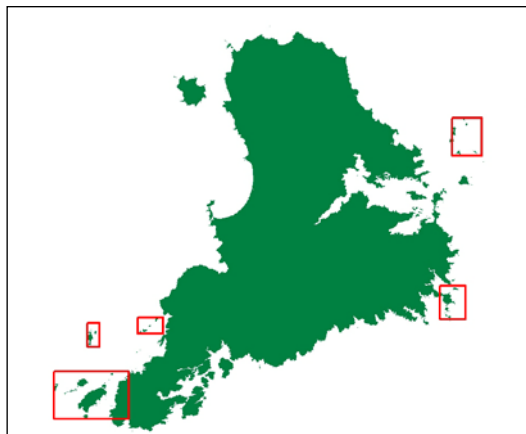


CUSTOMARY REGULATIONS FOR THE SOUTHERN TITI/MUTTONBIRD ISLANDS

Figure 1: Map of Stewart Island indicating the general locations of the proposed closures



Executive Summary

- 1 This paper describes a proposal for new customary regulations. The regulations would restrict commercial fishing in 31 locations around the Southern Titi/Muttonbird Islands.
- 2 Tītī (mutton bird) harvesters are reliant on shellfish whilst on the Southern Titi/Muttonbird Islands. Because of this, tangata whenua wish to ensure tītī harvesters can continue to gather kaimoana, particularly shellfish, around the islands.
- 3 To recognise and provide for customary food gathering by the tītī harvesters of paua, kina, and rock lobster in these areas, and the special relationship between the tītī harvesters and the islands, Te Rūnanga o Ngāi Tahu (Ngāi Tahu), on behalf of the Titi/Muttonbird Island birding community as tangata whenua, has asked that the Minister of Fisheries (the Minister) consider creating new customary regulations under s 186(1) of the Fisheries Act 1996 (the Fisheries Act). The regulations would close a total of 31 areas: 27 areas to the commercial harvesting of paua and kina; three areas to the commercial harvesting of kina, only; and one area to the commercial harvesting of paua, kina, and rock lobster. The areas are relatively small, totalling approximately 1.9 km². They are all adjacent to safe landing areas around the Southern Titi/Muttonbird Islands.
- 4 The Ministry of Fisheries' (MFish) initial position is that the proposed regulations better provide for Maori non-commercial traditional and customary rights and interests than the status quo. MFish also considers the proposed regulations are consistent with the Crown's obligation under s 10 of the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992 (the Settlement Act).
- 5 MFish is seeking submissions from tangata whenua and stakeholders on the impact of commercial fishing on customary fishing around the Southern Titi/Muttonbird Islands, the economic impacts on commercial fishers of the proposed closures, the boundaries of the proposed closures, and the likely impact on adjacent areas of displaced commercial effort under the proposals.

Regulatory Impact Analysis Requirements

- 6 This IPP required a Regulatory Impact Statement which was reviewed internally by MFish.
- 7 For more information on the Regulatory Impact Analysis Requirements and the meaning of the word 'significant' with reference to an IPP, please refer to the Treasury website www.treasury.govt.nz.

The Issue

- 8 Tītī (mutton bird) harvesters are reliant on shellfish whilst on the Southern Titi/Muttonbird Islands. Because of this, tangata whenua wish to ensure tītī harvesters can continue to gather kaimoana, particularly shellfish, around the islands. Due to the remote location of the islands and other restrictions to land access, the only take of shellfish is by tangata whenua and commercial fishers.
- 9 To recognise and provide for customary food gathering by the tītī harvesters of paua, kina, and rock lobster in these areas, and the special relationship between the tītī harvesters and the islands, Ngāi Tahu (on behalf of the Titi/Muttonbird Island birding community as tangata whenua) has asked that the Minister consider creating new customary regulations under s 186(1) of the Fisheries Act. The regulations would close a total of 31 areas: 27 areas to the commercial harvesting of paua and kina; three areas to the commercial harvesting of kina, only; and one area to the commercial harvesting of paua, kina and rock lobster. The areas are relatively small, totalling around 1.9 km². They are all adjacent to safe landing areas around the Southern Titi/Muttonbird Islands.

Summary of Options

Option 1 – Status Quo

- 10 The status quo (Option 1) allows commercial fishers to continue to harvest paua, kina and rock lobster (in PAU5B, SUR5 and CRA8, respectively) from the areas proposed for closure. There would be no change to the Fisheries (Southland and Sub-Antarctic Areas Commercial Fishing) Regulations 1986, which would continue to apply in the areas proposed for closure¹.

Option 2 – New Customary Regulations for the Southern Titi/Muttonbird Islands – MFish's Preferred Option

- 11 MFish's preferred option (Option 2) is for regulations to be made closing 31 areas, as follows:

¹ None of the proposals relate to recreational fishing.

No.	Name	Proposed closure to commercial harvest for:	For a map see:
1	Pikomamakuiti (North Island)	Kina and paua	<i>Fig. 1, Appendix 1</i>
2	Bunker Island	Kina	<i>Fig. 1, Appendix 1</i>
3	Herekopare	Kina and paua	<i>Fig. 1, Appendix 1</i>
4	Tia Island	Kina and paua	<i>Fig. 2, Appendix 1</i>
5	Rukawahakura	Kina and paua	<i>Fig. 2, Appendix 1</i>
6	Wharepuaitaha	Kina and paua	<i>Fig. 2, Appendix 1</i>
7	Poutama	Kina and paua	<i>Fig. 3, Appendix 1</i>
8	Puwai	Kina and paua	<i>Fig. 3, Appendix 1</i>
9	Hinekuha	Kina and paua	<i>Fig. 3, Appendix 1</i>
10	Murderers Cove	Kina and paua	<i>Fig. 3, Appendix 1</i>
11	Patupahe	Kina and paua	<i>Fig. 3, Appendix 1</i>
12	Pukeotakohe	Kina and paua	<i>Fig. 3, Appendix 1</i>
13	Pukeweka	Kina and paua	<i>Fig. 3, Appendix 1</i>
14	Solomons	Kina and paua	<i>Fig. 3, Appendix 1</i>
15	Upokopotiti – Potted Head	Kina, paua, and crayfish	<i>Fig. 3, Appendix 1</i>
16	West Taukihepa	Kina	<i>Fig. 3, Appendix 1</i>
17	Southern Putauhinu	Kina and paua	<i>Fig. 3, Appendix 1</i>
18	South Eastern Putauhinu	Kina and paua	<i>Fig. 3, Appendix 1</i>
19	Eastern Putauhinu	Kina and paua	<i>Fig. 3, Appendix 1</i>
20	North Eastern Putauhinu	Kina and paua	<i>Fig. 3, Appendix 1</i>
21	North Western Putauhinu	Kina and paua	<i>Fig. 3, Appendix 1</i>
22	Putauhinu Nuggets	Kina and paua	<i>Fig. 3, Appendix 1</i>
23	Kaimohu	Kina and paua	<i>Fig. 3, Appendix 1</i>
24	Pohowaitai & Tamaitemoika Islands	Kina and paua	<i>Fig. 3, Appendix 1</i>
25	Poho a Tairea	Kina and paua	<i>Fig. 4, Appendix 1</i>
26	Poho a Tairea 2	Kina	<i>Fig. 4, Appendix 1</i>
27	Poho a Tairea/Chimneys Island	Kina and paua	<i>Fig. 4, Appendix 1</i>
28	Betsy Island	Kina and paua	<i>Fig. 4, Appendix 1</i>
29	Kani (Kundy Island)	Kina and paua	<i>Fig. 4, Appendix 1</i>
30	Paua Bay (Big Moggy Island)	Kina and paua	<i>Fig. 5, Appendix 1</i>
31	Little Moggy Island	Kina and paua	<i>Fig. 5, Appendix 1</i>

- 12 The proposed regulations would be made under s 186(1) of the Fisheries Act. Regulations would be implemented under s 297(1)(a) through amendments to the Fisheries (Southland and Sub-Antarctic Areas Commercial Fishing) Regulations 1986.

Rationale for Management Options

- 13 The Minister has an ongoing obligation under s 10 of the Treaty of Waitangi (Fisheries Claim) Settlement Act 1992 to consult with tangata whenua and to develop policies to help recognise use and management practises of Maori in the exercise of non-commercial fishing rights. Under s 10(c) of the Settlement Act, the Minister must recommend to the Governor-General in Council the making regulations “...to recognise and provide for [non-commercial] customary food gathering...and the

special relationship between tangata whenua and those places which are of customary food gathering importance...”.

- 14 Under s 186(1) of the Fisheries Act, the Governor-General may make regulations recognising and providing for customary food gathering by Maori, and the special relationship between tangata whenua and places of importance for customary food gathering to the extent that such food gathering is neither commercial in any way nor for pecuniary gain or trade.
- 15 MFish is currently developing a policy statement in regard to regulations proposed under s 186(1) of the Fisheries Act. The proposal in this IPP may be considered prior to that policy statement being finalised and approved. However, consistent with the draft policy statement, MFish considers that the following matters are relevant to whether new customary regulations should be made:
 - a) whether customary interests can be provided for through existing tools
 - b) whether the proposed new regulations meet the conditions of s 186 of the Fisheries Act
 - c) whether the proposed regulations are *ultra vires* or consistent with fisheries legislation, as well as other legal obligations (such as the Bill of Rights, international obligations etc)
 - d) the rights and interests of other groups; and
 - e) resourcing and implementation issues.

Existing tools

- 16 Existing tools that might provide for recognising the use and management practises of Maori in the exercise of non-commercial fishing rights include appointment of Tangata Tiaki/Kaitiaki under the Fisheries (South Island Customary Fishing) Regulations 1999 (the Customary Regulations) to allow the issuing of customary take authorisations, Taiapure-local fisheries², mātaihai reserves, temporary closures, and existing regulations. MFish does not consider that any of these existing tools are able to address Ngai Tahu’s concerns about access to shellfish, without creating an unnecessary administrative burden to tangata whenua.
- 17 Tangata Tiaki/Kaitiaki have been appointed under the Customary Regulations for the area/rohe moana encompassing the South Island fisheries waters about and within Rakiura/Stewart Island, and other offshore islands situated within the 200 mile limit. These appointed Tangata Tiaki/Kaitiaki represent individual papatipu runanga³. As many of the extended whānau groups undertaking the annual tītī harvest are affiliated to many papatipu runanga, customary management of these 31 proposed areas by the existing Tangata Tiaki/Kaitiaki would not be an appropriate mechanism to provide for customary interests of the Titi/Muttonbird Island birding community. Tangata Tiaki/Kaitiaki are also not able to manage commercial fishing.

² Taiapure-local fisheries, under s174 of the Act, aim to provide for recognition of rangatiratanga and the fisheries rights secured under Article Two of the Treaty of Waitangi, over any area of estuarine or coastal waters that have customarily been of special significance to any iwi or hapu either as a source of food or for spiritual or cultural reasons.

³ With inland boundaries defined in the First Schedule of the Te Runanga o Ngāi Tahu Act 1996

- 18 MFish does not consider that a Taiapure-local fishery could provide for customary interests in this situation. On the Southern Titi/Muttonbird Islands there is no resident community, besides the birders themselves, from which representatives for the Taiapure management committee can be drawn. These islands are remote, occupied only for a few months each year and land access is almost exclusively restricted to tangata whenua. The Tītī Administering Body and the Tītī Committee are mandated and resourced to manage specific aspects of the use and management of the Southern Titi/Muttonbird Islands, but not customary fishing issues. Extended whānau groups with interests in managing areas of customary fishing grounds within the 31 proposed closed areas are also affiliated to many different papatipu runanga. Provision for customary fishing interests under this local community focused management mechanism would be resource intensive for the Southern Titi/Muttonbird Island birding community and place an unreasonable administrative burden on them.
- 19 MFish considers that mātaimai reserves⁴ are unsuitable for many of the same reasons given for Taiapure-local fisheries. Such reasons include the lack of a resident community on the Southern Titi/Muttonbird Islands, and that management by Tangata Tiaki/Kaitiaki would place an unreasonable administrative burden on the Southern Titi/Muttonbird Island birding community. MFish considers that management by mātaimai reserves may be undesirable because of the small number of species for which customary protection is sought and the large number of small, well-defined areas proposed for protection.
- 20 Temporary closures⁵ may assist in restoring the kina, paua, and rock lobster in depleted areas around the Southern Titi/Muttonbird Islands in the short-term, but would not enhance access to customary fisheries resources in the longer term. Given the historic and contemporary cultural and economic significance of the tītī harvest to Rakiura Māori, and Ngāi Tahu as a whole, MFish considers that it is desirable that any legislative protection afforded to the 31 proposed areas should be permanent. MFish does not consider temporary closures are able to recognise and provide for the interests of tangata whenua in these 31 places of customary food gathering importance in the longer term.
- 21 MFish does not consider that any existing regulations adequately provide for customary interests in the 31 areas proposed for closure.

Conditions of s186

- 22 The Southern Titi/Muttonbird Islands are of cultural and economic significance to Ngāi Tahu. The Crown has acknowledged the “special” relationship between tangata whenua and the Southern Titi/Muttonbird Islands through:
- a) implementation of legislative restrictions on access by non-tangata whenua to the islands;

⁴ These reserves provide for tangata whenua to manage all non-commercial fishing in some of their traditional fishing grounds. Tangata Tiaki/Kaitiaki may be appointed by tangata whenua to make by-laws for the mātaimai reserves.

⁵ Under s186B of the Act, tangata whenua may request the Minister of Fisheries to close or restrict fishing in a given area of the South Island Fisheries waters for a period not exceeding two years. The purpose of these temporary closures is to improve the size and/or availability of fish stocks that have been depleted, or to recognise and provide for the use and management of tangata whenua.

- b) recognition of tītī⁶ as a “taonga species” under Ngāi Tahu Claims Settlement Act 1998; and
 - c) engagement with, and support of, Rakiura Maori kaumātua in their work on the Ministry of Agriculture and Fisheries’ South Island “Rahui Area” Programme (the Rahui Programme).
- 23 The Rahui Programme is one of several ways that Te Runanga o Ngai Tahu has engaged with the Crown to seek protection for areas of significance to customary fishing around the Southern Titi/Muttonbird Islands. Work undertaken by Te Runanga o Ngāi Tahu on the “Ngāi Tahu Customary Fisheries Protection Areas Project”⁷ has re-confirmed many of the areas identified by the Rahui Programme as being of sufficient historic and contemporary significance within the Ngāi Tahu takiwā (tribal area).
- 24 The gathering of paua, kina and rock lobster by the Titi/Muttonbird Island birding community is for sustenance and is not for pecuniary gain or trade.

Consistent with fisheries legislation

- 25 MFish considers that the proposed regulations are not *ultra vires* and are consistent with fisheries legislation. MFish are not aware of any inconsistency with any other legal obligation.

Rights and interests of other groups

- 26 MFish considers that new regulations would better provide for Maori non-commercial traditional and customary rights and interests. Despite this, the status quo could be preferred if it is determined that the proposal will have an unreasonable impact on the utilisation of fisheries resources within PAU5B, SUR5, or CRA8 by commercial fishers.
- 27 With the support of the Titi Administering Body and the Titi Committee, representing beneficiaries with interests in the Former Crown Islands and Beneficial Islands, respectively, Ngāi Tahu has engaged in discussions with commercial paua, kina and rock lobster fishers. Ngāi Tahu is seeking support from them for the proposed closed areas. The SUR5 Association, representing commercial kina fishers, has indicated their general support for the proposal⁸.
- 28 In an attempt to minimise the impacts of the proposed closures on commercial fishers (in particular paua fishers), Ngāi Tahu has changed the number, size and boundaries of the proposed areas from the initial proposal. Ngāi Tahu remains open to discussions to further amendments on all areas, but, in particular, boundary changes that will minimise impacts of: Pikomamakuiti (North Island); Herekopare; Tia Island;

⁶ Tītī are considered a “taonga species” by Ngāi Tahu, and are listed in Schedule 97 of the Ngai Tahu Claims Settlement Act 1998

⁷ A background to the project has been provided by Toitū te Whenua, of Te Runanga o Ngāi Tahu, and is available on the MFish website, www.fish.govt.nz. This background includes the objective of this project and the methodology used for identifying significant customary fisheries areas and appropriate mechanisms for customary protection.

⁸General support for the proposal has been given by the SUR5 Association, through discussions held by the Southern Shellfish Fisheries Plan Advisory group in the development of the Draft Southern Shellfish Fisheries Plan.

and Poho a Tairea/Chimneys Island. Ngāi Tahu is also particularly interested in tangata whenua and stakeholder views on whether the Solomons Island proposed closure should proceed.

- 29 MFish is seeking submissions from tangata whenua and stakeholders on the impact of commercial fishing on customary fishing around the Southern Titi/Muttonbird Islands, the economic impacts on commercial fishers of the proposed closures, the boundaries of the proposed closures, and likely impacts of the displacement of commercial effort on adjacent areas as a result of this proposal.
- 30 Recreational fishing would not be impacted by the proposed closures.

Resourcing and implementation issues

- 31 There will be no new significant resourcing or implementation issues that MFish considers would prevent new regulations being introduced to close the 31 areas as requested by Ngai Tahu. Monitoring compliance will be on a priority basis for resources.

Assessment of Management Options

Option 1 – Status Quo

Impact

- 32 Commercial harvest of paua, kina, and rock lobster will be unaffected. The ability of Southern Titi/Muttonbird Island birding community to manage and have access to traditional fishing resources will be impeded. They see this as an unnecessary barrier to their expression of tikanga (customary protocols).
- 33 Under this option, tangata whenua would need to rely on voluntary measures to address their concerns. The effectiveness of any future voluntary agreement is uncertain. Tangata whenua are only on the islands between April and May each year. It is, therefore, impossible for them to monitor their effectiveness of any voluntary commercial measures throughout the year. Attempts by tangata whenua to create voluntary commercial closures in these areas have been met with varying degrees of voluntary compliance from commercial fishers.

Costs

- 34 This option does not address tangata whenua concerns about access to kaimoana by the birding community as part of the annual harvesting of tītī. It does not recognise and provide for for customary food gathering by the tītī harvesters of paua, kina, and rock lobster in these areas, and the special relationship between the tītī harvesters and the islands.

Benefits

- 35 The status quo would mean less cost to MFish compliance services.

Option 2 – New Customary Regulations for the Southern Titi/Muttonbird Islands – MFish Preferred Option

Impact

- 36 Under this option, tangata whenua concerns about access to kaimoana by the birding community as part of the annual harvesting of tītī would be addressed. However, implementation of the recommended regulations would have some impact commercial harvest of paua, kina, and rock lobster.
- 37 MFish considers that new regulations for the Southern Titi/Muttonbird Islands would recognise and better provide for Maori non-commercial traditional and customary rights and interests.

Costs

- 38 MFish does not expect the proposals to significantly affect commercial fishing for rock lobster. Upokopotiti – Potted Head (approximately 0.51km of coastline) is the only area over which a prohibition on the commercial harvesting of rock lobster is sought. This is a small bay on Big South Cape Island (Taukihepa) and is located within Rock Lobster Statistical Area 924. This statistical area includes the whole of Rakiura/Stewart Island. Around 9.1% of the CRA8 Total Allowable Commercial Catch (TACC) of rock lobster is taken from Rakiura/Stewart Island. MFish considers the impact of this proposal on commercial rock lobster harvest around Rakiura/Stewart Island or CRA8 would be very small.
- 39 The proposed regulations would reduce the areas that commercial fishers could harvest paua and kina within PAU5B and SUR5.
- 40 The proposed closed areas all occur in SUR5. The current TACC for SUR5 is 455 t. The statistical areas affected by this proposal are 025, 027 and 029. The proposed closed areas Pikomamakuiti, Bunker Island, and Herekopare all occur within General Statistical Area 025 and Tia Island, Rukawahakura, and Wharepuaitaha are located in 027. For the past seven fishing years, the average annual kina catches for each of these statistical areas was estimated to be 8.7 t and 15.7 t, respectively. The remaining areas proposed for closure occur within General Statistical Area 029, this statistical area includes all of the Southern Titi/Muttonbird Islands off the southwest coast of Rakiura/Stewart Island. Over the past seven years, just under the 17% of the commercial TACC of kina in SUR5 was taken from General Statistical Area and a total of 22.13% of the SUR5 TACC has been taken from the statistical areas affected by the proposed 31 proposed closed areas around the Southern Titi/Muttonbird Islands. The actual impact of the proposal will be less than the percentages shown, as the proposed areas for protection comprise only a small part of these statistical areas.
- 41 The SUR5 Association representing commercial kina fishers has, through discussions undertaken as part of the Southern Shellfish Plan development, indicated their general support for the proposal.
- 42 The main impact of the proposed regulations is on commercial paua fishing. The proposed closed areas all occur in PAU5B, where the current TACC is 90t. The statistical areas affected by this proposal are P5BS34, P5BS36, P5BS37, P5BS38,

P5BS39, P5BS61, P5BS66, P5BS75, P5BS76 and P5BS79. Over the past seven years, no commercial harvest has been reported in P5BS38, however, a total of 2.8% of the PAU 5B TACC has been taken from the other statistical areas affected by the proposal. The actual impact of the proposal will be less than the percentages shown, as the proposed areas for protection comprise only part of these statistical areas.

- 43 Following discussion between Ngai Tahu, MFish, and PauaMAC 5, MFish understands that paua quota holders do not oppose the proposed closures. Further information is now sought as part of the consultation process.
- 44 Additional compliance costs would be incurred under Option 2. Specific closed areas would demand additional effort to educate commercial fishers and monitor compliance with the closed areas. MFish has no estimate for the likely cost of this work which would be undertaken within existing priorities for resources.
- 45 The recommended regulations do not relate to recreational fishing. So, the proposals will have no cost in terms of recreational fishing for paua, kina, and rock lobster within the 31 proposed areas.

Benefits

- 46 Creating new customary fisheries regulations for these 31 areas around the Southern Titi/Muttonbird Islands, in conjunction with existing restrictions to land access, provides tangata whenua with the ability to express more fully their tikanga (customary protocols) and mātauranga Maori (traditional knowledge) in relation to the harvest of tītī, which includes the gathering of shellfish for sustenance. Proceeding with these proposals therefore better provides for Maori non-commercial fishing interests around the Southern Titi/Muttonbird Islands. This is consistent with the Crown's obligation under section 10 of the Treaty of Waitangi (Fisheries Claim) Settlement Act 1992.
- 47 This option addresses the concerns of tangata whenua about access by tangata whenua to paua, kina, and rock lobster in safe customary fishing areas whilst harvesting tītī on the Southern Titi/Muttonbird Islands.

Other Management Controls

- 48 Ngāi Tahu is pursuing mātaihai reserves in four areas around the Southern Titi/Muttonbird Islands where management by mātaihai has been deemed appropriate by the respective applicants. Mātaihai applications for Kaihuka Island, Horomamae and Pikomamaku were lodged with MFish in August 2008. These applications are currently with MFish for consideration.

Consultation

- 49 Consultation on the proposal is now being undertaken MFish, on behalf of the Minister. The proposal will be notified in the local newspapers, sent to interested parties, and posted in full on the MFish website. MFish seeks submissions on the impact of the proposals from commercial paua, kina and rock lobsters harvesters from PAU5B, SUR5 and CRA8, and how displacement of effort from the proposed closed

areas may affect the fishery. Ngāi Tahu is particularly interested in the views of tangata whenua and stakeholder on whether Solomons Island should proceed.

- 50 Ngāi Tahu has already had preliminary discussions on the proposed regulatory closures with commercial fishers. As a result of these discussions, the number, size, and boundaries of the proposed closures have been amended to minimise the impact on commercial interests, in particular those of commercial paua harvesters. The SUR5 Association, representing commercial kina fishers, has indicated its general support for the proposed closures. Initial analysis suggests that the impact on the commercial harvest of rock lobster will be small. Rock lobster and paua quota holders have indicated they do not oppose the closures.

Statutory Considerations

- 51 Ngāi Tahu's request for new customary regulations to be created for the Southern Titi/Muttonbird Islands is consistent with the Crown's obligation under section 10 of the Treaty of Waitangi (Fisheries Claim) Settlement Act 1992.
- 52 While the Customary Regulations provide broadly for the non-commercial customary fishing interests of South Island Maori, the Crown also has a general obligation under section 186 of the Fisheries Act 1996 to consider requests from tangata whenua to develop new customary regulations for customary non-commercial purposes. Section 186(1) allows the Governor-General to make regulations recognising and providing for customary food gathering by Maori and the special relationship between tangata whenua and places of importance for customary food gathering to the extent that such food gathering is neither commercial in any way nor for pecuniary gain or trade.
- 53 Under s 10(a) of the Fisheries Act, the Minister must take into account the best available information in deciding whether to introduce the proposed closures. There are uncertainties in the information due to a lack of scientific information. In particular, the amount of commercial take from the 31 proposed closed areas is unknown and the costs and benefits of the proposed regulations cannot be quantified.

Other Management Issues

- 54 A Fisheries Plan Advisory Group comprising tangata whenua, stakeholder representatives and MFish has developed a Fisheries Plan for Southern Shellfisheries. This Fisheries Plan covers kina harvest within Fisheries Management Areas 3 and 5. Paua and rock lobster were not included as part of this Shellfish Plan. MFish anticipates that there will be discussions with fisheries stakeholders on Fisheries Plans which will include paua and rock lobster within the next year.

Appendix 1

Figure 2

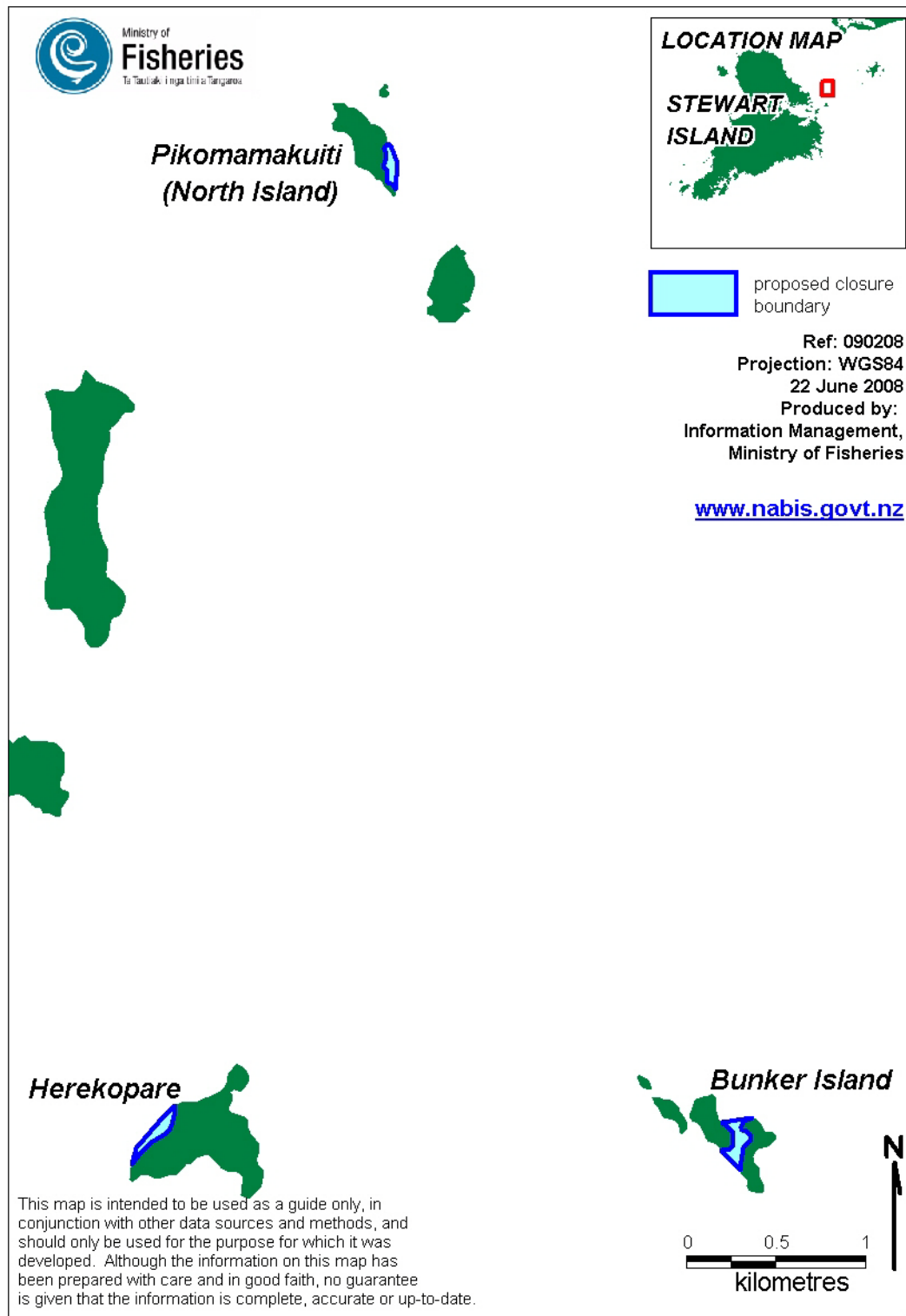


Figure 3

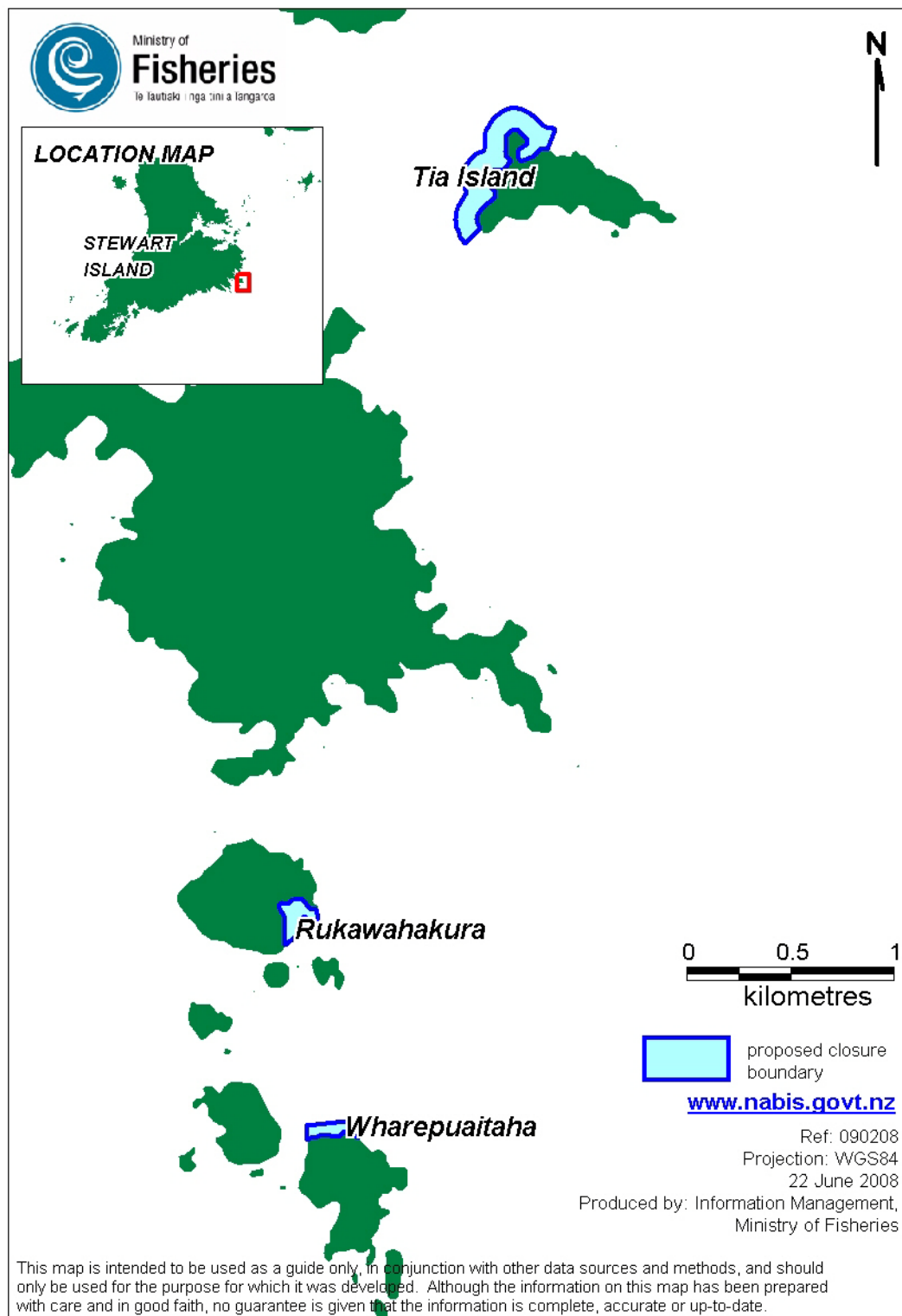


Figure 4

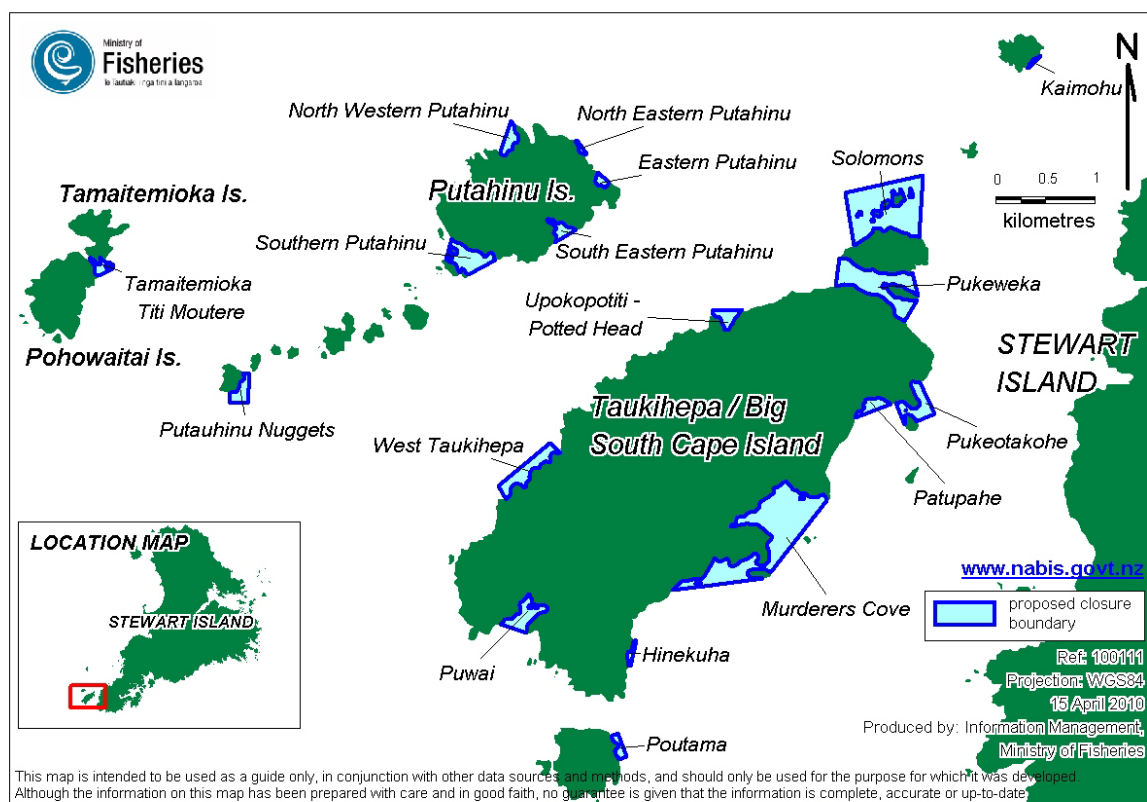


Figure 5

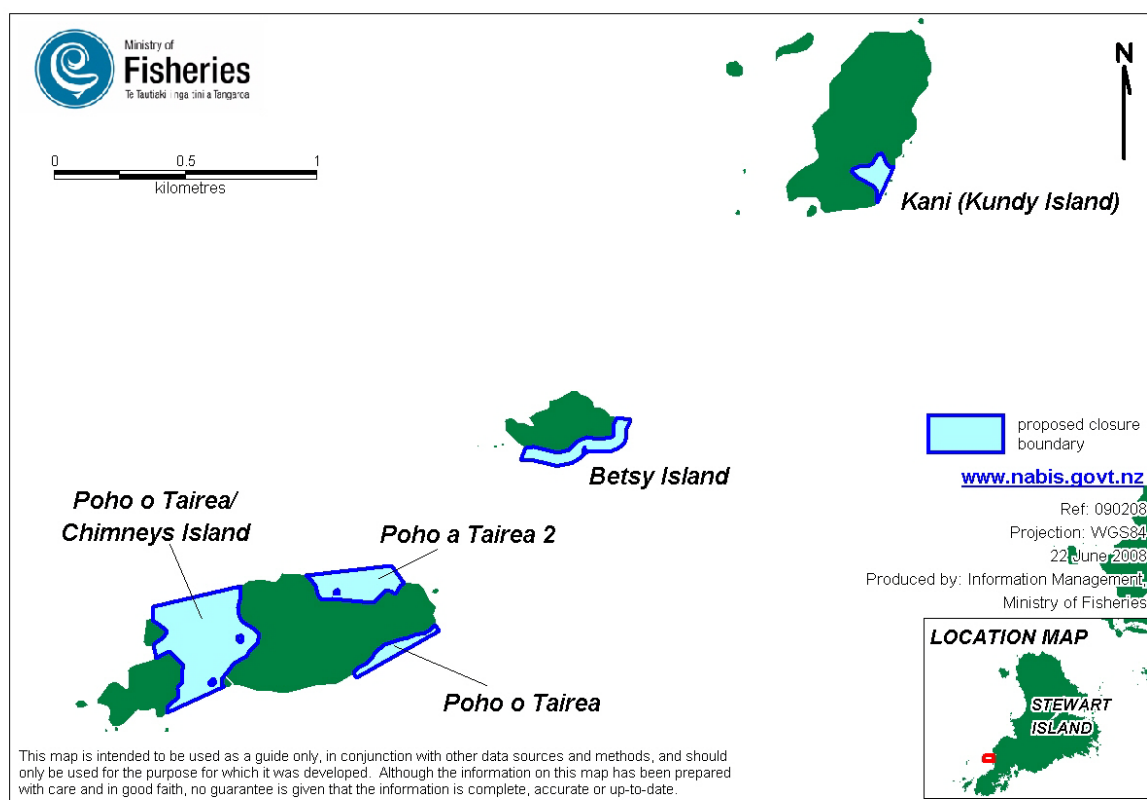


Figure 6

