year.

⁴ Based on the total \$NZ 34.3 million export value for the Forum Region based on 2017 FOB export prices.

⁵ Agencies note that MPA status does not in itself affect existing resource consents located outside an MPA but it may be a relevant matter for consideration when a consent or permit is being renewed.

MPA Site description					PP1 – Representation	PP2 – Protection standard	PP3 & PP5 – customary significance	PP5 – Minimising adverse impacts on existing users				Agency view/ assessment	
Site	Area (km ²)	% Forum area	Coastline (km)	Recommended restrictions	Site's contribution towards representation of habitats and ecosystems. (Percentage of total habitat in Forum region included in the Site. Ordered high to low)	Meeting the protection standard ¹	Impact on Treaty settlement obligations and tangata whenua Customary use incl. fishing and other	Displacement of commercial fisheries			Other users		
								Catch (kg) ²	Export Value (\$NZ) ³	% Forum region export value ⁴	Fisheries displaced (top three by catch and export value)		i.e. recreational fishing, consents and permits, etc.
M1 Marine Reserve 	5.9	0.1	9.3	No-take	3 coastal habitat types: • Exposed intertidal reef (8.4%) • Exposed shallow reef (2.9%) • Exposed sandy beach (0.6%)	The agencies consider that as a marine reserve Site M1 meets the protection standard as defined in the MPA Guidelines.	<ul style="list-style-type: none"> The coastal strip adjacent to Site M1 contains archaeological values that indicate customary use of this coast. Site M1 is rich in shellfish, including pāua and mussels, and also supports rock lobster and fin-fish, all of which are of particular importance to Taieri-based whānau of Te Rūnaka o Ōtakou who have traditionally utilised this coastal area for customary fisheries. Kāi Tahu commercial fishers oppose Site M1 because of the strong traditions of intergenerational utilisation of the fishery and kaimoana extending over hundreds of years. Whānau Rōpū have proposed a mātaimai reserve for around Moturata (Taieri Island) but have not yet lodged an application. The agencies note that the Recommendations Report states that Te Rūnaka o Ōtakou does not oppose Site M1 but Te Rūnaka o Kāi Tahu does due to the effect that the potential transfer of fishing effort to the Moturata sea area would have on customary commercial fishing rights and interests. 	6,858	239,302	0.7	<ul style="list-style-type: none"> Trawling for flatfish, potting for rock lobster, trawling for red cod (affected catch, kg). Potting for rock lobster, trawling for flatfish and bottom long lining for hapuku/bass (export value \$NZ). 	<ul style="list-style-type: none"> Likely to have a low impact on recreational fishers. No resource consents in immediate vicinity. 	<p>Key:</p> <p>Agencies support proposal</p> <p>DOC supports proposal, Fisheries New Zealand supports proposal in principle</p> <p>Agencies</p> <ul style="list-style-type: none"> The agencies support the inclusion of Site M1 in the network. They acknowledge the limitations in protecting all habitats contained within the site, but overall consider the site to be a necessary inclusion in the network. M1 would benefit the network by contributing to the representation of three habitats; one being required to provide replication (exposed sandy beach). DOC also notes that Site M1 is particularly important for adequately representing exposed rocky reef within the network. The agencies note that the Recommendations Report states that Te Rūnaka o Ōtakou does not oppose Site M1 but Te Rūnaka o Kāi Tahu does. <p>Fisheries New Zealand</p> <ul style="list-style-type: none"> Fisheries New Zealand considers that the greatest potential effect of Site M1 would be on the rock lobster fishery.
O1 Marine Reserve 	72.6	0.90	17.1	No-take	6 coastal habitat types: • Exposed intertidal reef (5.8%) • Exposed shallow reef (4.4%) • Exposed sandy beach (3.9%) • Exposed shallow sand (2.3%) • Deep sand (1.2%) • Deep reef (0.5%)	The Agencies consider that as a marine reserve Site O1 would meet the protection standard as defined in the MPA Guidelines.	<ul style="list-style-type: none"> Ngāi Tahu whānau comprising Waitaha Kāi Māmoē are the mana whenua of Irihuka (Long Point) while the whānau and hapū of Te Rūnaka o Awarua hold mana whenua mana moana over this area. The site is close proximity to Māori reserve land and South Island Landless Natives Act (SILNA) lands. There is a mātaimai reserve at Kaka Point. Kāi Tahu commercial fishers oppose any restrictions represented by MPAs. The local whānau strongly oppose to this site citing that this would be a direct breach of their Treaty rights. They believe the customary tools such as taiāpure and mātaimai reserves are the appropriate tools to manage this area. Te Rūnaka o Awarua educate their younger generations about traditional methods of mahika kai and sustainable management. From a wider perspective, Te Rūnaka o Ngāi Tahu also opposes this site on the basis of the displacement of fishing effort and customary rights to remaining fishing areas in the locality. Kāi Tahu representatives on the Forum did not support the site. 	65,670	482,477	1.4	<ul style="list-style-type: none"> Trawling for flatfish, red cod and stargazer (affected catch, kg). Trawling for flatfish, hand-gathering for pāua and trawling for stargazer (export value, \$NZ). 	<ul style="list-style-type: none"> Likely to have a low impact on recreational fishers. No resource consents in immediate vicinity. 	<p>Agencies</p> <ul style="list-style-type: none"> The agencies note that Kāi Tahu opposed this site and therefore the Recommendations Report does not formally include it as part of Network 1. Agencies are including this assessment for completeness. The agencies acknowledge that Site O1 would address gaps in the network, both in terms of habitat representation and connectivity. Site O1 is the only site other than Site D1 than includes representation of deep reef. The agencies recommend that you direct officials to provide you with further advice. This would include further discussions with Kāi Tahu, local tangata whenua and stakeholders. <p>Fisheries New Zealand</p> <ul style="list-style-type: none"> Fisheries New Zealand considers that establishing Site O1 would likely have impacts across all fishing sectors, and the pāua fishery would be particularly impacted.
Q1 Type 2 	0.7	<0.1	7.7	<ul style="list-style-type: none"> Dredging Set net fishing Commercial line fishing Mechanical harvesting (incl. spades for collecting shellfish) Fyke net fishing Kohikohi Inaka (whitebaiting) Bottom disturbance and seismic testing associated with any activity. 	Tahakopa estuary is a tidal lagoon and includes 0.68 km ² of estuarine habitat (0.7% of the Forum region's estuarine area). Provides representation of mud flats and estuarine sandy beach.	Agencies consider that requirement a) of the protection standard ('Provide for maintenance and recovery of physical features and biogenic structures that support biodiversity') is being met.	<ul style="list-style-type: none"> Tahakopa Estuary has extensive wāhi tapu and wāhi taōka sites with carbon dating providing evidence that it includes some of the oldest archaeological sites known in Aotearoa. The estuary is regularly used by whānau to gather mahika kai and launch waka ama. Customary practices are used to educate and transfer intergenerational mātauraka in traditional gathering practices. This site is in close proximity to SILNA lands. The Forum's Recommendations Report says that the establishment of an MPA would extinguish the spiritual connections and interests of the whānau. The report goes on to say that the establishment of a Type 2 MPA will not accommodate the mahika kai traditions of which estuaries are a part. Agencies note that Kāi Tahu's position is at a network level, not at a site level. The Recommendations Report states that Kāi Tahu does not oppose either Network 1 or 2. 	no data	N/A	N/A	<ul style="list-style-type: none"> Shortfin eel catch (no data) 	<ul style="list-style-type: none"> Impact on recreational set netting. No existing oil and gas permit in the vicinity. Resource consents in vicinity. 	<p>Agencies</p> <ul style="list-style-type: none"> DOC supports the inclusion of Site Q1 in the network. It acknowledges that issues have been raised regarding the level of protection recommended by the Forum, but on the whole considers the site to be a valuable inclusion in the network. Site Q1 would benefit the network by contributing to the representation of estuarine habitats; and would provide a replicate example of an estuarine system (in association with Pleasant River estuary in Site D1). <p>Fisheries New Zealand</p> <ul style="list-style-type: none"> Fisheries New Zealand supports in principle the inclusion of Site Q1 noting the requirement to include protection for estuarine habitats. However, notes the impacts on mahika kai traditions stated in the Forum Report. Fisheries New Zealand supports in principle the inclusion of Site Q1 however does not support the set net and commercial line fishing, mechanical harvesting (incl. spades for collecting shellfish), fyke net fishing and kohiko inaka (whitebaiting) restrictions as proposed by the Forum, as it does not consider that these are warranted. <p>Agencies</p> <ul style="list-style-type: none"> Agencies note that the Recommendations Report states that Kāi Tahu does not oppose either Network 1 or 2.
T1 Other protection tool ⁵ 	N/A	N/A	N/A	Commercial harvesting of attached giant kelp <i>Macrocystis pyrifera</i> .	Site covers 99.8% of the known and potential extent of <i>Macrocystis</i> along the coast of the Forum region.	Agencies note this recommendation does not meet the protection standard.	<ul style="list-style-type: none"> Agencies note that the Forum's recommended ban on commercial harvest of <i>Macrocystis</i> excludes cultural harvest. Customary fisheries are located along the length of Site T1. There is a mātaimai reserve over the lower Otago Harbour. The use of three species of kelp to make poha (kelp bags) for the preservation of kai or use in hangi still occurs. The Forum's report states that the customary use of kelp should be retained and available to whānau and hapū with an interest in exercising the customary right. Mātauraka associated with the management and use of kelp is an important taoka that requires continued access, use and sharing of knowledge. Coastal mātaimai reserves are dependent on the retention of kelp forests (its protection allows the retention of that customary right). Agencies note that Kāi Tahu's position is at a network level, not at a site level. The Recommendations Report states that Kāi Tahu does not oppose either Network 1 or 2. 	Unknown but FNZ estimates that only a small amount of TACC is harvested.	-	-	Commercial harvesting of attached giant kelp.		<p>Agencies</p> <ul style="list-style-type: none"> DOC supports the inclusion of Site T1 in Network 1 in recognition of the importance of this biogenic habitat in the region. DOC also acknowledges the issues with regards to implementation and notes the Forum has not recommended this as a <i>Macrocystis</i> sustainability issue but rather the potential for ecosystem effects of harvest. <p>Fisheries New Zealand</p> <ul style="list-style-type: none"> Fisheries New Zealand agrees with DOC that kelp is an important biogenic habitat, deserving of protection. However, Fisheries New Zealand does not support the Forum's recommendation with respect to Site T1, as discussed below. Fisheries New Zealand considers any sustainability concerns can be addressed through a sustainability review to consider the TACC and harvest controls. <p>Agencies</p> <ul style="list-style-type: none"> Agencies acknowledge that Site T1 is proposed as part of Network 1 under the 'other protection tool' category. It does therefore not contribute towards the representation of the habitat in the network but does contribute towards biodiversity protection in the Forum region. Agencies note that the Forum's Recommendations Report states that Kāi Tahu does not oppose either Network 1 or 2.

¹ Provide for maintenance and recovery of: a) physical features and biogenic structures that support biodiversity, b) ecological systems, natural species composition (incl. all life-supporting stages), and trophic linkages; and, c) potential for the biodiversity to adapt and recover in response to perturbation. (MPA Policy, page 18)

² Estimated average annual affected catch (kg) based on the annual catches from 2007/08 fishing year to the 2016/17 fishing year (and on information in the CatchMapper database)

³ FOB (Free on Board) export value estimates (\$NZ) based on export prices for 2017 calendar year.

⁴ Based on the total \$NZ 34.3 million export value for the Forum Region based on 2017 FOB export prices.

⁵ Agencies note that MPA status does not in itself affect existing resource consents located outside an MPA but it may be a relevant matter for consideration when a consent or permit is being renewed.

⁶ Site T1 is proposed as part of Network 1 under the 'other protection tool' category. It does therefore not contribute towards the representation of the habitat in the network. Information on Site T1 is included in this summary table for reference.

Attachments

Appendix 1: MPA Policy and MPA Guidelines

Appendix 2: Forum's Recommendations Report

Appendix 3: Full network analysis

Appendix 4: Full site by site analysis

Appendix 5: Analysis of the Forum's management recommendations

Appendix 6: Forum's recommendations on broader issues

Appendix 7: Summary of Submissions

Appendix 1: MPA Policy and MPA Guidelines

Appendix 2: Forum's Recommendations Report

Appendix 3: Full network analysis

Meeting the Policy Objective – A comprehensive and representative network of marine protected areas

1. The main considerations when ensuring that a network protects examples of the full range of natural marine habitats, and is viable, include: representation, replication and connectivity. Each of these are considered in the analysis below.

Definitions and minimum requirements

Representation

2. **Definition** – Representation refers to the inclusion of each habitat type within the network of MPAs. To be included as ‘representative’, the habitat must be of sufficient extent and quality to enable the maintenance and/or recovery of the habitat and associated biological communities in a healthy functioning state at the habitat and ecosystem level.
3. **Minimum requirement** – In terms of the MPA Policy, to protect the full range of marine biodiversity, ‘representation’ requires each of the 34 classified habitat types¹ that occur within the region to be represented in the network. The MPA Policy also requires “outstanding, rare, distinctive or internationally or nationally important marine habitats and ecosystems” be included in the MPA network. To be fully representative, the MPA Network within a region needs to cover latitudinal (cross-shelf) and longitudinal (north-south) variation in habitats².

Replication

4. **Definition** – Replication is the protection of the same habitat type in two or more sites within a network of protected areas.
5. **Minimum requirement** – Each habitat type should be represented in at least one marine reserve, and one other MPA. However, where a habitat is particularly vulnerable to irreversible change, more replicates may be established.³

Connectivity

6. **Definition** – Connectivity is the extent to which populations in different parts of a species’ range are linked by the movement of eggs, larvae or other propagules, juveniles or adults. Connectivity in the design of a network allows for linkages whereby protected sites benefit from larval and/or species exchanges, and functional linkages from other network sites. In a connected network, individual sites have the potential to provide benefit both directly between MPAs, and indirectly through connectivity with adjacent areas.
7. **Minimum requirement** – The Policy recognises the importance of connectivity in MPA network design, however, there is no guidance on what constitutes a minimum requirement. The policy guidance states under site identification guidelines criteria to “Maximise connectivity – the design of the protected area network should seek to maximise

¹ Of the 44 habitats classified within the policy guidelines, 22 coastal habitats and 12 estuarine habitats were identified within the Forum region

² MPA Guidelines, page 21

³ Network Design Principle 3 states, “The number of replicate MPAs included in the network will usually be two. However, in circumstances where a habitat or ecosystem is particularly vulnerable to irreversible change, more replicates may be established as a national priority.” The MPA Policy also states, “A marine reserve will be established to protect at least one sample of each habitat or ecosystem type in the network.””

Appendix 3: Full network analysis

and enhance the linkages among individual protected areas, groups of protected areas within a given biogeographic region, and across biogeographic regions.”

Applying these terms in network design

Representation considerations

8. Representation is recognised as crucial⁴ by the United Nations Convention on Biological Diversity (CBD) in creating networks of MPAs, yet the policy guidelines do not provide a minimum proportion of each habitat that would be considered ‘representative’. Therefore, representation is presented as 3 levels of habitat inclusion; 1-5%, 5-10%, and more than 10% of their total regional extent occurring within MPAs.
9. Representation and replication should take into consideration regional variation and the vulnerability of particular habitats to irreversible change.
10. The agencies consider that for an individual habitat to contribute to a network it must be viable. Viability is largely dependent on size and the threats (both foreseeable and/or current) that may impact on that habitat type. Where a habitat is not considered viable within the site by site summary, it is excluded from the network analysis. Table 3 (page 10) and Table 4 (page 11) give the amount of each habitat present in each recommended MPA, with habitats not considered to contribute to representation shown by an asterisk. Further information on the habitats are provided in the site by site analysis.
11. In general, estuarine areas are very dynamic and tend to be a mosaic of temporally variable habitat patches so do not fit well within the Policy requirements for quantifying representation and replication. To adequately protect small estuarine systems, the policy classification is not effective and ensuring the whole system is protected is a better option. As such, estuarine replication is considered at a whole estuary level.

Habitat variability considerations

12. The Policy Guidelines describe the approach to be taken in identifying habitats for inclusion in a representative MPA network. As limited biological information is available at a national scale, the Policy relies on a broad-scale classification based on physical surrogates that approximate biodiversity patterns (using depth, substrate and exposure)⁵.
13. However, additional physical processes and characteristics of the marine environment create latitudinal (north-south) and longitudinal (east-west/cross-shelf) differences in habitats and ecosystems. The Policy Guidelines state that ‘care should be taken to identify potential protected area sites that include differences in habitats and ecosystems that cover both latitudinal and longitudinal or cross-shelf ranges’.
14. While the classification produced 22 coastal habitats and 12 estuarine habitats, the Southern South Island region has physical characteristics that are likely to produce regional variation and need to be taken into account in providing for representation. These include:
 - **The Southland Current** is a major factor in southern oceanography, flowing from the subtropical waters west of New Zealand, through the Foveaux Strait and around Stewart Island, before heading north up the east coast of the South Island.

⁴ Target 11 – Technical Rationale extended COP/10/INF/12/Rev.1 <https://www.cbd.int/sp/targets/rationale/target-11/>

⁵ The MPA Policy Guidelines, page 26.

Appendix 3: Full network analysis

- **Major rivers** enter into the coastal environment and have a major effect on sedimentation and water chemistry of the surrounding areas, in particular the Clutha, Taieri, and Waitaki.
- **Two canyon heads** extend substantially within the 12 nm territorial sea, the Saunders Canyon and the Papanui Canyon.
- **The coastal geology** of the region includes distinct geological boundaries between the north and south of the region.

Connectivity considerations

15. Connectivity in the marine environment depends on the characteristics of the species involved (such as time in the water column for larvae), and the hydrographic conditions (such as exposure and currents).
16. The Southland Current is a major contributor to the region's hydrography. The current's highest velocity occurs approximately 40 km off the coast,⁶ with its influence reducing nearer the coast. Close in shore, water movement is further modified by waves, local eddies and tides, which on shorter temporal scales may dwarf the effect of the Southland Current. There is limited information on the nearshore currents occurring within the Forum region.
17. Addressing the effects of currents and hydrodynamic conditions on connectivity requires a large amount of data that is very rarely available. For this reason, connectivity in the development of MPA networks generally rely on broad rules of thumb that recommend a range of distances between individual MPAs.
18. In addition, relating connectivity across MPAs and the surrounding area is also difficult without a large amount of data on species distribution and dispersal. In the absence of this data, MPA planning tends to focus on the potential for benefits between MPAs in a network. While this is a practical application, it often does not account for the complexities of ecosystem connectivity and provides a limited assessment of connectivity overall. However, based on best available information, a broad rule of thumb approach is considered appropriate for comparative purposes.
19. International examples of guidance in dealing with connectivity include: 50-100 km (Marine Conservation Zones process⁷), 40-80 km (California Marine Life Protection Act process⁸), 70-100 km (Great Barrier Reef Marine Park), and 20-200 km (Canada⁹).
20. On the basis of international approaches, connectivity here is analysed for each recommended network as a range of dispersal potential from 25 km to 200 km, noting that connectivity with areas outside the MPAs has not been accounted for.

Network comparison - Representation & Replication

21. There are substantial differences in how the two networks may contribute to the MPA Policy objective to "Protect marine biodiversity by establishing a network of MPAs that is comprehensive and representative of New Zealand's marine habitats and ecosystems".

⁶ Philip J. H. Sutton, 'The Southland Current: A Subantarctic Current', *New Zealand Journal of Marine and Freshwater Research*, 37.3 (2003), 645–52 <<http://dx.doi.org/10.1080/00288330.2003.9517195>>.

⁷ Natural England and Joint Nature Conservation Committee, *Marine Conservation Zone Project: Ecological Network Guidance*, 2010.

⁸ California Department of Fish and Game, *CALIFORNIA MARINE LIFE PROTECTION ACT MASTER PLAN for Marine Protected Areas*, 2008.

⁹ S Jessen and others, *Science-Based Guidelines for Marine Protected Areas and MPA Networks in Canada*, Vancouver: Canadian Parks and Wilderness Society, 2011.

Appendix 3: Full network analysis

22. The agencies consider that Network 1 provides the best level of representation and replication for coastal, estuarine and biogenic habitats, and best meets the Policy requirements, as detailed below.

Coastal habitats

23. Table 1 provides a summary of how the two networks compare in general terms. Network 1 includes 17 habitats that contribute to representation within the network (at the 1% level), with 5 habitats not being represented. Network 2 includes 9 habitats that contribute to representation, and 13 habitats not being represented. When considering representing habitats at the 10% level, Network 1 and Network 2 include 9 and 4 habitats respectively.

Table 1 Summary of overall protection of the region, and representation and replication, for both networks. Representation is presented as 3 levels. For example, a representation level of 1% indicates that for each habitat at least 1% of each habitat is present in the network.

	Total % of region contained within the network	Total % of region contained in marine reserves	Number of coastal habitats represented at different levels (out of 22 coastal habitats)			Number of habitats not represented	Number of habitats replicated
			>1%	>5%	>10%		
Network 1	15.0	4.5	17	13	9	5	11
Network 2	4.1	2.4	9	5	4	13	4

24. Figure 1 shows the number of habitats that meet the minimum requirements of representing a habitat in a marine reserve and replicating it in at least one other MPA. Network 1 meets the minimum requirements for 11 out of 22 coastal habitats (given a level of representation >1%). Network 2 meets the minimum requirements for 4 out of the 22 habitats.

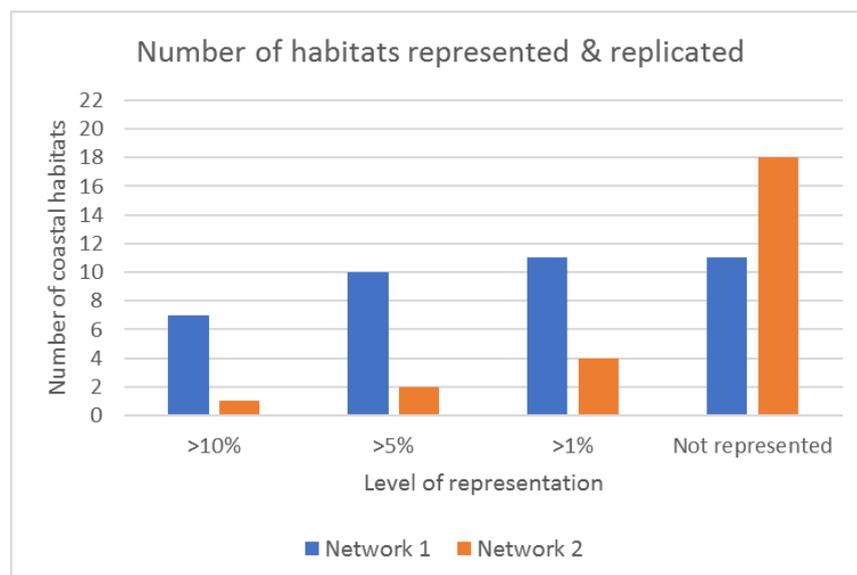


Figure 1 Level of contribution to the policy objective at each representation level. For example, seven habitats in Network 1 are both replicated and represented at greater than 10% of the regional habitat extent.

Appendix 3: Full network analysis

Estuarine environments

25. Of the 30 estuarine systems identified during the initial mapping of the region, Network 1 includes two of these areas as marine reserves (both included in Site D1), and two as Type 2 MPA (Site L1 and Q1; Akatore and Tahakopa). Overall, 2.4% of estuarine habitats are included in the 4 estuaries.
26. Under Planning Principle 5 of the MPA Policy, 'a marine reserve will be established to protect at least one sample of each habitat or ecosystem type in the network'. While four estuaries are represented in Network 1, the agencies consider that this level of representation for estuarine habitat may be necessary due to the sensitive nature of estuarine habitat. The agencies note that the habitat information available for estuaries does not describe well the small-scale and variable nature of those habitats.
27. The two estuaries contained within Site D1 are substantially different in estuary type (see Table 2) and are likely to contain different ecological communities. As such, they cannot be considered replicates of each other in an ecological sense, and both would contribute to representation of estuarine habitats regionally.
28. Pleasant River, Akatore and Tahakopa are all classified as Tidal Lagoons. Variation within estuary type makes it likely that patterns of biodiversity will be different across estuaries, even though the type is the same. Key differences between these tidal lagoons are the proportion of intertidal area to total area (Pleasant River with extensive intertidal flats), the level of tidal influence (Tahakopa and Pleasant River have the greatest tidal influence), and freshwater input (Tahakopa with the highest freshwater input than the other estuaries). All of these physical characteristics are important in structuring estuarine ecosystems.
29. Pleasant River is the only estuary in the network that includes seagrass and extensive sandflats, making it unique in the network.
30. Network 2 does not include any representation of estuarine areas.

Table 2 Characteristics and type for the estuaries contained in Network 1. Source: Hume et al 2016¹⁰

Estuary	Protection type	Estuary type	Area (km ²)	Mean depth (m)	Percent of estuary as intertidal (%)	Tidal prism ¹¹ (m ³)	River in-flow over tidal cycle (m ³)	Catchment (km ²)
Stony Creek	Marine reserve	Beach stream (with pond)	0.155	1	0	0	7,762	9
Pleasant River	Marine reserve	Tidal lagoon	0.973	1	76	971,541	110,721	126
Akatore	Type 2	Tidal lagoon	0.328	3	34	462,359	77,752	68
Tahakopa	Type 2	Tidal lagoon	0.860	2	31	1,345,484	621,423	310

Biogenic habitats

31. Three biogenic habitats were identified and able to be mapped within the region: giant kelp forest (*Macrocystis pyrifera*), bryozoan habitat, and seagrass (*Zostera muelleri*)

¹⁰ Hume, T & Gerbeaux, Philippe &, D. Hart & Kettles, Helen &, D. Neale. (2016). A classification of NZ coastal hydrosystems for management purpose.

¹¹ Tidal prism is the volume of water that is exchanged during a tidal cycle.

Appendix 3: Full network analysis

syn capricorni, novazelandica). Other biogenic habitats occur in the region, however their location and extent are anecdotal and could not be mapped.

Seagrass

32. While the habitat map does not show seagrass within the Pleasant River estuary, there is evidence of seagrass likely being present. It is likely that Site D1 does provide some representation for this habitat.
33. Network 2 does not contain seagrass.

Giant kelp forest

34. Giant kelp forest is present in both Site D1 and D2, which respectively incorporates 33% and 32% of this habitat within the region. Neither network replicates this habitat, noting that for Site T1 kelp forest is proposed to be protected from harvest, but is not considered an MPA. No harvest of giant kelp has been reported from the Forum region, with the only harvest in the QMA occurring around Banks Peninsula. However, the entire Forum region is included in the QMA that extends north to Clarence, North Canterbury, and the agencies note that since entering the Quota Management System (QMS) a maximum of 7.6% of the 1,236 tonnes of Total Allowable Commercial Catch (TACC) has been utilised in any given year.

Bryozoans

35. The main area of known bryozoan habitat, including areas of bryozoan thicket, occurs off the Otago Peninsula from approximately 70m water depth to the canyons.
36. Network 1 includes almost the entire area of known bryozoan habitat (94%).
37. Network 2 includes 49% of the known extent of bryozoan habitat.

Latitudinal variation

38. Network 1 does not capture the potential for latitudinal variation in many cases, particularly for deep (>30m) habitats, and exposed shallow habitats. For example, Figure 2a shows the widely distributed deep gravel habitat, captured by the network adjacent to the Otago Peninsula and by small parts to the north, but nothing south (accounting for 46% of the habitat's latitudinal range). Similar patterns occur for deep sand where northern and southern areas are not included in any recommended MPA (21% of the latitudinal range – Figure 2b).

Appendix 3: Full network analysis

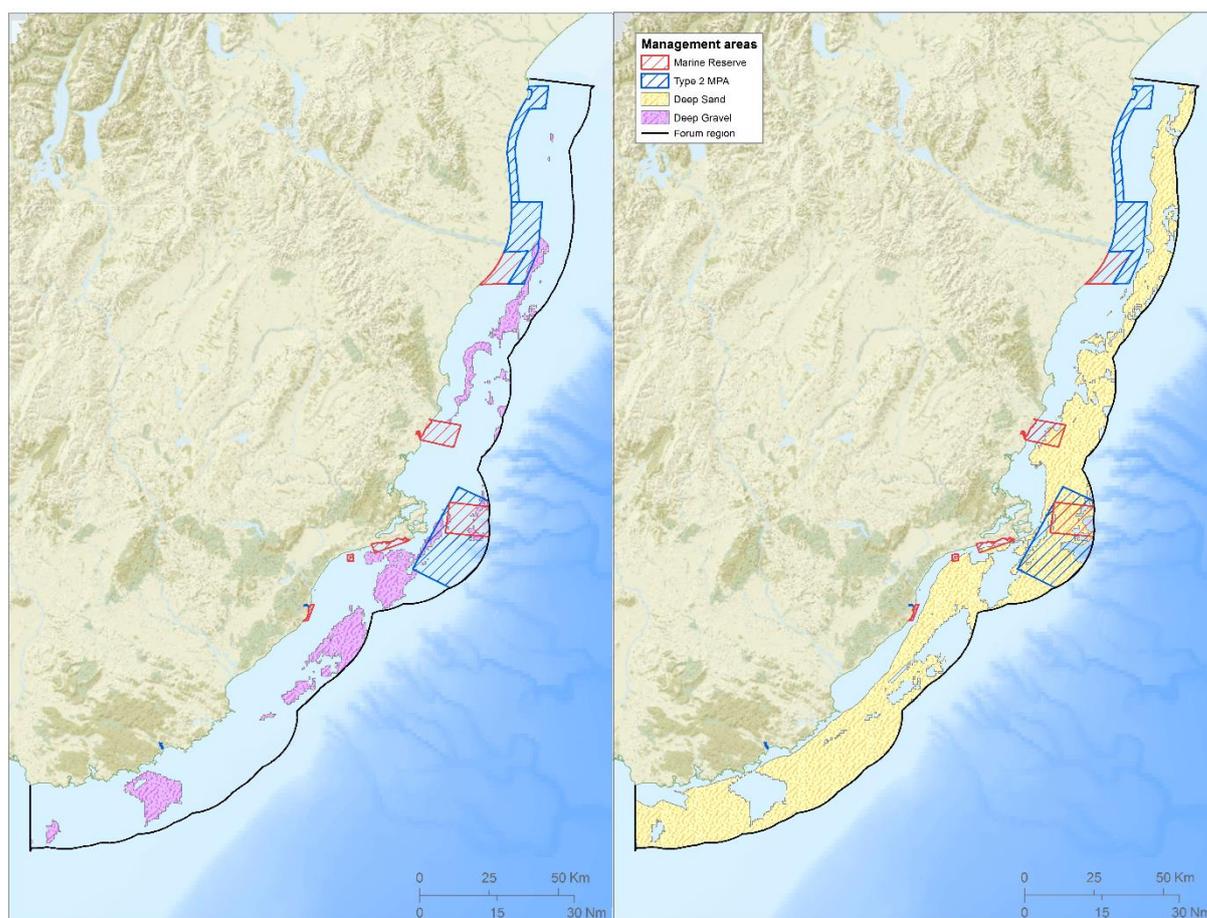


Figure 2 The spatial distribution of (a) Deep Gravel habitat (pink areas) and (b) Deep sand (yellow areas) relative to Network 1 for reference. Proposed no-take marine reserves are indicated by red hatched boxes, proposed Type 2 MPAs are indicated by blue hatched boxes.

39. Likewise, Network 2 does not capture the potential for latitudinal variation well, with no MPA proposals connected to the coast south of Site D2 (including no exposed shallow habitats), and no deep habitats contained in replicate MPAs either north or south of the Sites at H2 and G2.

Network comparison – Connectivity

40. The agencies consider that Network 1 provides the best opportunity over multiple scales for connectivity between MPAs within the region, and across bioregions.
41. The potential for connectivity between MPAs in Network 1 is shown in Figure 3. For rocky reef habitats (Figure 3a), Network 1 has MPAs connected at the 50 and 100 km scale, with sites also connected at the 25 km scale (I1, K1 and M1). The connectivity for reefs does not extend across the whole region at the 100 km scale, where gaps in the network would occur in the south (with no MPA in the Catlins); and a gap in the north of the region (Figure 3a).
42. For soft sediment habitats, Network 1 (Figure 3b) is well connected across the MPAs at the 25 and 50 km scale and has potential for connectivity across the entire region at the 100 km scale (although recognising a gap in the south in the absence of an MPA in the Catlins).
43. At the 200 km scale connectivity generally extends across the region for both reef and soft sediment habitats.

Appendix 3: Full network analysis

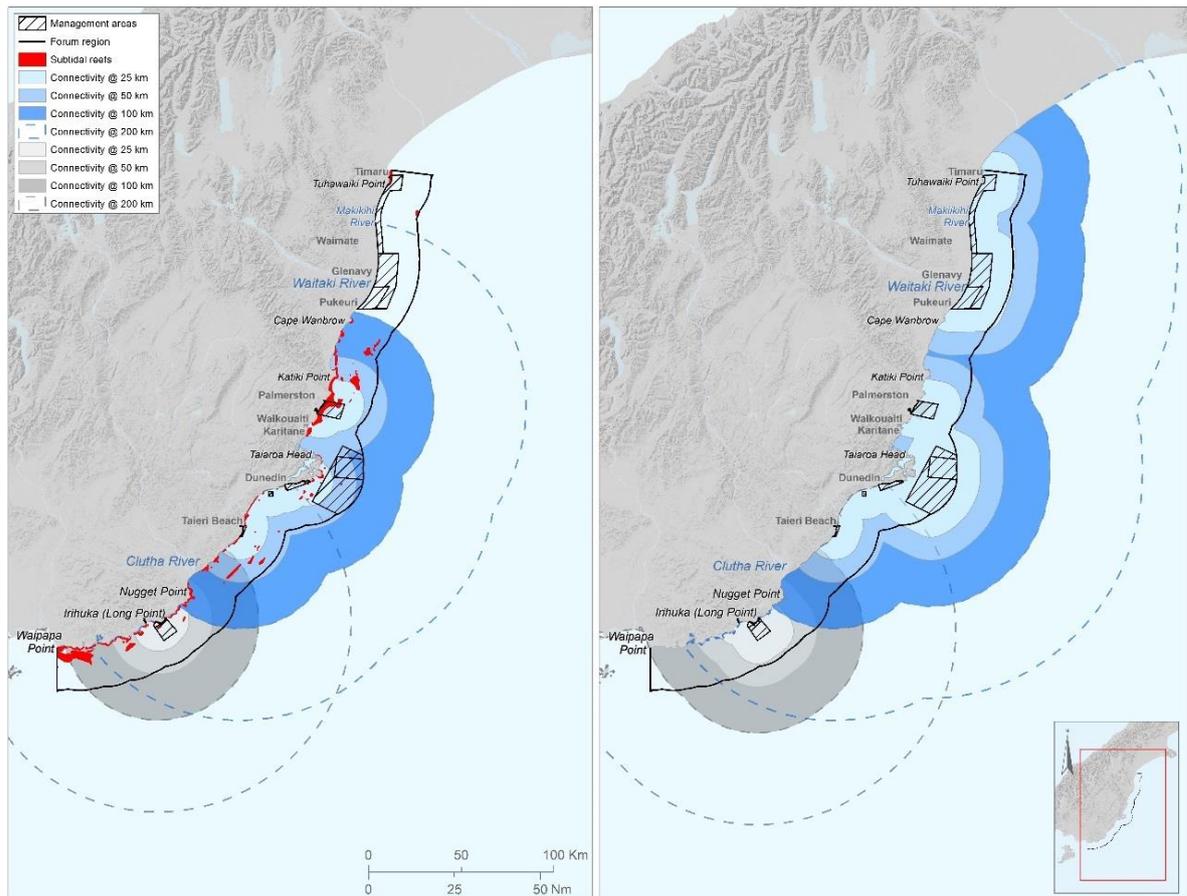


Figure 3: Network 1 connectivity. These maps show the potential for connectivity between (a) rocky reefs and (b) soft-sediment habitats protected in proposed MPAs. The scale of connectivity between MPAs is shown at 25 km (light blue), 50 km (medium blue), 100 km (dark blue) and 200 km (dashed line). The gap in connectivity that would be addressed by Site O1 is shown in grey (to the south) for reference, as it is not considered part of Network 1

44. Network 2 includes only one reef area that contributes to representation, therefore, connectivity within the Forum region is poor for rocky reef habitats (Figure 4a).
45. For soft sediment habitats (Figure 4b), Network 2 has good connectivity potential at the 100 km level, along with some connectivity at the 25 and 50 km level (for Sites D2, G2 and H2). However, as no MPA are proposed south of Ōtepoti (Dunedin), connectivity overall is not well provided for over the whole region.
46. At the 200 km scale, soft sediment habitat connectivity occurs across the north of the region, however, a gap would still remain in the south of the region.

Appendix 3: Full network analysis

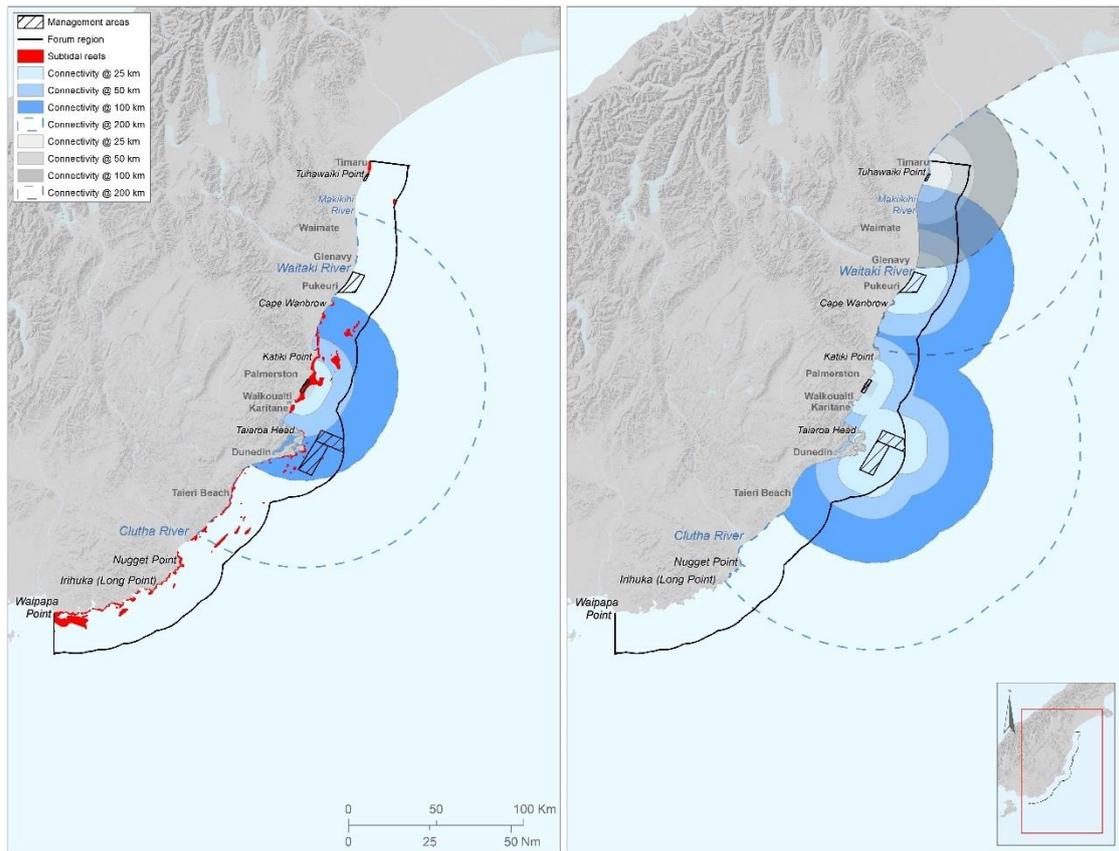


Figure 4 Network 2 connectivity. These maps show the potential for connectivity between (a) rocky reefs and (b) soft-sediment habitats protected in proposed MPAs for Network 2. The scale of connectivity between proposed MPAs is shown at 25 km (light blue), 50 km (medium blue), 100 km (dark blue) and 200 km (dashed line). The grey area shows the connectivity for the soft sediment habitats at Site A2, limited to the intertidal and inshore shallow gravel habitat.

Appendix 3: Full network analysis

Table 3 Representation and replication for Network 1. Numbers are in km², with overall percentage of habitat of region in brackets. Habitats that are considered not to contribute to representation are shown with an asterisk. Note: Sites L1 and Q1 are not included as they only contain estuarine habitats not included in the table.

Coastal habitat type	Total area in region (km ²)	A1	B1	C1	D1	E1	H1	I1	K1	M1	Percent in all MPA	Viable replicates (All MPA types)
Deep Gravel	1,102.2	0	0	16.7 (1.5)	0.1 (0.01)*	47.2 (4.3)	20.9 (1.9)	0.7 (0.1)*	0	0	7.7	3
Deep Mud	128.2	0	0	0	9.5 (7.4)	0	0	0	0	0	7.4	1
Deep Reef	163.4	0	0	0	7.3 (4.5)	0.4 (0.2)*	0	0	0	0	4.5	1
Deep Sand	4,785.9	0	0	0	37.7 (0.8)	348.8 (7.3)	128.8 (2.7)	7.1 (0.1)	1.6 (0)	0	10.9	5
Deep Water Sand	73.1	0	0	0	0	52.7 (72.1)	18.2 (25)	0	0	0	97.1	2
Exposed Boulder Beach	0.03	0	0	0	0	0	0	0.02 (80.3)	0	0	80.3	1
Exposed Intertidal Reef	7.2	0	0	0	0	0	0	0.5 (6.2)	0.03 (0.4)	0.6 (8.4)	15.0	3
Exposed Sandy Beach	6.3	0	0	0	0	0	0	0.6 (9)	0	0 (0.6)	9.6	2
Exposed Shallow Gravel	6.5	0	0	1.1 (17.1)*	0	0	0	0.2 (3.5)*	0	0	0.0	0
Exposed Shallow Reef	90.9	0	0	0	0	0	0	2.4 (2.7)	0.2 (0.2)	2.7 (2.9)	5.8	3
Exposed Shallow Sand	547.1	0	0	0	0	0	0	17.2 (3.1)	3.2 (0.6)	2.5 (0.5)*	3.7	2
Moderate Gravel Beach	3.2	1.9 (57.4)	0.4 (13.2)	0.7 (20.4)	0	0	0	0	0	0	91.0	3
Moderate Intertidal Reef	5.2	0.01 (0.2)*	0	0	0.2 (3.6)	0	0	0	0	0	3.8	1
Moderate Sandy Beach	6.4	0	0	0	0.2 (3.2)	0	0	0	0	0	3.2	1
Moderate Shallow Gravel	901.8	33.0 (3.7)	87.1 (9.7)	195.6 (21.7)	0	0	0	0	0	0	35.0	3
Moderate Shallow Mud	132.9	44.4 (33.4)	13.8 (10.4)	19.7 (14.8)	10.1 (7.6)	0	0	0	0	0	66.2	4
Moderate Shallow Reef	116.8	2.7 (2.3)*	0	0	29.0 (24.8)	0	0	0	0	0	24.8	1
Moderate Shallow Sand	768.3	75.4 (9.8)	0	20.6 (2.7)	0.8 (0.1)*	0	0	0	0	0	12.5	2†
Sheltered Intertidal Reef	0.4	0	0	0	0	0	0	0	0	0	0	0
Sheltered Sandy Beach	1	0	0	0	0	0	0	0	0	0	0	0
Sheltered Shallow Reef	4.5	0	0	0	0	0	0	0	0	0	0	0
Sheltered Shallow Sand	25.9	0	0	0	0	0	0	0	0	0	0	0

†For moderate shallow sand, while there are two replicates, the network does not represent this habitat in a marine reserve.

Table 4 Representation and replication for Network 2. Numbers are in km², with overall percentage of habitat of region in brackets. Habitats that are considered not to contribute to representation are shown with an asterisk.

Coastal habitat type	Total area in region (km ²)	A2	B2	D2	G2	H2	Percent in all MPA	Viable replicates (All MPA types)
Deep Gravel	1,102.2	0	0	0	24.97 (2.3)	5.22 (0.5)	2.74	2
Deep Mud	128.2	0	0	0	0	0	0	0
Deep Reef	163.4	0	0	0	0	0	0	0
Deep Sand	4,785.8	0	0	0	126.8 (2.6)	82.92 (1.7)	4.38	2
Deep Water Sand	73.1	0	0	0	0	18.08 (24.7)	24.74	1
Exposed Boulder Beach	0.03	0	0	0	0	0	0	0
Exposed Intertidal Reef	7.2	0	0	0	0	0	0	0
Exposed Sandy Beach	6.3	0	0	0	0	0	0	0
Exposed Shallow Gravel	6.5	0	0	0	0	0	0	0
Exposed Shallow Reef	90.9	0	0	0	0	0	0	0
Exposed Shallow Sand	547.1	0	0	0	0	0	0	0
Moderate Gravel Beach	3.2	0.12 (3.8)	0.43 (13.2)	0	0	0	16.99	2
Moderate Intertidal Reef	5.2	0	0	0.19 (3.6)	0	0	3.63	1
Moderate Sandy Beach	6.4	0	0	0.21 (3.2)	0	0	3.21	1
Moderate Shallow Gravel	901.8	0.13 (0.01)	74.38 (8.2)	0	0	0	8.26	1
Moderate Shallow Mud	132.9	0	13.61 (10.2)	0	0	0	10.24	1
Moderate Shallow Reef	116.8	0.63 (0.5)*	0	14.67 (12.6)	0	0	12.56	1
Moderate Shallow Sand	768.3	3.53 (0.5)*	0	0.26 (0.03)*	0	0	0	0
Sheltered Intertidal Reef	0.4	0	0	0	0	0	0	0
Sheltered Sandy Beach	1.	0	0	0	0	0	0	0
Sheltered Shallow Reef	4.5	0	0	0	0	0	0	0
Sheltered Shallow Sand	25.9	0	0	0	0	0	0	0

Appendix 3: Full network analysis

Additional information – Implications of Irihuka/Long Point (Site O1)

47. The agencies note that Irihuka/Long Point (Site O1) is not formally included in Network 1, however, it was included within the Recommendations Report as the proponents considered that Site O1 would address gaps in representation and connectivity. Site O1 was supported by the other proponents of Network 1.
48. Agencies note that further discussions with Kāi Tahu are needed should this site be progressed in any capacity, including discussions on protection level, specific boundaries, and aspirations for the wider coastal area.
49. The agencies consider that the absence of protection being established in the Catlins creates a gap in representation, both in terms of replicating habitats, and in representing the potential for latitudinal differences within habitat types across the region. In particular, Site O1 would have the advantages of:
 - Providing a replicate for deep reef, noting that it contains only a small extent of reef at the site, but is entirely contained within the proposed MPA
 - Representing the potential for latitudinal difference for deep reef, deep sand, exposed shallow sand and reef habitats
 - Increasing the number of habitats meeting the minimum requirements from 11 to 12; and increasing the level of representation for 6 habitats (notably exposed shallow sand and exposed rocky reef).
 - Providing for connectivity between network sites across the entire region at the 100 km scale.
50. See the site by site analysis for further description and context relating to Site O1.

Appendix 3: Full network analysis

Adverse impacts on existing fishing interests

51. Overall, the agencies consider that Network 2 does not fulfil the MPA Policy as well as Network 1. However, Network 2 will have less impact than Network 1 on commercial, recreational and customary fishers.

Introduction

52. The MPA Policy states that adverse impacts on existing users and Treaty settlement obligations must be taken into account when planning the MPA network. Where there are choices of several sites that would add a similar ecosystem or habitat to the protected area network if protected, the sites chosen should minimise adverse impacts on existing users and Treaty settlement obligations.
53. The Forum initially considered and consulted on numerous sites but ultimately recommended 18, as presented in Network 1 and Network 2. Some of these sites were amended when developing the networks, and some were not carried over to the recommended networks.
54. The Forum's Recommendation Report states that in selecting the sites, the Forum has taken into account the potential adverse impacts on existing users and Treaty settlement obligations. For example, sites such as Matakaea (Shag Point), Cape Saunders, Papanui Inlet and Tōkata (The Nuggets) were excluded in recognition of their customary significance. Agencies note that concessions were made to minimise the adverse impact on commercial fishing interests, and avoid some of the sites that are of recreational importance.
55. The Forum has taken into account the views expressed during consultation by different sectors, tangata whenua groups and individuals when determining how the proposed MPAs would affect existing users. Presenting the two different network options reflects an inherent tension in developing MPAs that are large enough to represent a full range of marine habitats and ecosystems while minimising adverse impacts on existing users.

Department of Conservation

56. The assessment below provided by Fisheries New Zealand (paragraphs 63-106) does not necessarily reflect the views of DOC.
57. DOC considers that the Network 1 proponents have demonstrated that they have considered minimising effects on existing users as far as practicable, using a gifts and gains approach. The task of minimising adverse effects on users is embedded in the process and the Consultation Document and Forum's Recommendation Report provide numerous instances where Network 1 proponents have compromised and amended or discarded proposals with a view of balancing effects on users with biodiversity protection outcomes.
58. Notably, the proponents of Network 1 put forward recommendations that excluded areas such as Tow Rock (associated with Site I1) for the specific purpose of minimising effects on existing users. Other sites that were consulted on were also removed from the recommendations based on a gifts and gains approach in meeting the Policy objective (consultation Sites F, J, N and P). DOC notes that of the six estuaries that were put forward for consultation, the two estuaries that are purported to have the highest potential impact on the eel fishing industry were omitted from the recommendations. DOC also notes that prior to consultation, numerous concessions on areas for protection were also discussed and removed due to the perceived impacts on existing users (for example, The Nuggets, as referred to in the Consultation Document).

Appendix 3: Full network analysis

59. DOC considers that there are benefits from MPAs that have not been accounted for in the assessment of potential effects on fisheries. Benefits such as the recovery of habitat important for fisheries in the absence of fishing disturbance of the seafloor, and spillover of both adults and larvae from the MPAs, have the potential to benefit fisheries and/or offset some impacts created through displacement. These potential benefits are both species and habitat specific, and are ecologically difficult to predict. The establishment of MPAs with various levels of protection (i.e. marine reserves and Type 2 MPA) will allow greater understanding of these factors and their contribution to both impacts and benefits on the wider environment and its utilisation.
60. DOC notes that when assessing whether particular fishing restrictions are required in establishing a Type 2 MPA, in order to meet the protection standard (Planning Principle 2), a large amount of information would be required to show ecosystem effects of fishing. This information is not available and the work to collect this information to allow this assessment to take place is not currently being undertaken. In the absence of this information, DOC considers that working in a precautionary approach (Planning Principle 8) is warranted.
61. DOC notes that the agencies have alternative views concerning the requirements and interpretation of Planning Principle 2 (the protection standard) and Planning Principle 5 (minimising adverse effects on existing users). DOC notes that Network 1 includes five MPAs with various fisheries restrictions and considers the following:
 - Planning Principle 5 requires that the Forum minimises effects on existing users where there is a choice between sites that add the same biodiversity values. DOC, as stated above, considers that the Network 1 proponents have demonstrated they have accounted for this principle in their decision making.
 - Planning Principle 2 refers to the level of protection that is required to be considered an MPA, at an individual site. As Planning Principle 5 is specifically about minimising effects when comparing two sites, the agencies have differing views on whether it is appropriate to consider the implications of protection tools under Planning Principle 5. That is, either the restrictions are warranted to be included or not, there is no 'minimising impacts' test on proposed restrictions in order to meet the definition of an MPA.
62. DOC notes that Fisheries New Zealand considers that Sites A1, C1, E1, L1, and Q1 contain fishing restrictions that could be difficult to be implemented under the Fisheries Act. Fisheries New Zealand considers that there is insufficient information available to determine if the current levels of fishing activity are having an adverse ecological effect at these sites or not, that would warrant the level of restrictions recommended. If you decide to progress marine protection through existing legislation, DOC notes that there are mechanisms available other than the Fisheries Act, such as the Marine Reserves Act, that may be utilised to include restrictions. You may also decide to use special legislation. Agencies can provide further advice should these sites be progressed as recommended.

Fisheries New Zealand

63. Fisheries New Zealand undertook an initial assessment of the proposed networks in terms of likely impacts on existing fishers (commercial, recreational and customary). Some of the factors considered in the analysis include: the major fish species and estimated catch taken in the proposed areas, the number and type of fishers operating in the proposed areas, and the likely consequences of displacement of fishing effort. The assessment includes the consideration of the likely impact on customary fishing interests in terms of the Crown's capacity to meet their obligations under the 1992 Fisheries Deed of Settlement. Fisheries New Zealand also considered if any of the proposed areas in the networks are of importance for recreational fishing.

Appendix 3: Full network analysis

64. Appendix 4 provides an initial site by site assessment of the adverse effects of each of the network proposals on existing fisheries users. A further, more detailed analysis will be undertaken to provide you with a detailed assessment of the effects of any MPA options you decide to progress. This analysis will be informed by further consultation with Iwi and stakeholders.
65. There are some limitations to the fisheries data used in the assessment (see section 6.6 of the Forum's Recommendations Report). Commercial fishing catch rates were estimated using information contained within fishing catch effort and landings returns reported to Fisheries New Zealand. Individual fishing events were mapped following the methodologies listed in Appendix 1.2.2 of the Forum's Recommendations Report. Species catch weights for each fishing event were then estimated based on the proportional area of the mapped fishing event which intersects with the various proposed MPA options.
66. The quality of available information on fishing locations varies. Fishing methods like offshore trawling require fishers to record both start and end points of fishing events, but fishers using other methods (like fyke-netting) are only required to report a statistical area in which they fish. As a consequence, it has not been possible for Fisheries New Zealand to develop estimates of shortfin eel catch taken within proposed estuarine MPAs. Full details of data limitations for catch estimation procedures used by Fisheries New Zealand are presented in section A1.2 of the Forum's Recommendations Report.

Commercial fishing

67. Table 5 provides the potential commercial fishing displacement for both networks. Table 6 provides the estimates of average annual number of commercial fishers by gear type. As noted previously, the impact of catch displacement is likely to be greatest for the paua and (kōura papatea) rock lobster fisheries. Impacts on fishers using trawls will be less severe because the species they target disperse widely throughout the Forum's planning area. As a consequence, trawler operators displaced from MPAs are likely to be able to take most of their catch entitlement in the adjacent areas that remain open to them. However, for these fishers, the need for them to relocate may increase the cost of their fishing operations due to greater traveling times on the water and reduced catch efficiency.

Appendix 3: Full network analysis

Table 5 Estimated average annual affected catch (kg) based on the annual catches from 2007/08 fishing year to the 2016/17 fishing year, and FOB (Free on Board)³⁷ export value estimates (\$NZ) for Network 1 and Network 2³⁸.

Network 1					
Site	MPA tool	Catch (kg)	% Catch in Forum area	Export value (\$NZ)	% Forum value ³⁹
A1	Type 2	109,880	2.6	462,597	1.4
B1	MR	4,766	0.1	21,491	0.1
C1	Type 2	34,492	0.8	148,145	0.4
D1	MR	40,526	0.9	1,992,476	5.8
E1	Type 2	17,764	0.4	77,445	0.2
H1	MR	20,959	0.5	122,241	0.4
I1	MR	2,584	0.1	27,303	0.1
K1	MR	689	0.02	19,111	0.1
L1	Type1	no data	--	no data	--
M1	MR	6,858	0.2	239,303	0.7
Q1	Type 2	no data	--	no data	--
Total		238,518	5.6	3,110,112	9.1
Network 2					
Site	MPA tool	Catch (kg)	% Catch in Forum area	Export value (\$NZ)	% Forum value
A2	Type 2	8,129	0.2	37,086	0.1
B2	MR	3,700	0.1	17,052	0.0
D2	MR	11,097	0.3	914,356	2.7
G2	Type 2	759	0.0	2,841	0.0
H2	MR	11,833	0.3	70,032	0.2
Total		35,518	0.8	1,041,367	3.0

³⁷ Free on Board - The value of export goods, including raw material, processing, packaging, storage and transportation up to the point where the goods are about to leave the country as exports. FOB does not include storage, export transport, or insurance cost to get the goods to the export market.

³⁸ These values are indicative of the relative impact of foregone opportunities at each site. Export values are based on export prices for 2017 calendar year. Where there were no export prices available, these stocks are not included in the calculations. If all catch were exported (as opposed to being sold domestically) the total export value would be slightly higher than the estimates included here. Note: it is not possible to assess the impacts of estuarine closures (Sites D1, L1 and Q1), so these are not included in the estimates.

³⁹ Over the total of \$NZ 34.4 million export value for the Forum region.

Appendix 3: Full network analysis

Table 6 Estimates of average annual number of commercial fishers by gear type (fishing years 2014/15 to 2016/17) (limited to fishers taking at least 100kg with that gear type). * Values of the methods not impacted by the respective proposal.

Gear type	Number of fishers (Network 1)										Number of fishers (Network 2)					
	A1	B1	C1	D1	E1	H1	I1	K1	M1	Total	A2	B2	D2	G2	H2	Total
Danish seine	1	1	1	-	-	-	-	-	-	3	-	1	-	-	-	1
Dredge	1	1	1	-	-	-	-	-	-	3	-	1	-	-	-	1
Hand gathering	2*	1	1*	2	-	-	-	-	-	6	2*	1	2	-	-	5
Jig	-	-	-	-	1*	1	-	-	-	2	-	-	-	-	1	1
Bottom longline/ Dahn line	2	1	1	2	1*	-	2	2	3	14	2	1	2	-	-	5
Handline/Trolling	3*	3	3*	1	1*	1	1	1	-	14	3*	3	1	1*	1	9
Net ⁴⁰	2	2	4	3	3	3	-	-	-	17	-	-	-	2*	3	5
Pot	1*	-	-	19	19*	11	14	14	12	90	1*	-	19	11*	11	42
Trawl ⁴¹	19	3	10	9	7	3	5	1	5	62	13	3	1	4	3	24
Total of unique fishers⁴²	25	10	17	29	27	16	18	16	16	174	17	9	22	15	15	78

68. The following is a high-level account of the commercial fisheries that would be displaced by establishment of Network 1 and 2 (further detail is in Appendix 4). Based on estimated average annual affected catch and export value in each network:⁴³

- Network 1, used by around 170 commercial fishers each year (a subset of whom would likely be impacted by Network 1), potentially displaces approximately 240 tonnes of greenweight catch per annum. This is approximately 5.6% of the total estimated catch of 4,297 tonnes in the Forum region, and has an estimated FOB export value of approximately \$NZ 3.1m (9.1% of the total of \$NZ 34.3 million for the Forum region) per annum. Sites D1, A1 and M1 would have the greatest potential impact in terms of export value.
- Network 2, used by around 80 commercial fishers each year (a subset of whom would likely be impacted by Network 2), potentially displaces approximately 36 tonnes of greenweight catch per annum. This is approximately 0.8% of the total 4,297 tonnes of catch in the Forum region, and has an estimated FOB export value of \$NZ 1m (3% of the Forum region) per annum. Sites D2 and H2 would have the greatest potential impact in terms of export value.

69. The estimates reflect only one aspect of the value of commercial fisheries, and do not represent a full economic assessment. The estimates are provided as indicators of the relative impacts of the networks and sites.

70. There are no quantitative estimates of affected catch or export value for fisheries in the four estuaries proposed for protection in Network 1 due to the scale at which catch is reported. However, Fisheries New Zealand is aware that there is some commercial fishing activity for shortfin eels occurring in the estuaries.

⁴⁰ Includes set net and drift net.

⁴¹ All trawl events were bottom trawl except for a single fisher in E1 that reported the fishing method as midwater trawl.

⁴² Note: Some fishers use more than one gear type.

⁴³ There are some limitations to the information used in this site by site analysis, particularly there are some issues with the habitat classification and fisheries data (see section 6.6 of the Forum's Recommendations Report).

Appendix 3: Full network analysis

71. However, Fisheries New Zealand is aware that there is commercial fishing activity for shortfin eels occurring in the estuaries. The submission from the South Island Eel Industry Association (SIEIA)⁴⁴ estimated the median and maximum annual shortfin eel catch taken from these estuaries (in total) to be 6 to 14 tonnes, respectively. This would potentially amount to a displacement of 21% – 48% of the TACC of 29 tonnes for SFE 15.
72. Fisheries New Zealand considers that commercial eel fishers' ability to take their shortfin eel catch elsewhere in the Forum region may be limited, given that there are a number of other estuaries where commercial fishing activity is either prohibited or restricted.
73. Fisheries New Zealand notes that the upper portion of the Akatore Estuary (Site L1) already has a level of protection. Fishers currently need to apply for a concession from DOC to commercially fish this part of the estuary. Making Akatore estuary an MPA has less potential impact on commercial fishers than the other estuaries proposed for protection in Network 1, because commercial fishing in the upper Akatore estuary is already restricted to some extent.
74. Fisheries New Zealand notes that the recommended restrictions on fyke netting in the Tahakopa and Akatore estuaries would effectively prevent commercial fishing for shortfin eels in these areas.
75. Fisheries New Zealand considers that the cumulative closures may increase the displacement impacts (and subsequent localised depletion risk) associated with including the Pleasant River, Stony Creek and Tahakopa estuaries – as commercial eel fishing at these estuaries is not restricted (to the best of our knowledge). Table 7 and

⁴⁴ The South Island Eel Industry Association represents commercial eel fishers who utilise the eel resource (shortfin and longfin eels) in the South Island, including coastal estuaries. Their members comprise the majority of eel permit holders and take the majority of shortfin and longfin eel catch in the South Island.

Appendix 3: Full network analysis

76. Table 8 provide the estimates of average annual commercial landings by species in both networks. Based on estimated average annual affected catch and export value of each fish stock, the biggest potential impacts of both networks would be on kōura pa-patea (rock lobster) and trawl-caught finfish species.

Table 7 Estimated average annual affected catch (kg) by fish stock based on the annual catches from 2007/08 fishing year to the 2016/17 fishing year, and FOB export value estimates (\$NZ) for Network 1⁴⁵.

Network 1			
Fish stock	Estimated catch (Kg)	% of QMA total	Estimated export value (\$NZ)
Elephant fish (ELE3)	31,007	2.8	162,478
Flatfish (FLA3)	27,838	2.0	177,332
Red cod (RCO3)	26,001	0.7	40,823
Red gurnard (GUR3)	24,422	2.3	171,691
Rough skate (RSK3)	24,268	1.7	28,152
Rock lobster (CRA7)	19,949	23.3	2,068,428
School shark (SCH3)	13,276	3.6	67,838
Rig (SPO3)	10,195	2.2	68,717
Barracouta (BAR1)	9,854	0.1	15,863
Blue cod (BCO3)	7,130	4.2	106,946
Arrow squid (SQU1T&J)	7,084	0.0	30,321
Spiny dogfish (SPD3)	6,933	0.4	5,061
Tarakihi (TAR3)	4,836	0.5	17,362
Hapuku/bass (HPB3)	3,909	1.2	43,893
Ling (LIN3)	3,553	0.2	13,425
Stargazer (STA3)	2,457	0.5	5,918
Ghost shark (GSH3)	2,449	0.5	2,646
Blue moki (MOK3)	2,416	1.7	13,361
Sea perch (SPE3)	2,051	0.4	5,474
Octopus (OCT3)	1,574	4.7	17,124
Leatherjacket (LEA3)	1,483	1.2	4,656
Common warehou (WAR3)	1,242	0.1	5,679
Smooth skate (SSK3)	1,068	0.3	1,240
Paddle crab (PAD3)	448	1.1	2,961
Large trough shell (MMI3)	309	0.9	2,082
Pāua (PAU5D)	306	0.4	16,739
Kina (SUR3)	211	5.4	10,473
Silver warehou (SWA3)	132	0.0	326
Triangle shell (SAE3)	122	0.5	826
Jack mackerel (JMA3)	121	0.0	173
Bluenose (BNS3)	103	0.0	1,137
Kahawai (KAH3)	82	0.1	20
Trumpeter (TRU3)	71	0.4	211
Seal shark (BSH3)	45	0.1	49
Pale ghost shark (GSP1)	22	0.0	24
Snapper (SNA3)	18	25.4	179

⁴⁵ The % of fishable ground in the QMA may be much higher/ different.

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Ringed dosinia (DAN3)	13	0.5	87
Southern tuatua (PDO3)	12	0.1	114
Queen scallop (QSC3)	12	0.1	39
Kingfish (KIN3)	11	0.9	132
Other	1,484	53.3	N/A
Total	238,517		3,110,002

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Table 8 Estimated average annual affected catch (kg) by fish stocks based on the annual catches from 2007/08 fishing year to the 2016/17 fishing year, and FOB export value estimates (\$NZ) for Network 2.

Network 2			
Fish stock	Estimated catch (Kg)	% of QMA total	Estimated export value (\$NZ)
Rock lobster (CRA7)	8,418	9.83	872,792
Arrow squid (SQU1T&J)	3,976	0.02	17,014
Elephant fish (ELE3)	2,796	0.26	14,648
Red cod (RCO3)	2,595	0.07	4,074
Blue cod (BCO3)	2,556	1.51	38,337
Flatfish (FLA3)	2,058	0.15	13,106
Red gurnard (GUR3)	1,895	0.18	13,323
Rough skate (RSK3)	1,838	0.13	2,131
Rig (SPO3)	1,312	0.29	8,839
Ling (LIN3)	1,265	0.08	4,783
Hapuku/bass (HPB3)	931	0.28	10,445
School shark (SCH3)	875	0.24	4,469
Spiny dogfish (SPD3)	780	0.05	569
Tarakihi (TAR3)	708	0.07	2,539
Octopus (OCT3)	650	1.93	7,069
Sea perch (SPE3)	582	0.11	1,551
Barracouta (BAR1)	562	0.01	905
Pāua (PAU5D)	294	0.36	16,106
Ghost shark (GSH3)	228	0.04	247
Stargazer (STA3)	221	0.04	533
Common warehou (WAR3)	139	0.01	637
Large trough shell (MMI3)	123	0.34	829
Blue moki (MOK3)	101	0.07	561
Kina (SUR3)	92	2.35	4,594
Smooth skate (SSK3)	85	0.02	98
Leatherjacket (LEA3)	78	0.07	247
Triangle shell (SAE3)	49	0.21	329
Bluenose (BNS3)	32	0.01	362
Trumpeter (TRU3)	25	0.14	73
Paddle crab (PAD3)	18	0.04	119
Seal shark (BSH3)	17	0.02	19
Jack mackerel (JMA3)	14	0.00	18
Other	208	2.66	N/A
Total	35,521		1,041,367

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Kōura papatea (rock lobster) fishery

77. Potting is the primary fishing method used in the kōura papatea (rock lobster) fishery. Commercial kōura papatea (rock lobster) fishing occurs in discrete areas within each QMA. These areas are primarily concentrated inshore around rocky coastline and rocky reef structures. Kōura papatea (rock lobster) generally do not populate sandy sediment surfaces, although they may enter these areas when foraging or migrating.
78. Fishers generally fish the more abundant areas early in the season. The remaining areas with lower abundance are generally fished mid and late season. Kōura papatea (rock lobster) fishing occurs on a rotational basis, where certain areas are not fished for intermittent periods to either allow for population regeneration or maximise revenue at particular times of the season (e.g. when prices are higher).
79. Approximately 23% (20 tonnes) and 10% (8.5 tonnes) of the average annual CRA7 catch comes from the proposed MPAs in Network 1 and 2, respectively. Certain fishing areas within CRA7, which covers the majority of the Forum area, are considered to have higher abundance of kōura papatea (rock lobster) than other areas (i.e. with higher catch levels). Some of these areas of high abundance are included in the proposed MPAs, particularly Network 1. For example, Site D1 accounts for an estimated 20.7% of total kōura papatea (rock lobster) catch in CRA7.
80. The Forum's Recommendations Report states that in developing their recommendations, the proponents of Network 1 aimed to limit negative impacts on important commercial fisheries in the region while maximising biodiversity gains. As a result, compromises have been made. Examples of this include Site D1 being placed in an area between two important commercial fishing areas (Arai-te-uru (Danger Reef) and Cornish Head – Pleasant Estuary mouth). The report also notes that the proponents of Network 1 consider that kōura papatea (rock lobsters) are migratory, and believe that the actual impacts on this fishery could be considerably less because of this.
81. Fisheries New Zealand notes that research tagging information confirms that there is a significant directed alongshore migration from CRA7 towards CRA8 (south along the east coast of the South Island, west through Foveaux Strait and around the south of Stewart Island, then north along the Fiordland coast). In a review of historic tagging records, data from Banks Peninsula south showed that up to 29% of both male and immature female tagged kōura papatea (rock lobsters) were recaptured after moving at least 5 km and migrations of at least 100 km occurred from many tagging sites (Booth 1997). There is no evidence for any return migration. The mass movements are sporadic, i.e. they do not occur every year, and these movement patterns vary from area to area.
82. Fisheries New Zealand considers that this potential southward movement out of an MPA is unlikely to offset the impact of closing areas where kōura papatea (rock lobster) fishing currently occurs. If there is a mass movement, catch rates in CRA7 are likely to go down (whether or not there are MPAs in place), so that catch per unit of effort would decline (or effort would increase for the same amount of catch). With MPAs in place, fishing pressure is likely to increase on the remaining fishing grounds available within CRA7. This raises the risk of localised depletion in those sites; this effect is likely to become more pronounced during any mass movement because of the lower catch rates. The management response to this would likely be for Fisheries New Zealand to recommend that the Minister of Fisheries reduces the Total Allowable Commercial Catch across the CRA7 area.

Trawl and other fisheries

83. Some of the sites are also likely to affect trawl and other fisheries (e.g. Site A1). Mako repe (elephant fish), flatfish, hoka (red cod), rawaru (blue cod), red gurnard, rough skate, mako (school shark), Arrow squid, rig and rari (ling) are major species taken in both networks, but Network 1 will have more impact than Network 2, with the top 20 species taken across Network 1 accounting for about 180 tonnes of catch annually.

Appendix 3: Full network analysis

84. Flatfish are shallow water species, and the fishery is mainly confined to the inshore trawl fleet in depths to 50 m, except for small incidental bycatch of sole, brill and turbot by deepwater trawlers. Hoka (red cod) are taken primarily by trawlers in 30 to 200 m depth and are also a bycatch of deepwater fisheries off the southeast and southwest coasts of the South Island. Rough skates occur throughout New Zealand waters, but are most abundant around the South Island in depths to 200 m. Most is taken as bycatch by bottom trawlers, but also taken by long-liners.
85. The data indicates that a low level of commercial fishing targeting finfish species occurs in some of the proposed MPAs in both networks. This is due to various commercial fishing restrictions and prohibitions (including voluntary closures), as well as competition with recreational fishers.
86. Fisheries New Zealand notes that, while some of the sites when considered individually have a relatively low impact on commercial fishing, the cumulative impact of all proposed sites in either network may be high. The cumulative effect of closing areas to commercial fishing puts pressure on the remaining open areas, as the same number of fishers are entitled to take the same tonnage of fish from a smaller area.

Reduction in fishable area and effects of fishing effort displacement

87. When considering the effect on commercial fishing, relevant matters that the Ministers must consider include: the removal of productive habitat from the quota management areas (QMA); the displacement of commercial fishing activities from the proposed MPAs; the redistribution of fishing activities to the remainder of QMA; effects on the biological status of fish stocks; and the increased fishing costs that would be incurred by individual fishers, due to increased competition with other fishers, or the requirement for them to relocate their effort.
88. Based on the estimated catch within the proposed sites, establishing them as MPAs will lead to the displacement of fishing effort into the reduced fishable area. In fully utilised fisheries with a strong spatial dependency (such as rock lobster and pāua where fish are concentrated on areas of suitable habitat), displacement of fishing effort has potential to lead to localised depletion outside the closed areas as fishers compete for a limited resource. Localised depletion may, in turn, lead to stock-wide sustainability risks.
89. Other existing fishing closures or restrictions limit the availability of alternative areas for fishing, which could mean certain areas outside the MPAs may be disproportionately affected. Fishing closures and other restrictions may have less impact on relatively mobile species (such as most finfish species) compared with less mobile species that are localised to areas of suitable habitat (such as blue cod), due to the often restricted habitat in which these species reside.

Proposed restrictions in Type 2 MPAs

90. Fisheries New Zealand considers that there is insufficient evidence to justify the full range of fishing methods recommended for prohibition at Sites A1, C1, E1, L1 and Q1 (in addition to prohibiting bottom trawling, Danish seining, and dredging), and therefore questions whether these proposed prohibitions should be implemented. The particular method prohibitions which are of concern to Fisheries New Zealand are set out in Table 9 below.
91. The purpose of the Fisheries Act is to provide for the utilisation of fisheries resources while ensuring sustainability. Ensuring sustainability includes avoiding, remedying or mitigating any adverse effects of fishing on the aquatic environment. The Forum has recommended restrictions on fishing at Sites A1, C1, E1, L1 and Q1 on the basis that these may be required in order to maintain the functional integrity of habitats and ecosystems. This could involve protecting organisms with a particular ecological role (such as predators, or prey species) where direct fishing impacts on them could have 'flow on effects for other components of the ecosystem'.

Appendix 3: Full network analysis

92. Fisheries New Zealand considers that the maintenance of fish stocks at levels which ensure their sustainability also serves to maintain the functional role of those stocks in marine ecosystems and helps to maintain ecosystem integrity. For this reason, and without further evidence, Fisheries New Zealand considers that it is difficult to demonstrate that the fishing methods set out in Table 9 are having an effect on marine and estuarine ecosystems at Sites A1, C1, E1, L1 and Q1 that is of sufficient magnitude to justify prohibiting these methods under the Fisheries Act.

Table 9 Proposals for fishing method prohibitions in Type 2 MPAs across Network 1 and 2 which Fisheries New Zealand considers could be difficult to implement.

Site	Proposed Fishing method prohibitions
A1 & A2	<ul style="list-style-type: none"> • Recreational and commercial set netting • Commercial longlining • 5-hook limit • Mid-water trawling (A1 only)
C1	<ul style="list-style-type: none"> • Recreational and commercial set netting • Mid-water trawling
E1	<ul style="list-style-type: none"> • Midwater trawling • Set netting • Purse seining
L1 & Q1	<ul style="list-style-type: none"> • Set net fishing • Commercial line fishing • Mechanical harvesting (including spades for collecting shellfish) • Fyke net fishing

93. Should you wish to pursue some, or all the protection measures set out in Table 9, agencies can provide you with further advice on alternative options for doing so. For example, some of the Type 2 MPA proposals put forward by proponents of Network 1 may be better achieved by creating a marine reserve rather than a Type 2 MPA, or by promulgating special legislation.
94. Alternately, proposals to prohibit Fyke netting at Sites L1 and Q1 in order to limit fishing impacts on shortfin eels, could be given effect by reviewing the total allowable catch (TAC) for the fisheries management area in which these sites are located (SFE 15).
95. It may also be appropriate to consider responding to some of the other site specific recommendations by implementing protection measures at a wider geographic scale that better manages particular ecological risks. For example, to manage the risk of protected species bycatch in set nets, you may wish to consider the use of these nets at scales wider than that covered by each of the alternative MPA network proposals put forward by the Forum.
96. There are currently a number of regulations in place to manage set-netting; and it may be opportune to integrate specific consideration of set net use within the Forum's area into a wider review of the use of set nets in New Zealand. This review is being considered by Fisheries New Zealand as a potential strategy for addressing ongoing concerns about bycatch of protected species. The work would be done with DOC, as the review of the Hector's and Māui dolphin Threat Management Plan and development of a hoiho recovery plan are joint agency initiatives. Both agencies have responsibilities in addressing issues of protected species interactions with fishing activities. The outcome of this review will result in a set of options to address the concerns.

Appendix 3: Full network analysis

Customary

97. Consideration of the impacts of MPAs on customary use and management practices is an essential part of creating an effective MPA network and avoiding unnecessary conflict. The Forum region includes numerous traditional fishing grounds of Kāi Tahu. Kāi Tahu has a management plan to create a network of mātaihai reserves over its most important customary fishing grounds to give effect to the Fisheries Settlement agreements.
98. The effect of MPAs may be to further restrict available areas where mātaihai reserves can be established. In some areas the effect of the network may prevent Kāi Tahu from establishing further reserves. The implications of this will require careful consideration, and ongoing dialogue with Kāi Tahu on this point will be essential.
99. Kāi Tahu representatives have been involved throughout the Forum process. At a network level, the Forum's Recommendations Report states that Kāi Tahu does not oppose Network 1 or 2 (page 23). However, the agencies note that the Forum's Recommendations Report states (on page 57) that the Kāi Tahu position is determined by the individual papatipu rūnaka, who do not hold a uniform position on their respective areas. The report also states that it cannot be assumed that Kāi Tahu holds a single position on any particular MPA. Kāi Tahu, individual rūnaka and other tangata whenua groups will have further opportunities to be involved if you decide to progress any proposal to establish MPAs in the region.
100. The agencies note that the Forum's selection and design of some of the proposed sites in both Networks was aimed at avoiding certain customary food gathering areas, to help recognise and provide for customary fishing interests.
101. In the Forum's Recommendations Report, Irihuka/Long Point (Site O1) was not included in the analysis of Network 1 as it was opposed by Kāi Tahu representatives of the Forum. Agencies consider that ongoing dialogue with Kāi Tahu is essential to understand the basis for this opposition and identify opportunities for the future management of this area. In terms of the overall impact on customary fishers, Fisheries New Zealand considers Network 1 will have more impact than Network 2.
102. Neither agency supports the inclusion of Irihuka/Long Point (Site O1) without further discussions.^{s9(2)(f)}

103. Irihuka/Long Point (Site O1) was opposed by Kāi Tahu. Neither agency recommends it be progressed separately without Kāi Tahu support. Instead, we seek Ministers' views on further engagement with Iwi to discuss their concerns with this proposed site.

Recreational

104. The Forum recommendations of two different networks largely reflect the diverse views of recreational fishers and their representatives. Some of the site boundaries were devised or amended to accommodate recreational fishing suggestions.
105. The agencies consider that the Forum recommendations regarding Network 2 minimise the adverse impacts on existing recreational fishers. However, some of the proposed sites in Network 1 include areas of importance to recreational fishers. In particular Sites K1, I1 and D1 receive a relatively high level of use by recreational fishers relative to other sites.
106. Based on the best available information, the importance of specific proposed MPAs for recreational fishers is outlined below:⁴⁶

⁴⁶ Information from Ministry for Primary Industries' compliance staff, amateur charter vessel (ACV) data, Summary of Submissions, and National Recreational Fishing Survey data.

Appendix 3: Full network analysis

- Sites A1, A2, B1, B2, C1 D2, E1, G2, and L1 would likely have low impacts on recreational fishing interests.
- Site D1 would likely have a greater impact on recreational fishing interests than Site D2.
- Sites H1 and H2 will have some impact on recreational fishing interests.
- The proposed marine reserve at Site I1 is likely to be contentious for recreational fishers, as this area is a key area for recreational pāua and rawaru (blue cod) fishing.
- Site K1 is also known to be used by recreational fishers. However, the Forum's Recommendations Report states there is conflicting information regarding impacts (positive or negative) on recreational fishers from submissions, and cannot definitively state the scale of impact on recreational fishers/users of this site.
- A range of views were expressed from recreational fishers about the level of recreational fishing activity that occurs at Site M1, which would likely have low impacts on recreational fishing interests. Fisheries New Zealand notes that a few people will be affected, but the effect on them is likely to be high.
- Site Q1 is likely to have some impact on the recreational set netting that currently occurs in the estuary.
- Site O1 (not included in either network) is heavily fished by recreational fishers therefore it would potentially displace a large number of recreational fishers.

Appendix 4: Full site by site analysis

Overview

1. This Appendix includes the agencies' analysis of each site recommended by the Forum. The analysis covers the following:
 - Overall agencies' views on each site proposed. Where the agencies have concerns and/or differing views, they are clearly outlined.
 - The main reasons for proposing the site.
 - Assessment against the following MPA Policy design and planning principles:
 - Representation of habitats (Planning Principle 1).
 - Alignment with protection standard (Planning Principle 2).
 - Impact on Treaty settlement obligations/tangata whenua (Planning Principle 3).
 - Adverse effects on existing users.
 - Any other relevant matters specific to that particular proposed site are also considered.
2. The agencies have differing views on the assessment of Planning Principle 5.
3. DOC notes that the Forum has demonstrated that they have considered minimising effects on existing users, using a gifts and gains approach, and the Forum's Recommendations Report reflects this. In assessing Planning Principle 5, DOC considers that the Forum has already undertaken to choose sites that balance minimising potential impacts on existing users, and the Policy requirements to establish a comprehensive and representative network of MPAs. As such, the agencies have differing views on whether it is appropriate to assess the potential of impact of a site in isolation from the purpose of Planning Principle 5
4. Outlined below are some of the considerations on background and context that are relevant to the sites, and any limitations of the information used in the analysis.

Amendments and finalisation of sites post-consultation

5. The Forum initially considered and consulted on numerous sites, but ultimately recommended 18, as presented in Network 1 and Network 2. Some of these sites were amended when developing the networks and some were not carried over to the recommended networks (and is why some letters appear to be missing from the Site sequencing). The specific numbering for sites was used to distinguish the same sites (with or without amendments) included in two networks. For example, Site A was consulted on and later included as Site A1 in Network 1 and as Site A2 in Network 2.

Naming of sites

6. Should Ministers decide to establish any of the proposed sites, Māori names provided by Kāi Tahu (see the Forum's Recommendations Report, page 238) will need to be considered and discussed with the relevant rūnaka as part of the formal establishment process.

Stakeholders' views

7. The views expressed by stakeholders during consultation to support or oppose individual sites are not necessarily reflective of their position on the sites included in the Forum's Recommendations Report. This is due to amendments made to the sites following consultation. These amendments were not consulted on in the context of a network proposal.

Appendix 4 Full site by site analysis

Kāi Tahu position

8. The agencies note that the Forum's Recommendations Report states (on page 57) that the Kāi Tahu position is determined by the individual papatipu rūnaka, who do not hold a uniform position on their respective areas. The report then goes on to clarify that it cannot be assumed that Kāi Tahu holds a single position in support of or opposition to any MPA. However, at a network level, the report also states that Kāi Tahu does not oppose Network 1 or 2 (see Forum's Recommendations Report page 23).

Comparison of sites

9. Where a particular area (with some variation) has been included in both Network 1 and Network 2, they have been compared to determine which site is more aligned with the MPA Policy.

Data limitations

10. There are some limitations to the information used in this site-by-site analysis which were also raised by the Forum (see section 6.6 of the Forum's Recommendations Report), in particular with the habitat classification and fisheries data.

The relationship between fisheries displacement and impact

11. DOC considers it important to take into account all aspects when assessing the potential for impact based on estimates of displacement, including the potential for mitigation. Implications of issues such as edge-effects of fishing have not been accounted for in the assessment of effects, but rather assessments have been made on displacement from the entire MPA. For some species this is unrealistic, particularly for species that have large home ranges and/or are migratory, where their vulnerability to fishing may remain high.
12. The creation of any spatial closure will displace fishing effort into other areas of the region. The potential for impact on the fishery is dependent on a number of factors, including logistical and economic considerations related to fishing displacement, and how easy it is to catch the target species outside of the proposed MPA. As such, the figures on the level of displacement of fishing effort for particular species is unlikely to fully reflect the potential for impact on the fishery on its own. However, it does provide a relative measure between sites and is the best available information.
13. For fisheries with a strong spatial dependency, displacement of fishing effort has greater potential to lead to localised depletion outside the closed area as fishers compete for limited resource. Where additional information on the potential for impacts at site is available, it is noted in the site analysis.

Site A1 (Type 2 MPA) and Site A2 (Type 2 MPA)

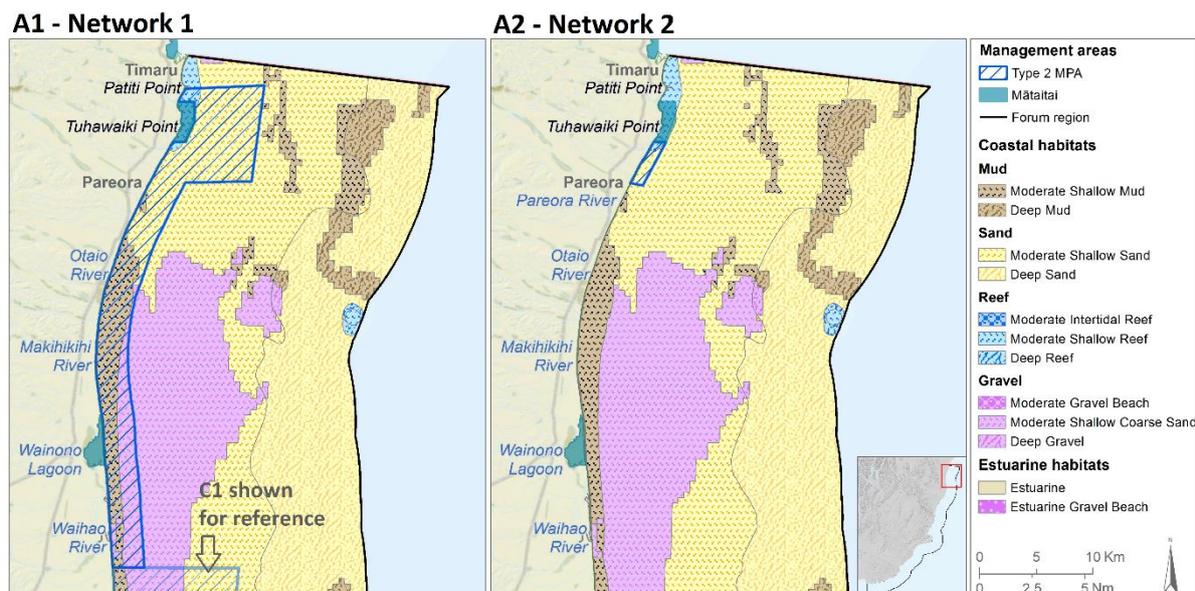


Figure 1 Sites A1 and A2

Overall agency assessment

14. DOC supports the inclusion of Site A1 in the network. It acknowledges that issues have been raised regarding part of the recommendation as detailed below, but on the whole considers the site to be a necessary inclusion in the network.
15. Fisheries New Zealand supports in principle the inclusion of Site A1, with restrictions on bottom-impacting fishing methods (bottom trawling, Danish seining and dredging) and an appropriate boundary setting. However, Fisheries New Zealand does not support the further restrictions proposed on set-netting, commercial long-lining, five-hook limit for line fishing, mid-water trawling, nor the boundaries as recommended. This is because Fisheries New Zealand considers there is insufficient evidence to warrant these actions being taken.
16. Site A1 would benefit the network by contributing to the representation of four habitats. Being one of only two MPAs that contain moderate shallow sand habitat, Site A1 is required to replicate this habitat.
17. Whilst Site A2 would have less adverse impacts on existing users than Site A1, the agencies consider that it would contribute little to an MPA network, due to the very limited amount of the habitats present.
18. Agencies note that the Forum's Recommendations Report states that Kāi Tahu does not oppose either Network 1 or 2.

Introduction

19. The Forum's Recommendations Report proposes two options for Type 2 MPAs south of Timaru. The Forum formally consulted on a Type 2 MPA at the general location of sites A1 and A2 (Site A). Site A2 has not changed from what was consulted on, and is part of Network 2. The larger Site A1 alternative site was designed following consultation feedback and is part of Network 1. The southern boundary of Site A1 adjoins the Site C1 Type 2 MPA.

20. Following recommendations from scientists for an extension during the consultation process, Site A1 was developed based on Site A but extends the proposed area northwards to Patiti Point, eastward by 6km in its northern section, and by 30km southward.
21. Site A was consulted on. Stakeholder views are reflected in the Forum's Recommendations Report on page 106 and the Summary of Submissions. The level of support for Site A1 and A2 cannot be determined based on the submissions for Site A, as they were not proposed as alternatives in the Consultation Document.

Table 1 Comparison of Site A1 and A2

	Site A1	Site A2
Network	Network 1	Network 2
Type	Type 2	Type 2
Size	157,5 km ²	4,4 km ²
% Forum region	1.76%	0.05%
Width	9km	1.1km
Coastline length	40.6km	4.2km

22. The waters south of Timaru are known as an important nursery area for mako (school shark) and spawning area of mako repe (elephant fish). The area is also of particular significance for pahu (Hector's dolphin), kororā (little penguin), hoiho (yellow-eyed penguin, particularly juveniles in their pelagic phase) as well as a range of sessile invertebrates.

Meeting the MPA Policy design and planning principle

Planning Principle 1: representation of habitats and ecosystems

23. The agencies consider that Site A1 includes 4 habitats that contribute to representation (

24. Table 2). The agencies do not consider that rocky reef habitat contained within this site are of a size that contributes to representation for this habitat type.
25. The agencies consider that Site A2 may contribute to the representation of the moderate gravel beach, and moderate shallow gravel habitat types in Network 2. Two other habitats contained in the site are not considered to be of sufficient size or extent to contribute to representation.
26. The habitats present in both Sites A1 and A2 are each present in at least one other site proposed in their respective network. Therefore, the agencies expect an MPA in the vicinity of Tuhawaiki to contribute to the MPA network by providing replicate examples of the habitats found here.
27. Fisheries New Zealand considers the inclusion of the southern extension of Site A1 (included after consultation) not necessary to ensure the representation of the habitats it contains within the network. The southern extension to Site A1 includes moderate shallow mud habitat not found in the rest of Site A1, however this habitat is also found in Sites B1, C1 and D1.

Table 2 Habitats contained within the sites. Area (%) indicates the percentage of the extent of the habitat within the Forum region that lies within the site. Sites with (*) indicate that the agencies consider the habitat does not contribute to representation. An indication of what other sites contain the habitat is also provided.

Habitats	Site A1			Site A2		
	Area (km ²)	Area (%)	Also in sites:	Area (km ²)	Area (%)	Also in sites:
Moderate gravel beach	1.9	57.4	B1, C1	0.1	3.8	B2
Moderate shallow gravel	33.0	3.7	B1, C1	0.1	0.01	B2
Moderate shallow mud	44.4	33.4	B1, C1, D1	-	-	B2
Moderate shallow sand	75.4	9.8	C1, D1*	3.5*	0.5*	D2*
Moderate Intertidal reef	0.0*	0.1*	D1	-	-	D2
Moderate shallow reef	2.7*	2.3*	D1	0.6*	0.5*	D2

Planning Principle 2: Meeting the protection standard

Table 3 Assessment of restrictions against the protection standard

Recommended Restrictions	Site restriction applies to	Required to meet protection standard	Existing restrictions
Danish seining	A1, A2	Yes	Danish seining is already prohibited in all of Site A2 and most of Site A1. ¹
Bottom Trawling	A1, A2	Yes	
Dredging	A1, A2	Yes	
Recreational and commercial set netting	A1, A2	See paragraph 29.	Recreational and commercial set netting are already prohibited at most of this Site. ^{2,3}
Commercial longlining			
5-hook limit			
Mid-water trawling	A1		
Bottom disturbance and seismic testing associated with any activity.	A1, A2	Yes, see paragraph 47.	

28. Sites A1 and A2 are recommended in the Forum's Recommendations Report to prohibit mobile, bottom impacting activities such as bottom trawling, dredging, and bottom disturbance associated with prospecting and seismic testing. The agencies consider that these are the minimum required to meet part (a) of the protection standard, specifically, providing for the maintenance and recovery of the physical features that support biodiversity.
29. Sites A1 and A2 include proposing further restrictions: set netting, commercial long lining, five hook limit for line fishing, and midwater trawling (Site A1 only). The agencies

¹ reg 70 of the Fisheries (Commercial Fishing) Regulations 2001.

² Recreational set netting is prohibited between Clarence Point and Slope Point (reg 137 of the Fisheries (Amateur Fishing) Regulations 2013).

³ Commercial set netting is prohibited within 4 NM of the coast from Clarence Point to Slope Point (reg 5AAC ibid).

could not reach consensus as to whether these restrictions are warranted at these sites. The agencies note:

- There is insufficient information available to determine if the current level of fishing activity from these methods are having an adverse effect on the aquatic environment at these sites.
- Fisheries New Zealand consider that this lack of evidence raises the question of whether the proposed restrictions on these methods should be imposed.
- In the absence of information that would allow an adequate assessment of effects of fishing, DOC considers that the proposed restrictions would provide the most certainty that the protection standard would be met at these sites. A prohibition on methods that have the potential to extract large quantities of fish within the site would be consistent with Planning Principle 8, which states “Decision making on management actions will be guided by a precautionary approach”.
- Should Ministers wish to pursue these restrictions, further advice on implementation options and associated risks can be provided by the agencies.

Planning Principle 3: Provision for special relationship between Crown and Māori

30. Sites A1 and A2 are within an area of customary significance, with two historical pā sites in the vicinity, as well as adjacent customary fishing areas.
31. Te Rūnaka o Arowhenua exercises kaitiakitanga for the northern part of Site A1 and all of Site A2, and administers a mātaītai at Tuhawaiki Point. Te Rūnaka o Waihao exercises kaitiakitanga for the southern part of Site A1⁴.
32. Agencies note that Kāi Tahu’s position is at a network level, not at a site level. The Forum’s Recommendations Report states that Kāi Tahu does not oppose either Network 1 or 2.

Planning Principle 5: Adverse impacts on existing users

Fisheries

33. The assessment below (paragraphs 34-45) is provided by Fisheries New Zealand, and does not necessarily reflect the views of DOC.
34. Fisheries New Zealand notes that Site A1 will have a greater potential impact on users than Site A2.
35. Fisheries New Zealand considers that the southern extension of Site A1 is inconsistent with Planning Principle 5, since adverse effects to users have not been minimised. Fisheries New Zealand notes that the southern extension protects two habitats that are otherwise protected (and replicated) elsewhere in Network 1, and increases the adverse impacts to users. Furthermore, it is not clear to Fisheries New Zealand how the potential effects of this site on existing users were addressed. The Forum’s recommendation report notes that proponents of Network 1 considered that the original site proposed during consultation was too small. In response it was extended offshore and to the south “*in partial fulfilment of what was requested by science submitters*”.⁵
36. DOC disagrees with the application of Planning Principle 5 described in the paragraph above, and considers that the Forum took into consideration minimising adverse effects as part of the site selection process.

⁴ Page 109, Forum’s Recommendations Report.

⁵ See: table 2-12 of the Forum’s Recommendation Report.

37. Fisheries New Zealand estimates that the southern extension of Site A1 contributes 27% (29 tonnes) of the potential total catch of finfish species that would be displaced from the site (110 tonnes).
38. Based on 2017 data, Fisheries New Zealand estimates the FOB export value of potentially displaced commercial catches from Site A1 to be \$NZ 463,000 (110 tonnes) and from Site A2 to be \$NZ 37,000 (8 tonnes) per year (Table 4). However, fishers would be likely to be able to take most of their catch entitlements elsewhere in the QMA as the finfish species being targeted are relatively mobile. They may however, experience higher costs of fishing as a consequence of having to relocate to alternative fishing grounds.

Table 4 Estimated average annual affected catch (kg) based on the annual catches from 2007/08 fishing year to the 2016/17 fishing year, and FOB export value estimates (\$NZ) for Site A1 and A2. Export values are based on export prices for 2017 calendar year.

Site A1			Site A2		
Affected catch (kg)	Export value (\$NZ)	% of Forum region export value ⁶	Affected catch (kg)	Export value (\$NZ)	% of Forum region export value
109,880	462,597	1.4	8,129	37,086	0.1

39. The biggest potential impacts of both Sites A1 and A2 are: bottom trawling for flatfish, (mako repe) elephant fish and red gurnard (in terms of export value) (Table 5 & Table 6).

⁶ Based on the total \$NZ 34.3 million export value for the Forum region based on 2017 FOB export prices.

Table 5 Estimated average annual affected catch (kg) based on the annual catches from 2007/08 fishing year to the 2016/17 fishing year for Site A1 (and on information in the CatchMapper database). FOB export value estimates (\$NZ) for Site A1 are based on export prices for 2017 calendar year (rounded to the nearest \$100). All species with total affected catch <1 tonne were summed under the heading 'Other'. A total cannot be estimated for % QMA landings affected because the configuration of QMAs varies across species. Methods that would be affected by fishing method prohibitions (as recommended by the Forum) are underlined.

Fishstock	<u>Trawl</u>	<u>Danish seine</u>	Hand gathering	<u>Bottom long-line/dahn line</u>	<u>Netting</u>	Handline/Troll	Pot	Total affected catch (kg)	% QMA landings affected	Export value (\$NZ)
Elephant fish	22,439	s9(2)(b)(ii) & s9(2)(ba)(i)						22,654	2.07	118,700
Flatfish	20,065							20,092	1.42	128,000
Rough skate	18,022							18,117	1.24	21,000
Red cod	17,782							18,076	0.46	28,400
Red gurnard	15,838							16,181	1.5	113,800
Barracouta	5,621							5,747	0.06	9,300
Rig	1,948							2,073	0.45	14,000
Hapuku/bass	72							1,206	0.36	13,500
Spiny dogfish	940							1,041	0.06	800
Other	4,246							4,692	-	15,200
Total	<u>106,973</u>	s9(2)(b)(ii) & s9(2)(ba)(i)						<u>109,880</u>		<u>462,600</u>

Table 6 Estimated average annual affected catch (kg) based on the annual catches from 2007/08 fishing year to the 2016/17 fishing year for Site A2 (and on information in the CatchMapper database). FOB export value estimates (\$NZ) for Site A2 are based on export prices for 2017 calendar year (rounded to the nearest \$100). All species with total affected catch <1 tonne were summed under the heading 'Other'. A total cannot be estimated for % QMA landings affected because each species is in a different QMA. Methods that would be affected by fishing method prohibitions (as recommended by the Forum) are underlined.

Fishstock	<u>Trawl</u>	Hand gathering	<u>Bottom long-line/dahn line</u>	Total affected catch (kg)	% QMA landings affected	Export value (\$NZ)
Elephant fish	2,016	s9(2)(b)(ii) & s9(2)(ba)(i)		2,016	0.18	10,500
Flatfish	1,438			1,438	0.1	9,100
Red cod	1,410			1,410	0.04	2,200
Red gurnard	1,219			1,219	0.11	8,500
Rough skate	1,121			1,121	0.08	1,200
Hapuku/bass	1			308	0.09	3,400
Other	612			616	0.13	1,800
Total	<u>7,818</u>	s9(2)(b)(ii) & s9(2)(ba)(i)		<u>8,129</u>		<u>37,000</u>

40. Fisheries New Zealand considers that there is a low risk of localised depletion arising in other areas as a result of the establishment of Sites A1 or Site A2. This could result from the displacement of finfish fishing effort (i.e. flatfish, elephant fish, gurnard red cod, rough skate and rig and other mobile fish stocks affected) to other areas. However, mobile species are able to range outside of the proposed Type 2 MPA where they are available to fishers. As a consequence, estimates of the value of displaced catch are likely to overestimate the actual costs to commercial fishers as many of them are likely to be able to take most of their catch entitlements elsewhere in the QMA.
41. Fisheries New Zealand considers that most of these species (by volume) are caught by bottom trawling over sand habitat; this type of habitat is generally widespread throughout the Forum region.
42. Fisheries New Zealand estimates Sites A1 and A2 are used by around 25 and 17 unique commercial fishers each year, respectively⁵³ (Table 7) and notes that a subset of fishers will be affected by the proposed restrictions. The majority of these fishers use methods that would be impacted by the restrictions proposed in the Report, particularly trawling.

Table 7 Estimated annual number of commercial fishers by method and total in Sites A1 and A2. Figures are based on an average of estimates for of the fishing years from 2014-15 to 2016-17. Some fishers use more than one method, so the count of unique fishers may be less than the sum of fishers using the various methods. Values with an asterisk are methods not impacted by the respective proposal.

Method	Number of fishers	
	Site A1	Site A2
Danish seine	1	0
Dredge	1	0
Trawl	19	13
Hand gathering	2*	2*
Bottom longline/Dahn line	2	2
Handline/Trolling	3*	3*
Net	2	0
Pot	1*	1*
Total count of unique fishers	25	17

43. The views of different stakeholder groups consulted on Site A are summarised in the Forum's Recommendations Report (page 106).
44. Based on the best available information⁵⁴, Fisheries New Zealand considers that both Sites A1 and A2 would likely have low impacts on recreational fishers. However, it is acknowledged that the potential for commercial fishing to be displaced and increased pressure outside the MPA location will occur.
45. Fisheries New Zealand notes that since the boundaries of Site A1 are significantly different to Site A (as consulted on), there may be impacts across all fishing sectors (customary, commercial and recreational) that have yet to be identified. This is because, in Fisheries New Zealand's view, the proposal for Site A1 that was included in the Forum's recommendations differs materially from that which the Forum consulted on.

⁵³ Figures are based on the average of the numbers of fishers estimated to have fished in each site within the last three fishing years; 2013-14 to 2016-17

⁵⁴ Information from Ministry for Primary Industries' compliance staff, amateur charter vessel (ACV) data, Summary of Submissions, and National Recreational Fishing Survey data.

Other users

46. A number of resource consents are currently active in this area including for gravel extraction and discharges to the marine environment. The Forum did not assess the adequacy of the conditions in those discharge consents. Agencies note that a Type 2 MPA status does not in itself affect existing resource consents, but it may be a relevant matter for consideration when consents are being renewed.
47. The prohibition on bottom disturbance and seismic testing recommended by the Forum could be implemented under special legislation. Further analysis is required as to the extent to which this could be done under existing legislation.

Social and economic interests

48. Both sites are highly accessible and visible from both shore and boat. For site A1 in particular, the proximity to Timaru and the new development of a coastal walkway along Jack's Point might encourage locals and visitors to access the MPA from its northern end. Further potential benefits lie in the opportunity for educational activities, the enhancement of the mātaītai reserve, community benefits (such as civic pride and amenity enhancement), indirect tourism benefits and an incentive for study.

Site B1 (Marine Reserve) and B2 (Marine Reserve)

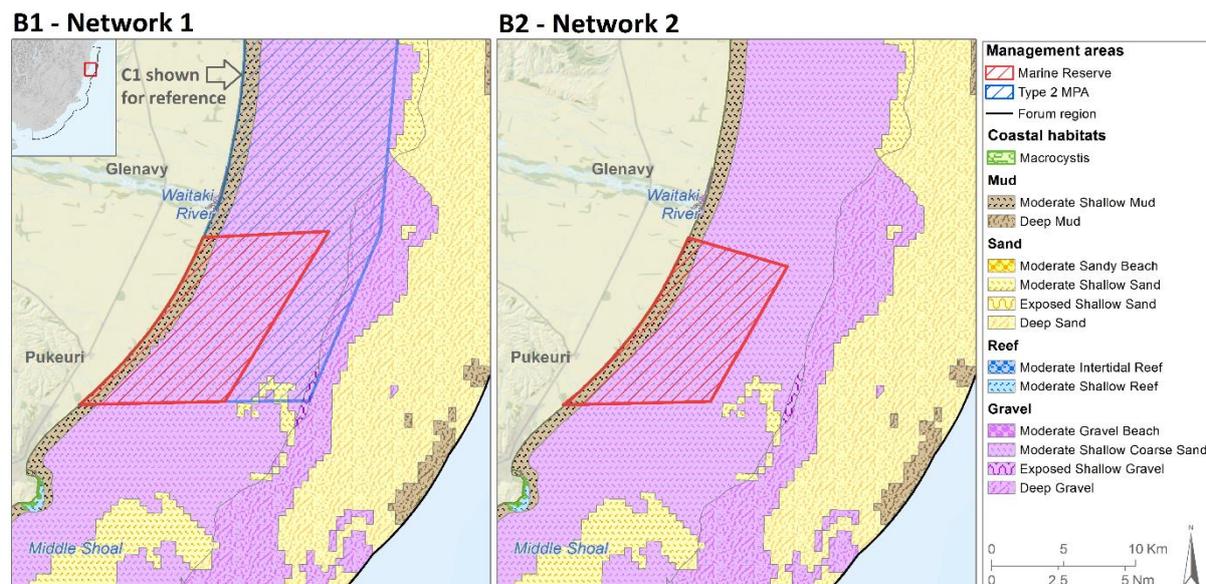


Figure 2 Sites B1 and B2

Overall agency assessment

49. The agencies support the inclusion of Site B1 in the network and consider a marine reserve in the Waitaki coastal area would be a valuable inclusion in the MPA Network, adequately representing the three habitat types present.
50. Site B1 includes two habitats that would otherwise not be included in a marine reserve, a requirement of the MPA Policy.
51. Agencies note that Site B1 has a slightly higher displacement on users than B2. However, agencies consider that the boundaries of Site B1 will make compliance and enforcement easier.
52. Fisheries New Zealand considers the potential impacts of this site on commercial and recreational fisheries will likely be low.
53. Agencies note the Forum's Recommendations Report states that Kāi Tahu does not oppose either Network 1 or 2.

Introduction

54. The Forum's Recommendations Report presents two options for a marine reserve located south of the Waitaki River mouth. The Forum formally consulted on a marine reserve at the general location of sites B1 and B2 (Site B). Site B2 has not changed from what was consulted on and is part of Network 2. The north-east boundary of Site B1 is further north but otherwise it is similar to Site B that the Forum consulted on.
55. Agencies note there was widespread support for a marine reserve at this location during consultation. Site B was consulted on and stakeholder views are reflected in the Forum's Recommendations Report on page 118 and the Summary of Submissions.
56. Site C1 – not described here – surrounds the northern and eastern boundary of B1 in Network 1 (see Figure 2 above).

Table 8 Comparison of Site B1 and B2

	Site B1	Site B2
Network	Network 1	Network 2
Type	Marine reserve	Marine reserve
Size	101.3 km ²	88.4 km ²
% Forum region	1.1%	1%
Width	8 km	8 km
Coastline length	14.8 km	14.8 km

57. The waters around Waitaki River are thought to hold some regionally unique habitats due to the influence of freshwater and riverine sediments on the marine environment. Although unstudied, anecdotal evidence indicates that the cobble and gravel substrate found in this area supports several biogenic habitats of high biodiversity value such as kelp and rhodolith (hard calcified red algae) beds. Should these habitats exist these are likely to provide habitat for juvenile fish species.
58. Historically, some of the densest concentrations of squat lobster (*Munida gregaria*), an important food source for fish, marine mammals and birds, have been found around the Waitaki River mouth. Squat lobsters are now at a very low abundance which is assumed to have an impact on trophic linkages.
59. Seabirds (including kororā little blue penguins) and pahu (Hector's dolphins) are known to use this area for foraging.
60. This area was proposed as a marine reserve, as it would encompass representative examples of gravel habitats of the North Otago/South Canterbury region otherwise not represented in any other recommended marine reserve. It would also provide a link in the network of MPAs along the coastline.

Meeting the MPA Policy design and planning principle

Planning Principle 1: representation of habitats and ecosystems

61. In terms of the MPA habitat classification, both Sites B1 and B2 include moderately exposed, gravel beach, shallow gravel and shallow mud habitats (Table 9). The agencies consider that all three habitats are included in large enough extents to be viable at each site and contribute to representation within their respective network.
62. Site B1 is the only site in Network 1 that represents moderate gravel beach and moderate shallow gravel in a marine reserve, a requirement under the policy.
63. Site B2 is the only site in Network 2 that represents moderately gravel beach, moderate shallow gravel and moderate shallow mud habitats in a marine reserve.

Table 9 Habitats contained within the sites. Area (%) indicates the percentage of the extent of the habitat within the Forum region that lies within the site. Sites with (*) indicate that the agencies consider the habitat does not contribute to representation. An indication of what other sites contain the habitat is also provided.

Habitats	Site B1			Site B2		
	Area (km ²)	Area (%)	Also in sites:	Area (km ²)	Area (%)	Also in sites:
Moderate gravel beach	0.4	13.2	A1, C1	0.4	13.2	A2
Moderate shallow gravel	87.0	9.7	A1, C1	74.3	8.2	A2
Moderate shallow mud	13.8	10.4	A1, C1, D1	13.6	10.2	-

Planning Principle 2: Meeting the protection standard

64. The agencies consider that, as a marine reserve, both Sites B1 and B2 meet the protection standard as defined in the MPA Guidelines.⁵⁵

Planning Principle 3: Provision for special relationship between Crown and Māori

65. Both proposed sites are in close proximity to the Waitaki River, which is central to the cultural identity of Kāi Tahu and an important taoka. The design of both sites avoids the river mouth and the area immediate around it in order to recognise and provide for customary fishing interests.
66. Three rūnaka share mana moana/mana whenua for Sites B1 and B2: Moeraki, Arowhenua and Waihao. Arowhenua and Waihao interests south of the Waitaki River mouth are centred around the historic Korotuaheka pā site.
67. The marine area within the proposed sites is fished by Kāi Tahu commercial fishers, some of whom submitted and were supportive of Sites B1 and B2.⁵⁶

Planning Principle 5: Adverse impacts on existing usersFisheries

68. The assessment below provided by Fisheries New Zealand (paragraphs 69-75) does not necessarily reflect the views of DOC.
69. Fisheries New Zealand considers that both Sites B1 and B2 would likely have a relatively low potential impact on fishing interests (commercial, customary and recreational), noting that the effect of Site B2 would likely be slightly lower than B1.
70. Fisheries New Zealand notes that both Sites B1 and B2 would likely have a low impact (in terms of export value) on the commercial sector.
71. Based on 2017 values, Fisheries New Zealand estimates the export value of potentially displaced commercial catches from Site B1 to be \$12,500 (4.8 tonnes) and from Site B2 to be \$17,000 (3.7 tonnes) per year (Table 10).

Table 10 Estimated average annual affected catch (kg) based on the annual catches from 2007/08 fishing year to the 2016/17 fishing year, and FOB export value estimates (\$NZ) for Site B1 and B2. Export values are based on export prices for 2017 calendar year.

Site B1			Site B2		
Affected catch (kg)	Export value (\$NZ)	% of Forum region export value ⁵⁷	Affected catch (kg)	Export value (\$NZ)	% of Forum region export value
4,766	21,491	0.1	3,700	17,052	0.1

72. The biggest potential impacts of both Sites B1 and B2 (in terms of export value) would be on red gurnard, elephant fish and rig commercial fisheries, all of which would be less than 1 tonne.
73. Fisheries New Zealand considers that there is very low sustainability risk associated with either Site B1 or Site B2, with respect to the displacement of finfish (i.e. rig, elephant fish, gurnard, tarakahi, red cod, and other mobile fishstocks affected) targeting

⁵⁵ MPA Policy page 18 and MPA Guidelines page 10.

⁵⁶ Page 120, Forum's Recommendations Report.

⁵⁷ Based on the total \$NZ 34.3 million export value for the Forum region based on 2017 FOB export prices.

to other areas, since by definition mobile species are able to range outside of the proposed MPAs. Displacement of fishing effort to adjacent areas outside Site B1 or Site B2 is unlikely to be a major issue in terms of either the utilisation or sustainability of the major fish stocks in the adjacent areas, because of the low volumes of fish caught in the area. Fisheries New Zealand estimates Sites B1 and B2 is used by approximately 10 and 9 commercial fishers each year, respectively⁵⁸ (Table 11).

Table 11 Estimated annual number of commercial fishers by method and total in Sites B1 and B2. Figures are based on an average of estimates for of the fishing years from 2014-15 to 2016-17. Some fishers use more than one method, so the count of unique fishers may be less than the sum of fishers using the various methods.

Method	Number of fishers	
	Site B1	Site B2
Danish seine	1	1
Dredge	1	1
Trawl	3	3
Hand gathering	1	1
Bottom longline/Dahn line	1	1
Handline/Trolling	3	3
Net ⁵⁹	2	0
Pot	0	0
Total count of unique fishers	10	9

74. The views of different stakeholder groups on Site B consulted on are summarised in the Forum's Recommendations Report (page 118).
75. Based on the best available information⁶⁰, Fisheries New Zealand considers that both Sites B1 and B2 would likely have low potential impacts on recreational fishers.

Other users

76. Several resource consents for contaminant and wastewater effluents are found in the vicinity of B1 and B2. None of these discharge into the proposed marine reserve. Agencies note that a marine reserve status does not in itself affect existing resource consents located outside of the marine reserve, but it may be a relevant matter for consideration when consents are being renewed.

Social and economic interests

77. Kelp at this site is an important yet understudied habitat and this site could provide opportunity for future research. The Forum also considered that either B1 or B2 would add to Oamaru's marine natural and recreational assets and the indirect economic benefits that a marine reserve might entail for the community, including enhancing the protection of Oamaru's kororā (little penguins) upon which the local tourism operations depend.

⁵⁸ Figures are based on the average of the numbers of fishers estimated to have fished in each site within the last three fishing years; 2013-14 to 2016-17

⁵⁹ Includes set net and drift net

⁶⁰ Information from Ministry for Primary Industries' compliance staff, amateur charter vessel (ACV) data, Summary of Submissions, the Forum's Recommendations Report, and National Recreational Fishing Survey data.

78. Based on submissions from several scientists, a larger reserve at this Site would have been preferred⁶¹.

⁶¹ See page 118 of the Forum's Recommendations Report for a detailed explanation

Site C1 (Type 2 MPA)

C1 - Network 1

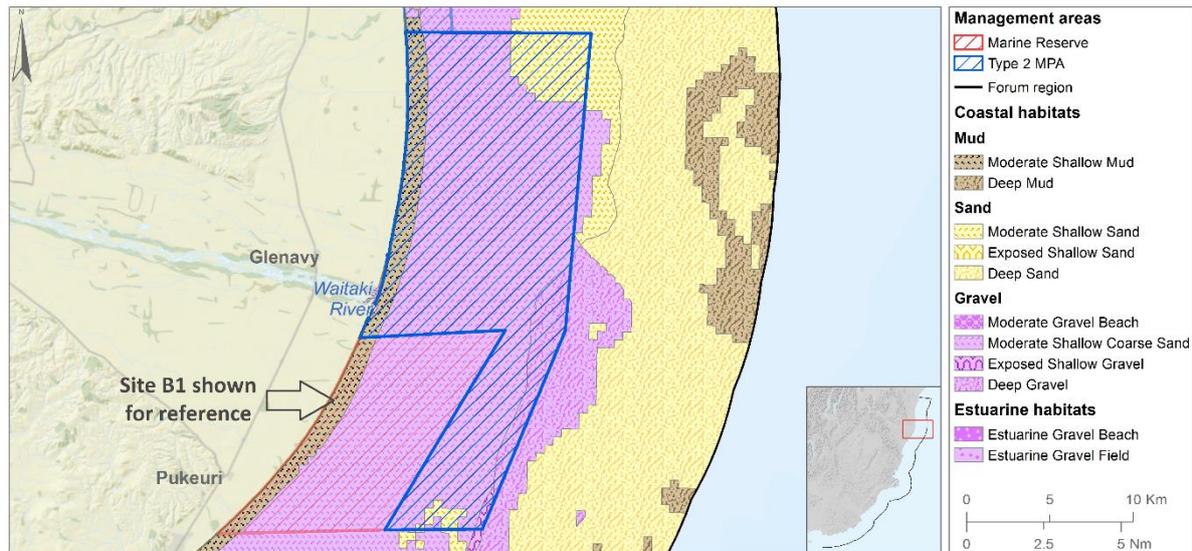


Figure 3 Site C1

Overall agency assessment

79. DOC supports the inclusion of Site C1 in the network. It acknowledges that issues have been raised regarding part of the recommendation as detailed below, but on the whole considers the site to be a necessary inclusion in the network.
80. Fisheries New Zealand supports in principle the inclusion of Site C1, however does not support the recreational and commercial set netting, and midwater trawling restrictions as proposed by the Forum, as detailed below.
81. Site C1 would benefit the network by contributing to the representation of five habitats; and would be required for replication of moderate shallow sand habitat.
82. Fisheries New Zealand considers that Site C1 would have a displacement impact to commercial fishing interests in this area, described below. But would likely have a low potential impact on recreational fishing interests.
83. Agencies note the Forum's Recommendations Report states that Kāi Tahu does not oppose either Network 1 or 2.

Introduction

84. The Forum's Recommendations Report proposes a Type 2 MPA off Waitaki as part of Network 1. Site C1 seeks to minimise the effects of fishing on biodiversity values of the seafloor, and bycatch of seabirds in this foraging area, and provides a buffer around the marine reserve at Site B1.
85. The Forum formally consulted on a Type 2 at this location: Site C. Stakeholder views are reflected in the Forum's Recommendations Report on page 129 and the Summary of Submissions.
86. The proposed Site C1 largely resembles the area consulted on. Changes to its boundaries relate to the adjustments made to Site B1.

Table 12 Site C1

	Site C1
Network	Network 1
Type	Type 2
Size	254.1 km ²
% Forum region	2.9%
Width	12.1
Coastline length	19.2

87. The waters around the Waitaki River are thought to hold some regionally unique habitats due to the influence of freshwater and riverine sediments on the marine environment. Although unstudied, anecdotal evidence indicates that the cobble and gravel substrate found in this area supports several biogenic habitats of high biodiversity value such as kelp and rhodolith (hard calcified red algae) beds. Should these habitats exist, these are likely to provide habitat for juvenile fish species.
88. Historically, some of the densest concentrations of squat lobster (*Munida gregaria*), an important food source for fish, marine mammals and birds, have been found around the Waitaki River mouth. Squat lobsters are now at a very low abundance which is assumed to have an impact on trophic linkages.
89. Seabirds (including kororā little blue penguins) and pahu (Hector's dolphins) are known to use this area for foraging.

Meeting the MPA Policy design and planning principle

Planning Principle 1: representation of habitats and ecosystems

90. In terms of the MPA habitat classification, the agencies consider that Site C1 includes five habitat types that contribute to the representation of those habitats in the network (Table 13). An additional habitat (exposed shallow gravel) is of such small extent that it is unlikely to be a viable, self-sustaining habitat, and therefore is unlikely to contribute to the network.

Table 13 Habitats contained within the sites. Area (%) indicates the percentage of the extent of the habitat within the Forum region that lies within the site. Sites with (*) indicate that the agencies consider the habitat does not contribute to representation. An indication of what other sites contain the habitat is also provided.

Habitats	Site C1		
	Area (km ²)	Area (%)	Also in sites:
Deep gravel	16.7	1.5	E1, H1, I1*
Exposed shallow gravel	1.1*	17.1*	I1*
Moderate gravel beach	0.7	20.4	A1, B1
Moderate shallow gravel	195	21.7	A1, B1
Moderate shallow mud	19.7	14.8	A1, B1, D1
Moderate shallow sand	20.5	2.7	A1, D1*

Planning Principle 2: Meeting the protection standard

Table 14 Assessment of restrictions against the protection standard

Recommended Restriction	Required to meet protection standard	Existing restrictions
Danish seining	Yes	<i>Prohibited out to 3nm of the South Island.⁶²</i>
Bottom Trawling	Yes	
Dredging	Yes	
Recreational and commercial set netting Mid-water trawling	See paragraphs 92 and 93.	<i>Existing restrictions on commercial and recreational set netting</i>
Bottom disturbance and seismic testing associated with any activity.	Yes. See paragraph 108.	

91. Site C1 is recommended in the Report to prohibit mobile, bottom impacting methods. The agencies consider that these are the minimum required to meet part (a) of the protection standard, particularly to protect the physical features that support biodiversity.
92. Site C1 includes further restrictions: recreational and commercial set netting, and mid-water trawling. The agencies could not reach consensus as to whether these additional restrictions are warranted at this site.
93. The agencies note:
- There is insufficient information available to determine if the current level of fishing activity from these methods are having an adverse effect on the aquatic environment at these sites;
 - Fisheries New Zealand considers that this raises the question of whether the proposed restrictions on these methods should be imposed;
 - In the absence of information that would allow an adequate assessment of effects of fishing, DOC considers that the proposed restrictions would provide the most certainty that the protection standard would be met at these sites. A prohibition on methods that have the potential to extract large quantities of fish within the site would be consistent with Planning Principle 8, which states 'Decision making on management actions will be guided by a precautionary approach'; and
 - Should Ministers wish to pursue these restrictions, further advice on implementation options and associated risks can be provided by the agencies.
94. Agencies are aware that one of the reasons the Forum proposed a set net prohibition over the area was to reduce the potential for bycatch of seabirds and marine mammals in an area of known importance to these taxa. The agencies consider that risks of direct interactions of seabirds and marine mammals with the fishing industry can be managed through threat management plans which take a holistic⁶³ approach, and are able to consider all threats across the range of these species. Fisheries New Zealand is currently reviewing the use of set nets nationally with a view to avoiding, remedying and mitigating impacts on protected species⁶⁴.

⁶² Fisheries (Commercial Fishing) Regulations 2001 - Reg 70.

⁶³ Note Threat Management Plans can include a wider range of legislative tools.

⁶⁴ The review will also consider other aspects of set net use, including their general efficiency and fish bycatch.

Planning Principle 3: Provision for special relationship between Crown and Māori

95. There are high customary fisheries' interests immediately in and around the Waitaki River mouth. The Waihao marae and Māori Reserve lands are located just to the north of Site C1. This area and the waterways are of high cultural importance to Kāi Tahu hapū associated with this area (represented by traditional settlements and rich mahika kai resources).

Planning Principle 5: Adverse impacts on existing users

96. The assessment below provided by Fisheries New Zealand (paragraphs 97-106) does not necessarily reflect the views of DOC.
97. Fisheries New Zealand notes that Site C1 has a medium potential impact on commercial fishing interests (in terms of export value).
98. Based on 2017 values, Fisheries New Zealand estimates the FOB export value of potentially displaced commercial catches from Site C1 to be \$NZ 148,000 (34.5 tonnes).

Table 15 Estimated average annual affected catch (kg) based on the annual catches from 2007/08 fishing year to the 2016/17 fishing year, and FOB export value estimates (\$NZ) for Site C1. Export values are based on export prices for 2017 calendar year.

Site C1		
Affected catch (kg)	Export value (\$NZ)	% of Forum region export value ⁶⁵
34,492	148,145	0.4

99. The biggest potential impacts in terms of foregone export opportunities of Site C1 would be on red gurnard, rig and mako (school shark) commercial fisheries (Table 16).
100. Fisheries New Zealand estimates that the proposed prohibitions on set netting would displace around 25% by volume of current catch at Site C1.
101. Fisheries New Zealand considers that there is a low risk of localised depletion arising in other areas as a result of the establishment of Site C1. This could result from the displacement of finfish fishing effort (i.e. red gurnard, school shark, and rig and other mobile fish stocks affected) to other areas. However, mobile species are able to range outside of the proposed Type 2 MPA and may be available to be caught in adjacent areas.
102. Fisheries New Zealand considers that most of these species (by volume) are caught by bottom trawling over sand habitat; this type of habitat is generally widespread throughout the Forum region.

⁶⁵ Based on the total \$NZ 34.3 million export value for the Forum region based on 2017 FOB export prices.

Table 16 Estimated average annual affected catch (kg) based on the annual catches from 2007/08 fishing year to the 2016/17 fishing year (and on information in the CatchMapper database). FOB export value estimates (\$NZ) for Site C1 are based on export prices for 2017 calendar year (rounded to the nearest \$ per 100). All species with total affected catch <1 tonne were summed under the heading 'Other'. A total cannot be estimated for % QMA landings affected because each species is in a different QMA. Methods that would be affected by fishing method prohibitions (as recommended by the Forum) are underlined. The three most affected fishstocks (in terms of foregone export opportunities, export value, \$NZ) are asterisked.

Fish-stock	<u>Danish seine</u>	<u>Trawl</u>	<u>Dredge</u>	<u>Bottom longline /dahn line</u>	<u>Hand gathering</u>	<u>Pot</u>	<u>Set Net</u>	<u>Hand-line/Trolling</u>	<u>Jig</u>	Total affected catch (kg)	% QMA landings affected	Export value (\$NZ)
Red gurnard	s9(2)(b)(ii) & s9(2)(ba)(i)	615	s9(2)(b)(ii) & s9(2)(ba)(i)				30	0	s9(2)(b)(ii) & s9(2)(ba)(i)	4,596	0.43	32,400*
School shark		101					4,043	0	s9(2)(ba)(i)	4,404	1.2	22,600*
Red cod		777					6	0		4,163	0.11	6,600
Elephant fish		574					1,042	0		3,972	0.36	20,900
Rig		246					2,354	0		3,655	0.79	24,700*
Barra-couta		1,302					2	0		2,768	0.03	4,500
Tarakihi		223					8	0		2,421	0.23	8,700
Rough skate		757					53	0		1,894	0.13	2,200
Spiny dogfish		89					145	0		1,410	0.08	1,100
Ghost shark		131					0	0		1,180	0.23	1,300
Other		1,283					850	22		4,030	-	23,800
Total		6,098					8,534	22		34,492	-	148,200

103. Fisheries New Zealand estimates that Site C1 is used by around 17 unique commercial fishers each year (Table 17). A subset of these fishers will be affected by the proposed restrictions. The majority of these fishers use methods that would be impacted by the restrictions proposed in the Report. The proposed prohibition on trawling would impact the most commercial fishers (by number), but would not have the greatest impact on affected catch (kg).

Table 17 Estimated annual number of commercial fishers by method and total in Site C1. Figures are based on an average of estimates for of the fishing years from 2014-15 to 2016-17. Some fishers use more than one method, so the total fishers may be less than the sum of fishers using the various methods. Values with an asterisk are methods not impacted by the respective proposal.

Method	Number of fishers
	Site C1
Danish seine	1
Dredge	1
Trawl	10
Net ⁶⁶	4
Hand gathering	1*
Bottom longline/Dahn line	1*
Handline/Trolling	3*
Total count of unique fishers	17

⁶⁶ Includes set net and drift net.

104. The views of different stakeholder groups on Site C consulted on are summarised in the Forum's Recommendations Report (page 129).
105. Fisheries New Zealand notes that the Forum's Recommendations Report states the area is fished by Kāi Tahu commercial fishers, some of whom were opposed to Site C1.
106. Based on the best available information⁶⁷, Fisheries New Zealand considers that this site would have little if any impact on recreational fishing interests, but notes that the Report states that submitters who opposed this site contended that it disadvantaged recreational fishers. Fisheries New Zealand is unclear what submitters are referring to.

Other users

107. The Forum's Recommendations Report does not list adverse impacts on other users.
108. The prohibition on bottom disturbance and seismic testing recommended by the Forum could be implemented under special legislation. Further analysis is required as to the extent to which this could be done under existing legislation.
109. Further to the restrictions to fisheries for Site C1, the Forum also recommends a prohibition to any 'bottom disturbance and seismic testing associated with any activity' at these sites. Further work needs to be done to investigate how this could be achieved.

Social and economic interests

110. The Forum considered that the improved protection of key species including pahu (Hector's dolphin), penguins and other seabirds would provide indirect benefits to the associated wildlife tourism sector. They further highlighted a possible increase in the profile of marine protection in the Waitaki region and the area's commitment towards enhancing marine biodiversity.

⁶⁷ Information from Ministry for Primary Industries' compliance staff, amateur charter vessel (ACV) data, Opus Summary of Submissions, and National Recreational Fishing Survey data.

Site D1 (Marine Reserve) and Site D2 (Marine Reserve)

D1 - Network 1

D2 - Network 2

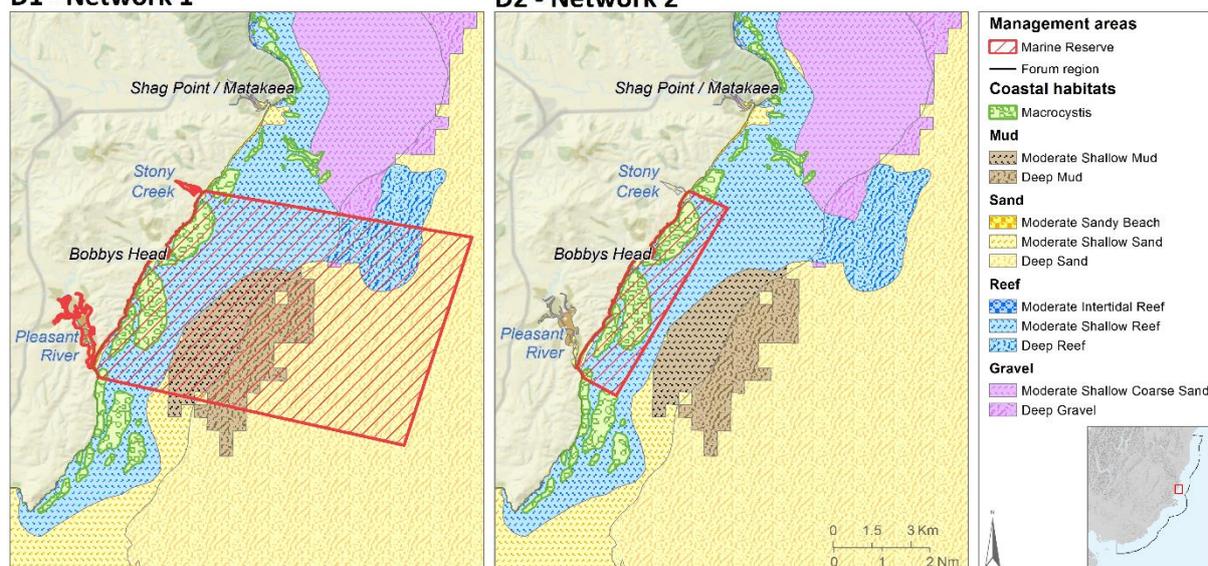


Figure 4 Sites D1 and D2

Overall agency assessment

111. DOC supports the inclusion of Site D1 in the network and considers the site to be a necessary inclusion.
112. Site D1 would hold the greatest habitat representation of any recommended site, with seven coastal habitats, plus estuarine habitats and two biogenic habitats, being represented in one site. For five of the coastal habitats and the two biogenic habitats, Site D1 is the only site in Network 1 that represents these habitats. In addition, it is the only site to include estuarine habitats in a marine reserve (including two vastly different estuarine ecosystems in one MPA). DOC also considers it contributes to the representation of deep sand habitat that is otherwise poorly represented north of the Site E1.
113. Fisheries New Zealand supports in principle the inclusion of Site D1, but has concerns regarding the extent of the boundary change following consultation. Fisheries New Zealand notes the high potential impact on commercial fishers of establishing a marine reserve in this area. To manage the potential risks posed by displacement of kōura papatea (rock lobster) fishing effort from site D1, Fisheries New Zealand recommends that you either:
- Progress the proposal for Site D1 in the form that the Forum originally consulted on it (i.e.: with a seaward boundary situated 6km offshore); or;
 - Direct officials to undertake further work to assess the options for reconfiguring the boundaries of Site D1 to reduce the impacts on the kōura papatea (rock lobster) fishery, while also ensuring adequate habitat representation.
114. DOC acknowledges that Site D1 has a likely higher displacement than D2 (or the extension that was consulted on). DOC notes that the habitat afforded protection in Site D1 (deep reef) was specifically excluded from Site I1 (Tow Rock) in order to reduce potential impacts on existing commercial, recreational and customary users.
115. The agencies note that Site D1 better meets the considerations of the Policy than D2. In particular, agencies consider that Site D2 exhibits poor reserve design⁶⁸.

⁶⁸ see MPA Guidelines page 20.

116. Agencies note that kōura papatea (rock lobster) potting would be the primary fishing activity affected by both sites. The agencies note that Site D1 would result in greater displacement of kōura papatea (rock lobster) catch than Site D2.
117. Agencies note the Forum's Recommendations Report states that Kāi Tahu does not oppose either Network 1 or 2.

Introduction

118. The Forum's Recommendations Report presents two options for a marine reserve at this location (D1 and D2).
119. The Forum formally consulted on two marine reserve options in this area, one extending approximately 2 km offshore and another approximately 6km offshore. Stakeholder views are reflected in the Forum's Recommendations Report (page 136) and the Summary of Submissions.
120. The proponents of Network 1 have recommended Site D1 which extends the larger of the areas that was consulted out to 10km offshore. Site D1 also includes both estuaries consulted on (Stoney Creek and Pleasant River).
121. Network 2 proponents recommend Site D2, which is consistent with the smaller option for Site D that was originally consulted on, it extends 2km offshore and excludes the estuaries.

Table 18 Comparison of Site D1 and D2

	Site D1	Site D2
Network	Network 1	Network 2
Type	Marine reserve	Marine reserve
Size	96 km ²	15.3 km ²
% Forum region	1.1%	0.2 %
Width	8.4 km	2.1 km
Coastline length⁶⁹	10.4 km	10.4 km

122. The general area on which Sites D1 and D2 are focused was selected for protection due to a large range of inshore and offshore habitats found in close proximity, and the opportunity this allows to protect several habitats within one MPA. Habitats found here include examples of volcanic rock reef, exposed reef shelves, sea caves, subtidal concretions (Moeraki boulders), seaweed gardens, and a variety of estuarine habitats. The area further boasts outstanding examples of kelp forest patch reefs that support juvenile kōura papatea (rock lobster) settlement. For more information on the biodiversity value of kelp forests, see analysis of Site T (page 75).
123. The biodiversity of this area is currently the subject of a range of research and teachings by the University of Otago's Portobello Marine Laboratory.
124. Agencies need to make you aware that the southern arm of Pleasant River Estuary was omitted from the proposal due to an outdated coastal marine area boundary, and was not part of the area consulted on. The intent of the Network 1 proponents was to include the entirety of the estuary.

Meeting the MPA Policy design and planning principle

Planning Principle 1: representation of habitats and ecosystems

125. The agencies consider that Site D1 includes 7 coastal habitats, and Site D2 includes 3 coastal habitats that would contribute to the representation within each respective network (Table 19). A small amount of moderate shallow sand is present in both sites, but the agencies consider that it is likely too small to be viable. It is not considered to contribute to either network representation for that habitat type. Likewise, a small amount of deep gravel is present in D1, but at an extent that does not contribute to representation of that habitat type.

⁶⁹ Excludes estuaries which would add another 18.3 km.

126. The agencies note that the site boundary for D2 bisects the entire length of the reef from north to south, compromising its ability to protect the rocky reef habitat.
127. In Network 1, Site D1 is the only site to provide marine reserve protection of deep reef and deep mud habitats, moderate shallow and intertidal reef and biogenic giant kelp.
128. Site D1 is the only site that includes representation of estuarine habitats, and encompasses two estuaries, approximately 1.2% of the estuarine area in the region.
129. In Network 2, Site D2 is the only site to provide moderate shallow and intertidal reef, and biogenic kelp forest.

Table 19 Habitats contained within the sites. Area (%) indicates the percentage of the extent of the habitat within the Forum region that lies within the site. Sites with (*) indicate that the agencies consider the habitat does not contribute to representation. An indication of what other sites contain the habitat is also provided.

Habitats	Site D1			Site D2		
	Area (km ²)	Area (%)	Also in sites:	Area (km ²)	Area (%)	Also in sites:
Deep mud	9.5	7.4	-	-	-	-
Deep Reef	7.3	4.5	E1*	-	-	-
Deep Sand	37.6	0.8	E1, H1, I1	-	-	-
Deep Gravel	0.1*	0.0*	C1, E1, H1, I1*	-	-	-
Moderate intertidal reef	0.2	3.6	A1*	0.2	3.6	-
Moderate sandy beach	0.2	3.2	-	0.2	3.2	-
Moderate shallow mud	10.1	7.6	A1, B1, C1	-	-	-
Moderate shallow reef	29.0	24.8	A1*	14.7	12.6	A2*
Moderate shallow sand	0.8*	0.1*	A1, C1	0.3*	0.0*	A2*
Estuarine (combined)	1.1	1.2	L1, Q1	-	-	-
Biogenic – giant kelp	5.9	32.7	-	5.8	32.4	-

Planning Principle 2: Meeting the protection standard

130. The agencies consider that, as a marine reserve, Sites D1 and D2 meet the protection standard as defined in the MPA Guidelines.⁷⁰
131. The agencies consider that Site D2 exhibits poor reserve design, and likely compromises its effectiveness in affording adequate protection to the kelp forest ecosystem. Both the seaward, north and south boundaries bisect the reef, and do not provide a buffer of sand habitat around the reef. Specifically, the agencies note that while the site protects kelp habitat, it would not protect the mobile species that would move in and out of it, and edge effects of fishing the boundary are likely to occur. As a result, it would likely be insufficient to protect natural species composition and trophic linkages associated with the kelp forest habitat.

Planning Principle 3: Provision for special relationship between Crown and Māori

132. There is a significant pā site at the Huriawa Peninsula (Karitāne).

⁷⁰ MPA Policy page 18 and MPA Guidelines page 10.

133. To the north of Sites D1 and D2 there is a prominent reef and fishery off the mouth of the Waihemo (Shag River) known as Arai-te-uru (Danger Reef). This is an area that is steeped in tradition and associated with the wreck of the Arai-te-uru waka.
134. There are high customary fisheries interests to the north of Sites D1 and D2 and to the south of the proposed area.

Planning Principle 5: Adverse impacts on existing users

Fisheries

135. The assessment below provided by Fisheries New Zealand (paragraphs 136-151) does not necessarily reflect the views of DOC.
136. Fisheries New Zealand considers that Site D1 would have a greater potential adverse impact on users than Site D2.
137. Fisheries New Zealand notes that the proponents of Network 1 recommend that Site D, as consulted on, be extended to represent deep reef habitat, and to ensure connectivity between deep reef and deep sand habitat. Fisheries New Zealand notes the importance of protecting deep reef habitat (this is not recommended for protection elsewhere), but notes the extension greatly increases the potential impacts on commercial fishing interests.⁷¹
138. DOC disagrees with the interpretation of Planning Principle 5 described in the paragraph above. DOC considers the Forum took into consideration minimising adverse effects as part of the site selection process.
139. Based on 2017 values, Fisheries New Zealand estimates the export value of potentially displaced commercial catches from Site D1 to be \$2 million (40.6 tonnes) and from Site D2 to be \$914,000 (11.1 tonnes) per year.

Table 20 Estimated average annual affected catch (kg) based on the annual catches from 2007/08 fishing year to the 2016/17 fishing year, and FOB export value estimates (\$NZ) for Site D1 and D2. Export values are based on export prices for 2017 calendar year.

Site D1			Site D2		
Affected catch (kg)	Export value (\$NZ)	% of Forum region export value ⁷²	Affected catch (kg)	Export value (\$NZ)	% of Forum region export value
40,526	1,992,476	5.8	11,097	914,356	2.7

140. The biggest potential impacts on commercial fishing in terms of foregone export opportunities of Site D1 would be in order of impact: kōura papatea (rock lobster), blue cod and flatfish (Table 21). Fisheries New Zealand estimates that 20.67% of the kōura papatea (rock lobster) that is caught within CRA7 (the QMA within which this site falls) would be displaced by establishing Site D1.
141. The biggest potential impact of Site D2 on commercial fishing would be on kōura papatea (rock lobster), pāua and rawaru (blue cod) (in terms of foregone export opportunities). Fisheries New Zealand estimates that 9.83% of the kōura papatea (rock lobster) that is caught within CRA7 (the QMA within which this site falls) would be potentially displaced by establishing Site D2, with potential displacement of \$NZ 872,800 annually

⁷¹ Fisheries New Zealand estimates Site D1 has almost double the displacement impact on commercial fishing than Site D (Option Two), as was consulted on. Fisheries New Zealand cannot estimate the potential impact on customary and recreational interests, which is why the effect on those sectors is not mentioned here but is discussed below.

⁷² Based on the total \$NZ 34.3 million export value for the Forum region based on 2017 FOB export prices.

(export value). Fisheries New Zealand estimates that all potential affected catch for Site D2 other than kōura papatea (rock lobster) is less than 1 tonne per year, therefore no table has been provided for Site D2.

Table 21 Estimated average annual affected catch (kg) based on the annual catches from 2007/08 fishing year to the 2016/17 fishing year. FOB export value estimates (\$NZ) for Site D1 are based on export prices for 2017 calendar year (rounded to the nearest \$100). All species with total affected catch <1 tonne were summed under the heading 'Other'. A total cannot be estimated for % QMA landings affected because each species is in a different QMA. Methods that would be affected by fishing method prohibitions (as recommended by the Forum) are underlined. The three most affected fisheries (in terms of foregone export opportunities – export value (\$NZ)) are asterisked.

Fishstock	<u>Trawl</u>	<u>Bottom longline/dahn line</u>	<u>Danish seine</u>	<u>Net</u>	<u>Pot</u>	<u>Hand gathering</u>	Total affected catch (kg)	% QMA landings effected	Export value (\$NZ)
Rock lobster	0	s9(2)(b)(ii) & s9(2)(ba)(i)		0	17,702	s9(2)(b)(ii) & s9(2)(ba)(i)	17,702	20.67	1,835,400*
Flatfish	2,910			1	0		2,913	0.21	18,600*
Blue cod	29			13	2,557		2,690	1.59	40,400*
Red gurnard	2,435			5	0		2,460	0.23	17,300
Elephant fish	2,186			207	0		2,409	0.22	12,700
Rough skate	2,235			17	0		2,255	0.15	2,700
Blue moki	362			1,130	29		1,525	1.07	8,500
Octopus	15			1	1,178		1,194	3.54	13,000
Red cod	752			2	430		1,188	0.03	1,900
Hapuku/bass	6			2	6		1,032	0.31	11,600
Other	3,382			535	663		5,157	35.09	30,800
Total	<u>14,312</u>			<u>1,911</u>	<u>22,567</u>		<u>40,526</u>	-	<u>1,992,500</u>

142. Fisheries New Zealand estimates Sites D1 and D2 are used by around 29 and 22 commercial fishers each year, respectively⁷³ (Table 22).

Table 22. Estimated annual number of commercial fishers by method and total in Sites D1 and D2. Figures are based on an average of estimates for of the fishing years from 2014-15 to 2016-17. Some fishers use more than one method, so the total fishers may be less than the sum of fishers using the various methods. Values with an asterisk are methods not impacted by the respective proposal.

Method	Number of fishers	
	Site D1	Site D2
Hand gathering	2	2
Bottom longline/Dahn line	2	2
Handline/Trolling	1	1
Net ⁷⁴	3	0
Pot	19	19
Trawl	9	1
Total count of unique fishers	29	22

⁷³ Figures are based on the average of the numbers of fishers estimated to have fished in each site within the last three fishing years; 2013-14 to 2016-17.

⁷⁴ Includes set net and drift net.

143. Fisheries New Zealand considers that there may be a risk of localised depletion arising in other areas as a result of the establishment of Site D1. This could result from the displacement of fishing effort targeting kōura papatea (rock lobster) (a large volume) and rawaru (blue cod) to other areas. These species show a strong preference for particular habitat, therefore while some may range in and out of the proposed reserve, concerns regarding utilisation or sustainability of major stocks in the adjacent areas may arise (due to effort being displaced out of the proposed reserve area).
144. Fisheries New Zealand considers that displacement of fishing effort targeting flatfish outside Site D1 is unlikely to be a major issue in terms of either utilisation or localised depletion in the adjacent areas. Flatfish are a mobile species caught by bottom trawling over sand and shallow mud habitat. Flatfish can move out of protected areas where they may be available to fishers, and sand habitat is generally widespread throughout the region.
145. Fisheries New Zealand considers that Site D2 would have a lower sustainability risk than Site D1 because less catch is displaced. However, Fisheries New Zealand notes that all of the species with the greatest affected catch at Site D2 (pāua, rock lobster and blue cod) exhibit a strong preference for a particular habitat, and therefore displaced fishing effort may cause more pressure to be placed on stocks in the areas adjacent to this site.
146. Fisheries New Zealand notes that the East Otago Taiapure Committee raised their concerns that a MPA at Site D would undermine their ability to establish a commercial pāua fishing ban, as per their request to the then Minister for Primary Industries.⁷⁵ The Committee also requested rebalancing for kōura papatea (rock lobster) to prevent fishing activity being displaced into other areas (particularly the taiapure).
147. Fisheries New Zealand is aware that there is commercial fishing activity in the estuaries at Site D1 for shortfin eels. The submission from the South Island Eel Industry Association (SIEIA)⁷⁶, estimated the median and maximum annual shortfin eel catch to be 1.5 tonnes and 4.5 tonnes respectively (in total) (5% - 15.5% total TACC of 29 tonnes for SFE15).
148. Fisheries New Zealand notes that shortfin eels are often targeted in estuaries, as they are generally in better condition and are of a higher value than when they are taken from rivers. Fisheries New Zealand considers that commercial eel fishers' ability to take their shortfin eel catch elsewhere in the Forum region may be limited, given a number of other estuaries are already closed or restricted to commercial fishing activity⁷⁷. Fisheries New Zealand can provide a complete analysis of this if required.
149. Fisheries New Zealand considers that there may be potential for the displacement of shortfin eel fishing effort into surrounding estuaries that may result in localised depletion (by concentrating fishing effort into the areas that remain open). Fisheries New Zealand notes that this may raise concerns for local Iwi.

⁷⁵ Site D is close to (~6km away from) the East Otago Taiāpure. In their submission, the East Otago Taiāpure Committee recommended to the then Minister for Primary Industries that a commercial ban on pāua and wading-only restrictions for recreational pāua collection be implemented in the taiapure. This request has subsequently changed to a permanent commercial fishing closure on pāua and a temporary recreational closure on pāua in the taiapure. Fisheries New Zealand is consulting on these proposed closures (in October 2018) and the Minister of Fisheries will subsequently be advised on the outcomes of this consultation.

⁷⁶ The South Island Eel Industry Association represents commercial eel fishers who utilise the eel resource (shortfin and longfin eels) in the South Island, including coastal estuaries. Their members comprise the majority of eel permit holders and take the majority of shortfin and longfin eel catch in the South Island.

⁷⁷ Fisheries New Zealand is aware of 13 estuarine areas in the Forum region that are already closed or restricted to commercial eel fishing, and there may be more closures/restrictions Fisheries New Zealand is not aware of at this stage. Fisheries New Zealand notes that 9 of these areas meet the classification of an estuarine habitat under the MPA Guidelines (p.36).

150. The views of different stakeholder groups on Site D consulted on are summarised in the Forum's Recommendations Report (page 136).
151. Fisheries New Zealand considers that Site D1 will have a greater impact on recreational fishing interests than Site D2⁷⁸, but notes that the Report does not estimate the effect of Site D1 on recreational fishers.

Other users

152. A few resource consents are found towards the southern edge of the proposed marine reserve in the Pleasant River estuary area. Agencies note that a marine reserve status does not in itself affect existing resource consents located outside of the marine reserve, but it may be a relevant matter for consideration when consents are being renewed.
153. The Forum's recommendations for Site D1 specifically prohibit trout fishing, whitebaiting, and duck shooting within Stony Creek and Pleasant River estuaries.

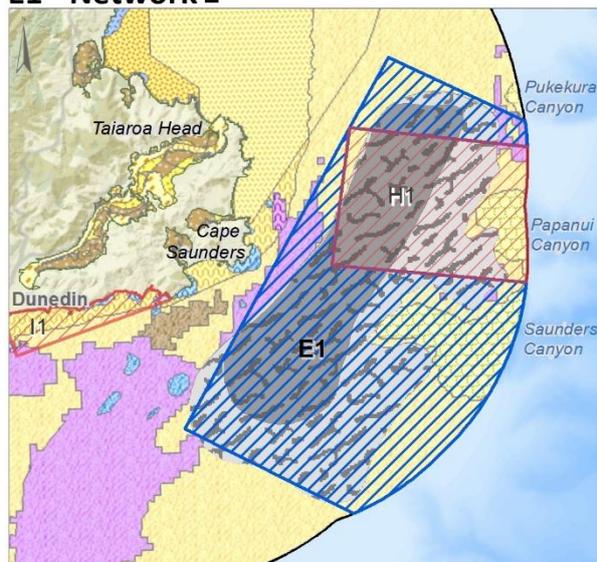
Social and economic interests

154. This area is relatively close and accessible to the University of Otago's Portobello Marine Laboratory, which currently supports a range of research and teaching of the University and other institutions. The proposals would provide the opportunity for education and research activities to be carried out on habitats and ecosystems that are not protected elsewhere in New Zealand. In particular, they would provide an opportunity to undertake research on kelp forests, an ecosystem thought to be declining globally due the effects of climate change. Further, increased research opportunities on these habitats and populations of a range of exploited species would provide valuable data to inform fisheries management.
155. Despite the limited access to some of the main attractions in this area, significant opportunities to provide access and develop land- or water-based tourism exist. Te Umu Koau (Bobby's Head) and Stony Creek provide walking access through revegetated protected areas to scenic cliffs and beaches.

⁷⁸ Based on information provided by Ministry for Primary Industries Fisheries Officers, and the Forum's Recommendations Report.

Sites E1 (Type 2 MPA) and G2 (Type 2 MPA)

E1 - Network 1



G2 - Network 2

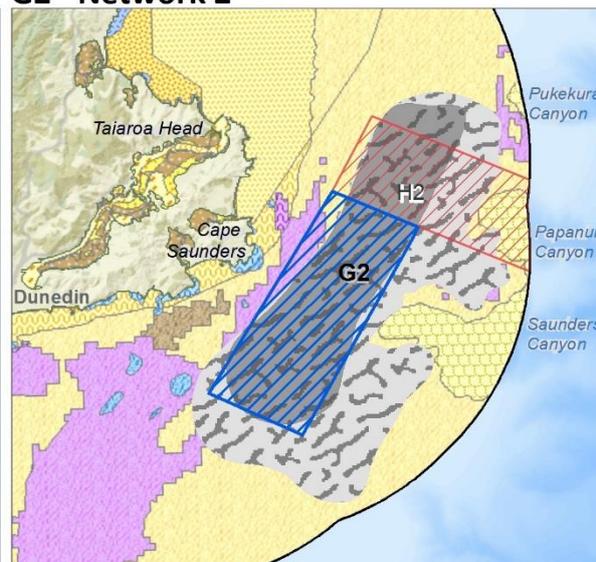


Figure 5 Sites E1 and G2. Note that Sites H1, I1 (Network 1) and H2 (Network 2) are shown for reference

Overall agency assessment

156. DOC supports the inclusion of Site E1 in the network. It acknowledges that issues have been raised regarding part of the recommendation as detailed below, but on the whole considers the site to be a necessary inclusion in the network.
157. Fisheries New Zealand supports in principle the inclusion of Site E1, however does not support the restrictions (beyond bottom-impacting methods) of set netting, purse sein-ing and mid-water trawling.
158. Site E1 would benefit the network by contributing to the representation of four habitats, including the regionally important bryozoan thickets off the Otago Peninsula; and would be required to replicate canyon and bryozoan habitats in Network 1 (in association with H1). DOC also notes that Site E1 is particularly important for adequately representing deep gravel and deep sand habitats within the region.
159. Fisheries New Zealand considers that Site E1 is likely to have greater impacts on commercial fishing than Site G2, largely due to the proposed prohibitions on set netting in Site E1. Fisheries New Zealand considers that effects to recreational fishers (of both sites) will likely be low.
160. The agencies note that the Report states that Kāi Tahu does not oppose either Network 1 or 2.

Introduction

161. The Forum's Recommendations Report presents two options for Type 2 MPAs east of Otago Peninsula. Network 1 includes Site E1, a Type 2 MPA that encloses the marine reserve Site H1 and covers most of the known and likely extent of bryozoans and Saunders Canyon. Network 2 includes Site G2, a Type 2 MPA that covers the highest density extent of bryozoans and adjoins the proposed marine reserve Site H2.
162. The Forum formally consulted on several options for a Type 2 MPA at this location.
163. Site E was formally consulted on. Stakeholder views are reflected in the Forum's Recommendations Report on page 152, and the Summary of Submissions. Following consultation, the boundaries of the proposed Site E1 reflect the changed boundaries of the

marine reserve it encloses (i.e. a marine reserve at Papanui Canyon instead of at Saunders Canyon).

164. Site G was formally consulted on. Stakeholder views are reflected in the Forum's Recommendations Report on page 163, and the Summary of Submissions. The proposed Site G2 has the same boundaries as Site G.

Table 23 Comparison of Site E1 and G2

	Site E1	Site G2
Network	Network 1	Network 2
Type	Type 2	Type 2
Size	449.8 km ²	151.8 km ²
% Forum region	5.04 %	1.70 %
Width	20.2 km	8.2 km

165. The waters east of Otago Peninsula are defined by a unique set of oceanographic conditions. Coastal, subtropical and subantarctic waters mix and upwelling of deep, nutrient-rich waters is likely to occur through various canyons found along the continental shelf. This has created the conditions to support a rich diversity of habitats and associated ecosystems.
166. Bryozoan beds represent an important biogenic habitat in this area. It supports diverse invertebrate communities (e.g. sponges, anemones, etc) and juvenile fish. It is considered that the bryozoan thickets off the peninsula meet the definition of 'outstanding, rare, distinctive or internationally or nationally important marine habitat and ecosystems' as mentioned in the MPA Policy due to the high proportion of endemic species it supports.
167. Despite little knowledge on the biodiversity of the plateau, the presence of tupa (queen scallops), and existence of the upwelling, suggest that this area is a very productive area and potentially high in biodiversity.
168. The proximity of deeper waters due to the narrow shelf and the abundance of organisms using bryozoans as habitat create feeding grounds for some larger vertebrates such as rāpoka (NZ sea lion) and hoiho (yellow-eyed penguins). Numerous other megafauna is known to frequent these waters, including various protected shark species (i.e. great white and basking sharks). Seabirds are also known to forage in these waters, including eight threatened species, three of which are classified as nationally critical. The Forum's Recommendations Report remarks that the proposed restrictions would protect the ecosystems these animals depend on and reduce the potential for bycatch, particularly in set nets.

Meeting the MPA Policy design and planning principle

Planning Principle 1: representation of habitats and ecosystems

169. The agencies consider that Site E1 includes three habitat types and Site G2 contains two habitat types in large enough extents to be considered representative (Table 24). The agencies consider the remaining habitat type in Site E1 (deep reef) is not likely to contribute to representation.
170. Both sites include bryozoan biogenic habitat at an extent that is considered to be adequately representative. The protection afforded by both Sites E1 and H1 (Network 1)

covers more than 90% of the known extent of bryozoan habitat, whereas Sites G2 and H2 (Network 2) afford protection to approximately 50% of the known extent.

Table 24 Habitats contained within the sites. Area (%) indicates the percentage of the extent of the habitat within the Forum region that lies within the site. Sites with (*) indicate that the agencies consider the habitat does not contribute to representation. An indication of what other sites contain the habitat is also provided.

Habitat type	Site E1 (Network 1)			Site G2 (Network 2)		
	Area (km ²)	%	Also in site/s	Area (km ²)	%	Also in site/s
Deep Gravel	47.3	4.3	C1, D1*, H1, I1*	25.1	2.3	H2
Deep Reef	0.4*	0.2*	D1	0	0	-
Deep Sand	349.4	7.3	D1, H1, I1, K1	126.8	2.6	H2
Deep Water Sand	52.7	72.1	H1	0	0	(H2)
Biogenic – Bryozoan habitat	276.1	64.1	H1	138	32.0	H2

Planning Principle 2: Meeting the protection standard

Table 25 Assessment of restrictions against the protection standard

Recommended Restriction	Site restriction applies to	Required to meet protection standard	Existing restrictions
Dredging	E1, G2	Yes	
Bottom trawling	E1, G2	Yes	
Danish seining	E1, G2	Yes	Danish seining is prohibited within 3NM i.e. a small part of Site E1 and G2 ⁷⁹
Midwater trawling Set netting Purse seining	E1	See paragraphs 173 and 174.	Recreational and commercial set netting are already prohibited in western part of E1 and G2. ^{80,81}
Bottom disturbance and seismic testing associated with any activity.	E1, G2	Yes. See paragraph 194 to 196.	

171. The agencies note that part of E1, and a large portion of G2, is already a voluntary closed area, in which fishers voluntarily do not bottom trawl to protect the Bryozoan thickets. Fisheries New Zealand notes that while there is usually high compliance with this voluntary trawl ban, the Ministry for Primary Industries cannot take disciplinary action in the event of non-compliance.

172. Sites E1 and G2 are recommended in the Report to prohibit mobile, bottom impacting methods. The agencies consider that these are the minimum required to meet part (a)

⁷⁹ reg 70 f the Fisheries (Commercial Fishing) Regulations 2001.

⁸⁰ Recreational set netting is prohibited between Clarence Point and Slope Point (reg 137 of the Fisheries (Amateur Fishing) Regulations 2013).

⁸¹ Commercial set netting is prohibited within 4 NM of the coast from Clarence Point to Slope Point (reg 5AAC ibid).

of the protection standard, particularly considering the presence of a biogenic habitat (bryozoan thickets).

173. Site E1 includes further restrictions: midwater trawling, set netting and purse seining. The agencies could not reach consensus as to whether these restrictions are warranted at this site.
174. The agencies note:
- There is insufficient information available to determine if the current level of fishing activity from these methods are having an adverse effect on the aquatic environment at these sites.
 - Fisheries New Zealand consider that this raises the question of whether the proposed restrictions on these methods should be imposed.
 - In the absence of information that would allow an adequate assessment of effects of fishing, DOC considers that the proposed restrictions would provide the most certainty that the protection standard would be met at these sites. A prohibition on methods that have the potential to extract large quantities of fish within the site would be consistent with Planning Principle 8, which states '*Decision making on management actions will be guided by a precautionary approach*'.
 - Should Ministers wish to pursue these restrictions, further advice on implementation options and associated risks can be provided by the agencies.
175. Agencies are aware that one of the reasons the Forum proposed a set net prohibition over the area was to reduce the potential for bycatch of seabirds and marine mammals in an area of known importance to these taxa. The agencies consider that risks of direct interactions of seabirds and marine mammals with the fishing industry can be managed through threat management plans which take a holistic⁸² approach and are better able to consider all threats across the range of these species including set nets.
176. In addition, Fisheries New Zealand is currently reviewing the use of set nets nationally with a view to avoiding, remedying and mitigating impacts on protected species⁸³.

Planning Principle 3: Provision for special relationship between Crown and Māori

177. Traditional settlements in the Cape Saunders area utilised sheltered anchorages to access the rich fishery in this region. Maintaining and enhancing marine ecosystems that contribute to the biodiversity of Te Tai o Araiteuru is an important issue for Kāi Tahu. The shelf and canyons are similarly considered in terms of customary fisheries.
178. The local rūnaka has established a mātaimai reserve in the outer Ōtākou (Otago) Harbour. However this does not define the extent of such interest. Ōtākou whānau and hapū have maintained a continuous and active role in all facets of the fishery activity, be it customary, commercial or recreational⁸⁴.
179. Agencies note that Kāi Tahu's position is at a network level, not at a site level. The Forum's Recommendations Report states that Kāi Tahu does not oppose either Network 1 or 2.

Planning Principle 5: Adverse impacts on existing users

Fisheries

180. The assessment below provided by Fisheries New Zealand (paragraphs 181-193) does not necessarily reflect the views of DOC

⁸² Note Threat Management Plans can include a wider range of legislative tools.

⁸³ The review will also consider other aspects of set net use, including their general efficiency and fish bycatch.

⁸⁴ Page 155, Forum's Recommendations Report.

181. Fisheries New Zealand considers that Site E1 would have a bigger potential impact on commercial fishers than Site G2. Fisheries New Zealand estimates that Site G2 would have the lowest potential economic impact of all sites recommended in Network 2, and that Site E1 would have a relatively low impact compared with other sites recommended in Network 1.
182. Based on 2017 values, Fisheries New Zealand estimates the export value of potentially displaced commercial catches from Site E1 to be \$NZ 77,500 (18 tonnes), and from Site G2 to be \$NZ 3,000 (0.8 tonnes) per year (Table 26).

Table 26 Estimated average annual affected catch (kg) based on the annual catches from 2007/08 fishing year to the 2016/17 fishing year, and FOB export value estimates (\$) for Site E1 and G2. Export values are based on export prices for 2017 calendar year. Percent export value is the amount of export value per unit catch (average 2007/08 – 2016/17 fishing years) that would be lost as a proportion of the total economic value of the Forum region.

Site E1			Site G2		
Affected catch (kg)	Export value (\$NZ)	% of Forum region export value ⁸⁵	Affected catch (kg)	Export value (\$NZ)	% of Forum region export value
17,764	77,445	0.2	759	2,841	0.01

183. Site E1 would have the greatest effects on mako (school shark), rig and flatfish fisheries in terms of foregone export opportunities (Table 27)⁸⁶.
184. Fisheries New Zealand estimates that the proposed set netting prohibition at Site E1 contributes approximately 80% of the potential total catch displaced by the site (13.7 tonnes)
185. Site G2 would have the greatest potential effects (in terms of catch volume) on trawling for flatfish, rough skate, and tarakihi (all volumes < 1 tonne). In terms of foregone export opportunities, Site G2 would have the greatest potential impacts on flatfish (\$NZ 990), Tarakihi (\$NZ 400) and red gurnard (\$NZ 370). Fisheries New Zealand estimates that this site would have relatively low impacts on the commercial fishing sector (Table 27).

⁸⁵ Based on the total \$NZ 34.3 million export value for the Forum region based on 2017 FOB export prices.

⁸⁶ Estimated volume of flatfish potentially displaced from this site is < 1 tonne.

Table 27 Estimated average annual affected catch (kg) based on the annual catches from 2007/08 fishing year to the 2016/17 fishing year (and on information in the CatchMapper database). FOB export value estimates (\$NZ) for Site E1 are based on export prices for 2017 calendar year (rounded to the nearest \$ per 100). All species with total affected catch <1 tonne were summed under the heading 'Other'. A total cannot be estimated for % QMA landings affected because each species is in a different QMA. Methods that would be affected by fishing method prohibitions (as recommended by the Forum) are underlined.

Fishstock	<u>Trawl</u>	<u>Bottom longline /dahn line</u>	<u>Net</u>	<u>Pot</u>	<u>Jig</u>	<u>Hand line /troll</u>	Total affected catch (kg)	% QMA landings effected	Export value (\$NZ)
School shark	7	s9(2)(b)(ii) & s9(2)(ba)(i)	6,149	1	s9(2)(b)(ii) & s9(2)(ba)(i)		6,156	1.68	31,500
Rig	9		2,196	0			2,206	0.48	14,900
Spiny dogfish	94		1,846	1			1,940	0.11	1,400
Other	3,693		3,768	13,733			7,463	-	29,700
Total	<u>3,803</u>		<u>13,962</u>	<u>13,735</u>			<u>17,764</u>		<u>77,400</u>

186. Fisheries New Zealand considers that there is a low risk of localised depletion arising in other areas as a result of the establishment of Site E1. This could result from the displacement of finfish fishing effort (i.e. red gurnard, school shark, and rig and other mobile fishstocks affected) to other areas. However, mobile species are able to range outside of the proposed site where they are available to fishers.
187. Fisheries New Zealand considers that most of these species (by volume) are caught by bottom trawling over sand habitat; this type of habitat is generally widespread throughout the Forum region.
188. Fisheries New Zealand notes that the commercial fishing effort displaced from Site G2 is likely to have a relatively low impact on adjacent areas (in terms of localised depletion) due to the low amount of catch taken from this site.
189. Fisheries New Zealand estimates that 10 and four commercial fishers each year respectively will likely be affected by the proposed restrictions in Sites E1 and G2 (Table 28).

Table 28 Estimated annual number of commercial fishers by method and total in Sites E1 and G2. Figures are based on an average of estimates for of the fishing years from 2014-15 to 2016-17. Some fishers use more than one method, so the total fishers may be less than the sum of fishers using the various methods. Values with an asterisk are methods not impacted by the respective proposal.

Method	Number of fishers	
	Site E1	Site G2
Jig	1*	0*
Bottom longline/ Dahn line	1*	0*
Handline/Trolling	1*	1*
Net ⁸⁷	3	2*
Pot	19*	11*
Trawl ⁸⁸	7	4
Total count of unique fishers	27	15

190. Fisheries New Zealand considers that both Site E1 and G2 may impact the future utilisation of the commercial queen scallop fishery. Both sites encompass an area in which queen scallops have historically been fished for. Fisheries New Zealand notes that the TACC (of 380 tonnes) has not been fully caught since the species was brought into the QMS (in 2002), and that reported commercial takes have fluctuated annually (between 1.7 tonnes – 223 tonnes) since then.⁸⁹ Fisheries New Zealand considers that Site G2 would have a lower potential impact on the future utilisation of the queen scallop fishery than Site E1. Fisheries New Zealand notes that the ongoing closure of the SCA7 fishery (Nelson/Tasman) may mean commercial interest in these scallop beds may increase.
191. The views of different stakeholder groups on Site E consulted on are summarised in the Forum's Recommendations Report (page 152).
192. The views of different stakeholder groups on Site G consulted on are summarised in the Forum's Recommendations Report (page 163).

⁸⁷ Includes set net and drift net.

⁸⁸ Includes midwater trawl and bottom trawl (mostly bottom trawl).

⁸⁹ This is likely due to the high levels of naturally occurring cadmium in the scallops and natural bio-fouling of the shells, which have limited the market interest in the product.

193. Fisheries New Zealand notes that the Forum's Recommendations Report states the fishery and associated ecosystems of the Cape Saunders area are of high importance to Kāi Tahu, local rūnaka, and their customary, commercial and recreational fishers. Based on the best available information,⁹⁰ Fisheries New Zealand considers that Sites E1 and G2 will likely have low potential impacts on recreational fishers.

Other users

194. Further to the restrictions to fisheries for Sites E1 and G2, the Forum also recommends a prohibition to any 'bottom disturbance and seismic testing associated with any activity' at these sites.
195. The prohibition on bottom disturbance and seismic testing recommended by the Forum could be implemented under special legislation. Further analysis is required as to the extent to which this could be done under existing legislation.
196. Sites E1 has a minimal overlap on eastern edge with a mineral exploration permit in the Canterbury Basin.

Social and economic interests

197. Ōtepoti (Dunedin)'s international reputation for nature tourism would likely be bolstered as the sea off the Otago Peninsula is a hotspot for threatened marine fauna.
198. Most visitor trips would originate from Ōtākou (Otago) Harbour and access would be weather dependent.
199. Benthic ecosystems on the shelf and bryozoan beds are of high value scientifically and have been the subject of scientific study for more than 50 years. The closeness and accessibility of different water masses is likely unique in the world and provides significant opportunities for research on pelagic systems, pelagic benthic coupling, marine birds/mammals and climate change.

⁹⁰ Information from Ministry for Primary Industries' compliance staff, amateur charter vessel (ACV) data, Summary of Submissions, and National Recreational Fishing Survey data.

Sites H1 (Marine Reserve) and H2 (Marine Reserve)

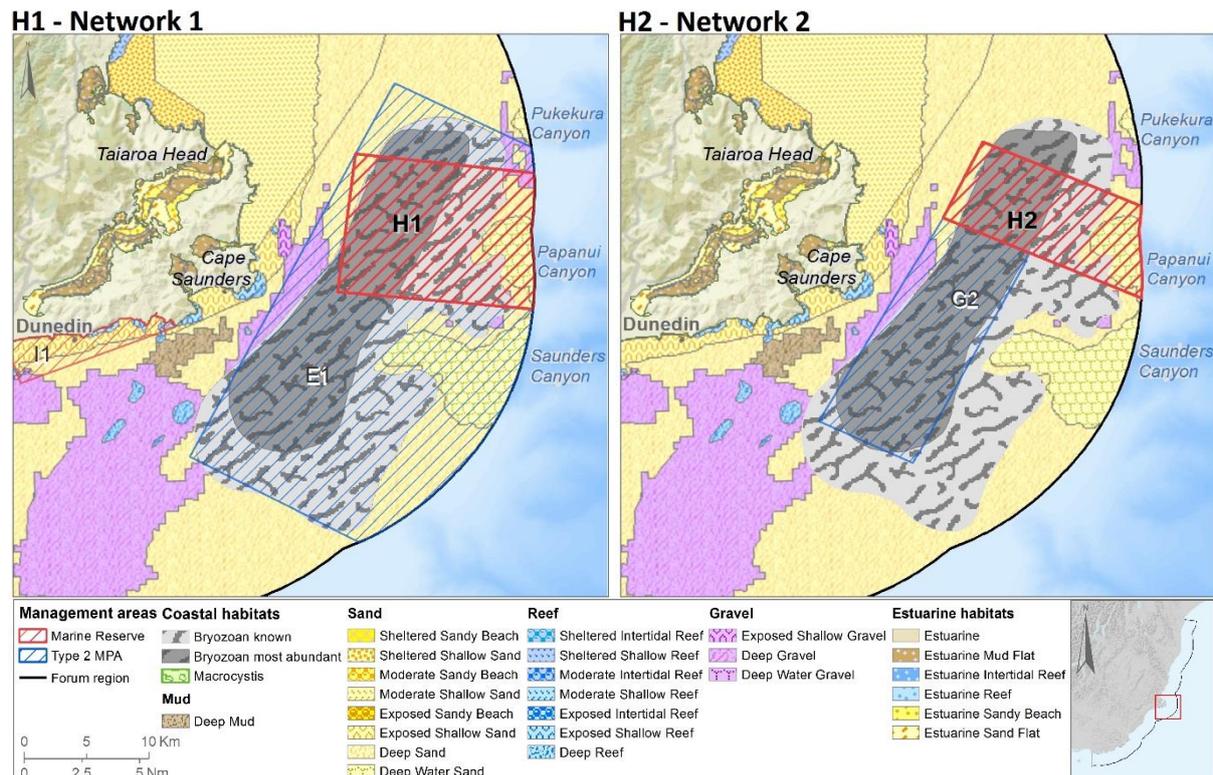


Figure 6 Sites H1 and H2. Note that Sites E1 and I1 (Network 1) and G2 (Network 2) are shown for reference.

Overall agency assessment

200. The agencies support Site H1 being included as recommended in Network 1. The agencies consider that Site H1 better contributes towards representation of habitats than Site H2.
201. H1 is required to replicate canyon and bryozoan habitat (in association with Site E1). DOC also notes that Site H1 is particularly important for adequately representing deep gravel and deep sand habitats within the region.
202. Fisheries New Zealand considers that Site H1 is likely to have greater adverse impacts to the fishing sector than Site H2.
203. Agencies note the Forum's Recommendations Report states that Kāi Tahu does not oppose either Network 1 or 2.

Introduction

204. The Forum's Recommendations Report presents two options for a marine reserve over Papanui Canyon, east of Otago Peninsula.
205. The Forum formally consulted on several options for a marine reserve over the canyons east of Otago Peninsula. Stakeholder views are reflected in the Forum's Recommendations Report on pages 152 and 163, and the Summary of Submissions.
206. The Forum ultimately pursued the protection of Papanui Canyon in the interest of achieving consensus for a marine reserve in this area.
207. Site H1 (as recommended by the Forum) was not formally consulted on. The boundaries of H1 were however based on Site H but altered to include habitats that would otherwise be underrepresented in Network 1 (i.e. canyon plateau).

208. In Network 1 a Type 2 MPA (Site E1) largely encases H1. In Network 2 a Type 2 MPA (Site G2) is adjacent to H2. Both Type 2 MPAs (E1 and G2) are analysed in the next section (page 31).

Table 29 Comparison of H1 and H2

	Site H1	Site H2
Network	Network 1	Network 2
Type	Marine reserve	Marine reserve
Size	167.4 km ²	106.3 km ²
% Forum region	1.9 %	1.2 %
Width	11.3 km	6.9 km

209. The waters east of Otago Peninsula are defined by a unique set of oceanographic conditions. Coastal, subtropical and subantarctic waters mix and upwelling of deep, nutrient-rich waters is likely to occur through various canyons found along the continental shelf. This has created the conditions to support a rich diversity of habitats and associated ecosystems.
210. Bryozoan beds represent an important biogenic habitat in this area. It supports diverse invertebrate communities (e.g. sponges, anemones, etc) and juvenile fish. It is considered that the bryozoan thickets off the peninsula meet the definition of 'outstanding, rare, distinctive or internationally or nationally important marine habitat and ecosystems' as mentioned in the MPA Policy due to the high proportion of endemic species it supports.
211. Despite little knowledge on the biodiversity of the plateau, the presence of tupa (queen scallops) and existence of the upwelling suggest that this area is a very productive area and potentially high in biodiversity.
212. The proximity of deeper waters due to the narrow shelf and the abundance of organisms using bryozoans as habitat create feeding grounds for some larger vertebrates such as rāpoka (NZ sea lion) and hoiho (yellow-eyed penguins). Numerous other megafauna is known to frequent these waters, including various protected shark species (i.e. great white and basking sharks) and marine mammal such as parāoa (sperm whales *Physeter macrocephalus*) and iheihe (Shepherd's beaked whale *Tasmacetus shepherdi*), among other. Seabirds are also known to forage in these waters, including eight threatened species, three of which are classified as nationally critical. The Forum's Recommendations Report remarks that the proposed restrictions would protect the ecosystems these animals depend on and reduce the potential for bycatch, particularly in set nets.

Meeting the MPA Policy design and planning principle

Planning Principle 1: representation of habitats and ecosystems

213. The agencies consider that both Sites H1 and H2 contain three habitat types in large enough extents to be considered representative. The agencies consider however that Site H1 likely provides protection for a wider range of biodiversity than Site H2, as only Site H1 includes the plateau area between Papanui and Saunders Canyon.
214. Both sites include bryozoan biogenic habitat at an extent that is considered to be adequately representative. The protection afforded by Site H1 and H2 include 29.9% and 17.4% of the mapped bryozoan habitat respectively.

Table 30 Habitats contained within the sites. Area (%) indicates the percentage of the extent of the habitat within the Forum region that lies within the site. Sites with (*) indicate that the agencies consider the habitat does not contribute to representation. An indication of what other sites contain the habitat is also provided.

Habitat type	Site H1			Site H2		
	Area (km ²)	Area (%)	Also in site/s	Area (km ²)	Area (%)	Also in site/s
Deep Gravel	20.9	1.9	C1, D1*, E1, I1*	5.2	0.5	G2
Deep Sand	128.3	2.7	D1, E1, K1,	83	1.7	G2
Deep Water Sand	18.2	25	E1	18.1	24.7	-
Biogenic – bryozoan habitat	129	29.9	E1	75	17.4	G2

Planning Principle 2: Meeting the protection standard

215. The agencies consider that as a marine reserve Sites H1 and H2 meet the protection standard as defined in the MPA Guidelines.⁹¹

Planning Principle 3: Provision for special relationship between Crown and Māori

216. Traditional settlements in the Cape Saunders area utilised sheltered anchorages to access the rich fishery in this region. Maintaining and enhancing marine ecosystems that contribute to the biodiversity of Te Tai o Araiteuru is an important issue for Kāi Tahu. The shelf and canyons are similarly considered in terms of customary fisheries.

217. The local rūnaka has established a mātaītai reserve in the outer Ōtākou (Otago) Harbour. However, this does not define the extent of such interest. Ōtākou whānau and hapū have maintained a continuous and active role in all facets of the fishery activity, be it customary, commercial or recreational.⁹²

218. Agencies note that Kāi Tahu's position is at a network level, not at a site level. The Forum's Recommendations Report states that Kāi Tahu does not oppose either Network 1 or 2.

Planning Principle 5: Adverse impacts on existing users

Fisheries

219. The assessment below provided by Fisheries New Zealand (paragraphs 220-231) does not necessarily reflect the views of DOC.

220. Fisheries New Zealand considers that Site H1 is likely to have a greater potential impact on the commercial fishing sector than Site H2.

221. Based on 2017 values, Fisheries New Zealand estimates the export value of potentially displaced commercial catches from Site H1 to be \$NZ122,000 (21 tonnes), and from Site H2 to be \$NZ 70,000 (12 tonnes) per year (Table 31).

⁹¹ MPA Policy page 18 and MPA Guidelines page 10.

⁹² Page 155, Forum's Recommendations Report.

Table 31 Estimated average annual affected catch (kg) based on the annual catches from 2007/08 fishing year to the 2016/17 fishing year, and FOB export value estimates (\$NZ) for Site H1 and H2. Export values are based on export prices for 2017 calendar year

Site H1			Site H2		
Affected catch (kg)	Export value (\$NZ)	% of export value	Affected catch (kg)	Export value (\$NZ)	% of export value
20,959	122,241	0.4	11,833	70,032	0.2

222. The biggest potential impacts of Site H1 would be on rawaru (blue cod), arrow squid, and rig fisheries in terms of foregone export opportunities (
223. Table 32).
224. Fisheries New Zealand considers that Site H2 would likely have a lower impact on commercial fishers than Site H1. The potential economic impact of Site H2 on the three most affected fisheries (blue cod, arrow squid, and ling) would be approximately 40% that of Site H1 in terms of commercial catch (kg) and foregone export opportunities (\$NZ) that would be displaced.
225. Fisheries New Zealand considers that there may be a risk of localised depletion arising in other areas as a result of the establishment of Site H1 and H2, but that this risk is lower for H2 than H1. This could result from the displacement of fishing effort targeting rawaru (blue cod) to other areas. This species demonstrates high site fidelity, therefore while some may range in and out of the proposed reserve, concerns regarding utilisation or localised depletion of major stocks in the adjacent areas may arise.
226. Fisheries New Zealand considers that there would be a low risk of localised depletion arising in other areas as a result of the establishment of Site H1 and H2. However, mobile species are able to range outside of the proposed sites where they are available to fishers.

Table 32 Estimated average annual affected catch (kg) based on the annual catches from 2007/08 fishing year to the 2016/17 fishing year (and on information in the CatchMapper database). FOB export value estimates (\$NZ) for Site H1 are based on export prices for 2017 calendar year (rounded to the nearest \$ per 100). All species with total affected catch <1 tonne were summed under the heading 'Other'. A total cannot be estimated for % QMA landings affected because each species is in a different QMA. Methods that would be affected by fishing method prohibitions (as recommended by the Forum) are underlined. The three most affected fisheries (in terms of foregone export opportunities – export value (\$NZ)) are asterisked.

Fishstock	<u>Pot</u>	<u>Trawl</u>	<u>Bottom long-line /dahn line</u>	<u>Net</u>	<u>Jig</u>	Total affected catch (kg)	% QMA landings effected	Export value (\$NZ)
Arrow squid	0	13	s9(2)(b)(ii) & s9(2)(ba)(i)	0	s9(2)(b)(ii) & s9(2)(ba)(i)	6,352	0.72	27,200*
Blue cod	3,141	90		40		3,273	1.94	49,100*
Ling	890	251		188		1,860	0.12	7,000
School shark	0	12		1,834		1,847	0.5	9,400
Rig	0	4		1,669		1,673	0.36	11,300*
Spiny dog-fish	0	88		1,317		1,410	0.08	1,000
Other	1,091	1,820		1,440		4,547	-	17,200
Total	<u>5,123</u>	<u>2,278</u>		<u>6,488</u>		<u>20,959</u>	-	<u>1,222,00</u>

Table 33. Estimated average annual affected catch (kg) based on the annual catches from 2007/08 fishing year to the 2016/17 fishing year (and on information in the CatchMapper database). FOB export value estimates (\$NZ) for Site H2 are based on export prices for 2017 calendar year (rounded to the nearest \$ per 100). All species with total affected catch <1 tonne were summed under the heading 'Other'. A total cannot be estimated for % QMA landings affected because each species is in a different QMA. Methods that would be affected by fishing method prohibitions (as recommended by the Forum) are underlined.

Fishstock	<u>Jig</u>	<u>Pot</u>	<u>Net</u>	<u>Trawl</u>	<u>Bottom longline/ dahn line</u>	Total affected catch (kg)	% QMA landings effected	Export value (\$NZ)
Arrow squid	s9(2)(b)(ii) & s9(2)(ba)(i)	0	0	7	s9(2)(b)(ii) & s9(2)(ba)(i)	3,900	0.44	16,700
Blue cod		1,848	19	68		1,936	1.15	29,000
Ling		663	46	183		1,122	0.07	4,200
Other		665	2,771	1,349		4,877	-	20,100
Total		<u>3,179</u>	<u>2,835</u>	<u>1,608</u>		<u>11,833</u>	-	<u>70,000</u>

227. Fisheries New Zealand estimates Sites H1 and H2 are used by around 16 and 15 commercial fishers each year, respectively⁹³ (Table 34).

Table 34 Estimated annual number of commercial fishers by method and total in Sites H1 and H2. Figures are based on an average of estimates for of the fishing years from 2014-15 to 2016-17. Some fishers use more than one method, so the total fishers may be less than the sum of fishers using the various methods. Values with an asterisk are methods not impacted by the respective proposal.

Method	Number of fishers	
	Site H1	Site H2
Jig	1	1
Handline/Trolling	1	1
Net ³	3	3
Pot	11	11
Trawl ⁴	3	3
Total count of unique fishers	16	15

228. Fisheries New Zealand considers that both Site H1 and H2 may impact the future utilisation of the commercial queen scallop fishery. Both sites encompass an area in which queen scallops have historically been fished for. Fisheries New Zealand notes that the TACC (of 380 tonnes) has not been fully caught since the species was brought into the QMS (in 2002), and that reported commercial takes have fluctuated annually (between 1.7 tonnes – 223 tonnes) since then.⁹⁴ Fisheries New Zealand considers that Site H2 would have a lower potential impact on the future utilisation of the queen scallop fishery than Site H1. Fisheries New Zealand notes that the ongoing closure of the SCA7 fishery (Nelson/Tasman) may mean commercial interest in these scallop beds may increase.
229. The views of different stakeholder groups on Site H consulted on are summarised in the Forum's Recommendations Report (pages 152 and 163).
230. Fisheries New Zealand notes that the Forum's Recommendations Report states the fishery and associated ecosystems of the Cape Saunders area are of high importance to Kāi Tahu, local rūnaka, and their customary, commercial and recreational fishers.
231. Based on the best available information,⁹⁵ Fisheries New Zealand considers that Sites H1 and H2 will have some impact on recreational fishers, but that this will likely be less than the alternative Type 1 MPA the Forum considered for Saunders Canyon (Site F in the Consultation Document).

Other users

232. Sites H1 and H2 have a minimal overlap with an active petroleum exploration permit in the Canterbury Basin which expires in 2021. Agencies can provide further advice on how the permit would be affected by the establishment of a marine reserve in this location.

⁹³ Figures are based on the average of the numbers of fishers estimated to have fished in each site within the last three fishing years; 2013-14 to 2016-17.

⁹⁴ This is likely due to the high levels of naturally occurring cadmium in the scallops and natural bio-fouling of the shells, which have limited the market interest in the product.

⁹⁵ Information from Ministry for Primary Industries' compliance staff, amateur charter vessel (ACV) data, Summary of Submissions, the Forum's Recommendations Report and National Recreational Fishing Survey data.

Social and economic interests

233. Ōtepoti (Dunedin)'s international reputation for nature tourism would likely be boosted as the sea off the Otago Peninsula is a hotspot for threatened marine fauna.
234. Most visitor trips would originate from Ōtākou (Otago) Harbour and access would be weather dependent.
235. Benthic ecosystems on the shelf and bryozoan beds are of high value scientifically and have been the subject of scientific study for more than 50 years. The closeness and accessibility of different water masses is likely unique in the world and provides significant opportunities for research on pelagic systems, pelagic benthic coupling, marine birds/mammals and climate change.

Site I1 (Marine Reserve)

I1 - Network 1

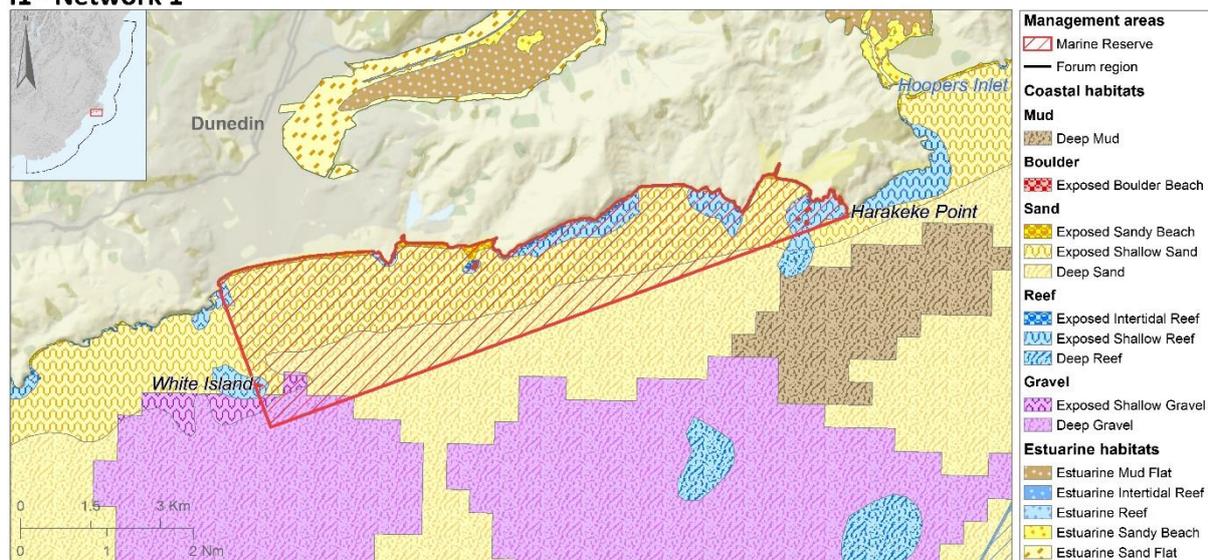


Figure 8 Site I1

Overall agency assessment

236. DOC supports the inclusion of Site I1 in the network and considers the site to be a necessary inclusion in the network.
237. Fisheries New Zealand supports Site I1 in principle, but has concerns regarding the potential for impacts on recreational fishers.
238. Site I1 would benefit the network by contributing to the representation of six habitats; two of which are required for representation and/or replication in the network. DOC also notes that Site I1 is particularly important for adequately representing exposed shallow sand and exposed rocky reef within the network. At Ōtepoti's (Dunedin)'s doorstep, Site I1 would be the most prominent MPA within the network. DOC considers that a high level of protection is required to adequately allow for the maintenance and recovery of rocky reef ecosystems.
239. Fisheries New Zealand considers that Site I1 will likely have a low impact on commercial fishers.
240. Agencies note the Forum's Recommendations Report states that Te Rūnanga o Ngāi Tahu supports Site I1 in principle.

Introduction

241. The Forum's Recommendations Report proposes a marine reserve along Ōtepoti (Dunedin)'s and the Otago Peninsula's southern coast between Harakeke Point and Ponuihine (White Island).
242. Site I1 is the same as Site I in the Consultation Document. Agencies therefore consider submissions are likely to be broadly representative of stakeholder views on Site I1. Stakeholder views are reflected in the Forum's Recommendations Report on page 172 and the Summary of Submissions.
243. Site I as consulted on included an extension that encompassed Tow Rock. Following consultation feedback the Tow Rock extension was excluded to minimise effects on existing users.

Table 35 Site I1

	Site I1
Network	Network 1
Type	Marine reserve
Size	28.8 km ²
% Forum region	0.3%
Width	3.4 km
Coastline length	19.5 km

244. The coastal waters south of Ōtepoti (Dunedin) display a variety of habitat types in close proximity. Rocky reefs are dominated by forests of rimurapa (bull kelp) *Durvillaea* spp. In the shallows and a diverse understorey of seaweeds below. A range of fish such as moki, rawaru (blue cod), kohikohi (trumpeter) and matahoe (butterfish), as well as kōura papatea (rock lobster) and pāua are also found on reefs.
245. Several conservation areas are adjacent to Site 1, including Boulder beach, Ōrau (Sandfly Bay), Tomahawk Lagoon and Ponuahine (White Island).
246. This area is significant for seabirds, being especially noted for its hoiho (yellow-eyed penguin) population, and is also a rāpoka (NZ sea lion) haul-out area. Other species commonly seen in the area include seals, kororā (little penguins), red-billed gulls and fairy prions amongst other. Kewa (southern right whale) are known to pass through the area and a titi (sooty shearwater) colony is being restored nearby.

Planning Principle 1: representation of habitats and ecosystems

247. In terms of MPA habitat classification, agencies consider that Site I1 includes six habitat types in large enough extents to be representative. The habitats contributed to the network by this site are shown in Table 36.
248. Agencies consider that two habitats present at Site I (exposed shallow gravel and deep gravel) are not present in large enough extents to contribute to representation.
249. Agencies note that exposed boulder beach is a rare habitat type within the region, and is only present in two locations, one of which is included in Site I. This is the only site that includes this habitat.

Table 36 Habitats contained within the sites. Area (%) indicates the percentage of the extent of the habitat within the Forum region that lies within the site. Sites with (*) indicate that the agencies consider the habitat does not contribute to representation. An indication of what other sites contain the habitat is also provided.

Habitats	Site I1 (Network 1)		
	Area (km ²)	Area (%)	Also in sites:
Deep gravel	0.7*	0.1*	C1, D1*, E1, H1
Deep sand	7.1	0.1	D1, E1, H1, K1
Exposed boulder beach	0.02	80.3	-
Exposed intertidal reef	0.4	6.2	K1, M1
Exposed sandy beach	0.6	9.0	M1
Exposed shallow gravel	0.2*	3.5*	C1*
Exposed shallow reef	2.4	2.7	K1, M1
Exposed shallow sand	17.2	3.1	K1, M1*

Planning Principle 2: Meeting the protection standard

250. The agencies consider that as a marine reserve Site I1 meet the protection standard as defined in the MPA Guidelines.

Planning Principle 3: Provision for special relationship between Crown and Māori

251. The coastal area is rich in traditional association.

252. Site I1 falls within the rohe of Te Rūnaka o Ōtākou and is part of their traditional food gathering area. In 2016, the Ōtākou Mātaitai Reserve was established in outer Ōtākou (Otago) Harbour, which recognises and provides for part of their traditional food gathering areas.

253. Te Rūnaka o Ōtākou does not oppose Site I1 on the basis that the impacts on customary and commercial fishing are manageable.

254. As noted, Te Rūnanga o Ngāi Tahu supports Site I1 in principle.⁹⁶

Planning Principle 5: Adverse impacts on existing users**Fisheries**

255. The assessment below provided by Fisheries New Zealand (paragraphs 256-268) does not necessarily reflect the views of DOC.

256. Fisheries New Zealand notes that Site I1 would likely have a low impact (in terms of foregone export opportunities) on the commercial sector.

257. Fisheries New Zealand considers that Site I1 is likely to have a relatively high impact on recreational fishing interests.

258. Based on 2017 values, Fisheries New Zealand estimates the export value of potentially displaced commercial catches from Site I1 to be \$NZ 27,300 (2.6 tonnes) per year (Table 37).

Table 37 Estimated average annual affected catch (kg) based on the annual catches from 2007/08 fishing year to the 2016/17 fishing year, and FOB export value estimates (\$NZ) for Site I1. Export values are based on export prices for 2017 calendar year.

Site I1		
Affected catch (kg)	Export value (\$NZ)	% of Forum region export value
2,584	27,303	0.1

259. The biggest potential commercial impacts of Site I1 are estimated to be on kōura papatea (rock lobster) (\$NZ 7,500; 72kg), rawaru (blue cod) (\$NZ 10,000; 665kg), and Hapuku/bass (\$NZ 2,700, 243kg) (in terms of foregone economic opportunities). Fisheries New Zealand notes that the estimated average annual commercial catch for each of these methods by fishery is less than 1 tonne, so the impact to the commercial fishing sector of this site would likely be relatively low.

260. Fisheries New Zealand notes that the area is rotationally used for papaka (paddle crab) potting. Because of the way the papaka (paddle crab) potting is reported, Fisheries New Zealand does not have high confidence in its estimates of the potential displacement of this fishery that may be caused by a marine reserve at Site I1.

⁹⁶ Page 174, Forum's Recommendations Report.

261. Fisheries New Zealand considers that establishing Site I1 may pose a low risk of localised depletion, in terms of displaced commercial fishing effort, due to the relatively small amounts of catch estimated to be taken from this site.
262. Fisheries New Zealand estimates Site I1 is used by around 18 commercial fishers each year (Table 38).⁹⁷

Table 38 Estimated annual number of commercial fishers by method and total in Site I1. Figures are based on an average of estimates for of the fishing years from 2014-15 to 2016-17. Some fishers use more than one method, so the total fishers may be less than the sum of fishers using the various methods.

Method	Number of fishers
	Site I1
Bottom longline/Dahn line	2
Handline/Trolling	1
Pot	14
Trawl	5
Total count of unique fishers	18

263. Overall, Fisheries New Zealand considers that the impacts on commercial fishing are likely to be low due to the commercial fishing prohibitions that are already in place at the majority of this site (See pages 94-99 of the Forum's Recommendations Report).
264. Fisheries New Zealand notes that the area of Site I1 is an area valued by recreational fishers; particularly for pāua and rawaru (blue cod) fishing. Based on the best available information⁹⁸, Fisheries New Zealand considers that this marine reserve is likely to be opposed by recreational fishing interests.
265. Fisheries New Zealand considers that there may be a localised depletion risk associated with establishing Site I1, in terms of recreational catch displaced. This could result from the displacement of fishing effort targeting species such as pāua and rawaru (blue cod) to other areas. These species demonstrate high site fidelity, therefore while some may range in and out of the proposed reserve, concerns regarding utilisation or sustainability of major stocks in the adjacent areas may arise⁹⁹.
266. Fisheries New Zealand notes that the Forum's Recommendations Report states that two of the most popular fishing areas close to Ōtepoti (Dunedin) have been excluded from this site; the reefs to the west of Ponuahine (White Island) and Tow Rock.
267. DOC notes the Forum considered the protection tools required to protect the habitats contained within this site, in particular rocky reef. DOC supports the Forum and considers the recommended marine reserve tool is appropriate to protect these habitats.
268. The views of different stakeholder groups on Site I consulted on are summarised in the Forum's Recommendations Report (page 172).

Other users

⁹⁷ Based on average annual numbers of fishers estimated to have used Site I1 in the last three fishing years (2014-15 to 2016-17). Some fishers use more than one gear type.

⁹⁸ Information from Ministry for Primary Industries' compliance staff, amateur charter vessel (ACV) data, Summary of Submissions, and National Recreational Fishing Survey data.

⁹⁹ Fisheries New Zealand cannot estimate the volume of catch taken annually from this site by recreational fishers as recreational fishers are not required to report catch.

269. Several consented activities are located on the western part of I1 close to Ōtepoti (Dunedin) including sewage and stormwater discharges on land and offshore. Agencies note that a marine reserve status does not in itself affect existing resource consents but it may be a relevant matter for consideration when consents are being renewed
270. Several consented activities are located on the western part of I1 close to Dunedin including sewage and stormwater discharges on land and offshore. Agencies note that a marine reserve status does not in itself affect existing resource consents located outside of the marine reserve, but it may be a relevant matter for consideration when consents are being renewed.

Social and economic interests

271. The Forum considered that this marine reserve could become a flagship marine reserve for the entire coast. Being on the doorstep of Ōtepoti (Dunedin), a marine reserve along 18km its shoreline would increase the city's profile by protecting the foraging habitats of wildlife the city is known for and boost the city's profile as a tourism destination with its economic performance. The presence of a marine reserve and good access (by foot, car and boat) to the site would provide direct tourism benefits for a variety of activities such as visiting, snorkelling and diving as well as marine education and interpretation. Ōrau (Sandfly Bay), towards the eastern side of the recommended marine reserve is already a high-use tourism site for viewing hoiho (yellow-eyed penguins) and rāpoka (NZ sea lions) and it is thought that a marine reserve could complement this.
272. In close proximity to University of Otago and its Portobello Marine Laboratory, this area would provide opportunity for scientific research to be undertaken on a good example of wave-exposed shoreline and the response of shallow subtidal and intertidal habitats to removal of fishing.

Site K1 (Marine Reserve)

K1 - Network 1



Figure 9 Site K1

Overall agency assessment

273. The agencies support the inclusion of Site K1 in the network. They acknowledge that issues remain regarding the size of the site, however based on best available information consider the site to be a valuable inclusion in the network.
274. Site K1 would benefit the network by increasing representation for four habitats, but in particular through the addition of an offshore island (a unique feature of the network).
275. Fisheries New Zealand considers that this site will likely have a relatively low impact on commercial fishing, but may potentially incur a high impact on recreational fishing since it is known popular recreational fishing location
276. Fisheries New Zealand notes the report states there is conflicting information regarding impacts (positive or negative) on recreational fishers from submissions, and cannot definitively state the scale of impact on recreational fishers/users of this site.
277. Agencies note the Forum's Recommendations Report states that Te Rūnanga o Ngāi Tahu supports Site K1 in principle.

Introduction

278. The Forum's Recommendations Report presents a marine reserve surrounding Okaihe (Green Island) located off the coast of Ōtepoti (Dunedin) as part of Network 1. The Forum proposes Site K1 due to its historical ecological importance, and a perceived decline in the diversity and abundance of species over the last few decades.
279. The Forum formally consulted on a marine reserve in this location (Site K). Stakeholder views are reflected in the Forum's Recommendations Report (page 179) and the Summary of Submissions.

Table 39 Site K1

	Site K1
Network	Network 1
Type	Marine reserve
Size	5 km ²
% Forum region	0.1 %
Width	2.1 km
Coastline length	0.7 km

280. Green Island Nature Reserve is important ecologically, and historically supported a diverse array of marine life. The rocky reefs surrounding the area include forests of ri-murapa (bull kelp) *Durvillaea* spp. With an understory of seaweed species below. They provide habitat for many reef fish species, such as moki, kohikohi (trumpeter) and matahoe (butterfish), as well as kōura papatea (rock lobster). The area is frequently visited by seals, rāpoka (NZ sea lions) and mako taniwha (great white sharks). Anecdotally, hapuku (grouper) used to be commonly found in these reefs but are encountered less often nowadays.
281. This nature reserve is one of the few predator-free offshore islands in the south-east region. It is home to a number of seabird species such as titi (sooty shearwater), kororā (little penguins), red-billed gulls, hoiho (yellow-eyed penguin) amongst other. The island is further home to a large spoonbill population.
282. Okaihae is a very different habitat from Ponuihine (White Island) in Site I and would represent a biodiversity that is not represented elsewhere.
283. The Forum considered that the marine environment in this area has undergone a considerable decline in the diversity and abundance of species over the last few decades, and would therefore respond well to protection as a no-take area. The Forum considered the area unique and outstanding and the best example of an offshore island in the Forum region.

Meeting the MPA Policy design and planning principle

Planning Principle 1: Representation of habitats and ecosystems

284. In terms of habitat protection, the agencies consider that Site K1 includes four habitat types (i.e. exposed inter tidal reef, shallow reef and shallow sand; and deep sand) that contribute in some way to the network's representation of these habitat types (Table 40). However, due to the small area and extent of these habitats, they are unlikely to fully represent the habitat types across the region.
285. The agencies note that there are concerns regarding the size of the site (2.2km width) and uncertainty as to how well the site will contribute to representation. However, based on the best available information regarding the extent of the reef habitat, the agencies consider the site will contribute to representation of the habitat contained. To address this issue further would require a dedicated survey to determine the boundaries of the habitats in relation to the boundaries of the site.
286. While K1 is limited in its contribution to representation of reef habitats (0.2% and 0.4% for exposed shallow reef and exposed intertidal reef respectively), it allows for the inclusion of a unique area of the coast to be included. As an offshore island (a rare physical feature of the coast – the only other island significantly separated from the mainland is White Island), it is considered likely to have biodiversity features that would not be fully represented at any other site in the network.

Table 40 Habitats contained within the sites. Area (%) indicates the percentage of the extent of the habitat within the Forum region that lies within the site. Sites with (*) indicate that the agencies consider the habitat does not contribute to representation. An indication of what other sites contain the habitat is also provided.

Habitats	Site K1		
	Area (km ²)	Area (%)	Also in sites:
Deep sand	1.6	0.0	D1, E1, H1, I1
Exposed intertidal reef	0.03	0.4	I1, M1
Exposed shallow reef	0.2	0.2	I1, M1
Exposed shallow sand	3.2	0.6	I1, M1*

Planning Principle 2: Meeting the protection standard

287. The agencies consider that as a marine reserve Site K1 meets the protection standard as defined in the MPA Guidelines.¹⁰⁰

Planning Principle 3: Provision for special relationship between Crown and Māori

288. Okaihe (Green Island) traditionally supported customary fishing and birding activity and was part of the mahika kai network.
289. Ōtākou whānau and hapū have maintained a continuous and active role in all facets of fishery activity, including customary, commercial and recreational, within their rohe moana.
290. Kāi Tahu commercial fishers oppose Site K1 due to the impact the proposal has on that part of their commercial fishing grounds.
291. Te Rūnanga o Ōtākou does not oppose Site K1 due to the manageable impact on the customary commercial fishery.
292. Agencies note the Forum's Recommendations Report states that Te Rūnanga o Ngāi Tahu supports Site K1 in principle.¹⁰¹

Planning Principle 5: Adverse impacts on existing users

Fisheries

293. The assessment below provided by Fisheries New Zealand (paragraphs 294-302) does not necessarily reflect the views of DOC.
294. Fisheries New Zealand considers that Site K1 will have a relatively low impact on commercial fishing activity, but that this site may have a notable impact on the recreational fishing sector.
295. Based on 2017 values, Fisheries New Zealand estimates the export value of potentially displaced commercial catch from Site K1 to be \$NZ19,000 (0.7 tonnes), 0.06% of the total Forum export value (

¹⁰⁰ MPA Policy page 18 and MPA Guidelines page 10.

¹⁰¹ Page 183, Forum's Recommendations Report.

296. Table 41).

Table 41 Estimated average annual affected catch (kg) based on the annual catches from 2007/08 fishing year to the 2016/17 fishing year, and FOB export value estimates (\$NZ) for Site K1. Export values are based on export prices for 2017 calendar year.

Site K1		
Affected catch (kg)	Export value (\$NZ)	% of Forum region export value ¹⁰²
689	19,111	0.1

297. The biggest potential impacts of Site K1 would likely be on kōura papatea (rock lobster) (\$NZ 15,500), rawaru (blue cod) (\$NZ 1,800) and flatfish (\$NZ 800) in terms of affected catch (all < 0.2 tonnes) and foregone export opportunities. Fisheries New Zealand notes that the estimated total affected catch (kg) for Site K1 is <1 tonne, and that the effects of this site on commercial fishers would likely be relatively low.
298. Fisheries New Zealand notes that the commercial fishing effort displaced from this site is likely to have a relatively low impact on adjacent areas (in terms of localised depletion) due to the low amount of catch taken from this site.
299. Fisheries New Zealand estimates Site K1 is used by around 16 commercial fishers each year (Table 42).¹⁰³

Table 42 Estimated annual number of commercial fishers by method and total in Site K1. Figures are based on an average of estimates for of the fishing years from 2014-15 to 2016-17. Some fishers use more than one method, so the total fishers may be less than the sum of fishers using the various methods.

Method	Number of fishers
	Site K1
Bottom longline/Dahn line	2
Handline/Trolling	1
Pot	14
Trawl	1
Total count of unique fishers	16

300. The views of different stakeholder groups on Site K consulted on are summarised in the Forum's Recommendations Report (pages 179 and 181).
301. Based on the best available information¹⁰⁴, Fisheries New Zealand considers that this site may result in a high amount of recreational fishing displacement. As stated in the Forum's Recommendations Report, there is uncertainty about the actual impacts (positive or negative) of displacing these recreational fishers. The Forum's Recommendations Report notes that the information received through consultation and submissions was conflicting, as to the extent to which the proposed area was used for recreational fishing.

s9(2)(ba)(ii)

¹⁰² Based on the total \$NZ 34.3 million export value for the Forum region based on 2017 FOB export prices.

¹⁰³ Based on average annual numbers of fishers estimated to have used Site K1 in the last three fishing years (2014-15 to 2016-17). Some fishers use more than one gear type.

¹⁰⁴ Information from Ministry for Primary Industries' compliance staff, amateur charter vessel (ACV) data, Summary of Submissions, and National Recreational Fishing Survey data.

Other users

303. The agencies are unaware of any other users that may be adversely affected by this site.

Social and economic interests

304. The Forum deemed that this area has a particularly strong support for its tourism benefits. Visible from parts of Ōtepoti (Dunedin), Okaihe (Green Island) prohibits landing given its status as nature reserve but provides ample of opportunities for safe recreational and educational activities including diving and snorkelling. A marine reserve designation is thought would complement the nature reserve of Okaihe (Green Island) and add to the natural heritage reputation of Ōtepoti (Dunedin) City ('Wildlife Capital of New Zealand').

305. There is considerable value from a research perspective and it would provide an opportunity to study the ecology of an island in this region. The site is accessible from the Portobello Marine Laboratory and from other boat launching sites.

Site L1 (Type 2 MPA)

L1 - Network 1

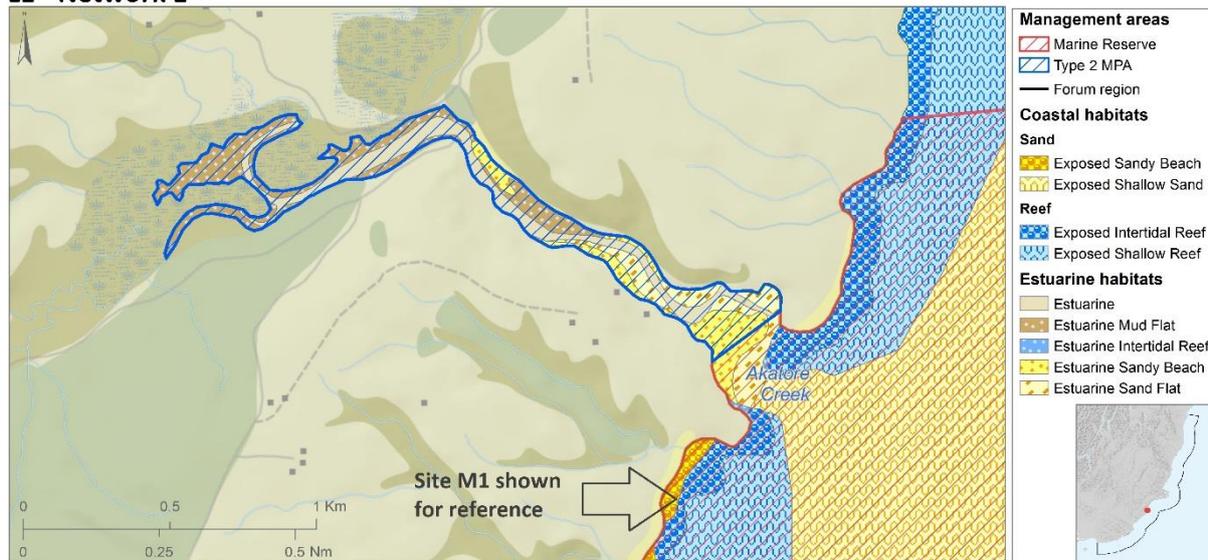


Figure 10 Site L1

Overall agency assessment

306. DOC supports the inclusion of Site L1 in the network. It acknowledges that issues have been raised regarding the level of protection recommended by the Forum as detailed below, but on the whole considers the site to be a valuable inclusion in the network.
307. Fisheries New Zealand supports in principle the inclusion of Site L1, including restrictions on bottom trawling, Danish seining and dredging. However, Fisheries New Zealand does not support restrictions as proposed by the Forum on set net fishing, commercial line fishing, mechanical harvesting (incl. spades for collecting shellfish), fyke net fishing and kohikohi īnaka (whitebaiting), as detailed below.
308. Site L1 would benefit the network by contributing to the representation of estuarine habitats; and would provide a replicate example of an estuarine system (in association with Pleasant River estuary in Site D1 and Tahakopa Estuary in Site Q1).
309. The agencies note that the Forum's Recommendations Report states that Kāi Tahu does not oppose either Network 1 or 2.

Introduction

310. The Forum's Recommendations Report presents a Type 2 MPA in the Akatore Estuary.
311. Site L was consulted on. Stakeholder views are reflected in the Forum's Recommendations Report (page 187) and the Summary of Submissions. Due to its similarity with the site consulted, the agencies consider submissions are likely to be broadly representative of stakeholder views on Site L1.
312. The boundary of Site L1 adjoins the proposed marine reserve at M1.

Table 43 Site L1

	Site L1
Network	Network 1
Type	Type 2
Size	0.3 km ²
% Forum region	0.0%
Width	0.7 km
Coastline length	6.9 km

313. The Otago Regional Council's Regional Plan lists Akatore as displaying 'Estuarine values such as nationally significant wildlife areas for waterfowl, waders and fernbird, and whitebait can be found in in the estuary'. Known as a nursery area for patiki (flatfish), the estuary also hosts two species of Galaxiids known to be in decline, Īnaka (whitebait), and higher-trophic-level fauna, particularly tuna (eels). It also includes of the best examples of saltmarsh outside of The Catlins.
314. Akatore Estuary has several protected areas that are found in its catchment area, including a wildlife management area in the upper reaches and area on its northern bank bordering a QEII covenant.

Meeting the MPA Policy design and planning principle

Planning Principle 1: representation of habitats and ecosystems

315. In general, estuarine areas are very dynamic and tend to be a mosaic of temporally variable habitat patches so do not fit well within the Policy requirements for quantifying representation and replication. As such, estuarine representation and replication is considered at a whole estuary level and does not assess estuaries based directly on the habitat classification.
316. Akatore Estuary is a tidal lagoon and includes 0.28 km² of estuarine habitat, which equates to 0.3% of the overall forum regions estuarine area.
317. It provides representation of an estuary that includes mud flats, sand flats and estuarine sandy beach habitat.

Planning Principle 2: Meeting the protection standard

Table 44 Assessment of restrictions against the protection standard

Recommended Restriction	Required to meet protection standard	Existing restrictions
Dredging	Yes	
Set net fishing Commercial line fishing Mechanical harvesting (incl. spades for collecting shellfish) No fyke net fishing Kohikohi Īnaka (whitebaiting)	See paragraphs 319-321.	
Bottom disturbance and seismic testing associated with any activity.	Yes. See paragraph 332.	

318. Site L1 is proposed in the Forum's Recommendations Report to prohibit fishing methods that disturb the seafloor, including dredging and mechanical harvesting (including the use of spades). DOC considers that these are required to meet part (a) of the protection standard.
319. Fisheries New Zealand considers that prohibitions on dredging is required to meet part (a) of the protection standard. Fisheries New Zealand notes that mechanical harvesting can affect the benthos, however whether a prohibition on mechanical harvesting at this site is required or could be implemented may require more information to support a case under the Fisheries Act. Fisheries New Zealand considers that this would be difficult to implement at this site, but can provide more information should you decide to pursue it.
320. Site L1 includes further restrictions on set netting, commercial line fishing, fyke nets and whitebaiting. The agencies could not reach consensus as to whether these additional restrictions are warranted at this site.
321. The agencies note:
- There is insufficient information available to determine if the current level of fishing activity from these methods are having an adverse effect on the aquatic environment at these sites.
 - Fisheries New Zealand consider that this raises the question of whether the proposed restrictions on these methods should be imposed.
 - In the absence of information that would allow an adequate assessment of effects of fishing, DOC considers that the proposed restrictions would provide the most certainty that the protection standard would be met at these sites. A prohibition on methods that have the potential to extract large quantities of fish within the site would be consistent with Planning Principle 8, which states '*Decision making on management actions will be guided by a precautionary approach*'.
 - Should ministers wish to pursue these restrictions, further advice on implementation options and associated risks can be provided by the agencies.

Planning Principle 3: Provision for special relationship between Crown and Māori

322. The Akatore (Akatorea) Estuary is a customary mahika kai resource for whānau and hapū associated with this area of coast. It is of particular interest to Taieri-based whānau of Te Rūnaka o Ōtakou who utilise the estuary for customary gathering of tuaki (shellfish). The whānau and hapū who remain in the Taieri Mouth area have maintained a continuous and active role in all facets of fishery activity, be it customary, commercial or recreational.¹⁰⁵
323. Agencies note that Kāi Tahu's position is at a network level, not at a site level. The Forum's Recommendations Report states that Kāi Tahu does not oppose either Network 1 or 2.

Planning Principle 5: Adverse impacts on existing users

Fisheries

324. The assessment below provided by Fisheries New Zealand (paragraphs 325-331) does not necessarily reflect the views of DOC.
325. Fisheries New Zealand has limited information on commercial fishing activity at this site and therefore cannot estimate the catch displacement and potential associated

¹⁰⁵ Page 190-191, Forum's Recommendations Report.

economic loss caused by a Type 2 MPA with fyke net prohibitions (as recommended by the Forum).

326. Fisheries New Zealand is aware that there is commercial fishing activity in this estuary for shortfin eels. The submission from the South Island Eel Industry Association (SIEIA)¹⁰⁶, estimated the median annual shortfin eel catch taken from this estuary to be 1.75 tonnes (6% total TACC of 29 tonnes for SFE15). Fisheries New Zealand considers that prohibitions on fyke netting at this estuary will have an impact on commercial shortfin eel fishing interests.
327. Fisheries New Zealand notes that shortfin eels are often targeted in estuaries as they are generally in better condition and are of a higher value than when they are taken from rivers. Fisheries New Zealand considers that commercial eel fishers' ability to take their shortfin eel catch elsewhere in the Forum region may be limited, given a number of other estuaries that are already closed or restricted to commercial fishing activity.¹⁰⁷ Fisheries New Zealand notes that the upper half of the Akatore estuary is already a DOC managed reserve, and would require a concession from DOC for any commercial fishing activity (at present) such as commercial fyke netting for eels.
328. Fisheries New Zealand considers that there may be potential for the displacement of shortfin eel fishing effort (as a result of the recommended fyke netting restrictions) into surrounding estuaries that may result in a localised depletion issue (by concentrating fishing effort into the areas that remain open). Fisheries New Zealand notes that this may raise concerns for local Iwi.
329. The views of different stakeholder groups on Site L consulted on are summarised in the Forum's Recommendations Report (pages 187 and 189).
330. Fisheries New Zealand notes that Te Rūnanga o Ngāi Tahu supported this site in principle.
331. Fisheries New Zealand considers that the potential impacts of this site on recreational fishers would be low, which is supported by information provided to Fisheries New Zealand from MPI Fisheries Compliance staff and information in the Forum's Recommendations Report.

Other users

332. The prohibition on bottom disturbance and seismic testing recommended by the Forum could be implemented under special legislation. Further analysis is required as to the extent to which this could be done under existing legislation.
333. A consented landfill site is near Akatore Estuary. Agencies note that a marine reserve status does not in itself affect existing resource consents located outside of the marine reserve, but it may be a relevant matter for consideration when consents are being renewed.

Social and economic interests

334. This area has good access and is close to Ōtepoti (Dunedin). As noted by the Forum, the benefits associated with protection include providing access to a near-natural estuary and the educational opportunities of estuarine habitats and associated fauna (e.g. birdwatching) this allows.

¹⁰⁶ The South Island Eel Industry Association represents commercial eel fishers who utilise the eel resource (shortfin and longfin eels) in the South Island, including coastal estuaries. Their members comprise the majority of eel permit holders and take the majority of shortfin and longfin eel catch in the South Island.

¹⁰⁷ Fisheries New Zealand is aware of 13 estuarine areas in the Forum region that are already closed or restricted to commercial eel fishing, and there may be more closures/restrictions Fisheries New Zealand is not aware of at this stage. Fisheries New Zealand notes that nine of these areas meet the classification of an estuarine habitat under the MPA Guidelines (p.36).

Site M1 (Marine Reserve)

M1 - Network 1

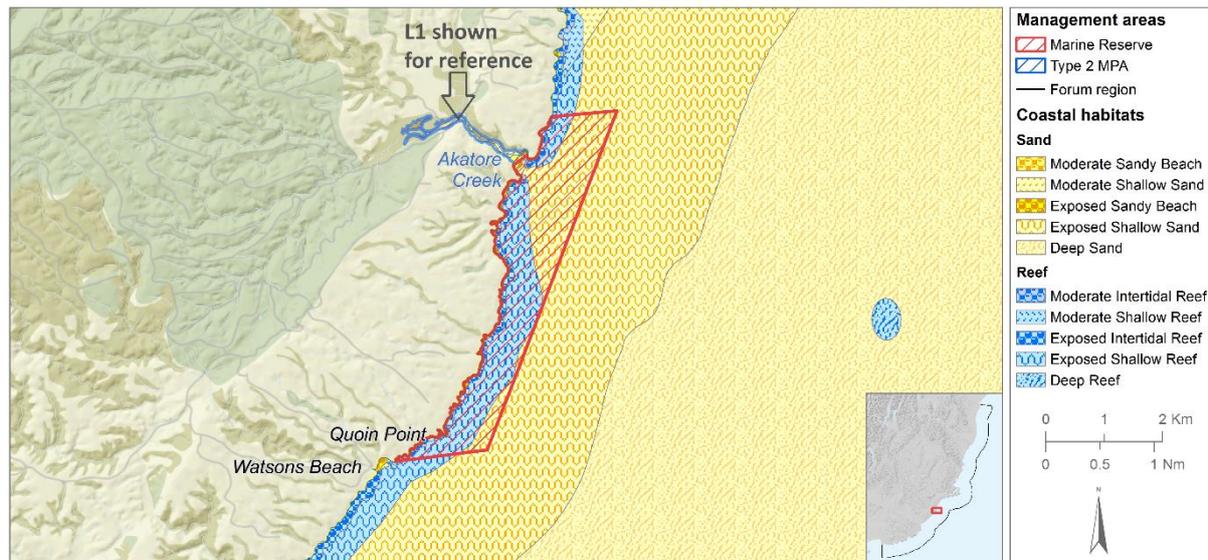


Figure 11 Site M1

Overall agency assessment

335. The Agencies support the inclusion of Site M1 in the network. They acknowledge the limitations in protecting all habitats contained within the site, but on the whole consider the site to be a necessary inclusion in the network.
336. Site M1 would benefit the network by contributing to the representation of three habitats; one being required to provide replication (exposed sandy beach). DOC also notes that Site M1 is particularly important for adequately representing exposed rocky reef within the network.
337. Fisheries New Zealand considers that the greatest potential effect of Site M1 would be on the kōura papatea (rock lobster) fishery.
338. The Agencies note that the Forum's Recommendations Report states that Te Rūnaka o Ōtakou does not oppose Site M1 but Te Rūnaka o Kāi Tahu does.

Introduction

339. The Forum's Recommendations Report proposes a marine reserve north of Akatore Creek extending south along the coastline to just north of Watsons Beach. Site M1 is proposed as part of Network 1.
340. Site M1 adjoins the proposed Type 2 MPA at Akatore Estuary (L1), providing direct coastal connectivity with an estuary.
341. Site M1 is similar to Site M that was formally consulted on. Stakeholder views are reflected in the Forum's Recommendations Report (page 194) and the Summary of Submissions. Boundaries were altered to account for opposition to Watsons Beach being included in the site, and to simplify the offshore boundary.

Table 45 Site M1

	Site M1
Network	Network 1
Type	Marine reserve
Size	5.9 km ²
% Forum region	0.1%
Width	1.4 km
Coastline length	9.3 km

342. Giant kelp (*Macrocystis*) generally occurs in this area, although its presence can be intermittent due to sea conditions and sedimentation.
343. Due to the geology of the area, in particular the schist landforms, the ecology is likely to be different from other parts of the coast.

Meeting the MPA Policy design and planning principle

Planning Principle 1: representation of habitats and ecosystems

344. The agencies consider that Site M1 includes three habitats (exposed intertidal reef, shallow reef and sandy beach) in large enough extents and of sufficient protection to be representative.
345. The agencies consider that a further habitat present in Site M1, exposed shallow sand, does not contribute to the representation of this habitat type within the network. The small area of habitat, the limited offshore extent, and the exposed nature of the coast mean that it is unlikely to meet the requirements for representation.
346. Site M1 includes a rare example of sea-exposed schist, which offers different habitat structure to other types of bedrock. As such, the biological communities associated with this site are likely to show differences compared to other exposed reef habitats in the network.

Table 46 Habitats contained within the sites. Area (%) indicates the percentage of the extent of the habitat within the Forum region that lies within the site. Sites with (*) indicate that the agencies consider the habitat does not contribute to representation. An indication of what other sites contain the habitat is also provided.

Habitats	Site M1 (Network 1)		
	Area (km ²)	Area (%)	Also in sites:
Exposed intertidal reef	0.6	8.4	I1, K1
Exposed shallow reef	2.7	2.9	I1, K1
Exposed shallow sand	2.5*	0.5*	I1, K1
Exposed sandy beach	0.04	0.6	I1

Planning Principle 2: Meeting the protection standard

347. The agencies consider that as a marine reserve Site M1 meets the protection standard as defined in the MPA Guidelines.

Planning Principle 3: Provision for special relationship between Crown and Māori

348. The coastal strip adjacent to Site M1 contains archaeological values that indicate customary use of this coast. Site M1 is rich in shellfish, including pāua and kutai (mussels), and also supports kōura papatea (rock lobster) and finfish, all of which are of particular importance to Taieri-based whānau of Te Rūnaka o Ōtākou who have traditionally utilised this coastal area for customary fisheries.
349. Kāi Tahu commercial fishers oppose Site M1 citing strong traditions of intergenerational utilisation of the fishery and kaimoana extending over hundreds of years.
350. Whānau Rōpū have proposed a mātaītai reserve for around Moturata (Taieri Island) but have not yet lodged an application.
351. The agencies note that the Forum's Recommendations Report states that Te Rūnaka o Ōtākou does not oppose Site M1 but Te Rūnaka o Kāi Tahu does due to the effect that the potential transfer of fishing effort to the Moturata sea area would have on customary commercial fishing rights and interests.¹⁰⁸

Planning Principle 5: Adverse impacts on existing usersFisheries

352. The assessment below provided by Fisheries New Zealand (paragraphs 353-360) does not necessarily reflect the views of DOC.
353. Fisheries New Zealand considers that this site will have a notable impact on the fishing sector.
354. Based on 2017 values, Fisheries New Zealand estimates the export value of potentially displaced commercial catches from Site M1 to be \$NZ 239,300 (7 tonnes), representing 0.7% of the export value of the Forum region (Table 47).

Table 47 Estimated average annual affected catch (kg) based on the annual catches from 2007/08 fishing year to the 2016/17 fishing year, and FOB export value estimates (\$NZ) for Site M1. Export values are based on export prices for 2017 calendar year.

Site M1		
Affected catch (kg)	Export value (\$NZ)	% of Forum region export value ¹⁰⁹
6,858	239,302	0.7

355. The biggest impact of Site M1 would be on the kōura papatea (rock lobster) and flatfish fisheries; all other fishstocks are estimated to have < 1 tonne affected catch (Table 48). The displacement of kōura papatea (rock lobster) fishing effort from this site amounts to the majority of commercial fishing impact (Table 48).
356. Fisheries New Zealand considers that there may be a localised depletion risk associated with establishing Site M1, in terms of commercial catch displaced. This could result from the displacement of fishing effort targeting kōura papatea (rock lobster) to other areas. This species demonstrates high site fidelity, therefore while some may range in and out of the proposed reserve, concerns regarding utilisation or sustainability of major stocks in the adjacent areas may arise. Fisheries New Zealand considers that displacement of fishing effort targeting flatfish outside Site M1 is unlikely to be a

¹⁰⁸ Page 198, Forum's Recommendations Report.

¹⁰⁹ Based on the total \$NZ 34.3 million export value for the Forum region based on 2017 FOB export prices.

major issue in terms of either utilisation or sustainability in the adjacent areas.

Table 48 Estimated average annual affected catch (kg) based on the annual catches from 2007/08 fishing year to the 2016/17 fishing year (and on information in the CatchMapper database). FOB export value estimates (\$NZ) for Site M1 are based on export prices for 2017 calendar year (rounded to the nearest \$ per 100). All species with total affected catch <1 tonne were summed under the heading 'Other'. A total cannot be estimated for % QMA landings affected because each species is in a different QMA. Methods that would be affected by fishing method prohibitions (as recommended by the Forum) are underlined. The most affected fishstocks (in terms of foregone export opportunities, export value, \$NZ) are asterisked.

Fishstock	<u>Trawl</u>	<u>Pot</u>	<u>Bottom longline /dahn line</u>	<u>Hand gathering</u>	Total affected catch (kg)	% QMA landings affected	Export value (\$NZ)
Flatfish	2,729	0	0	0	2,729	0.19	17,400*
Rock lobster	0	2,025	0	0	2,025	2.37	210,000*
Other	1,090	676	291	s9(2)(b)(ii) & s9(2)(ba)(i)		-	s9(2)(b)(ii) & s9(2)(ba)(i)
Total	<u>3,819</u>	<u>2,700</u>	<u>292</u>			-	

357. Fisheries New Zealand estimates Site M1 is used by around 16 commercial fishers each year (Table 49).¹¹⁰

Table 49 Estimated annual number of commercial fishers by method and total in Site M1. Figures are based on an average of estimates for of the fishing years from 2014-15 to 2016-17. Some fishers use more than one method, so the total fishers may be less than the sum of fishers using the various methods.

Method	Number of fishers
	Site M1
Bottom longline/ Dahn line	3
Pot	12
Trawl	5
Total count of unique fishers	16

358. The views of different stakeholder groups on Site M consulted on are summarised in the Forum's Recommendations Report (pages 194 and 196).

359. Based on submissions and the best available information¹¹¹, Fisheries New Zealand considers that the effect to recreational fishers will likely be low.

360. Based on submissions and the best available information, Fisheries New Zealand considers that the effect to recreational fishers will likely be low. Fisheries New Zealand notes that a few people will be affected, but the effect on them is likely to be high.

Other users

361. The Forum's Recommendations Report does not list adverse impacts on other users.

Social and economist interests

362. This site has limited access and the northern area is only accessible at low tide. The Forum highlighted the potential for education given that it is a relatively safe place for children to explore rock pools. Other opportunities are deemed to lie in the potential for

¹¹⁰ Based on average annual numbers of fishers estimated to have used Site M1 in the last three fishing years (2014-15 to 2016-17). Some fishers use more than one gear type.

¹¹¹ Information from Ministry for Primary Industries' compliance staff, amateur charter vessel (ACV) data, Summary of Submissions, and National Recreational Fishing Survey data.

ecotourism activities in this area and people visiting to experience rock pool life, and observe seals and seabirds.

363. Further, the Forum considered that together with the adjoining Akatore Estuary Type 2 MPA (Site L1) these sites would provide a rare example of coastal and estuarine habitats being protected together.
364. From a scientific point of view, the response of shallow subtidal and intertidal habitats to the removal of fishing would provide interesting topics for scientific study. The site could provide a greater understanding of marine ecosystems that could inform fisheries management.

Site O1 (Marine Reserve)

Site O1



Figure 12 Site O1

Overall agency assessment

365. The agencies note that Kāi Tahu opposed this site, and therefore the Forum's Recommendations Report does not formally include it as part of Network 1. Agencies are including this assessment for completeness.
366. The agencies acknowledge that Site O1 would address gaps in the network, both in terms of habitat representation and connectivity. Site O1 is the only site other than Site D1 than includes representation of deep reef.
367. Fisheries New Zealand considers that establishing Site O1 would likely have impacts across all fishing sectors, and the pāua fishery would be particularly impacted.
368. The agencies recommend that you direct officials to provide you with further advice. This would include further discussions with Kāi Tahu, local tangata whenua and stakeholders.

Introduction

369. The Forum's Recommendations Report includes a marine reserve at Long point on The Catlins Coast (Site O1), which includes the coastal area from Pillans Head to north of Purakaunui Bay, including Cosgrove Island, and extends offshore approximately 7.5 km. The proponents of Network 1 consider Site O1 would provide better regional representation and is consistent with the MPA Policy. However, the Forum did not include Site O1 in the formal proposal for Network 1 due to the opposition by Kāi Tahu representatives on the Forum. It was acknowledged that without Kāi Tahu's acceptance, the site has limited support within the Forum.
370. Site O was proposed in the Consultation Document. Stakeholder views are reflected in the Forum's Recommendations Report on page 206 and the Summary of Submissions. The boundaries of Site O1 have been shifted south, resulting in an additional 10.6 km² being included in Site O1 (a 14% increase in overall size). In addition, an 'anchoring zone' was included, to allow fishers to clean catch while at anchor. This was in response to submitter concerns about using the site as shelter while processing fish onboard.

371. The agencies consider that the boundaries of Site O1 are similar enough to Site O in the Consultation Document that submissions on Site O will be broadly representative of likely stakeholder views on Site O1.

Table 50 Site O1

	Site O1
Type	Marine reserve
Size	72,6 km ²
% Forum region	0.9%
Width	8.7 km
Coastline length	17.1 km

372. The waters off the Catlins coast is known as an area of high marine biodiversity. It includes a wide range of important habitats ranging from intertidal to deep reefs.
373. Rocky reefs in the shallow areas are dominated by rimurapa (bull kelp) *Durvillaea* spp. forests to a depth of several metres. The understory contains a diverse mix of smaller kelp species and extensive areas of red algal species. This area is also a good habitat for juvenile pāua. The fish diversity includes species such as tākahaka (banded wrasse *Notolabrus fucicola*), spotty (*N. celidotus*) and scarlet wrasse (*Pseudolabrus miles*) amongst other.
374. The Catlins is identified as an area of importance for seabirds ('Important Seabird Area IBA'¹¹²). A range of seabirds visit the area, including koau (Otago shag), Foveaux shag (*Leucocarbo stewartia*), Salvin's mollymawk (*T. cauta*), toroa (royal albatross) and giant petrel (*Macronectes* spp) amongst other.
375. Kekeno (NZ fur seals) breed in the area, and rāpoka (NZ sea lions), pahu (Hector's dolphins) as well as other dolphin species are known to frequent the area.
376. One of the most significant mainland clusters of hoiho (yellow-eyed penguin) colonies occurs adjacent to Site O1. Site O1 includes part of the habitat that is utilised by the penguins from this colony.
377. Several protected areas are found along the coast of Site O1, including two scenic reserves (Purakaunui Bay and Irihuka (Long Point), two Conservation Areas (Pillans Head and Chasm Island Bird Sanctuary) and land owned by the Yellow-eyed Penguin Trust.

Meeting the MPA Policy design and planning principle

Planning Principle 1: Representation of habitats and ecosystems

378. The agencies consider that Site O1 would contribute to the network by adding to the representation of six habitat types (deep reef, deep sand, exposed intertidal reef, exposed sandy beach, exposed shallow reef, and exposed shallow sand). Site O1 replicates examples of exposed intertidal and shallow rocky reef, and it improves connectivity between the other sites that include these habitat types (i.e. Sites I1, K1 and M1). Site O1 is the only site other than Site D1 than includes representation of deep reef.

¹¹² Forest & Bird 2014: New Zealand seabirds: important bird areas and conservation. The Royal Forest & Bird Protection Society of New Zealand, Wellington.

Table 51 Habitats contained within the sites. Area (%) indicates the percentage of the extent of the habitat within the Forum region that lies within the site. Sites with (*) indicate that the agencies consider the habitat does not contribute to representation. An indication of what other sites contain the habitat is also provided.

Habitats	Site O1		
	Area (km ²)	Area (%)	Also in sites:
Deep reef	0.8	0.5	D1, E1*
Deep sand	58.2	1.2	D1, E1, H1, I1, K1,
Exposed intertidal reef	0.4	5.8	I1, K1, M1
Exposed sandy beach	0.2	3.9	I1, M1
Exposed shallow reef	4.0	4.4	I1, K1, M1
Exposed shallow sand	12.4	2.3	I1, K1, M1*

Planning Principle 2: Meeting the protection standard

379. The agencies consider that as a marine reserve, Site O1 would meet the protection standard as defined in the MPA Guidelines.¹¹³

Planning Principle 3: Provision for special relationship between Crown and Māori

380. Ngāi Tahu whānau comprising Waitaha Kāti Māmoe are the mana whenua of Irihuka (Long Point) while the whānau and hapū of Te Rūnaka o Awarua hold mana whenua mana moana over this area.

381. The site is in close proximity to Māori reserve land and South Island Landless Natives Act (SILNA) lands. There is a mātaihai reserve at Kaka Point. Kāi Tahu commercial fishers oppose any restrictions represented by MPAs. The local whānau strongly oppose to this site citing that this would be a direct breach of their Treaty rights. They believe the customary tools such as taiāpure and mātaihai reserves are the appropriate tools to manage this area. Te Rūnaka o Awarua educate their younger generations about traditional methods of mahika kai and sustainable management.

382. From a wider perspective, Te Rūnanga o Ngāi Tahu also opposes this site on the basis of the displacement of fishing effort and customary rights to remaining fishing areas in the locality. Kāi Tahu representatives on the Forum did not support the site.¹¹⁴

Planning Principle 5: Adverse impacts on existing users

Fisheries

383. The assessment below provided by Fisheries New Zealand (paragraphs 384-391) does not necessarily reflect the views of DOC.

384. Based on 2017 values, Fisheries New Zealand estimates the annual export value of potentially displaced commercial catches from Site O1 to be \$NZ 482, 500 (65.7 tonnes), representing 1.4% of the total export value of the Forum region (Table 52). Fisheries New Zealand considers that Site O1 will likely have a large potential impact on the fishing sector.

Table 52 Estimated average annual affected catch (kg) based on the annual catches from 2007/08 fishing year to the 2016/17 fishing year, and FOB export value estimates (\$NZ) for Site O1. Export values are based on export prices for 2017 calendar year.

¹¹³ MPA Policy page 18 and MPA Guidelines page 10.

¹¹⁴ Pages 205/209, Forum's Recommendations Report.

Site O1		
Affected catch (kg)	Export value (\$NZ)	% of Forum region export value ¹¹⁵
65,670	482,477	1.4

385. The biggest potential impact of Site O1 would be on flatfish, pāua and stargazer fisheries (Table 53).
386. Fisheries New Zealand notes that Site O1 includes parts of the CRA7 and CRA8 as the Long Point is the boundary between these QMAs. Site O1 is a historically important kōura papatea (rock lobster) fishing ground, and the northern part of this area was recently reopened to commercial kōura papatea (rock lobster) fishing after years of closure. Therefore, the estimates of the displacement of kōura papatea (rock lobster) fishery from Site O1 may be underestimated in Table 53, as Fisheries New Zealand anticipates that the catch of kōura papatea (rock lobster) would have increased.
387. Fisheries New Zealand notes that there is a risk that the displacement of pāua gathering caused by prohibiting all fishing activity at Site O1 may lead to a risk of localised depletion in the areas adjacent to this site, due to more concentrated fishing pressure and the relatively sedentary nature of pāua. Fisheries New Zealand notes that of the pāua caught in PAU5D (the pāua QMA that encompasses the Forum region) approximately 4% is estimated to be taken within Site O1.

¹¹⁵ Based on the total \$NZ 34.3 million export value for the Forum region based on 2017 FOB export prices.

Table 53 Estimated average annual affected catch (kg) based on the annual catches from 2007/08 fishing year to the 2016/17 fishing year (and on information in the CatchMapper database). FOB export value estimates (\$NZ) for Site O1 are based on export prices for 2017 calendar year (rounded to the nearest \$ per 100). All species with total affected catch <1 tonne were summed under the heading 'Other'. A total cannot be estimated for % QMA landings affected because each species is in a different QMA. Methods that would be affected by fishing method prohibitions (as recommended by the Forum) are underlined. The three most affected fishstocks (in terms of foregone export opportunities, export value, \$NZ) are asterisked.

Fishstock	<u>Trawl</u>	<u>Jig</u>	<u>Hand gathering</u>	<u>Net</u>	<u>Pot</u>	<u>Bottom long-line /dahn line</u>	Total affected catch (kg)	% QMA landings effected	Export value (\$NZ)
Flatfish	34,007	0	0	s9(2)(b)(ii)& s9(2)(ba)(i)	0	0	s9(2)(b)(ii)& s9(2)(ba)(i)	2.4	s9(2)(b)(ii)& s9(2)(ba)(i)
Red cod	5,657	0	0		1	0		0.15	
Stargazer	5,562	0	0		0	0		1.08	
Rough skate	5,219	0	0		0	0		0.36	
Pāua	0	0	3,322		0	0		4.06	
Elephant fish	1,806	0	0		0	0		0.17	
Tarakihi	1,124	0	0		0	0		0.11	
Ling	1,109	0	0		0	0		0.07	
Barracouta	1,111	0	0		0	0		0.01	
Spiny dogfish	1,067	0	0		0	0		0.06	
Other	4,472	33	0		386	279		-	
Total	61,135	33	3,322		387	279		-	

388. Fisheries New Zealand considers that there is less of a sustainability risk associated with Site O1 with respect to the displacement of finfish catch (i.e. flatfish, red cod, star-gazer and rough skate and other mobile fishstocks affected). These stocks, are sufficiently mobile and well dispersed that it is likely that fishers will be able to take their catch entitlement outside the proposed reserve. For this reason, displacement of fishing effort to adjacent areas outside Site O1 is unlikely to be a major issue in terms of either the utilisation or sustainability of the major mobile fish stocks in the adjacent areas. Most of these species (by volume) are caught by bottom trawling over sand habitat; this type of habitat is generally widespread throughout the region.
389. Fisheries New Zealand estimates that Site O1 is used annually by around 25 fishers (Table 54).

Table 54 Estimated annual number of commercial fishers by method and total in Site O1. Figures are based on an average of estimates for of the fishing years from 2014-15 to 2016-17. Some fishers use more than one method, so the count of unique fishers may be less than the sum of fishers using the various methods.

Method	Number of fishers
	Site O1
Trawl	11
Hand gathering	6
Bottom longline/Dahn line	3
Net ¹¹⁶	1
Pot	8
Total count of unique fishers	25

390. The views of different stakeholder groups on Site O1 consulted on are summarised in the Forum's Recommendations Report (pages 205 – 207).
391. Based on the best available information¹¹⁷, Fisheries New Zealand considers that a marine reserve at this location would potentially displace a large number of recreational fishers. The Ministry for Primary Industries compliance officers note that recreationally, this area is heavily fished.

Other users

392. The agencies are unaware of other users that would be affected.

Social and economic interests

393. The Forum deemed that this area has considerable wildlife and could provide a boost to the Catlins' image as a tourism and wildlife viewing destination. Although remote, the entire site is easily accessible by car and by boat in calm sea conditions.
394. The improved diving experience the Forum expects to occur, once the marine reserve is in place and formerly exploited species have recovered, is considered to ultimately lead to further tourism activities and tourism revenue.
395. In its Report the Forum also noted the indirect benefits for wildlife (i.e. marine mammals, penguins and other seabirds) and thus wildlife tourism in the area.

¹¹⁶ Includes set net and drift net.

¹¹⁷ Information from Ministry for Primary Industries' compliance staff, amateur charter vessel (ACV) data, Summary of Submissions, and National Recreational Fishing Survey data.

396. The high biodiversity this site displays make it a valuable place for scientific research. The area provides opportunities to study a range of wave-exposed reef and soft-sediment habitat types that extend from the intertidal area to relatively deep water. Further, the area provides research opportunities into populations of a range of exploited species and the chance for a greater understanding of marine ecosystems which could inform fisheries management.

Site Q1 (Type 2 MPA)

Site Q1 - Network 1



Figure 13 Site Q1

Overall agency assessment

397. DOC supports the inclusion of Site Q1 in the network. It acknowledges that issues have been raised regarding the level of protection recommended by the Forum as detailed below, but on the whole considers the site to be a valuable inclusion in the network.
398. Fisheries New Zealand supports in principle the inclusion of Site Q1, noting the requirement to include protection for estuarine habitats. However, Fisheries New Zealand notes the impacts on mahika kai traditions stated in the Forum's Recommendations Report. Further, Fisheries New Zealand does not support the additional set net fishing, commercial line fishing, mechanical harvesting (incl. spades for collecting shellfish), fyke net fishing and kohikohi īnaka (whitebaiting) restrictions as proposed by the Forum and detailed below.
399. Site Q1 would benefit the network by contributing to the representation of estuarine habitats; and would provide a replicate example of an estuarine system (in association with Pleasant River estuary in Site D1).
400. Agencies note that the Forum's Recommendations Report states that Kāi Tahu does not oppose either Network 1 or 2.

Introduction

401. The Forum's Recommendations Report proposes a Type 2 MPA for Tahakopa Estuary in recognition of its special significance for wading birds and īnaka (whitebait) breeding and to allow the restoration of degraded saltmarshes. The Tahakopa Estuary Type 2 MPA is part of Network 1.
402. The upper half of Tahakopa Estuary was consulted on as a marine reserve, Site Q. Stakeholder views are reflected in the Forum's Recommendations Report (page 214) and the Summary of Submissions. Following consultation feedback the Forum enlarged the MPA to include the whole estuary and also changed the protection type from marine reserve to Type 2.

403. Since the option of protecting the entire estuary in a Type 2 MPA was not included in the Consultation Document, indications of support or opposition to Site Q1 are not available.

Table 55 Site Q1

	Site Q1
Network	Network 1
Type	Type 2
Size	0.7 km ²
% Forum region	0.0%
Width	0.8 km
Coastline length	7.7 km

404. The western side (left bank) of the Tahakopa estuary is unmodified mudflats with a small area of saltmarsh turf and an extensive area of tall jointed rush (*Juncus articulatus*). This intricate area of wetland is of special significance for wading birds and īnaka (whitebait) breeding. Patiki (flatfish) area also a feature of the estuary's biodiversity. Saltmarsh has been removed by human actions elsewhere in the estuary and the Forum expects that this proposal would protect and/or allow the restoration of what remains.
405. Tahakopa Estuary is flanked by several conservation areas, including Papatowai Scenic Reserve, Tahakopa Bay Scenic Reserve and Shank's Bush private QEII Reserve.

Meeting the MPA Policy design and planning principle

Planning Principle 1: Representation of habitats and ecosystems

406. In general, estuarine areas are very dynamic and tend to be a mosaic of temporally variable habitat patches so do not fit well within the Policy requirements for quantifying representation and replication. As such, estuarine representation and replication is considered at a whole estuary level and does not assess estuaries based directly on the habitat classification.
407. Tahakopa Estuary is a tidal lagoon and includes 0.68 km² of estuarine habitat, which equates to 0.7% of the overall forum regions estuarine area.
408. It provides representation of an estuary that includes mud flats and estuarine sandy beach habitat.
409. The habitats present at this site are each present in at least one other site proposed in their respective network, including in each case at least one that is proposed as a marine reserve. Therefore, the agencies expect this MPA to contribute to the MPA network by providing replicate examples of the habitats found here.

Planning Principle 2: Meeting the protection standard

Table 56 Assessment of restrictions against the protection standard

Recommended Restriction	Required to meet protection standard	Existing restrictions
Dredging	Yes	
Set net fishing Commercial line fishing Mechanical harvesting (incl. spades for collecting shellfish) No fyke net fishing Kohikohi inaka (whitebaiting)	See paragraphs 412 and 413.	
Bottom disturbance and seismic testing associated with any activity.	Yes. See paragraph 422.	

410. Site Q1 is proposed in the Report to prohibit fishing methods that disturb the seafloor, including dredging and mechanical harvesting (including the use of spades). DOC considers that these are required to meet part (a) of the protection standard.
411. Fisheries New Zealand considers that prohibitions on dredging is required to meet part (a) of the protection standard. Fisheries New Zealand notes that mechanical harvesting can affect the benthos. However whether a prohibition on mechanical harvesting at this site is required or could be implemented may require more information to support a case under the Fisheries Act. Fisheries New Zealand can provide more information should you decide to pursue it.
412. Site Q1 includes further restrictions on set netting, commercial line fishing and fyke nets and whitebaiting. The agencies could not reach consensus as to whether these additional restrictions are warranted at this site
413. The agencies note:
- There is insufficient information available to determine if the current level of fishing activity from these methods are having an adverse effect on the aquatic environment at these sites.
 - Fisheries New Zealand consider that this raises the question of whether the proposed restrictions on these methods should be imposed.
 - In the absence of information that would allow an adequate assessment of effects of fishing, DOC considers that the proposed restrictions would provide the most certainty that the protection standard would be met at these sites. A prohibition on methods that have the potential to extract large quantities of fish within the site would be consistent with Planning Principle 8, which states 'Decision making on management actions will be guided by a precautionary approach'.
 - Should ministers wish to pursue these restrictions, further advice on implementation options and associated risks can be provided by the agencies.

Planning Principle 3: Provision for special relationship between Crown and Māori

414. Tahakopa Estuary has extensive wāhi tapu and wāhi taōka sites with carbon dating providing evidence that it includes some of the oldest archaeological sites known in Aotearoa.

415. The estuary is regularly used by whānau to gather mahika kai and launch waka ama. Customary practices are used to educate and transfer intergenerational mātauraka in traditional gathering practices.
416. This site is in close proximity to SILNA lands.
417. The Forum's Recommendations Report says that the establishment of an MPA would extinguish the spiritual connections and interests of the whānau. The report goes on to say that the establishment of a Type 2 MPA will not accommodate the mahika kai traditions of which estuaries are a part.¹¹⁸
418. Agencies note that Kāi Tahu's position is at a network level, not at a site level. The Forum's Recommendations Report states that Kāi Tahu does not oppose either Network 1 or 2.

Planning Principle 5: Adverse impacts on existing users

Fisheries

419. The assessment below provided by Fisheries New Zealand (paragraph 420) does not necessarily reflect the views of DOC.
420. Fisheries New Zealand is aware that there is commercial fishing activity in this estuary for shortfin eels. The submission from the South Island Eel Industry Association (SIEIA)¹¹⁹, estimated the median annual shortfin eel catch taken from this estuary to be 2.75 tonnes (9.5% total TACC of 29 tonnes for SFE15). Fisheries New Zealand considers that prohibitions on fyke netting at this estuary will impact commercial shortfin eel fishing interests. Fisheries New Zealand notes that shortfin eels are often targeted in estuaries as they are generally in better condition and are of a higher value than when they are taken from rivers. Fisheries New Zealand considers that commercial eel fishers' ability to take their shortfin eel catch elsewhere in the Forum region may be limited, given a number of other estuaries that are already closed or restricted to commercial fishing activity¹²⁰. Fisheries New Zealand/agencies can provide a complete analysis of this if Ministers require. Fisheries New Zealand considers that there may be potential for the displacement of shortfin eel fishing effort (as a result of the recommended fyke netting restrictions) into surrounding estuaries that may result in a localised depletion issue (by concentrating fishing effort into the areas that remain open).
421. Fisheries New Zealand notes that this may raise concerns for local Iwi. The views of different stakeholder groups on Site Q as consulted on are summarised in the Forum's Recommendations Report (pages 214 and 216).

Other users

422. Various resource consents are found in close proximity to Tahakopa Estuary. Agencies note that a Type 2 MPA status does not in itself affect existing resource consents but it may be a relevant matter for consideration when consents are being renewed. The prohibition on bottom disturbance and seismic testing recommended by the Forum could be implemented under special legislation. Further analysis is required as to the extent to which this could be done under existing legislation. The Forum considered

¹¹⁸ Pages 217/218, Forum's Recommendations Report.

¹¹⁹ The South Island Eel Industry Association represents commercial eel fishers who utilise the eel resource (shortfin and longfin eels) in the South Island, including coastal estuaries. Their members comprise the majority of eel permit holders and take the majority of shortfin and longfin eel catch in the South Island.

¹²⁰ Fisheries New Zealand is aware of 13 estuarine areas in the Forum region that are already closed or restricted to commercial eel fishing, and there may be more closures/restrictions Fisheries New Zealand is not aware of at this stage. Fisheries New Zealand notes that 9 of these areas meet the classification of an estuarine habitat under the MPA Guidelines (p.36).

that a cultural tourism/education concession currently being developed for the site may be prevented/impacted by the proposal.

Social and economic interests

423. The estuary is much visited via various walks and access points although parts of the area proposed for protection would be accessed to the public by water only. This site would offer families and visitors an educational experience of estuarine habitats in a natural condition. The Forum deemed that the establishment of a protected area at this site would highlight the natural values of an area adjacent to a high-use tourist route. The proposed site is highly visible from the scenic highway.
424. The Forum further considered the indirect benefit to tourism values through the protection of wading birds and their food supply.

Site T1 – Proposed ban on commercial harvest of bladder kelp

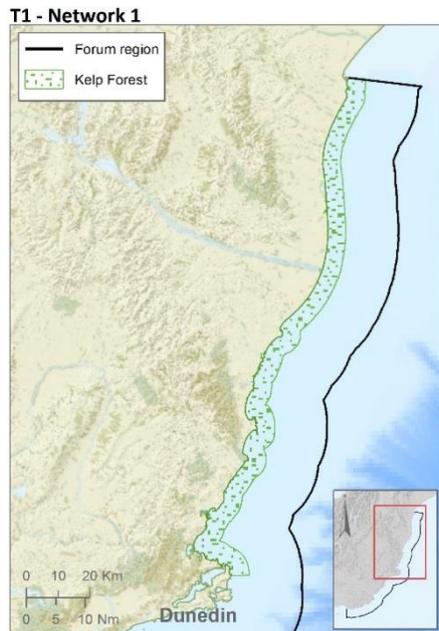


Figure 14 Site T1

Overall agency assessment

425. Agencies acknowledge that Site T1 is proposed as part of Network 1 under the ‘other protection tool’ category. It does therefore not contribute towards the representation of the habitat in the network but does contribute towards biodiversity protection in the Forum region.
426. DOC supports the inclusion of Site T1 in Network 1 in recognition of the importance of this biogenic habitat in the region. DOC also acknowledges the issues with regards to implementation, and notes the Forum has not recommended this as a *Macrocystis* sustainability issue but rather the potential for ecosystem effects of harvest.
427. Fisheries New Zealand agrees with DOC that kelp is an important biogenic habitat, deserving of protection. However, Fisheries New Zealand does not support the Forum’s recommendation with respect to Site T1, as discussed below.
428. Fisheries New Zealand considers any sustainability concerns can be addressed through a sustainability review to consider the TACC and harvest controls.
429. Agencies note that the Forum’s Recommendations Report states that Kāi Tahu does not oppose either Network 1 or 2.

Introduction

430. The Forum’s Recommendations Report proposes the protection of giant bladder kelp (*Macrocystis pyrifera*) through a ban on commercial harvesting along a 3NM-wide coastal stretch running from the Timaru south to the Otago Peninsula. Site T1 was proposed as part of Network 1 and encompasses all known areas of *Macrocystis* forest along the coast in the northern part of the Forum’s region.

431. Site T1 is proposed under the MPA Policy's 'Other Protection Tool' category i.e. tools similar to those for MPAs, but which in particular cases, do not protect sufficient biodiversity to meet the protection standard¹²¹. While Site T1 does not count towards the MPA network, it is within the scope of the MPA Policy and the Forum's terms of reference.
432. The Forum proposed the restriction in Site T1 to mitigate the potential impact of kelp harvest on kelp populations and the ecosystems for coastal food webs and fisheries that they provide. Whilst the Forum acknowledges that the observed decline in kelp forests is mainly attributed to land-originated sedimentation issues, they argue that 'harvesting provides an additional and unwarranted risk to the values provided by *Macrocystis*, a species already threatened by other stressors'¹²².
433. Site T was formally consulted on. Stakeholder views are reflected in the Forum's Recommendations Report (page 224) and the Summary of Submissions. Site T1 has the same proposed boundaries as the consulted Site T. Agencies therefore consider submissions to the Forum are likely to be indicative of stakeholder views on Site T1.

Table 57 Site T1

	Site T1
Network	Network 1
Type	Other Protection Tool
Size	157.5 km ²
% Forum region	1.8%
Width	5.5 km (3 NM)
Coastline length	40.6 km

434. Offshore and fringing kelp forests, formed by the native *Macrocystis pyrifera* (giant or bladder kelp), that are found in the area from Warrington to Kakanui, are nationally and globally significant. *Macrocystis pyrifera* kelp forests are important biogenic habitats that support biodiversity and provide important ecosystem services in the Forum region, including the protection against coastal erosion and providing habitat for both coastal and pelagic fish and invertebrates. Further, kelp forests play a key role as primary producers in coastal food webs, as well as acting as buffers of ocean acidification due to their role in CO² absorption.
435. Agencies note that the Forum could not propose management tools designed to manage issues outside of the marine environment. The agencies note that this limited their ability to address other threats to kelp forest in their Report, such as sedimentation from land-based activities, which has been identified as a potential factor in the decline in the extent of *Macrocystis*.

Meeting the MPA Policy design and planning principle

Planning Principle 1: representation of habitats and ecosystems

436. The agencies note that *Macrocystis* is represented in Sites D1 and D2 (proposed as marine reserves, 32.7% and 32.4%, respectively). Neither of the proposed networks include a replicate of kelp forest in any other MPA.
437. Site T1 encompasses 99.8% of the known extent of *Macrocystis* forests along the coast of the Forum region. While Site T1 would not meet the requirements of being a

¹²¹ Page 13 in MPA Policy – Classification, protection standard and implementation guidelines (2008).

¹²² Forum's Recommendations Report page 224.

replicate of the habitat, it would mitigate any potential risk associated with commercial harvest.

Planning Principle 2: Meeting the protection standard

438. Agencies note this recommendation does not meet the protection standard.

Planning Principle 3: Provision for special relationship between Crown and Māori

439. Agencies note that the Forum's recommended ban on commercial harvest of *Macrocystis* excludes cultural harvest.

440. Customary fisheries are located along the length of Site T1. There is a mātaimai reserve over the lower Ōtākou (Otago) Harbour. The use of three species of kelp to make poha (kelp bags) for the preservation of kai or use in hangi still occurs. The Forum's Recommendations Report states that the customary use of kelp should be retained and available to whānau and hapū with an interest in exercising the customary right. Mātauraka associated with the management and use of kelp is an important taoka that requires continued access, use and sharing of knowledge. Coastal mātaimai reserves are dependent on the retention of kelp forests (its protection allows the retention of that customary right).¹²³

441. Agencies note that Kāi Tahu's position is at a network level, not at a site level. The Forum's Recommendations Report states that Kāi Tahu does not oppose either Network 1 or 2.

Planning Principle 5: Adverse impacts on existing users

442. The assessment below provided by Fisheries New Zealand (paragraphs 443-448) does not necessarily reflect the views of DOC.

443. Attached *Macrocystis* is managed under the quota management system (QMS), and the current commercial catch limit (total allowable commercial catch – TACC) for the quota management area that includes the Forum region (KBB3G) is 1,236 tonnes. Commercial harvest is restricted to the top 1.2 m of kelp canopy (measured from the surface of the water).

444. Fisheries New Zealand estimates only a small amount of attached *Macrocystis* is currently harvested from the Forum region. The main harvest of *Macrocystis* occurs around Banks Peninsula, which is well outside the Forum's planning area.

445. Fisheries New Zealand considers that prohibiting commercial harvest of *Macrocystis* (as recommended in Site T) is unwarranted, because there is no evidence that commercial harvest is unsustainable or has an adverse effect on the aquatic environment. It could also put pressure on *Macrocystis* stocks in other parts of KBB3G, particularly if the TACC was not amended accordingly.

446. Fisheries New Zealand notes the potential for the establishment of Site T1 to potentially impact the ability of quota holders to fully develop the kelp fishery, and to potentially reduce the value of the *Macrocystis* quota they hold.

447. The views of different stakeholder groups on Site T consulted on are summarised in the Forum's Recommendations Report (page 224).

448. If Ministers have sustainability concerns for kelp harvesting and would like to consider options for greater protection of this habitat within the region, Fisheries New Zealand

¹²³ Forum's Recommendations Report pages 225 and 226.

can undertake a review of the TACC and harvest control settings and advise on options. This may be a more appropriate mechanism to manage the kelp forest, balancing the option for extraction whilst also ensuring its protection and sustainability.

Other users

449. A number of resource consents are currently active in this area including for gravel extraction and discharges to the marine environment. The Forum did not assess the adequacy of the conditions in those discharge consents. Agencies note that it is unlikely that a ban on commercial harvesting would affect existing resource consents but it would depend on the method of implementation and may be a relevant matter for consideration when consents are being renewed.

Social and economic interests

450. The benefits of protecting kelp ecosystems is the opportunity to study a species that forms the base of the coastal food web and creates habitat for other species such as pāua, kōura papatea (rock lobster), and the enhancement of these fisheries.
451. The Forum further considered that the protection of kelp along the coast would provide indirect benefits to tourism through the enhancement of food supplies for marine iconic species.
452. They further highlight the role of kelp in mitigating coastal erosion and protecting reefs from climate change.

Appendix 5:

The Forum's management recommendations for either option (Continued)

Management recommendations relating to monitoring and review

1. The Forum has recommended the development of a scientific monitoring programme that would assess the effectiveness of the MPAs. The Forum recommends that this involve:
 - a generational review (discussed above)
 - a baseline survey
 - five-yearly assessments of management measures
 - objectives that measure the ecological, Kāi Tahu cultural, social and economic effects of the MPAs.
2. The agencies agree that a scientific monitoring programme is an essential element of this proposal¹²⁴. The need for effective monitoring was a general theme in submissions, and we consider that it is an important component of the proposal that may improve social licence. We note that monitoring is also a requirement of the MPA Policy (Network Design Principle 6).
3. The agencies agree with the Forum's recommendation of baseline surveying, as this valuable information has rarely been able to be collected from New Zealand's MPAs. Ideally this baseline surveying would happen over multiple years, however, one set of information collected prior to the establishment of the MPAs would still provide a valuable reference point.
4. The agencies agree that a five-yearly assessment of management measures would be appropriate. The agencies would not recommend that a full-scale review be launched five-yearly without an initial assessment of information (to determine if a review was necessary).
5. The agencies agree that objectives should be set (as per the Forum's recommendation above), and note that discussions with Kāi Tahu would be required to ascertain their objectives for any network that is progressed.
6. Should you decide to progress a network, we recommend that you seek further advice from officials regarding scientific monitoring options, including a 'baseline' survey. The agencies note that substantial resources will be required to undertake any monitoring work, given the number and breadth of MPAs that have been proposed.
7. Resourcing costs and funding options can be provided to you, subject to your preferred approach.

Management recommendations relating to compliance and enforcement

8. The Forum recommends that compliance and enforcement requirements be included within the management strategy. The agencies support this recommendation.
9. The agencies recommend that, prior to the implementation of any MPAs, you direct officials to provide you with the resourcing costs associated with any proposals you choose to progress.
10. The estimated MPI compliance costs associated with these proposals are relatively high. Network 1 and Network 2 would require additional FTEs and a vessel to enable

¹²⁴ A monitoring programme was not built into the implementation of the marine reserves established through the West Coast Forum. A baseline survey was not commissioned, but subsequent monitoring of the intertidal habitats has been undertaken since their implementation.

compliance monitoring and enforcement. These costs have not been budgeted for and could not be absorbed within current baselines without redirecting resources from existing work programmes.

11. DOC notes that additional FTEs and operational budget beyond existing baselines would be required.

Management recommendations relating to transit and seismic surveying

Transit through MPAs by vessels

12. The Forum recommends that it be made explicit that vessels, including fishing vessels, are permitted to:
 - transit through MPAs (including Type 2)
 - shelter in them when necessary even with catch on board
 - subject to the proviso that no fishing gear is allowed in the water while a vessel is within a marine reserve.
13. The agencies do not consider this necessary as it is already provided for under s 23(1) and (2) of the Marine Reserves Act 1971. Transit through, and shelter within, Type 2 MPAs will not be impacted, provided that any fishing activity could be proven to have not occurred within the protected area.

Seismic testing and bottom disturbance

14. The Forum recommends that bottom disturbance and seismic testing associated with any activity, including petroleum or mineral exploration or extraction, be prohibited in MPAs.
15. The agencies support the Forum's recommendation to prohibit bottom disturbance. Prohibiting activities that disturb the seabed will support biodiversity protection and is consistent with the approach taken to fishing activities, where methods that disturb the seabed are prima facie to be excluded from MPAs in order to meet the protection standard.
16. As marine reserves are listed in the Fourth Schedule to the Crown Minerals Act 1991, a permit holder of a permit in respect of petroleum must not exercise the permit in a marine reserve without an access arrangement (section 53(3) of the Crown Minerals Act 1991). The circumstances in which an access arrangement can be granted are very limited (section 61 (1A)).
17. Type 2 MPAs are not listed in the Fourth Schedule to the Crown Minerals Act 1991, and hence the controls on access for petroleum exploration under section 53(3) of the Crown Minerals Act 1991, do not apply to these areas.

Appendix 6:

Forum's recommendations on broader issues

1. A number of other issues and concerns were raised by Forum members and submitters on matters that may affect not only some of the MPA proposals, but also the coastal marine environment in general. Some examples, and the agencies' views on them, are included below.
2. Agencies are not requesting that you make a decision on these.

Risks to seabirds

3. Seabirds are ranked as the world's most threatened group of birds, and New Zealand has the highest number and proportion of threatened seabird species of any country in the world. Habitat loss, disease, pollution and fishing are known threats to penguins, for which the Forum region is of particular significance.
4. The agencies note that there are various fisheries initiatives, such as the Seabirds National Plan of Action, that could be expanded to address protected species bycatch issues. MPA networks are not as comprehensive, as they cover only a small fraction of an affected species' range.
5. However, the maintenance of the biodiversity and ecosystem functioning, which can be achieved through MPAs, would benefit seabirds as well as large predators such as rāpoka, pahu and paikea in the marine environment.

Land-based impacts on the coastal environment

6. Sedimentation and discharges from land-based activities contribute to environmental decline.
7. The Forum recommended that regional and district councils ensure monitoring and integrated management of land use and land disturbance are undertaken to protect and safeguard coastal habitats and ecosystems.
8. The Forum also recommended that central and local government undertake greater advocacy to protect and better manage marine habitats and ecosystems.
9. The agencies agree that habitat health in MPAs may be affected by land uses.
10. No specific response is considered necessary in relation to these recommendations as:
 - Policy 5 of the New Zealand Coastal Policy Statement 2010 already requires councils to consider the effects on land or waters in the coastal environment;
 - The National Policy Statement for Freshwater Management already recognises the need for consideration of marine receiving environments in doing freshwater planning work; and
 - The RMA contains a range of tools to allow integrated planning across the land/water boundary.

Fisheries management

11. As noted by the Forum, some matters raised in submissions are outside the scope of the MPA process and the Forum's Terms of Reference. These include: reducing recreational daily bag limits; changing recreational size limits; introducing a licensing system for recreational fishers; bringing charter fishing operations into the QMS; the temporal and / or seasonal closures of sites; the creation of recreational fishing parks.

12. Fisheries New Zealand manages recreational fishing by setting recreational allowances for selected stocks. Bag limits and size limits are set at a level that ensures recreational allowances are not exceeded. Fisheries New Zealand has noted the views expressed by submitters in relation to bag and size limits, and other fisheries management related matters. If you choose to implement any of the MPA proposals, Fisheries New Zealand would continue to monitor and provide you with future management options as appropriate.

Appendix 7: Summary of Submissions
