Fisheries New Zealand
Tini a Tangaroa

Appendix Two:

Review of sustainability measures for rock lobster in CRA 7 (Otago) and CRA 2 (Hauraki Gulf, Coromandel, and Bay of Plenty)

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Contents

Note regarding the use of citations and references in this document

Throughout this paper FNZ has used in-text citations, and all works cited are listed at the end of the document. FNZ has included these citations and references to show where statements are supported by relevant science and information. Hyperlinks to relevant sources have been included throughout the document to improve public accessibility for the online version of the document.

Some information presented, such as commercial catch data, does not include citations because the data was sourced internally from FNZ databases.

All information required for your decision-making is presented within this document itself and you are not expected to read any of the references that have been cited.

Chapter 1: Spiny rock lobster (CRA 7) – Otago

Part 1: Overview

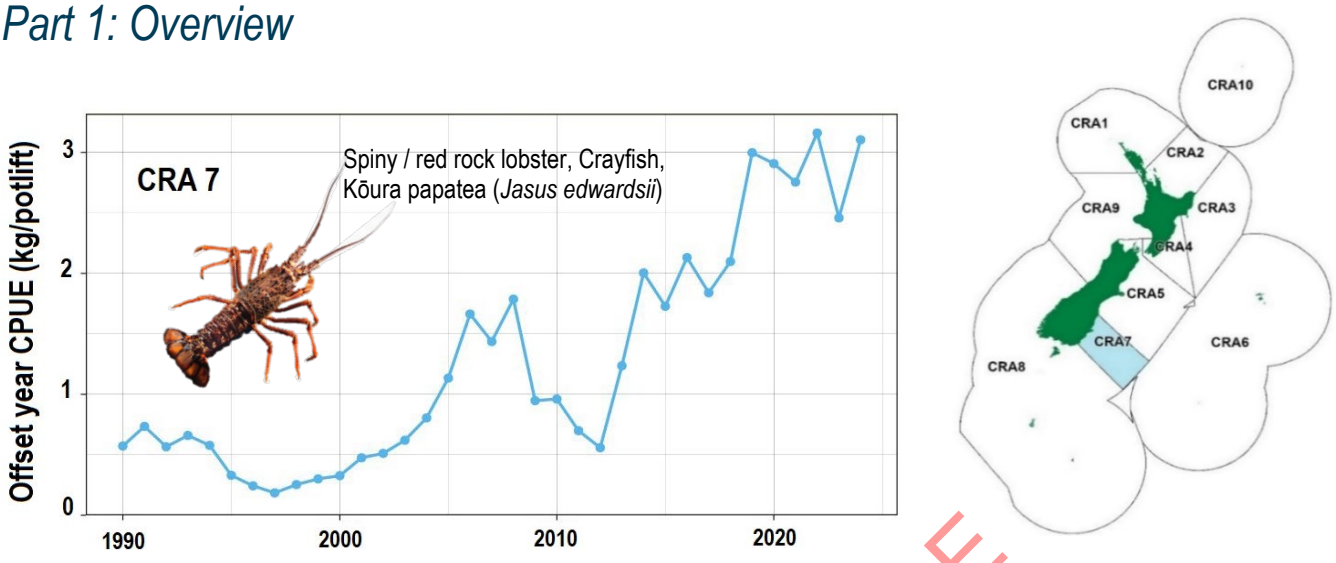

Figure 1: Quota management areas for spiny rock lobster, with CRA 7 (Otago) highlighted, and offset[1] year CPUE (in kg per potlift) for CRA 7 from the 1990/91 to the 2023/24 fishing year, based on data from the Catch, Effort, and Landings Returns (CELR) until 2019 and from the Electronic Reporting System (ERS) from 2020.

Rationale for review

1. The CRA 7 rock lobster stock (Otago) is assessed together with CRA 8 (Southern - Stewart Island, Southland, Fiordland, & Auckland Islands) because they are considered to be part of the same biological stock. The stocks are assessed across two different regions: Region 1 which includes all of CRA 7 (Otago) and part of CRA 8 (Southland & Stewart Island); and Region 2, which includes the remainder of CRA 8 including Fiordland (see Figure 3 in Part 4 for map). Very few mature female lobsters are caught in CRA 7. Both sexes migrate from CRA 7 into CRA 8 as they sexually mature.
2. Management of CRA 7 and CRA 8 is informed by regular stock assessments and management procedures2 which recommend Total Allowable Commercial Catch (**TACC**) settings each year based on catch-per-unit-effort (**CPUE**) data (see '*CRA 7 management procedure*' in Part 4 for more information on how management procedures operate). Rapid assessment updates[3] have also informed management of CRA 7 and CRA 8 in intervening years between full stock assessments.
3. The most recent rapid assessment update undertaken in 2023 indicated that combined biomass of CRA 7 and CRA 8 had increased to around 54% SSB_0,[4] very likely (>90% probability) to be above the interim management target of 40% SSB_0. CRA 8 individually was estimated to be at 62% SSB_0. Stock status for CRA 7 could not be reliably estimated independently from CRA 8. However, updated CPUE data suggested that biomass had also increased substantially in CRA 7 within the last few decades.
4. In 2024 you decided, based on the 2023 rapid assessment update and outputs from updated management procedures, to increase the Total Allowable Catch (**TAC**) of CRA 8 from 1,453 to 1,601 tonnes. The TAC and TACC of CRA 7 remained unchanged, in line with its management procedure recommendation at the time.
5. Rapid assessment updates for CRA 7 and CRA 8 were not carried out in 2024. However, the accepted CPUE series for both stocks have been updated to include new data up to September 2024, and this data has been

[1] While CRA 7 is managed under an April fishing year, CPUE is 'offset' to an October fishing year, to enable timely information to inform the management procedure and TACC changes (i.e. results of the first half of the current fishing year inform the TACC of the next fishing year).

[2] A management procedure is a set of 'decision rules' that can be used to guide the setting of commercial catch limits (TACCs) in response to changes in abundance (in this case measured by changes in CPUE). The use of management procedures allows FNZ to respond more quickly to changes in stock abundance on an annual basis because there is a more settled approach of how to respond to different levels of abundance. In 2024 you agreed that management procedures should be used in CRA 7 & CRA 8 until the fishing year beginning 1 April 2027, or until an earlier review is considered necessary.

[3] Rapid assessment updates estimate stock status by updating the most recent full stock assessment model with new information, such as updated commercial catch information, recreational harvest estimates, length frequency, and growth information.

[4] SSB_0, the level of unfished (virgin) spawning stock biomass of a fish stock, is the theoretical carrying capacity of a fish stock. It represents the level of biomass a fish population would eventually return to if fishing was halted.

incorporated into the management procedures of both stocks to produce new outputs. The new data shows CPUE for CRA 7 increased in 2024 (Figure 1), and the CRA 7 management procedure has recommended a TACC increase of 11.5 tonnes (~9%) for 2025. For CRA 8, CPUE decreased by about 4% from 2023 to 2024. This was below the change threshold of the CRA 8 management procedure (the procedure did not recommend any TACC change for CRA 8 from 2025).

6. Based on this new information, FNZ has consulted on an option to increase the TAC of CRA 7 from 2025. Within this option, it is proposed that the allowance for other sources of mortality is increased to align with best available information, and that the TACC is increased in line with the CRA 7 management procedure recommendation (Table 1). FNZ did not consult on options to change the TAC of CRA 8, as the current settings appear to remain appropriate.

7. FNZ now seeks your decision to set the TAC of CRA 7 under section 13(2A) of the Fisheries Act 1996 (**the Act**). Your decision will take effect from the beginning of the next fishing year, from 1 April 2025.

Proposed options and FNZ's recommendations

Table 1: Proposed management options (in tonnes) for CRA 7 from 1 April 2025. FNZ's preferred option is highlighted in orange.

Option	TAC	TACC	Allowances		
			Customary Māori	Recreational	All other mortality caused by fishing
Current settings	*134.5*	*111.5*	*10*	*5*	*8*
Option 1	137.5 (↑ 3)	111.5	10	5	11 (↑ 3)
Option 2	150 (↑ 15.5)	123 (↑ 11.5)	10	5	12 (↑ 4)

8. A total of 11 submissions were received on this review of CRA 7 during public consultation. Submissions showed mixed support among the proposed options. Representatives of the commercial rock lobster industry supported Option 2. Recreational, environmental, and other interests supported the more cautious Option 1, or did not specify support for a particular option. Representatives of the commercial kina industry supported an increase only if implemented in conjunction with a proposed kina harvesting plan (see Part 2 for more details).

9. The feedback from submissions has been characterised further under '*Analysis of options'* below. More detail, including other matters raised by submitters, is provided in Part 2 ('*Submissions'*).

10. After considering the feedback received, and assessing the proposed options against legal provisions (see Part 3), FNZ prefers Option 2. The rationale for this recommendation is set out in Part 5 under '*Conclusions and recommendations*'.

Analysis of options

11. The options proposed for CRA 7 are analysed below with an outline of the key risks and benefits, as well as feedback received during consultation. Additional information and rationale to support current and proposed settings within the TAC can be found below in Table 2 under *'Fishery characteristics and settings'*.

12. FNZ is proposing a *modified status quo* as an option for CRA 7 in this review, to reflect updated information on other mortality occurring in the fishery.

13. The current other mortality allowance of eight tonnes was set in 2022 based on estimates of illegal catch and handling mortality from the 2020/21 fishing year, but the combined estimate for illegal catch and handling mortality is now estimated to be 11 tonnes. FNZ therefore considers that the allowance should be set at a minimum of 11 tonnes.

Option 1 – Modified status quo (2% TAC increase)
14. This option would set a modified status quo, with a small three-tonne increase to the allowance for other sources of mortality caused by fishing, to better reflect current information on other mortality occurring in the fishery. It would not alter the customary Māori and recreational allowances, which appear to remain appropriate based on current harvest levels (see Table 2 below). The TACC would remain unchanged at 111.5 tonnes, which would not align with the TACC recommended for 2025 by the CRA 7 management procedure (123 tonnes).
Benefits
15. This option reflects a cautious approach, noting that the status of CRA 7 in relation to B_{MSY}[5] cannot be reliably estimated independently from CRA 8. 16. It would carry a lower sustainability risk than Option 2, including reduced broader environmental and ecosystem impacts. 17. This option places more weight on the concerns raised by some scientists and stakeholders about increasing TACCs based on CPUE-based management procedures. 18. The planned establishment of six new marine reserves on the southeast coast (currently subject to Judicial review) could result in displacement of ~5.1% of commercial fishing effort in CRA 7.[6] This option would allow more time to understand the potential impacts of this displacement for the stock.
Risks
19. This option constrains commercial utilisation opportunities. It places little weight on the observed increase in CPUE and the combined assessment of CRA 7 and CRA 8, which suggests the stock is likely to be in a period of high abundance. 20. The option would disregard the CRA 7 management procedure, which you agreed should be utilised from 1 April 2024 onwards. This could diminish some stakeholders' confidence in the established management approach for CRA 7, and potentially other stocks with management procedures.
Feedback received
21. Option 1 received support from a joint recreational submission (representing the New Zealand Sport Fishing Council, LegaSea, New Zealand Underwater Association, and New Zealand Angling and Casting Association), the Royal New Zealand Society for the Prevention of Cruelty to Animals (**RNZSPCA**), the Environment and Conservation Organisations of NZ (**ECO**), and an individual submitter. 22. In their support for this option the joint recreational submitters and ECO noted distrust in the reliability of the management procedure and CPUE as an indicator of abundance. The recreational submitters suggested that the procedure should not be used without a more reliable index of abundance or a management target for the fishery that is agreed among iwi and stakeholders. They also suggested that FNZ should take more time to consider the findings of the independent review of rock lobster assessment processes before considering a TACC increase for CRA 7 based on the management procedure (see further discussion and FNZ's response to this in Part 2 under '*Independent panel views on CPUE-based management procedures*'). 23. The RNZSPCA support Option 1 because it would have less impact on animal welfare and suggest that handling mortality in the fishery should be reduced.[7] 24. An individual submitter in support of Option 1 expressed concerns about the impact of increased rock lobster fishing for the environment (particularly in relation to depletion of kelp and urchin barren[8] formation). 25. Four individuals did not explicitly support this option but generally opposed increasing commercial catch.

[5] B_{MSY} is the biomass that enables a fish stock to deliver the maximum sustainable yield.
[6] This figure was derived from DOC's advice to the Minister of Conservation on the proposed marine reserves (available online).
[7] Measures to directly address handling mortality are not in scope of this consultation. However, FNZ notes that the level of handling mortality allowed for will depend on the TAC and TACC settings for CRA 7. Higher levels of handling mortality are expected under higher catch limits, and this has been reflected in the allowances for other mortality proposed under these TAC options.
[8] Urchin barrens are sea urchin dominated areas of rocky reef that would normally support healthy kelp forest but have little or no kelp due to overgrazing by sea urchins.

Option 2 – Implement management procedure (11.5% TAC increase) – FNZ preferred option
26. This option would increase the TAC of CRA 7 by 15.5 tonnes. This includes a four-tonne increase to the other mortality allowance to align with best available information on other mortality occurring, and an 11.5-tonne increase to the TACC which aligns with the 2025 recommendation of the CPUE-based management procedure. This option would not alter the customary Māori or recreational allowances, which appear to remain appropriate based on current harvest levels (see Table 2 below).
Benefits
27. The combined CRA 7 & 8 stock was estimated in 2023 to be at 54% SSB_0, an increase from the 48% estimated by the model in 2021, and assessed as very likely to be above the interim target of 40% SSB_0. This option places more weight on this estimate being above the interim target. 28. This increase reflects that there has been a recent increase in CPUE (Figure 1), and that the Fisheries Assessment Plenary[9] has accepted this CPUE series as being an informative indicator of abundance for the stock. 29. The TACC under this option is based on a 2024 output from the accepted CRA 7 management procedure. This procedure was successfully used up until 2020/21, resulting in biomass increases over an eight-year period. This provides a greater degree of confidence in its continued use. 30. The TACC increase under this option has potential to provide $1.17 million more in commercial revenue, compared to the 2024/25 fishing year.[10] This is likely to have some downstream benefits to associated business and communities, but the extent of these benefits is uncertain.
Risks
31. This option and the management procedure do not take into account the risk of increased relative fishing pressure that could occur from displacement of commercial fishing effort, should six new marine reserves be established on the southeast coast as planned (noting that decisions have been made by the Minister of Conservation to establish these reserves, but the decisions are currently subject to judicial review). More information on this is provided in Part 3, Table 8 in the section on '*Existing controls*'. There is uncertainty as to how this TAC increase may impact fishing in areas outside of the marine reserves. However, the proposed increase is considered small, and ongoing CPUE updates will allow for timely management response through the management procedure. 32. Some ecosystem functions of rock lobster, such as predation of kina, may be diminished with increased fishing pressure enabled under this option (see '*Interdependence of stocks*' in Parts 3 and 4 for more analysis on this). 33. The frequency and intensity of marine heatwaves and storm events is predicted to increase, and this could have negative implications for rock lobster (see '*Environmental conditions affecting the stock*' in Table 6 in Part 3). Marine heatwaves can reduce the density of kelp, which is important for rock lobster diet, habitat and recruitment, and for ecosystem balance (formation of urchin barrens may be more likely to occur if kelp densities are reduced). Retaining the TAC at a lower level would help to maintain rock lobster abundance at higher level, which may help to support greater resilience of the stock and wider ecosystem to any negative impacts. The environmental stressors relevant to CRA 7 are discussed in more detail in Part 3 (Table 6) and Part 4 under '*Environmental conditions affecting the stock*'. 34. Some scientists and stakeholders have expressed concerns about using CPUE-based management procedures to increase catch settings for rock lobster stocks, due to the risk of relying on CPUE as an indicator of vulnerable biomass. This option would not align with an independent scientific panel's

[9] Fisheries Assessment Plenaries summarise fisheries, biological, environmental, and stock assessment information for NZ's commercial fish species and groups. Each year new research and information is reviewed through plenary working groups and incorporated into the plenaries on an annual basis. The working groups are chaired by FNZ scientists, and include participation by research providers, independent experts (often contracted by FNZ), fisheries managers and experts representing iwi and various stakeholders (for example, commercial, recreational, and environmental NGOs).

[10] Calculated from the difference between the projected landing revenue (from the extra TACC allocation) using the 2024/25 CRA 7 port price ($101.97 per kilogram), and the projected landing revenue for the current (2024/25) fishing year from CRA 7 ($11.37 million). Note the annual process for determining port price is governed by the Fisheries (Cost Recovery) Rules 2001 (SR 2001/229), which are based on a surveyed price supplied voluntarily by LFRs. The quantities used to calculate landing revenue include wharf sales and exclude loss from holding pots. The future calculations assume the full TACC is landed and not exceeded. No economic flow-on effects, such as impacts on processing and retail, are quantified.

	recommendation that TACCs should not be increased based on CPUE-based management procedures (Refer to Part 2 *'Independent panel views on CPUE-based management procedures'*).
Feedback received	
35.	Te Rūnanga o Ngāi Tahu, the New Zealand Rock Lobster Industry Council (**NZ RLIC**) and the Otago Rock Lobster Industry Association (**ORLIA**) support Option 2.
36.	NZ RLIC and ORLIA highlighted the previous success of the management procedure in CRA 7 and emphasised that biomass (of CRA 7 & CRA 8) is above target and appears to be increasing.
37.	NZ RLIC and ORLIA questioned the basis of the panel of scientists' view that CPUE-based management procedures should not be used to inform a TACC increases (see further discussion of these views, and FNZ's views on the matter in Part 2 under '*Independent panel views on CPUE-based management procedures'*).
38.	Cando Fishing Ltd and Specialty and Emerging Fisheries Group expressed that they would only support Option 2 if it were implemented alongside a proposed kina harvest plan. Otherwise, they oppose any increase. They consider that their kina harvest plan will help to address potential kina barrens forming in East Otago in the area they define as Moeraki. This plan would require an increase in the TACC of the southeast kina stock (SUR 3). More details about this proposed kina harvest plan are provided below in Part 2 under '*Kina in Moeraki/East Otago and the harvest plan proposed by Cando Fishing Ltd.*' FNZ's views on the matter are provided in that section for your consideration.

Who will be affected by the proposed changes?

39. The rock lobster population off the southeastern South Island supports an important shared fishery in CRA 7. They are a taonga for tāngata whenua, a popular species for recreational fishers to catch, and support valuable export markets, regionally important industries, and employment. There are also environmental interests in the fishery, due in large part to the important ecological role of rock lobster.

40. Commercial interests in CRA 7 include: quota owners, vessel owner-operators and contract fishers in the catching sector, Licensed Fish Receivers (**LFR**s) (see Table 3 below) and retailers and exporters. The interests of these groups are represented through organisations such as the Otago Rock Lobster Industry Association (**ORLIA**) and the New Zealand Rock Lobster Industry Council (**NZ RLIC**).

41. Tāngata whenua have both commercial and customary interests in CRA 7. These interests are represented through Te Rūnanga o Ngāi Tahu, noting that the CRA 7 management area falls entirely within the rohe moana of Ngāi Tahu whānui. Ngāi Tahu is part of Te Waka a Māui me Ōna Toka Iwi Fisheries Forum and is also represented in the National Rock Lobster Management Group (**NRLMG**).[11]

42. Recreational interests in CRA 7 are represented by a range of individuals, groups such as the New Zealand Sport Fishing Council (**NZSFC**), Fish Mainland, and various local fishing clubs and associations.

Input and participation of tāngata whenua

43. Prior to public consultation FNZ provided information to the Te Waka a Māui me Ōna Toka Iwi Fisheries Forum on the review of CRA 7. The forum held a hui attended by FNZ on 10 December 2024. In the hui FNZ reiterated that CRA 7 was being reviewed and offered an opportunity for any feedback. Input was sought directly from the representative of Ngāi Tahu, noting that CRA 7 falls entirely within the rohe moana of Ngāi Tahu whānui.

44. Ngāi Tahu provided feedback on the review through the NRLMG, which was later clarified via emails to FNZ. Ngāi Tahu expressed support for the management procedure, and Option 2, which is based on the management procedure's recommendation. Ngāi Tahu also noted that the proposed customary allowance of 10 tonnes (under all options) is appropriate and should adequately provide for customary take.

[11] The NRLMG is a national-level, multi-stakeholder group comprising representatives of customary, recreational and commercial fishing sectors, environmental interests, fisheries compliance, and FNZ.

Fishery characteristics and current settings

Table 2: Fishery characteristics and settings for CRA 7.

Commercial (TACC)

45. The CRA 7 stock supports the sixth-largest rock lobster fishery nationally by catch volume (of nine stocks). The fishery extends from the Waitaki River south along the Otago coastline to Long Point (Figure 1). Commercially caught rock lobsters in CRA 7 are predominantly (>97%) caught in a targeted potting fishery.

46. During the current fishing year there was an event where more than a tonne of rock lobsters was caught by a commercial trawler. This was incidental catch. The lobsters were caught in an area they were not expected to be in, possibly during a migration event. They were recorded as alive and returned to sea.[12]

47. Landings of CRA 7 and the TACC since 1990 are shown in Figure 2 below.

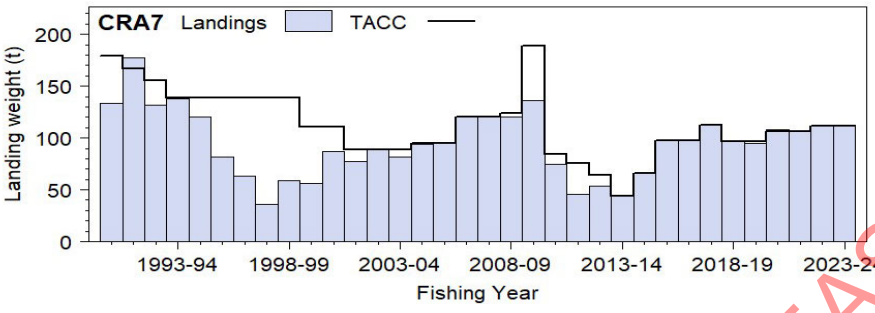

Figure 2: Annual commercial landings of CRA 7 (in tonnes) and the TACC since the 1990/91 fishing year.

48. The CRA 7 TACC was set by the operation of various management procedures from the mid-1990s until the previous procedure from 2013 to 2020/21 (see '*History of the CRA 7 management procedure*' in Part 4 for more information). In the late 1990s, landings of CRA 7 were markedly lower than the TACC. The cause for this decline in landings is unknown, however climatic cycling (El Niño events) may have caused reduced recruitment. The COVID-19 outbreak, particularly the effective closure of the Chinese export market for a period, coupled with low prices for exports, also contributed to a slight under-catch of the TACC in 2019/20. In April 2022, following the results of the 2021 stock assessment, the TACC in CRA 7 was increased from 106.2 tonnes to 111.5 tonnes.

49. Table 3 below provides a summary of quota owners, permit holders, vessels, and LFRs who participate in the CRA 7 commercial fishery (as of the 2023/24 fishing year). All the entries in Table 3 for this fishing year are lower than the 10-year average except for the number of vessels landing the stock.

Table 3: Summary of quota owners, % settlement quota, permit holders, vessels landing the stock, and Licensed Fish Receivers (LFRs) involved with CRA 7 during the 2023/24 fishing year.

Number of quota owners	% of quota that is settlement quota	No. permit holders landing the stock	No. vessels landing the stock	No. LFRs landed to
25 (includes 2 iwi entities)	10%	8	14	4

50. As noted above in the analysis of options, the planned establishment of six new marine reserves on the southeast coast (currently subject to Judicial review) could result in some displacement of commercial fishing effort in CRA 7 in future (estimated to displace ~5.1% of recent effort).

Customary Māori

51. Rock lobster (kōura papatea) is a taonga species for tāngata whenua. CRA 7 customary catch is provided for by the Fisheries (South Island Customary Fishing) Regulations 1999, through authorisations issued by appointed Tāngata Tiaki/Kaitiaki. Records of authorisations and catch are maintained and have been made available to FNZ up to 2020.

52. Based on information received from customary reports from the five years up to 2020, customary catch has fluctuated annually, with an average annual authorised amount of approximately 2,306 rock lobsters or 1.64 tonnes in CRA 7, using the average recreational weights for this area from the 2022/23 National Panel Survey. The current allowance for customary non-commercial fishing in CRA 7 is set above this level, at 10 tonnes.

[12] Lobsters reported as released alive are not offset against quota, and do not count against monthly harvest returns.

53. FNZ considers that maintaining the allowance for CRA 7 at this level above current customary authorisations is appropriate. It considers that reported customary authorisations may not reflect the long-term needs of tāngata whenua, both for consumption and to provide for customary management objectives that express their exercise of kaitiakitanga, a consideration that you must give particular regard to when setting sustainability measures. This is reinforced by input from Te Rūnanga o Ngāi Tahu, noting that Ngāi Tahu believes the 10-tonne allowance will adequately provide for customary take.

Recreational

54. The CRA 7 stock supports a small recreational fishery off the Otago coastline. Recreational fishers predominantly catch rock lobsters using targeted methods including hand-gathering by diving and potting. This can occur from shore-based diving, private vessels, Amateur Charter Vessels, or through recreational harvest taken by commercial vessels under section 111 of the Act. Most of the recreational catch is taken during the summer months, consistent with all other rock lobster stocks.

55. Recreational fishing is subject to a range of controls including gear restrictions (limits on the number of pots and escape apertures), a minimum legal size, prohibited states (it is illegal to collect females with eggs known as 'in berry' or soft-shell rock lobsters), daily limits, and area closures. More information on these controls is provided in Part 3, Table 8 in the section on '*Existing controls*'.

56. Table 4 below provides the total estimated recreational harvest in CRA 7 from the last three years in which the National Panel Survey of Marine Recreational Fishers (**NPS**) was conducted.

Table 4: Summary of recreational catch information for CRA 7, including National Panel Survey (NPS) and Amateur Charter Vessel (ACV) catch estimates, and reported landings under section 111 (recreational catch landed by commercial fishers). Figures are in tonnes.

Year	NPS Estimate	ACV	Section 111	Total
2011/12	0.23 (CV=1.03)	-	0.08	-
2017/18	0.09 (CV=1.0)	-	0.53	-
2022/23	1.41 (CV=0.54)	0.03	2.24	3.68
2023/24	1.41 (CV=0.54) – based on 2022/23 estimate	0.08	2.42	3.91

57. Total recreational catch in 2023/24 was estimated to be 3.91 tonnes. This is based on the latest NPS estimate of recreational catch (for 2022/23) (Heinemann & Gray, 2024) combined with reported Amateur Charter Vessel catch and section 111 data for 2023/24. It should be noted that there is a high level of uncertainty surrounding the NPS estimate. While precision of the estimate has improved from previous surveys, uncertainty is still relatively high.

58. The current recreational allowance for CRA 7 is set at 5 tonnes, which is more than 1 tonne above the most recent estimate. FNZ considers that this allowance remains appropriate.

Other sources of mortality caused by fishing

59. Other sources of mortality caused by fishing in CRA 7 include illegal catch, handling mortality caused by the return of under-sized lobsters, berried female lobsters, and high-grading,[13] as well as predation on lobsters by predators within pots.

60. Fishers are required to report predation of lobsters in pots. While the reporting may underestimate quantities predated, overall mortality from predation in pots is expected to be negligible in CRA 7.

61. In 2024, the Rock Lobster Working Group (**RLWG**)[14] agreed to follow the 2020 stock assessment decision to model illegal catch in CRA 7 as 10% of the total commercial catch summed over the period 1945–1989, followed by 5% of the summed commercial catch from 1990 to 2019. Using this approach, the 2023 model estimated 3.9 tonnes of illegal catch in CRA 7. The model estimated handling mortality to be 7 tonnes. Combined, this results in a total estimate of 10.9 tonnes for other sources of mortality caused by fishing.

[13] High-grading is the practice of selectively retaining fish so that only the best quality fish are landed to achieve the highest economic return. This means that some rock lobster which would be legal to land are returned to the water to maximise the quality of rock lobster that are landed.

[14] The Rock Lobster Working Group is a Science Working Group convened by FNZ. It includes input from fisheries scientists, subject matter experts and fisheries stakeholders.

62. The allowance for other sources of mortality caused by fishing in CRA 7 is currently set at 8 tonnes, having been increased from 5 tonnes in 2022. Given the most recent estimate of other mortality exceeds the allowance, FNZ is proposing that the allowance is adjusted under any TAC option to better reflect the current information. Under Option 1 (the modified status quo) this would mean setting the allowance at 11 tonnes, while under Option 2 it would increase slightly more to 12 tonnes in proportion to the proposed TACC increase under that option (noting that handling mortality is expected to increase accordingly).

Deemed value rates

63. FNZ did not propose any deemed value rate changes for CRA 7 as part of this review. However, in recognition of the fact that deemed value and catch limit settings are interlinked (TACC changes can impact deemed values), FNZ welcomed general feedback on the deemed value settings during consultation.

64. No submissions commented on the deemed value rates for CRA 7.

65. FNZ remains of the view that deemed value changes are not needed for CRA 7 at this time. FNZ is satisfied that the current deemed value rates for rock lobster stocks are consistent with section 75(2)(a) of the Act in that they provide sufficient incentive for fishers to balance their catch with ACE. However, FNZ acknowledges that if the TACC of CRA 7 as changes as a result of this review, subsequent changes in the ACE market may result in the need for the deemed value rates to be re-evaluated in the future.

Part 2: Submissions and NRLMG views

66. In total, 11 submissions were received on the review of CRA 7. Six were from representative organisations (including two separate combined submissions representing multiple organisations), and five were from individuals. The submissions and their supported options are summarised below in Table 5. Some matters not directly within scope of the proposed TAC changes were also raised in submissions. These have been summarised and responded to below under *'Other matters raised during consultation'*.

67. There were several submissions received which did not comment directly in support of specific TAC options or alternatives for CRA 7 but commented generally about catch limits or other aspects of fisheries management. These submissions generally opposed any increases to commercial catch limits, stating that past catch limit adjustments have negatively affected fish populations and have primarily benefited commercial interests at the expense of recreational fishers.

Table 5: Submissions and responses received in relation to the CRA 7 TAC proposals during consultation.

Submitter	Option supported			Notes
	1	2	Other	
Organisations				
Joint recreational submission: NZSFC (NZ Sport Fishing Council), LegaSea, NZUA (NZ Underwater Association) & NZACA (NZ Angling and Casting Association).	✓			The submitters do not support increasing the TACC based on the CPUE-based management procedure. The submitters suggest that the use of any procedure should be preceded by iwi and stakeholder agreement on an appropriate management target and following an agreed reliable index of abundance. The submitters also seek removal of the concession in CRA 7 permitting commercial fishers to harvest smaller lobsters smaller than the recreational minimum legal size (see further information and FNZ's views on this below under '*Differential minimum legal size (MLS) for recreational and commercial fishers*').
RNZSPCA (Royal NZ Society for the Prevention of Cruelty to Animals Inc.)	✓			Opposes TACC increase. Supports greater regulation and oversight of commercial and recreational fishing. Considers that handling mortality should be reduced to promote sustainability and minimise harm to rock lobster welfare.
Environment and Conservation Organisations of NZ Inc. (ECO)	✓			ECO does not support the management procedure adopted for CRA 7, or management targets below 50% SSB (and equivalent levels of vulnerable biomass). ECO also advocates for the removal of the differential MLS.
NZ RLIC (New Zealand Rock Lobster Industry Council) & ORLIA (Otago Rock Lobster Industry Association) Joint submission		✓		Support continued use of the management procedure and the TACC increase recommended for 2025. Note that several factors reduce the risk of relying on the procedure to inform TACC changes, including the minimum and maximum change thresholds, positive rapid assessment data, and previous long-term successful operation.
Cando Fishing Ltd.			✓	Opposes any increase in the CRA 7 TACC unless implemented alongside their proposed Kina Harvest Plan, which aims to prevent kina barrens forming off Moeraki. The Harvest Plan would include selective take from areas of high kina density, along with monitoring of kina in several areas throughout the Otago Coast.
Specialty & Emerging Fisheries Group			✓	Would support the proposed TACC increase under Option 2, but only if implemented concurrently with the kina Harvest Plan proposed by Cando Fishing Ltd.
Individuals				
C. Edwards, J. John, N. Rist, J. Smith			✓	Disagree with the proposed changes generally. Did not specify support for any option or provide associated rationale.
E. Ferguson	✓		✓	Is concerned about the impact of commercial rock lobster fishing in Otago, and potential for depletion of kelp and formation of urchin barrens. In addition to Option 1, they recommend additional reporting (mandatory recreational catch reporting), kelp and habitat monitoring, and changes to the legal-size limits for rock lobster (suggesting a 10 mm increase to the minimum legal size limit, and to introduce a maximum legal size of 120 mm).

Other matters raised during consultation

Independent panel views on CPUE-based management procedures

Independent panel recommendations

68. In 2024, an independent panel of three international scientists met to evaluate the assessment methods and processes used to inform the management of rock lobster stocks in New Zealand. This included a review of the assessment models used, associated biological reference points, management procedures, and the use of rapid assessment updates to inform fisheries management. The panel established a series of 25 recommendations for future work to improve the assessment processes used. A full report with details of these recommendations was published in August 2024 (de Lestang et al. 2024). FNZ is still working through the panel's recommendations and their potential implications for our assessment processes moving forward.

69. Some of the recommendations, particularly those which relate to the use of CPUE-based management procedures, are relevant to this review. In particular, the panel expressed concerns about management procedures being reliant on CPUE and the assumption that increases in CPUE are directly related to increases in the stock's vulnerable biomass. They viewed the use of these management procedures as inherently risky (with the risk increasing as the period since the last full assessment increases), and recommended that if using them, it should be demonstrated that increased risk is not occurring.

70. The panel noted that procedures based on rapid assessment updates would be preferred as a way of managing resources between full assessments. However, FNZ notes that this approach is not directly applicable to CRA 7 on its own, as both the full and rapid update assessments currently combine CRA 7 with CRA 8.

Comments from submitters

71. Commercial and recreational submissions shared different views on the panel's recommendations, especially in relation to the recommendation to not use CPUE-based management procedures to inform TACC increases. The joint recreational submitters believe it is counterintuitive for FNZ to go against the panel's recommendations (by considering a TACC increase informed by a CPUE-based management procedure), while still in the process of working through the recommendations and their implications. The recreational submitters suggest that FNZ should take time to fully consider the panel's recommendations before considering any change for CRA 7 based on the procedure.

72. Commercial representatives NZ RLIC and ORLIA questioned the panel's recommendation and underlying assumptions. In relation to the panel's view that *'it is good practice to allow for the TACC to decrease between full* assessments *but not increase. Increasing a TACC between full assessments can only increase potential risks to the stock',* the submitters suggest it is unclear what good practices the panel is referencing, and whether these practices account for updated information between full assessments, such as rapid assessment updates and current CPUE used to inform procedures.

73. NZ RLIC and ORLIA also highlighted several factors which help to reduce the risk of the CPUE-based procedure used for CRA 7:

- While there is a risk in using CPUE to measure abundance because it can be affected by other factors, the CRA 7 & 8 stock assessment process included a CPUE standardisation, which incorporated vessel as an explanatory variable. This allows for non-biomass factors, such as efficiency gains over time, to be partially accounted for, making standardised CPUE inherently more accurate when used as a measure of abundance.
- As standardised CPUE is the primary input of the CRA 7 management procedure, the output of the management procedure is likely to be more conservative and reduce the risk of its use. The CRA 7 procedure also incorporates minimum and maximum change thresholds to define risk tolerance.
- Management of CRA 7 has been supported by regular rapid assessment updates. The most recent rapid update in 2023 estimated that vulnerable biomass increased in the region overlapping CRA 7, from 18.1 to 19.5% SSB_0. NZ RLIC and ORLIA consider that this supports the assumption that an increase in the CRA 7 CPUE is due to increases in the stock's vulnerable biomass.

FNZ response

74. FNZ acknowledges the panel's recommendations and recognises that increasing TACCs based on CPUE-based management procedures may come with risks. FNZ notes that you should take these risks and the panel's recommendation (outlined above) into account in your decision to set the TAC of CRA 7.

75. The risks of using a CPUE-based management procedure will vary depending on the fishery involved, availability of other information to support management, and rules/specifications of the procedure used. FNZ considers that CPUE-based management procedures should be evaluated on a case-by-case basis, taking these risks into consideration.

76. In the case of CRA 7, there are several factors which lower the risk of using the current management procedure to inform an increase in the TACC. In addition to those factors identified above by NZ RLIC and ORLIA, FNZ notes that:

- The Fisheries Assessment Plenary has accepted the CPUE series for CRA 7 as being an informative indicator of abundance for the stock.
- The most recent full stock assessment of the combined CRA 7 & 8 stock estimated that the biomass of CRA 7 had steadily increased since the late 1990s, which encompasses the eight-year period (refer to Part 3 'History of the CRA 7 management procedure') over which these management procedures were previously operated, which empirically suggests that they are not inherently risky.
- The most recent rapid update assessment that was conducted for the combined CRA 7 & 8 stock in 2023 estimated that the vulnerable biomass was at 172% of its BMSY proxy target, and it is therefore highly unlikely that the proposed level of TACC increase (9%) would result in that biomass falling to a level close or below that management target, before the next full assessment is undertaken in 2027/28.
- The CPUE index that is being used as the basis for this management procedure is based on electronic catch reporting data provided by the entire CRA 7 commercial fleet for all effort targeted towards rock lobster, and it is not therefore based on the voluntary logbook programme data that the review panel had concerns about in terms of representative coverage of fishing effort.
- The next full stock assessment is planned for 2027/28, and the CRA 7 management procedure will be reviewed subsequently, informed by the various inputs of that assessment. If discrepancies arise between CPUE and other inputs, or if there are other issues identified in relation to the management procedure, then the procedure could be updated to address these issues or otherwise discontinued to reduce any risk to sustainability.

77. These factors provide FNZ with a greater degree of confidence in the continued use of the CRA 7 management procedure until 2027 when it is planned to be next reviewed.

78. Notwithstanding this, FNZ notes that you have discretion as to how to much weight to place on the risks identified above in your decision making. You may consider a more cautious decision to be appropriate (e.g. Option 1, which would not increase the TACC), considering the potential risks and the panel's recommendation.

Differential minimum legal size (MLS) for recreational and commercial fishers

79. In CRA 7, different minimum legal sizes (**MLS**s) apply for commercial and recreational fishers. Commercial fishers can take male and female rock lobsters at or above 127 mm tail length (approximately equivalent to 47 mm tail width for males and 48 mm tail width for females) from 1 June to 19 November. Recreational fishers can only take male lobsters with tails wider than 54 mm and females with tails wider than 60 mm.

80. The joint recreational submitters and ECO consider that this differential MLS should be removed from rock lobster fisheries, including CRA 7. In the joint recreational submitters' submission, they noted this regime was introduced in the mid-1900s to support a market for canned rock lobster tails, which no longer exists. They note that the commercial differential MLS of females is below the estimated size at which 50% of female rock lobsters reach maturity in these fisheries (58.2 mm tail width) and suggest that removing the differential MLS would allow for additional breeding cycles before fish become vulnerable to the fishery. The submitters suggest that landing sub-MLS fish results in a reduction of yield-per-recruit by removing a larger number of rock lobsters per tonne of ACE which fishes down new recruits before they have a chance to grow.

FNZ response

81. In 2012, the previous Minister agreed to retain the differential MLS because it was not considered to impact stock sustainability (the sizes are considered in stock assessments), and because of the significant economic

impact that any increase in size would have. In 2014, the government then decided against allowing recreational fishers to take rock lobsters at the lower commercial minimum legal size in CRA 7 (and CRA 8), because of compliance and enforcement challenges associated with a differential size regime for recreational fishers. However, at the time, the commercial sector (and NRLMG sector members) supported recreational fishers having access to the same MLS limited population as commercial fishers.

82. Recent feedback from MPI Fisheries Compliance indicates that the differential MLS regimes have unique regulation administration approval requirements to enable licensed fish receivers (**LFR**s) to receive, handle, transport, and process rock lobsters for either export consignment or domestic sale. The LFR approvals and conditions require differential MLS rock lobsters to be identifiable and kept separate from other QMA rock lobsters, particularly ungraded live rock lobsters consigned from the respective regions to approved live export Transhipment Point facilities in Christchurch and Auckland. In the case of New Zealand domestic sales, Fishery Officers outside of Otago can expend considerable time confirming the origin and legality of domestic sale rock lobster that are smaller than the national MLS during inspections at dealers in fish (such as fish distributors, retail outlets, and restaurants). MPI Compliance also note the inconvenience for retailers and sellers while Fishery Officers undertake inspection enquiries.

83. Notwithstanding the issues identified above, FNZ considers that a review of the differential regime in CRA 7 and other rock lobster fisheries is not urgent. The current regime does not present sustainability concerns, and it does not affect your obligations for setting the TAC for CRA 7. FNZ will continue to monitor the efficacy of the regime and may consider reviewing changes in the future. If you believe a review should be progressed more urgently, FNZ can arrange further discussion and advice to you on this matter.

84. FNZ notes that the differential MLS is incorporated into the stock assessment, rapid updates and management procedure used for CRA 7. Any adjustment to the regime outside of the full stock assessment process would impact the relevance of these tools for managing CRA 7 in the interim.

Kina in Moeraki/East Otago and the harvest plan proposed by Cando Fishing Ltd

85. Cando Fishing Ltd, a commercial fishing company involved in harvesting kina, raised concerns in its submission about high kina densities in an area on the Moeraki Coast (which also includes the East Otago area), pointing to the results of an industry-led kina biomass survey conducted last year, which estimated kina biomass in SUR 3 to be over 40,000 tonnes (McKenzie et al., 2024).

86. Cando Fishing Ltd assert that high kina densities may be leading to the formation of urchin barrens in the area and have proposed a plan to harvest kina to reduce the risk of barrens forming. The harvest plan outlines the company's proposal to commercially harvest over 200 tonnes of kina annually, with 150 tonnes of harvest from the area it defines as Moeraki. The plan would require a substantial increase to the TACC of the southeast kina stock (SUR 3).

87. FNZ notes that the results of the kina survey were incorporated into a review of the SUR 3 TAC last year. In response to the review, concerns were raised about the methodology and independence of the survey, with many submitters believing the methodology led to implausibly high biomass estimates. FNZ noted at the time that there was uncertainty in the biomass estimates and that aspects of the survey may have resulted in overestimation of kina biomass. In addition, there was conflict between the high biomass estimates from the survey and the observations of kina densities from stakeholders, including tāngata whenua, who noted kina have become increasingly difficult to access in parts of East Otago.

88. Acknowledging these concerns, in September last year you decided to increase the TAC of SUR 3 from 42 to 84 tonnes. This was more cautious than the increase initially consulted on. In your decision letter, you noted that the smaller increase would allow for some expansion of commercial fishing while the impacts of fishing could be assessed through further surveys. The decision considered feedback received during consultation and recognised the cultural significance of kina and uncertainty regarding biomass.

89. In relation to FNZ's recommendations for SUR 3, the submitter asserted that FNZ demonstrated an unprofessional degree of bias against Cando Fishing, which they consider was demonstrated again in FNZ's discussion document for CRA 7. Cando Fishing Ltd has since provided additional data from the SUR 3 biomass survey to FNZ and the public. This includes survey dive videos, transect locations, and kina counts, which the submitter considers provides '*incontrovertible proof that kina densities are high and that barrens may be forming off the Moeraki Coast*'.

FNZ response

90. FNZ acknowledges Cando Fishing Ltd.'s views and concerns regarding bias against a survey indicating high kina densities in the area it defines as Moeraki. However, your decisions must be based on the best available

information, and as highlighted above, the survey data supporting these views should be interpreted with caution.

91. Updated survey information provided by Cando Fishing Ltd is being reviewed and discussed by FNZ and may be used to inform further management changes for SUR 3. In the interim, you are being asked to decide on an appropriate TAC for CRA 7, taking into account the information presented in this review on the risk of urchin barren formation.

92. FNZ notes that the imagery provided by the submitters is not standardised and does not indicate scale. Consequently, it does not allow for any formal estimation of the extent of urchin barrens. FNZ also notes that if urchin barrens were demonstrated to be an issue in CRA 7, it is unlikely that increased urchin removals alone (as suggested by the submitter) would sufficiently address the issue. Empirical evidence from other regions indicates that while urchin removals can support short-term kelp recovery, it does not on its own provide a long-term solution to the issue of urchin barrens (Miller et al., 2024).

93. Based on the best available information, FNZ considers that the proposed TAC increase for CRA 7 under Option 2 would be sustainable without the implementation of the kina harvest plan proposed by Cando Fishing Ltd.

94. There is uncertainty regarding the risk of urchin barren formation in CRA 7 relative to the proposed TAC options (discussed below in more detail in Part 3, Table 6 under '*Urchin (kina) barrens*', and further with Part 4 under '*Interdependence of stocks'*), and you should take this into account in your TAC decision. While FNZ is recommending Option 2, to increase the TAC and TACC of CRA 7, you may make your own assessment of the risks highlighted and may choose to set the TAC more cautiously considering these risks.

NRLMG views

95. The National Rock Lobster Management Group (**NRLMG**)[15] met following consultation, however some members representing Te Ohu Kaimoana and ECO were unable to attend, therefore the views expressed at the NRLMG meeting may not be representative of the whole group.

96. The NRLMG members who were present did not reach consensus on options regarding the TAC options for CRA 7. Te Rūnanga o Ngāi Tahu and the commercial representatives of the NRLMG (NZ RLIC) support Option 2 and the use of the current management procedure (see '*Input and participation of tāngata whenua'* above for more details of regarding the views of Ngāi Tahu, and Table 5 above for a summary of NZ RLIC's views).

97. In the meeting, Ngāi Tahu and NZ RLIC commented on the submissions of Cando Fishing Ltd and Specialty and Emerging Fisheries Group, both noting the submitters' interest in commercially harvesting kina.

98. With respect to submissions opposing the use of the CRA 7 management procedure, NZ RLIC noted the Rock Lobster Working Group (**RLWG**) approved the management procedure and the Electronic Reporting System (**ERS**) CPUE series and further noted that the management procedure will recommend adjustments to yield if abundance changes in the future.

99. The recreational representatives of the NRLMG (the New Zealand Sport Fishing Council) reiterated what was expressed in their joint recreational submission on CRA 7, noting that they oppose CPUE-based management procedures. They also considered that declining trends in abundance in neighbouring CRA 5 and CRA 8 fisheries suggests that the high abundance of CRA 7 might be a short-term trend that does not warrant a management change.[16]

100. While ECO were not present to provide their position, their views are summarised in their separate submission (see Table 5 above).

[15] The NRLMG is a national-level, multi-stakeholder group comprising representatives of tāngata whenua, recreational, and commercial fishing sectors, environmental organisations, and FNZ.

[16] FNZ notes that while CPUE in CRA 8 declined by 4% from 2023 to 2024, there has been an overall increasing trend in abundance in the fishery over the last decade, and the TAC and TACC were increased from 1 April 2024 in line with high CPUE observed in the year prior.

Part 3: Assessment against relevant legal provisions

Overview

101. You are being asked to make a decision under section 13 of the Act, to set the TAC for CRA 7. This is a sustainability measure. Before setting or varying a sustainability measure, you must adhere to section 11 of the Act. When making your decision you must also act consistently with the requirements in section 5 (Application of international obligations and Treaty of Waitangi (Fisheries Claims) Settlement Act 1992); Section 8 (Purpose); Section 9 (Environmental principles); Section 10 (Information principles).

102. Guidance for you on the meaning of sections 5 and 8 and how they should be applied for decision making (for all the stocks being reviewed as part of this round) is provided in Addendum 1 (*Legal overview*).

103. On the following pages, FNZ has provided:

- a series of tables outlining our assessment of the proposed changes against sections 9, 10, 11, and 13 of the Act. Information to support this assessment can be found in Part 4 (*Supporting information*).
- information on kaitiakitanga, which you must have particular regard to under section 12(1)(b), and mātaitai reserves and other customary management tools which are relevant to your decision making under section 21(4).

Assessment of the proposals against section 13 of the Act

104. Table 6 below outlines FNZ's assessment of the proposed options for CRA 7 against section 13(2A) of the Act. This assessment has been informed by the best available information on the status of the stock (summarised in Part 1 under '*Rationale for review*' and detailed in Part 4 under *'Stock status information'*), and the information discussed in *'Information on biology, interdependence, and environmental factors'* within Part 4.

Table 6: Assessment of the TAC proposals for CRA 7 under section 13(2A) of the Act.

Section 13(2A)	105. Any change to the TAC of CRA 7 would be made under section 13(2A) of the Act. This is because it is not possible to reliably estimate the level of biomass required to support the maximum sustainable yield (i.e. B_{MSY}) in CRA 7 independently from CRA 8. Adult rock lobster from CRA 7 migrate to CRA 8 soon after maturation, and the spawning capacity of this population is therefore not self-sustaining and is dependent on that occurring in CRA 8. Due to this connectivity with the CRA 8 stock, an individual B_{MSY} target has not been agreed for CRA 7. 106. Under section 13(2A) of the Act you are required to set a TAC for CRA 7 using the best available information, and which is not inconsistent with the objective of maintaining the stock at or above B_{MSY}, while having regard to the interdependence of stocks, the biological characteristics of the stock, and any environmental conditions affecting the stock. 107. In the absence of a specific B_{MSY} target, the best available information on relative stock status for CRA 7 is the combined status of CRA 7 and CRA 8, and updated CRA 7 CPUE data (see Figure 1). The combined CRA 7 and CRA 8 stock was estimated to be at 54% SSB_0 in 2023, assessed as very likely to be above the interim target (40% SSB_0). The updated CPUE data suggests biomass in CRA 7 is increasing and shows that it is currently at a high level relative to the last three decades. Based on this information, FNZ's view is that both of the TAC options proposed for CRA 7, which would either maintain a modified status quo (Option 1) or apply a small increase to the TAC and TACC (Option 2), would not be inconsistent with the objective of maintaining the stock at or above B_{MSY}.
Harvest Strategy Standard[17]	108. A management target has not been agreed for CRA 7. There is an interim target of 40% SSB_0 (unfished spawning stock biomass) and the default reference points of the Harvest Strategy Standard include a soft limit of 20% SSB_0 and a hard limit of 10% SSB_0. These reference points are used as interim limits for CRA 7; however, they have limited relevance given that there is no reliable estimate of B_{MSY} for CRA 7 and uncertainty as to where the biomass sits in relation to these default reference points.

[17] See 'The Harvest Strategy Standard' in Addendum 1 '*Legal overview*' for more information.

Section 13(2A)(b) Interdependence of stocks	109. Rock lobsters are ecologically important predators in New Zealand's rocky reef ecosystems, where they can exert top-down regulation of prey populations such as molluscs, crustaceans, annelid worms, macroalgae, echinoderms, sponges, bryozoans, fish, foraminifera, and brachiopods.[18] **Urchin (kina) barrens** 110. There is evidence from northeastern New Zealand that reduced abundance of sea urchin predators (such as rock lobster) can contribute to the formation of urchin barrens. However, it is uncertain whether the effects of fishing on sea urchin densities observed in northeastern New Zealand are as strong in the Otago region. 111. Based on the limited information available, FNZ is unable to quantify the extent to which changes in rock lobster abundance in CRA 7 may affect the formation of urchin barrens and is unable to accurately quantify the risk of urchin barren formation relative to the proposed TAC options presented in this paper. 112. A higher level of rock lobster biomass will provide greater confidence that the ecological role of rock lobster will be fulfilled, in the sense that higher biomass is likely to result in more predation of urchins by rock lobster. Logically, this means there would be less risk of ecological issues under Option 1 because rock lobster biomass would be maintained at a higher level. 113. FNZ reiterates that the difference in risk (of urchin barren formation) between the proposed options cannot be accurately quantified. However, while the risk is uncertain, you must take it into account in setting the TAC. 114. It should be noted that the risk is unlikely to vary proportionally with changes in rock lobster abundance. There is reasonable evidence of ecological 'tipping points' at which urchin barren formation occurs (but the biomass of rock lobster required to reach this tipping point is unknown). 115. Further information which has guided the above analysis regarding risk of urchin barrens can be found below in Part 4 under '*Urchin barrens and fisheries induced trophic cascades*'. **Interdependence between CRA 7 and CRA 8** 116. The movement of rock lobster between CRA 7 and CRA 8 requires consideration. Almost all of the mature females that support recruitment into CRA 7 are thought to be found in the southern areas of CRA 8. Tagging data suggests that as juvenile lobsters in CRA 7 mature, they migrate back into the southern areas of CRA 8, and only a small proportion of the catch taken from CRA 7 is consequently comprised of mature females. 117. A TAC increase in CRA 7 could impact the CRA 8 fishery given that some migration of juvenile lobsters from CRA 7 to CRA 8 is thought to occur as they mature. However, the combined status of CRA 7 and CRA 8 is estimated to be well above the interim management target, and the increase to the CRA 7 TACC proposed under Option 2 is relatively small, so it is unlikely to have any significant impact for the CRA 8 stock (which supports a far higher TAC of 1,601 tonnes).
Section 13(2A)(b) Biological characteristics of the stock	118. Detailed biological information relevant to CRA 7 is provided in Part 4 under '*Biological characteristics'.* Some of the biological characteristics of rock lobster, for example their preference for specific habitat types required for settlement and adult life stages, make them more susceptible to environmental changes and fishing pressure because these characteristics limit their ability to move or adapt in the face of environmental changes. 119. FNZ considers that the proposed TAC options (which would apply a modified status quo or small TAC increase) are sufficiently cautious considering these characteristics, and reiterates that biomass appears to be increasing in CRA 7.
Section 13(2A)(b) Environmental conditions	120. A variety of environmental factors are thought to influence the productivity of rock lobster populations, including water temperature, ocean currents, shelter availability, and

[18] MacDiarmid et al. (2013)

affecting the stock	food availability (see '*Environmental conditions affecting the stock*' in Part 4 below for more information).[19] 121. Preliminary analyses suggest that elevated water temperatures may have direct effects on rock lobster through temperature stress affecting their physiological condition[20] or indirect effects through impacts on associated habitats, e.g. kelp forests. 122. Under the current environmental conditions, rock lobster stocks in CRA 7 and CRA 8 appear to be in a period of high recruitment (based on estimates in the rapid assessment update), and recruitment in CRA 7 is expected to remain high for at least the next few years. 123. However, it should be noted that in early 2025 Fiordland and Otago experienced a marine heatwave (moderate in Fiordland and moderate to strong around Otago Peninsula) (Moana Project, 2025). As noted above, elevated temperatures can have a direct impact on rock lobsters, and can reduce kelp density, which is important for rock lobster diet, habitat, and recruitment. A reduction in kelp density could also increase susceptibility of the ecosystem to trophic cascades (e.g. formation of urchin barrens). 124. If this heatwave (or similar events in future) affect recruitment in CRA 7, this will be reflected in the stock assessment. There are regular assessments in addition to the annual operation of the management procedure. These enable regular monitoring of the fishery and will allow for responsive changes to management measures if trends in recruitment or biomass of the stocks change. 125. FNZ notes the frequency and intensity of marine heatwaves and storm events is predicted to increase, and this is not factored into the current stock assessment. Maintaining CRA 7 at a higher abundance level could help to support greater resilience of the stock and wider ecosystem to any negative impacts that may occur as the result of more frequent and intense heat waves. A more precautionary TAC decision (Option 1) is available should you wish to place more weight on this potential resilience and the risks highlighted above.
Section 13(3) Factors to have regard to in considering the way and rate the stock is moved towards or above B_{MSY}	126. Section 13(3) is not considered relevant to the TAC decision for CRA 7 because the options only aim to maintain the stock at or above B_{MSY}. They are not intended to move the stock to a certain level in a certain way or rate.

Kaitiakitanga

127. Tāngata whenua can provide information on how they exercise kaitiakitanga, and on their values, goals, and objectives for fisheries, through Iwi Fisheries Forums and through Iwi Fisheries Plans, which set out iwi views on the management of fisheries resources and fish stocks.

128. Te Rūnanga o Ngāi Tahu does not have a fisheries plan; however, they have provided input into the fisheries plan of the Te Waka a Māui me Ōna Toka Iwi Forum. In this plan, rock lobster is listed as a taonga species. A few species that are bycaught in the CRA 7 fishery are also listed as a taonga species in the Forum's Fisheries Plan, these include octopus (wheke), conger eel (kōiro), and blue cod (rāwaru).

129. The Te Waka a Māui me Ōna Toka Iwi Forum Fisheries Plan sets out objectives for management of fish stocks, objectives relevant to this review include:

a) To create thriving customary non-commercial fisheries that support the cultural well-being of South Island Iwi and our whānau. This objective will be considered met when South Island Iwi are able to collect fisheries resources, according to their tikanga, throughout their takiwa/rohe.

b) South Island iwi are able to exercise kaitiakitanga. This objective will be considered met when the customary non-commercial fisheries legislative framework is implemented throughout the South Island in order to recognise and provide for the use and management practices of South Island Iwi,

[19] Linnane et al. (2010)
[20] Oellermann et al. (2020)

South Island Iwi are able to utilise their tikanga in the wider management of fisheries, and South Island Iwi Fisheries Settlement rights are actively protected by the Minister of Fisheries and FNZ.

c) To develop environmentally responsible, productive, sustainable, and culturally appropriate commercial fisheries that create long-term commercial benefits and economic development opportunities for South Island iwi. This objective will be considered met when core commercial stocks are enhanced and sustained for future generations, development stocks are further advanced in order to provide broader commercial and economic development opportunities, and South Island Iwi support long-term development of Iwi fishers and implement succession planning initiatives for new Iwi fishers.

130. FNZ considers that the options proposed in this review contribute to progress towards the achievement of management objective (b) and are consistent with management objective (c) above.

131. As noted above, Ngāi Tahu expressed support for the management procedure and Option 2, suggesting that it aligns with their aspirations in relation to the CRA 7 fishery. Ngāi Tahu also consider that the proposed customary allowance (under both options) is adequate to provide for customary needs.

Mātaitai reserves and other customary management tools

132. Section 21(4) of the Act requires that, when allowing for Māori customary non-commercial interests, you must take into account any mātaitai reserve in that is declared by notice in the Gazette under regulations made for the purpose under section 186, and any area closure or any fishing method restriction or prohibition imposed under section 186A or 186B.

133. There are three mātaitai reserves and one taiāpure within CRA 7 (Table 7). Commercial fishing is not permitted in any of the mātaitai reserves in CRA 7. There are no bylaws in the mātaitai reserves to prohibit recreational or customary harvest of rock lobster.

134. There are no regulations in the East Otago Taiāpure relevant to rock lobster fishing.

Table 7: Mātaitai reserves and other customary management tools that apply to CRA 7.

Customary area	Management type
Moeraki Mātaitai Ōtākou Mātaitai Puna-wai-Toriki Mātaitai	**Mātaitai reserve** Commercial fishing is not permitted within mātaitai reserves unless regulations state otherwise.
East Otago Taiāpure	**Taiāpure** All types of fishing are permitted within a taiāpure. The management committee can recommend regulations to manage commercial, recreational, and customary fishing.

135. The TAC increase proposed under Option 2 for CRA 7 could result in increased commercial fishing effort. The effect of this on rock lobster abundance and availability in these customary areas is not known and cannot be reliably quantified. However, FNZ expects that any effect of the increase on availability of rock lobsters in these areas would be small given that the abundance appears to be increasing, and the proposed TACC increase is modest.

Assessment of the proposals against section 9 of the Act

136. Table 8 below outlines FNZ's assessment of the proposed options for CRA 7 against the environmental principles in section 9 of the Act which you must take into account when considering the TAC of CRA 7. This assessment has been informed by our knowledge of the current environmental impact of this fishery, which is discussed under *'Information on environmental impacts'* within Part 4 (*Supporting information*).

Table 8: Assessment of the TAC proposals for CRA 7 under section 9 of the Act.

Associated or dependent species should be maintained above a level that ensures their long-term viability -	137. The CRA 7 fishery has a low interaction rate with protected species such as seabirds, marine mammals, and benthic invertebrates due to the primary method being potting. 138. Potting fisheries can interact with marine mammals by entangling species such as humpback whales and orcas. However, no mammal interactions have been reported in the CRA 7 potting fishery in the last 10 years. Commercial fishers also have measures to avoid and reduce any impacts of potting for mammals (see '*Protected species*' in Part 4). In relation to seabirds, one decomposing shag was reported as caught in a rock

Section 9(a) of the Act	lobster pot in CRA 7 in 2024/25. However, seabird interactions are very rare because pots are usually set too deep for seabirds to enter. 139. The most frequently reported incidental fish and invertebrate species caught as non-target catch in the CRA 7 target fishery are: carpet shark, octopus, conger eel, blue cod, banded wrasse, ling, sea perch, blue moki, wrasses, and red cod. Many of these species (blue cod, ling, red cod, sea perch, and blue moki) are managed under the QMS and are generally caught in small amounts that are unlikely to pose any sustainability concerns for those species (see further details in Part 4 under '*Fish and invertebrate bycatch*'). Carpet shark, octopus, conger eel, banded wrasse, and wrasses are not managed under the QMS. 140. Based on the available information, FNZ considers it highly unlikely that either TAC option for CRA 7 would threaten the long-term viability of any associated or dependent species.
Biological diversity of the aquatic environment should be maintained - Section 9(b) of the Act	141. The TAC options proposed for CRA 7 are unlikely to have a significant direct impact on biological diversity because the main fishing method used is potting, which is assumed to have very little direct effect on non-target species and the benthic environment. 142. However, as discussed under '*Interdependence of stocks',* rock lobster is an important rocky reef predator which can exert top-down regulation of prey populations, and fishing for rock lobster could therefore have indirect impacts for biological diversity. As noted above, in northeastern New Zealand it has also been demonstrated that fishing for predators such as rock lobster can contribute to the formation of urchin barrens, which are characterised as areas of lower biodiversity. This is discussed in more depth in Table 6 above, and in Part 4 under '*Interdependence of stocks'* and '*Biological diversity of the environment*'. 143. While the precise level of rock lobster biomass required to maintain biodiversity in this area is unknown, FNZ reiterates that rock lobster abundance in CRA 7 is at a high level relative to the last three decades and appears to be increasing at current fishing levels. It is expected that both proposed TAC options for CRA 7 would maintain abundance at a level that enables them to fulfil their important functional role in the environment.
Habitat of particular significance for fisheries management should be protected - Section 9(c) of the Act	144. There are three potential habitats of particular significance for fisheries management (**HoPS**) within the CRA 7 quota management area (described in Part 4 under '*Habitat of particular* significance *for fisheries management*'). However, rock lobster fishing is not known to overlap with any of these habitats. Rock lobster fishing is also primarily done via potting (and hand-gathering by diving for recreational fishing). Both methods are considered low benthic impact fishing methods, and FNZ has not identified any current adverse effects on these habitats caused by rock lobster fishing (so it is unlikely the TAC options proposed will impact them). 145. While FNZ does not currently have evidence available to support the identification of specific (spatially defined) areas of kelp-dominated habitat as habitat of particular significance for fisheries management, FNZ recognises the likely importance of kelp-dominated habitat in supporting settlement, recruitment, and productivity of a number of species, including rock lobster.

Assessment of the proposals against section 11 of the Act

Table 9: Assessment of the TAC proposals for CRA 7 under section 11 of the Act.

You must take into account:	
Effects of fishing on any stock and the	146. "*Effect*" is defined widely in the Act.[21] The direct effects of fishing for rock lobster need to be considered, as well as the indirect effects of this fishing on other species and the surrounding ecosystem.

[21] Section 2(1) of the Act defines "effect" to mean the direct or indirect effect of fishing, and includes any positive, adverse, temporary, permanent, past, present, or future effect. It also includes any cumulative effect, regardless of the scale, intensity, duration, or frequency of the effect, and includes potential effects.

aquatic environment – section 11(1)(a)	147. Information about the direct effects of fishing for CRA 7 is described throughout this paper, particularly within Part 1 under '*Analysis of options*' and *'Fishery characteristics and settings'.* The direct effects of fishing for other stocks caught in the same fishery are summarised above in Table 8, and further detailed below in Part 4 under '*Fish and invertebrate bycatch*'. The indirect effects of fishing, for example, potential impacts of fishing on the food chain, are summarised under the '*Interdependence of stocks'* part of Table 6, and in the assessment of the proposed changes against section 9 of the Act in Table 8. Further background analysis about potential indirect effects is provided below in Part 4, under '*Interdependence of stocks'* and *'Information on environmental impacts'.* 148. The magnitude of the effects of fishing on CRA 7, associated stocks and species, and the wider environment, will vary depending on the CRA 7 TAC setting. Greater effects are expected to occur under higher a TAC setting, and this is something that you must consider in your decision on this sustainability measure.
Existing controls that apply to the stock or area – section 11(1)(b)	149. A range of existing management controls apply to CRA 7. These are listed below and apply to recreational and commercial fishers unless noted otherwise. • **Gear restrictions**: the use of spears for taking rock lobsters is prohibited. Recreational fishers are also prohibited from using spring loaded loops or lassos, or from using set or baited nets for taking rock lobster. • **Number of pots (recreational only):** there is a maximum number of pots that may be used, set, or possessed in New Zealand fisheries waters on any day for recreational purposes. Recreational fishers are restricted to three pots. Two or more recreational fishers on a vessel are restricted to a combined total of six pots. • **Escape apertures:** a fisher must not set, use, or possess on a vessel a rock lobster pot, unless the pot has at least two rectangular apertures (other than the mouth of the pot) through which undersize rock lobsters are able to escape. Each aperture must be wider than 54 mm and longer than 200 mm. • **Must be measurable**: rock lobster must be possessed in a state that can be measured. • **Size restrictions**: Commercial fishers can only take male and female rock lobsters at or above 127 mm tail length (approximately equivalent to 47 mm tail width for males and 48 mm tail width for females). Different size restrictions apply for recreational fishers; they can only take male lobsters with tails wider than 54 mm and females with tails wider than 60 mm. Further information on the differential MLS in CRA 7 can be found below in Part 4 under '*Differential minimum legal size (MLS)'*. • **Prohibited states:** it is illegal to take or possess rock lobsters carrying external eggs (in berry), or rock lobsters in the soft-shell stage (post moulting). • **Area closures:** There are three mātaitai reserves and a taiāpure within CRA 7 (see Table 7). Marine reserves are not fisheries management tools under the Act, but it is also worth noting that six marine reserves were recently approved in the South East Marine Protection Area which will affect fishing in CRA 7, particularly at Te Umukōau Marine Reserve. The Minister of Conservation's decisions on these reserves are currently subject to ongoing judicial review. • **Daily limits (recreational only)**: no person may take or possess more than three spiny rock lobsters within the combined daily limit of six rock lobsters (spiny rock lobster and packhorse, *Sagmariasus verreauxii,* combined).
The natural variability of the stock – section 11(1)(c)	150. Rock lobster stocks generally have a high level of natural variability. Populations can fluctuate rapidly in response to changes in the environment, which can affect the recruitment, abundance, and availability of rock lobsters. This variability is taken into account in the stock assessments used to inform the development of TAC options. High levels of natural variability in abundance are also considered in broader management processes for rock lobster, with the use of management procedures and frequent assessment updates that enable responsive management changes. 151. Further information relevant to the natural variability of CRA 7 is described in Part 4 under '*Biological characteristics',* and environmental factors which can impact rock lobster abundance are discussed in Part 4 under '*Environmental conditions affecting the stock*'.

	152. FNZ considers that both TAC options proposed for CRA 7 take into account the stock's natural variability, given that the options have been informed by an accepted stock assessment (combined assessment for CRA 7 and CRA 8) and CPUE data which has been accepted by the RLWG as an informative indicator of abundance.
Fisheries plans, and conservation and fisheries services – section 11(2A)	153. There are no fisheries plans approved under section 11(2A) specific to CRA 7, or of specific relevance to this review of the stock. **Fisheries and conservation services:** 154. Fisheries services of relevance to the options in this paper include the research used to monitor stock abundance, such as contracted projects for stock monitoring and stock assessment, tag deployment and recapture. In addition, fisheries services include the tools used to enforce compliance with management controls in the fishery. 155. FNZ notes that the CRA 7 fishery has not had historical observer or on-board camera coverage. However, there is some observer coverage underway in CRA 7 for the current fishing year. 156. Fisheries Compliance regularly monitors the area to ensure management controls are being adhered to.
You must have regard to:	
Relevant statements, plans, strategies, provisions, and documents - section 11(2)	**Regional plans:** 157. The coastline within CRA 7 is within the jurisdiction of the Otago Regional Council. The Otago Regional Council has a policy statement and a regional plan; both of which are relevant to management of the coastal and freshwater environments within CRA 7, including terrestrial and coastal linkages, ecosystems, and habitats. 158. FNZ has reviewed the policy statement and regional plan, and the provisions that might be considered relevant can be found in **Addendum 2**. FNZ considers the proposed options for CRA 7 to be consistent with these provisions, which are of a general nature and focus mostly on maintaining the natural character and diversity of the Otago marine environment. There are no provisions specific to rock lobster.
Non-mandatory relevant considerations	
Other plans and strategies	Te Mana o te Taiao (Aotearoa New Zealand Biodiversity Strategy) 159. FNZ considers that the sustainability measures proposed for CRA 7 are generally consistent with relevant objectives of Te Mana o te Taiao – the Aotearoa New Zealand Biodiversity Strategy. This includes Objective 10, which is to ensure that ecosystems are protected, restored, resilient and connected from mountain tops to ocean depths; and Objective 12, which is to manage natural resources sustainably.

Information principles: section 10 of the Act

160. The best available information relevant to CRA 7 is presented throughout this paper, and uncertainties in the information have been highlighted where relevant. The table below provides an additional summary of the best available information and key areas of uncertainty, unreliability, or inadequacy in that information.

Table 10: Best available information and key areas of uncertainty for CRA 7.

Best available information
Stock status: 161. The best available information on stock status includes the 2021 stock assessment, the 2023 rapid assessment update, and the management procedure for this stock. **Customary, recreational, and illegal fishing estimates:** 162. The best available information regarding customary, recreational, and illegal fishing for rock lobster is presented in Table 2. Estimates of recreational catch are informed by three sources; reported section 111 catch for personal use by commercial fishers, reported catch from Amateur Charter Vessels for chartered recreational fishing, and the National Panel Survey (**NPS**) for 'private' recreational fishers.

Location and extent of urchin barrens:

163. New Zealand Aquatic Environment and Biodiversity Chapter 13 'Trophic and ecosystem-level effects', and Report No. 324, 'Fishery-induced trophic cascades and sea urchin barrens in New Zealand: a review and discussion for management' (Doheny et al, 2023), provide information on the role of fishing in the occurrence of urchin barrens in New Zealand. Historical surveys suggest that urchin barrens are uncommon in southern parts of New Zealand (with the exception of Marlborough and Fiordland).[22]

Key areas of uncertainty, unreliability, or inadequacy

164. **Stock status/assessment**: A list of uncertainties that were noted at the time of the 2021 stock assessment are summarised in the 2024 November Plenary report, and are outlined as the following:

a) Magnitude of early catch history and the distribution of early catch within two regions.
b) The estimates of illegal catches and recreational catches for years without surveys are considered to be unreliable.
c) The tag-based growth estimates provided by the model may not represent growth of the underlying population.
d) A possible cryptic population of large males and mature females in Region 1.[23]
e) The extent of movement between regions in the model is unknown.
f) Selectivity in Region 1 is poorly known.

165. It is also not possible to reliably estimate B_{MSY} in CRA 7 independently of CRA 8, and as a result there is no agreed B_{MSY} target for CRA 7.

Customary, recreational, and illegal fishing estimates:

166. There is a high level of uncertainty in the estimates of recreational and customary catch of CRA 7. The uncertainty in recreational catch is particularly high because the recreational fishery is small, and there are few participants from the fishery in the NPS survey. However, the risks associated with having imprecise recreational estimates are considered to be relatively minor for CRA 7 given that recreational catch only accounts for a very small proportion of total catch.

Ecosystem impacts and urchin barrens:

167. While rock lobsters are known to be ecologically important predators in New Zealand's rocky reef ecosystems which prey on a variety of different species groups, there is very little information regarding the strength of the associations between these species and relative influence of rock lobsters (and fishing for rock lobsters) on their abundance.

168. Based on the limited information available, FNZ is unable to quantify the extent to which changes in abundance in CRA 7 may affect the formation of urchin barrens, and unable to accurately quantify the risk of urchin barren formation relative to the proposed TAC options presented in this paper. However, FNZ notes that this lack of information (on their specific level of influence on other species) should not be used as a reason to not take action to ensure their role as key predators is maintained.

[22] Shears & Babcock (2007).
[23] However, there is currently no evidence to support the hypothesis that there is a substantive unexploited subpopulation of the stock elsewhere in CRA 7/Region 1.

Part 4: Supporting information

Stock status information

169. The best available information for the status of CRA 7 consists of the last full CRA 7 and CRA 8 stock assessment conducted in 2021, a rapid update of the assessment conducted in 2023, and current CPUE data (Figure 1). A summary of the 2021 stock assessment and 2023 rapid update results is provided below. More detailed information on these results can be found within the 2024 November Fisheries Assessment Plenary.

2021 CRA 7 and CRA 8 full stock assessment

170. The full CRA 7 and CRA 8 stock assessment conducted in 2021 modelled CRA 7 and CRA 8 as one biological stock across two regions (Figure 3), because very few mature female lobsters are caught in CRA 7, with both sexes migrating from CRA 7 into CRA 8 as they become sexually mature. The two regions are defined in the assessment model as:

a) Region 1 (Otago/Southland): CRA 7 and statistical areas 922, 923, 924, and 925 of CRA 8; and

b) Region 2 (Fiordland): Statistical areas 926, 927, and 928 of CRA 8 (see Figure 3).

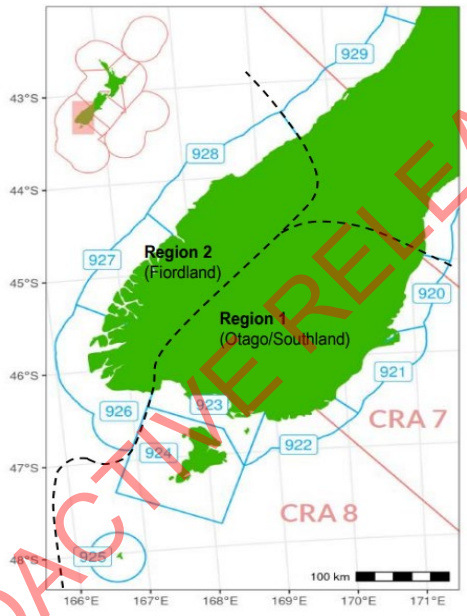

Figure 3: The CRA 7 (Otago) and CRA 8 (Southern) Quota Management Areas and statistical areas, showing approximate boundary of the two regions used in the 2021 CRA 7 and CRA 8 stock assessment model (black dashed lines).

171. The 2021 stock assessment suggested that, for the combined CRA 7 and CRA 8 fishery, the vulnerable biomass in both regions had increased substantially from the low levels experienced near the end of the 1990s. In 2021, the combined vulnerable biomass of CRA 7 and CRA 8 was estimated to be 146% (7,114 tonnes) of the B_{MSY} reference level (4,863 tonnes vulnerable biomass). The combined spawning stock biomass (**SSB**) in 2021 was estimated to be 48% of the unfished level (48% SSB_0).

2023 rapid assessment update

Background

172. The 2023 rapid assessment update for CRA 7 and CRA 8 incorporated a further two years of data into the 2021 stock assessment model. Stock status estimates from the 2023 rapid update were consistent with the projected estimates from the 2021 full assessment model. The rapid update indicated slightly higher biomass, attributable to higher than average recruitment in the years since the full assessment.

173. The best available information for the status of CRA 7 and CRA 8 changed in 2023; the November Plenary rejected the previous B_{MSY} target reference level (based on vulnerable biomass) estimate provided by the combined stock 2021 assessment, because it was not possible to calculate separate B_{MSY} reference level estimates for the CRA 7 and CRA 8 stocks from each other given the interdependent dynamics of these stocks in the 2021 full assessment model configuration. The B_{MSY} estimate for Region 1 (CRA 7 and some

adjacent areas) was also considered to be implausibly low relative to levels estimated for other regions, and implausibly high for Region 2 (most of CRA 8).

174. In 2023, the November Plenary therefore recommended that the 40% SSB_0 default target (recommended by the Harvest Strategy Standard) should be used instead to provide some guidance on the status of the combined biological stock of CRA 7 and CRA 8, as well as CRA 8 individually. SSB_0 cannot be reliably estimated for the CRA 7 alone, because an unknown amount of adult lobster from this area migrate to CRA 8 soon after maturation. However, based on the status of the combined CRA 7 and CRA 8 stock, and considering that the biomass trajectory for each stock is similar, CRA 7 is considered likely to be at or above a level consistent with the management target.

Results

175. The 2023 rapid update estimated spawning biomass of the combined CRA 7 and CRA 8 stock to be 54% (10,232 tonnes) of unfished levels (19,026 tonnes) and very likely (>90% probability) to be above the 40% SSB_0 target (Figure 4).

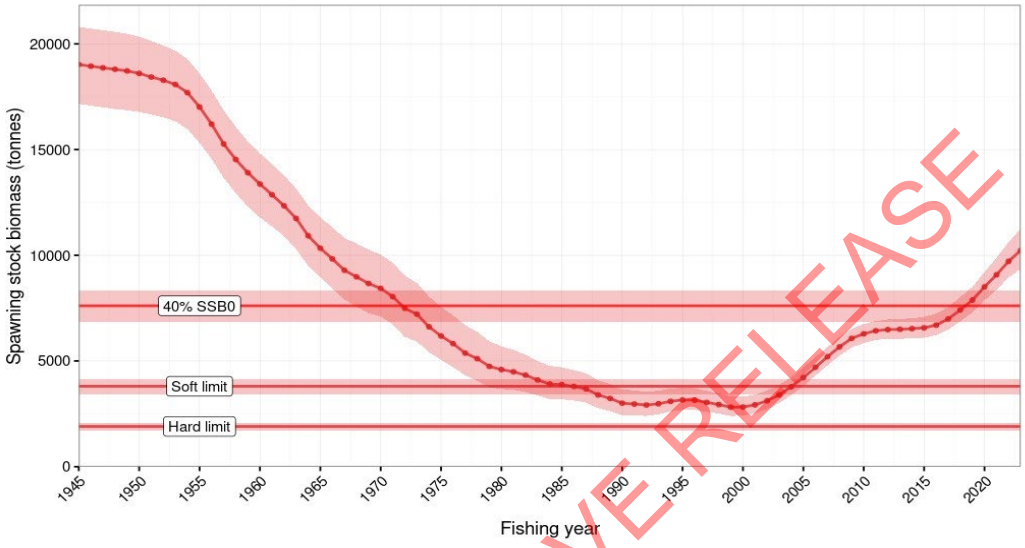

Figure 4: The 2023 rapid update estimates of trends in the spawning stock biomass (tonnes) in CRA 7 and CRA 8 since 1945. The solid line and points show the median and the shaded region indicates 90% credible intervals. The distributions of the interim target (40% SSB_0) and soft (20% SSB_0) and hard (10% SSB_0) limits are also shown.

176. The biomass of lobsters vulnerable to fishing (vulnerable biomass) was estimated to be 25% (8,367 tonnes) of the unfished level (33,942 tonnes) (see the Fisheries Assessment Plenary for relevant figure). As noted above, the current reference points for CRA 7 & 8 are based on spawning stock biomass rather than vulnerable biomass.

2024 Status of CRA 7 (Otago)

177. The biomass for CRA 7 cannot be reliably estimated separately from CRA 8, therefore, the best available information for the stock status of CRA 7 individually is standardised CPUE based on past Catch Effort Landing Return (**CELR**) and Electronic Reporting System (**ERS**) data.

178. The history of CRA 7 commercial CPUE is shown in Figure 1 (Part 1). The CPUE series uses offset year which is defined as the last six months of a fishing year combined with the first six months of the following year (1 October to 30 September). CPUE in CRA 7 has been increasing since a low point in the late 1990s. The overall trend since the 1990s suggests that abundance of rock lobster in CRA 7 has increased in the last decade and remains high compared to historical levels. Between 2008 and 2012, CPUE decreased but then increased over the following decade, reaching over 3.0 kg/potlift in 2022. In 2022/23, CPUE decreased to 2.5 kg/potlift. However, the most recent estimate in 2023/24 showed a further increase to 3.1 kg/potlift.

CRA 7 management procedure

179. As noted in the introduction of this paper, a management procedure (also known as a harvest control rule) is a set of 'decision rules' that can be used to guide the setting of commercial catch limits (TACCs) based on changes in abundance (in this case, measured by changes in commercial CPUE).

180. Management procedures do not automatically predetermine or decide the catch limit settings for stocks. They help to guide when, and how, catch limit reviews are considered. If a TAC or TACC change is required, this is still subject to the usual process of consultation, and you are still required to make a decision via a sustainability round process. Following consultation, you maintain discretion in deciding on catch limit settings that you consider meet the statutory requirements of the Act.

Background

181. As part of the April 2024 sustainability round, you agreed that FNZ should use a management procedure to guide setting the TACC in the CRA 7 fishery (through to the 2027/28 fishing year).

182. This management procedure is an updated version of a previously accepted procedure that was used in management of the CRA 7 fishery between 2013/14 and 2020/21. The procedure is based on CPUE data that has been calculated following new and improved standardisation methods. The procedure uses annual offset-year CPUE estimates, which are calculated from fishery data reported between 1 October to 30 September each year. This data is offset ahead by six months from the statutory 1 April to 31 March fishing year, allowing the most recent six months of data of the active fishing year to be incorporated into the management procedure.

183. The specifications of this management procedure, including key assumptions of the model were outlined within FNZ's 2024 advice to you on its application.[24]

History of the CRA 7 management procedure

184. Management procedures operated in the CRA 7 fishery from 1996/97 until the 2020/21 fishing year. During 2020, management procedures were halted for all rock lobster stocks following the implementation of electronic reporting of catch and effort information in 2019. In 2020, the Rock Lobster Working Group (RLWG) reviewed the data from the first year of electronic reporting (1 April 2019 to 31 March 2020) and compared the electronic reporting system data with that generated from the previous paper reporting system. The RLWG concluded that CPUE estimated under the new electronic reporting system was likely to differ from CPUE estimated under the paper form system and was not comparable. The reasons for this included data being collected on a different spatial and temporal scale, against a large number of new reporting codes, using different reporting platforms and some issues with operators incorrectly interpreting the new reporting requirements.

185. The disruption to the time series of CPUE data meant that previously used management procedures could not be operated, as they rely on a consistent time series of CPUE. In 2023, the November Plenary approved alternative CPUE series for the CRA 7 and CRA 8 fisheries, allowing the adoption of management procedures to be considered again in both fisheries. The Plenary agreed that the ERS CPUE series in CRA 7 was reliable due to the higher quality and consistency of reporting by fishers in this quota management area, allowing a further extension of the previously used CELR CPUE time series index.

186. Table 11 below provides a summary of the historical management procedure outputs for CRA 7, including CPUE estimates, management procedure results, and TAC and TACC settings for each fishing year.

187. FNZ notes that the management procedures were successfully used up until 2020/21, resulting in biomass increases over an eight-year period. This previous experience with the successful application of these procedures provides a greater degree of confidence in their continuing use to inform the management of the CRA 7 fishery.

[24] Fisheries New Zealand, Review of sustainability measures for the 2024 April round, Page 186.

Table 11: History of the CRA 7 management procedure. 'Rule result' is the result of the management procedure after operation of all its components.

Year of analysis	Applied to April fishing year	Offset year CPUE at time of analysis (kg/potlift)	Rule result TACC (tonnes)	TAC (tonnes) set by the Minister	TACC (tonnes) set by the Minister
2012	2013/14	0.625	43.96	64	44
2013	2014/15	1.356	66.00	86	66
2014	2015/16	2.304	97.7	117.7	97.7
2015	2016/17	2.212	97.7	117.7	97.7
2016	2017/18	2.766	112.5	132.5	112.5
2017	2018/19	2.328	98.5	117	97.0
2018	2019/20	2.292	97.3	117	97.0
2019	2020/21	2.567	106.2	126.2	106.2
2020	2021/22	-	-	126.2	106.2
2021	2022/23	-	-	134.5	111.5
2022	2023/24	-	-	134.5	111.5
2023	2024/25	2.503	111.5	134.5	111.5
2024	2025/26	3.105	123.4	-	-

Management procedure output for the 2025/26 fishing year

188. A graphic representation of the CRA 7 management procedure is provided below in Figure 5. The graph shows the proposed TACC for the next fishing year as a function of CPUE in the current year. Under this management procedure, a CPUE of 3.1 kg/potlift in 2023/24 would indicate that the TACC for 2025/26 should be set to 123 tonnes, a recommended 11.5-tonne (~9%) increase to the current 111.5-tonne TACC. This is above the accepted minimum change threshold of 10%.

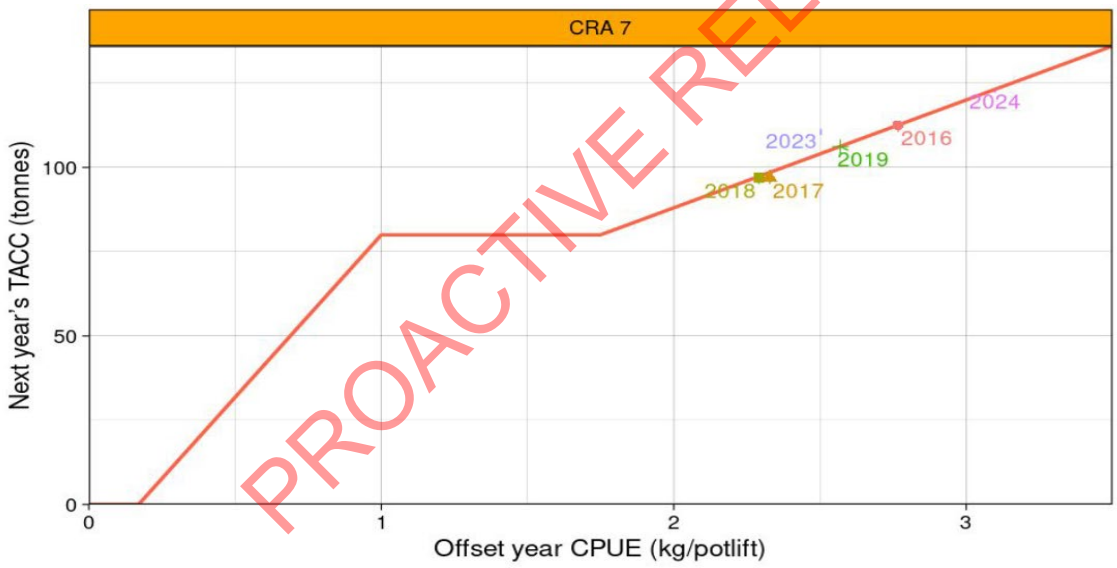

Figure 5: Graphic representation of the CRA 7 management procedure, showing the Total Allowable Commercial Catches (TACCs) resulting from evaluations performed since 2016 (shown as coloured shapes). The most recent evaluation in 2024 for the 2025/26 fishing year is shown in purple.

Information on biology, interdependence, and environmental factors

189. This information supports FNZ's assessment of the proposals against section 13 of the Act in Part 3. Information in this section was derived from the November 2024 Fisheries Assessment Plenary and the Aquatic Environment and Biodiversity Annual Review (**AEBAR**), except where cited otherwise.

Interdependence of stocks

190. Rock lobsters are ecologically important predators in New Zealand's rocky reef ecosystems, where they can exert top-down regulation of prey populations.[25] They consume a broad range of prey, including molluscs,

[25] Pinkerton et al. (2008) and Pinkerton et al. (2015)

crustaceans, annelid worms, macroalgae, echinoderms, sponges, bryozoans, fish, foraminifera, and brachiopods.[26] They strongly prefer soft-sediment bivalves over rocky reef prey and make nocturnal foraging movements away from the reef.[27] Their feeding rates vary seasonally in relation to moulting and reproductive cycles.[28]

191. There is evidence to suggest that predators, including rock lobsters, when at sufficient abundance and size structure can have a significant role in mitigating urchin barrens, which are less biologically diverse environments than the kelp forest habitats they replace. While rock lobsters prefer soft-sediment bivalves over urchins and consumption of kina (*Evechinus chloroticus*) varies seasonally, they are one of the few predators known to be able to predate on large kina.[29] Laboratory experiments on a range of rock lobster size classes found that predation on large sea urchins is limited to large rock lobsters.[30] The presence of rock lobster can also influence urchins indirectly. A study by Spyksma et al. (2017) in northern New Zealand found that increased presence of predators such as rock lobster and snapper inside marine reserves increases cryptic behaviour (hiding in crevices) by sea urchins. The relationship between rock lobster and urchin barrens in relation to CRA 7 is discussed further below under '*Urchin barrens and fisheries induced trophic cascades*'.

192. Predation on rock lobsters is known to occur from a variety of fish species. Published scientific observations support predation upon small to medium rock lobsters by octopus, rig, blue cod, grouper, southern dogfish, seals, and by other rock lobsters.[31] The relative influence of these predators is poorly understood, and the extent to which predation affects abundance in CRA 7 is not known. Harvests of rock lobster from fishing would reduce food availability for these predators. However, these species all have relatively broad diets, and it is unlikely that any of these species are entirely dependent on rock lobster as a food source.

Urchin barrens and fisheries induced trophic cascades

193. Much of the available information relating to urchin barrens comes from CRA 2 (Hauraki Gulf/Bay of Plenty). However, the studies from CRA 2 are not directly comparable to CRA 7 because of environmental differences between the regions.[32] In CRA 7, the environment is relatively turbid, productive, has high wave energy, and the predominant kelp is *Macrocystis spp.* and *Durvillaea antarctica* or bull kelp (rimurapa). On the other hand, CRA 2 is less exposed, has clearer water, and the predominant kelp is *Ecklonia radiata*.

194. Barker (2020) noted that kina are generally uncommon off the Otago coast, although isolated aggregations of extremely large individuals (over 120 mm in diameter) do occur in some areas. They suggested that kina may be uncommon in the region due to sporadic and low levels of recruitment.[33]

195. A survey of kina abundance was conducted in 2024 by fishers without formal scientific training.[34] The results of the study indicated possible high localised abundances of kina in regions of the north Otago coastline. This survey supported an increase to the TACC for the kina fishery on the south east coast of the South Island (SUR 3) in October 2024. FNZ noted at the time that there was uncertainty in the biomass estimates and that some aspects of the survey may have resulted in overestimation of kina biomass. In addition, there was conflict between the high biomass estimates from the survey and information from tāngata whenua, including the East Otago Taiāpure Committee which noted kina have become increasingly difficult to access.

196. The majority of literature on the causes of urchin barrens focuses on reefs in northern New Zealand where fishing effects on top predators of kina are considered a primary factor. The occurrence of urchin barrens may also be influenced by a range of other factors, such as environmental and climatic influences, species' demographics, and catchment-derived sedimentation. The extent of urchin barrens and relative importance of contributing factors varies regionally across New Zealand.[35] It should be noted that multiple causality or limited information specific to the CRA 7 region does not mean that effects that are manageable at this time should be ignored, i.e., the presence of other factors that may have a role to play, does not mean the impact of fishing can be disregarded.

197. Historical surveys suggest that urchin barrens are uncommon in southern parts of the country (with the exception of Marlborough and Fiordland).[36] Along the Otago coast (in CRA 7) bottom-up forces like marine

[26] MacDiarmid et al. (2013)
[27] Flood (2021)
[28] Kelly et al. (1999)
[29] Flood (2021) and Andrew & MacDiarmid (1991)
[30] Andrew & MacDiarmid (1991)
[31] MacDiarmid et al. (2013)
[32] Wing et al. (2022)
[33] Barker (2020)
[34] McKenzie et al. (2024)
[35] Schiel (2013) and Wing et al. (2022)
[36] Shears & Babcock (2007).

heatwaves and land-based inputs may play a stronger role in controlling kelp cover than fishing-effects on the food web as observed in other parts of the South Island.[37] However, if environmental stressors such as marine heatwaves reduce kelp density (as they have in recent years in the South Island)[38] then a trophic cascade may be more likely to occur[39] and maintaining lobsters at high abundance could help support a more resilient ecosystem.

198. While there is uncertainty in the threshold of abundance and size structure of rock lobster required to reverse or prevent further spread of urchin barrens, the best available information suggests CRA 7 biomass has increased substantially over the past few decades.

Interdependence of CRA 7 and CRA 8

199. The CRA 7 and CRA 8 stocks are considered to comprise one biological stock. Almost all of the mature females that support recruitment into CRA 7 are thought to be from the southern areas of CRA 8. Tagging data suggests that as juvenile lobsters in CRA 7 mature, they migrate back into the southern areas of CRA 8, and only a small proportion of the catch taken from CRA 7 is consequently comprised of mature females. CRA 7 and CRA 8 are assessed concurrently to account for this interdependence. FNZ recognises that a TAC decision for one of these two stocks can have an influence of the future stock status of its neighbouring stock.

Biological characteristics

Distribution and movement

200. Rock lobsters are mainly found on reef habitat and sometimes on sandy seafloor down to 200 m water depth.

201. Adult rock lobsters are generally considered to have a small home range once settled (i.e., less than 5 km). However, they also exhibit patterns of movement at various life stages. This includes movement into shallow water seasonally for moulting and mating, and females move to the edges of reefs to spawn their eggs. Some migrations consist of large numbers of rock lobsters moving together.

202. Long-distance migrations (>100 km) of rock lobsters have been observed within CRA 7 and CRA 8, between Otago and Stewart Island and Fiordland.[40] During spring and early summer, variable proportions of usually small males and immature females move against the current from the east and south coasts of the South Island towards Fiordland and south Westland (i.e., out of CRA 7 into western regions of CRA 8).[41] Tagging data suggests that females in CRA 7 migrate to CRA 8 Fiordland statistical areas prior to reaching maturity.[42] This is supported by the observation that mature females are absent from catches in CRA 7 and the Southland/Stewart Island statistical areas of CRA 8.[43]

Growth, maturity, and reproduction

203. Although there is currently no way of reliably estimating a rock lobsters' age, they are thought to be relatively long-lived. Individuals in Australia are considered to live at least 20 years.[44]

204. Female rock lobsters produce eggs once a year and can produce between 40,000 to 600,000 eggs in a single reproductive event, with larger females producing more eggs than smaller females.[45] Eggs incubate for 3 to 4 months on the underside of the female's tail, held in place by small hairs.[46]

205. Mating occurs in autumn, with the eggs hatching in spring. Larval development can last 12 to 24 months and occurs far offshore.[47] Because of the long larval life of rock lobsters, the origins of larvae are difficult to determine. Larvae hatched in one area may be retained in that area by local eddy systems, carried to other areas by currents, or lost to New Zealand entirely. For most areas, larvae may originate a considerable distance from the settlement site.

[37] Udy et al. (2019) and Wing et al. (2022)
[38] Tait et al. (2021) and Thomsen et al. (2019)
[39] Foster and Schiel (2010)
[40] Kendrick & Bentley (2003)
[41] Annala (1983)
[42] McKoy (1983)
[43] McKoy (1983)
[44] Linnane et al. (2020)
[45] Green et al. (2009)
[46] Kelly et al. (1999)
[47] Bradford et al. (2014); Chiswell & Booth (2008)

206. After the larval phase, puerulus settle on coastal rocky reef and less frequently on complex seaweeds and bryozoans. Rocky reef in shallow water less than 20 metres deep is critical settlement habitat for rock lobsters and provides the conditions and substrates key for kelp habitat in New Zealand.[48] Pueruli of rock lobsters use chemical cues associated with coastal waters to help locate settlement habitats.[49]

207. Evidence from Australia suggests that kelp habitat is important for rock lobster settlement, and that declines in kelp habitat could negatively affect rock lobster productivity.[50] For example, in Tasmania juvenile rock lobster showed increased recruitment and survival in kelp compared to long-spined urchin barren habitat[51] and larger reefs with kelp appear critical to the recruitment of rock lobsters.[52] Kelp increases structural complexity and provides habitat and food for prey species of rock lobster. Kelp is also consumed directly by rock lobster.[53]

208. In New Zealand, pueruli have been observed to detect and respond to both underwater sounds (acoustic cues) and substrate or chemical cues from different habitats, with seaweed and rock substrates increasing settlement and speeding up moulting.[54] Underwater sounds can provide orientation cues for pelagic crustacean larvae, expedite settlement and initiate settlement behaviour.[55]

209. Juvenile rock lobster are more vulnerable to predation in urchin barrens compared to kelp habitats during the day and potentially during dusk/dawn, but not during the night when they are typically active.[56] Kelp habitats also provide more of the preferred invertebrate prey for juvenile lobsters,[57] potentially increasing nutrition and growth, further research is required to confirm this relationship.

210. Recent analysis indicates a potential relationship between sea surface temperature and rock lobster recruitment, where relatively warm years were associated with poorer recruitment in northern regions.[58]

Environmental conditions affecting the stock

211. Various environmental factors are thought to influence the productivity of rock lobster populations, including water temperature, ocean currents, shelter availability, and food availability.[59] Rock lobster grow at different rates around New Zealand and female lobster mature at different sizes.[60]

212. Rock lobster spend an extended time in the planktonic larval phase, swimming and drifting in the ocean for up to 24 months. Therefore, larvae hatched in one area may be retained in that area by local eddy systems, carried to other areas by currents, or lost to New Zealand entirely. For most areas, larvae may originate a considerable distance from the settlement site. The number of 'puerulus', the final planktonic developmental phase of rock lobster, that settle to the sea floor varies among areas and from year to year.

213. Puerulus settlement may be affected by environmental factors such as the amount of suitable habitat available, the persistence of storms, prevailing ocean currents, sea temperature, food availability, and predation. Large numbers of puerulus larvae also die before reaching suitable habitat, which is due in part to predation, but may also be a result of unfavorable environmental conditions.

214. Evidence from Australia suggests that kelp habitat may be critical to the settlement success of rock lobster (*Jasus edwardsii* - the same species discussed in this paper) pueruli, providing important settlement cues, food, and refuge.[61] The same relationship has yet to be observed in New Zealand[62] and further research is needed to test this. However, given the similarity between ecosystems in Tasmania and New Zealand these potential relationships are important to consider for the management of rock lobster. Kelp does support both food sources and shelter for later life stages of rock lobster in New Zealand,[63] suggesting the health of coastal kelp forests is likely tightly linked to the health of the rock lobster population.

[48] Booth et al. (1991)
[49] Hinojosa et al. (2018)
[50] Hinojosa et al. (2015); Hinojosa et al. (2018); Shelamoff et al. (2022)
[51] Hinojosa et al. (2015)
[52] Shelamoff et al. (2022)
[53] MacDiarmid et al. (2013)
[54] Stanley et al. (2015)
[55] Stanley et al. (2012)
[56] Hesse et al. (2016)
[57] Taylor (1998)
[58] Roberts & Webber (2024)
[59] Linnane et al. (2010)
[60] Annala (1983)
[61] Hinojosa et al. (2015), Hinojosa et al. (2018) and Shelamoff et al. (2022)
[62] Stanley et al. (2015) and Hesse et al. (2015)
[63] MacDiarmid et al. (2013)

215. Information on variability in rock lobster growth, size at maturity, available abundance, mortality, and recruitment is incorporated into the stock assessments that inform rock lobster management.

216. As noted above, rock lobsters in CRA 7 migrate to CRA 8 around the onset of maturity. Because of this migratory behaviour, lobsters in CRA 7 are a transient population and generally only remain in the fishery for two years. This means the abundance of rock lobster in CRA 7 is highly dependent on recruitment from other stocks. As a result, biomass in CRA 7 can vary with recruitment. Fluctuations in CPUE, the length composition of landings from CRA 7, and historical landings over time are consistent with this trend. However, FNZ regularly monitors stocks to assess for variation in recruitment and abundance.

217. CRA 7 and CRA 8 appear to be in a period of high recruitment (based on data from puerulus settlement surveys and estimates in the rapid assessment update), and therefore abundance of both stocks is expected to remain high for at least the next few years. However, if recruitment were to decrease then the biomass in CRA 7 may in turn decrease. Regular full assessments (next in 2027/28) and the annual operation of management procedures will provide regular monitoring of the fishery and allow for responsive changes to management if trends in recruitment or biomass of the stocks change.

Climate change

218. The ocean around New Zealand is, in some regions, warming at a rate well in excess of the global average.[64] While the extent to how this will impact the wider ecosystem is unknown, it can be expected that there will be an impact on rock lobster, including their spatial variability.

219. Recent assessment indicates a potentially negative relationship between sea surface temperature and rock lobster recruitment in northern New Zealand.[65] This work is preliminary and requires further investigation, however this could be a significant development.

220. Organisms such as rock lobsters are particularly susceptible to ocean acidification because it lessens their ability to lay down calcified body structures during each moult.[66]

221. Changes to ocean circulation patterns also have the potential to affect the recruitment of the rock lobster, given the extended larval stage.

222. Extended periods of extremely warm ocean temperatures known as marine heatwaves are increasing in intensity and frequency across the globe with trends predicted to accelerate under future climate change. New Zealand experienced several extended periods of marine heatwaves in recent years,[67] causing a range of impacts including temporary southern migrations of warm-water fish and loss of ecologically important seaweeds.[68] During the summer of 2022/23, the Otago Peninsula (in CRA 7) experienced sea surface temperatures that were more than 5°C above the long-term average. Marine heatwaves may have direct effects on rock lobster through temperature stress affecting their physiological condition[69] or indirect effects through impacts on associated habitats e.g., kelp forests.

223. Research from Tasmania suggests potential linkages between kelp forest quality and rock lobster recruitment and survival. Reduction in kelp habitat within CRA 7 from MHWs or sedimentation may negatively impact rock lobster productivity within CRA 7.

Information on environmental impacts

224. This information supports FNZ's assessment of the proposals against section 9 of the Act in Part 3 (*Assessment against relevant legal provisions*).

Protected species

Seabirds

225. Management of seabird interactions with New Zealand's commercial fisheries is guided by the National Plan of Action - Seabirds 2020 (**NPOA-Seabirds**). The NPOA-Seabirds sets out the New Zealand government's commitment to reducing fishing-related captures and associated mortality of seabirds. The vision of the NPOA-Seabirds is that New Zealanders work towards zero fishing-related seabird mortalities. Management actions and research under the NPOA-Seabirds are guided and prioritised based on the seabird risk

[64] Sutton & Bowen (2019)
[65] Roberts & Webber (2024)
[66] Bell et al. (2023) and Hepburn et al. (2011)
[67] Salinger et al. (2019) and Bell et al. (2023)
[68] Thomsen et al. (2019), Salinger et al. (2020) and Thomsen et al. (2021)
[69] Oellermann et al. (2020)

assessment that breaks down the risks to seabird population by fishery groups. The most recent seabird risk assessment was published in 2020.

226. In the last 10 years, one seabird (a decomposing shag) was reported as caught in a rock lobster pot in CRA 7 (during in the 2024/25 fishing year). Interactions with seabirds is generally low in the fishery due to the primary method being potting, with pots usually set too deep for seabirds to enter.

Mammals

227. In New Zealand waters, marine mammal entanglements with pot fishing gear have been documented since 1980. A recent study on cetacean interactions with pot fisheries found that from 1980 to the present, one to two entanglement events of cetaceans per year were reported on average.[70] However more recently, from 2010 – 2020, an average of four to five entanglement events per year have been recorded.

228. Nationally, the most recorded entanglements over time have involved humpback whales, followed by orca. In CRA 7, there have been no interactions reported in the last 10 years.

229. Guidance for commercial pot fishers has been distributed by the New Zealand Rock Lobster Industry Council (**NZ RLIC**). This guidance includes proactive approaches to reduce the risk of cetacean entanglements with fishing gear, providing information on whale identification, best practise approaches to mitigation and reporting requirements.

230. The Hector's and Maui dolphin Threat Management Plan 2020 guides management approaches for addressing both non-fishing and fishing-related impacts on Hector's and Māui dolphins. To date, with regard to the rock lobster fishery, there have been no reported interactions with Hector's or Maui dolphins in CRA 7. The residual risk to the Hector's and Māui dolphin from potting in CRA 7 is also considered to be low.

Fish and invertebrate bycatch

231. When rock lobsters were targeted in CRA 7 from the 2019/20 fishing years until now, the ten most frequently reported incidental species caught in the CRA 7 target fishery were: carpet shark, octopus, conger eel, blue cod, banded wrasse, ling, sea perch, blue moki, wrasses, and red cod. BCO 3, LIN 3, RCO 3, SPE 3, and MOK 3 are managed under the QMS. BCO 3 is very unlikely to be at or below the target. Over the last 5 fishing years, about 800 kg of BCO 3 has been reported as bycaught per year in the CRA 7 fishery. LIN 3 and RCO 3 are considered to be sustainable under current catch levels. The status of SPE 3 in relation to management targets is unknown, however only an average of 126 kg of SPE 3 has been reported as bycaught in CRA 7 annually since 2019/20. In 2017, MOK 3 was estimated very likely to be below target and only 145 kg has been reported on average annually as bycatch in CRA 7 since 2019/20. Carpet shark, octopus, conger eel, banded wrasse, and wrasses are not managed under the QMS.

Biological diversity of the environment

232. Potting is the main method of targeting spiny rock lobster commercially and is assumed to have very little direct effect on non-target species. FNZ is not aware of any information that exists regarding the benthic effects of potting in New Zealand.

233. A study on the effects of lobster pots on the benthic environment was completed in a report on the South Australian rock lobster fisheries.[71] This fishery is likely to be the most comparable with New Zealand because the lobster species is the same (*Jasus edwardsii*) and many of the same species are present, although pots and how they are fished may differ. This report concluded that the amount of algae removed by pots (due to entanglement) probably has no ecological significance.

234. Fishing for predators such as rock lobsters has the potential to indirectly impact biological diversity of the aquatic environment because of the relationship between predator abundance and sea urchins (e.g. kina) which graze on kelp (see '*Interdependence of stocks'* above).

235. As outlined in the 2023 Aquatic Environment and Biodiversity Report No. 324 , kelp provides a wide and diverse range of services, including:

a) Providing energy and organic matter to rocky reef ecosystems as well as adjacent intertidal and deepwater ecosystems;
b) Providing complex three-dimensional structures which support high levels of biodiversity through both shelter and food subsidies; and
c) Cultural ecosystem services through harvestable food and materials as well as recreational and tourism opportunities.

[70] Pierre et al. (2022)
[71] Casement and Svane (1999)

236. It is important to note that kelp is indirectly affected by fishing for predators. The removal of predators, including rock lobster, can reduce predatory control of the abundance of kina, which graze on kelp. The magnitude of this relationship depends on many factors that vary regionally. Biotic factors include (but are not limited to) fishing pressure, population dynamics of predators, prey and kelp and ecosystem resilience. Abiotic factors in include temperature, turbidity and chemistry (among others).[72] An over-abundance of kina and the over grazing of kelp systems can result in kina barrens. Kelp forests are an important habitat and food source for many rocky reef dwelling species. Therefore, in making a decision, you must give consideration to the indirect impacts of rock lobster fishing on species that directly rely on kelp.

237. Kelp habitats are likely to be important for a range of harvested and non-harvested species, and any reduction in such habitats is therefore likely to be adverse to rock lobster and other species that rely on kelp for shelter or food.[73]

238. Fishing-induced trophic cascades, kelp grazers (e.g., butterfish),[74] and other impacts on the ecosystem due to fishing, sedimentation, and climate change can have long term impacts on kelp abundance and distribution. In turn, this could potentially negatively impact the suitability of rocky reef habitat for juvenile and adult rock lobsters as a refuge for settlement, as well as the availability of their prey species.[75]

Habitat of particular significance for fisheries management

239. Three potential habitats of particular significance for fisheries management (**HoPS**) have been identified within the CRA 7 quota management area. These include:

- Biogenic reefs on Otago shelf (blue cod nursery);
- Blueskin Bay (elephantfish nursery); and
- Hay Paddocks (tarakihi nursery).

240. Rock lobster fishing in CRA 7 is not known to overlap with any of these habitats.

[72] Doheny et al. (2023)
[73] Dayton (1985)
[74] Shears et al. (2008)
[75] Stanley et al. (2015)

Part 5: Conclusions and recommendations

241. The most recent rapid assessment update for CRA 7 & 8, and updated catch-per-unit-effort (CPUE) data suggest that biomass of rock lobster is increasing in CRA 7. The management procedure for CRA 7 (which utilises updated CPUE data) has recommended an increase to the TACC for the upcoming 2025 fishing year.

242. Based on this updated information, FNZ consulted on two TAC options for CRA 7.

- **Option 1:** This is a modified status quo which would apply a small increase to the allowance for other sources of mortality caused by fishing to better account for current levels of mortality in the fishery. The other allowances and TACC would be retained at current levels. This is a more cautious option which places weight on potential risks associated with following a CPUE-based management procedure (refer to Part 2 '*Independent panel views on CPUE-based management procedures*). It is also more cautious with respect to potential risks of urchin barren formation and the effects of environmental stressors such as marine heatwaves (see *'Interdependence of stocks'* and '*Environmental conditions affecting the stock'* in Table 6 and Part 4).
- **Option 2:** This would apply an increase to the allowance for other mortality, in addition to a modest (11.5-tonne) increase to the TACC. This option aligns with the management procedure currently used in CRA 7, which provides for a more settled management approach between stock assessments. Option 2 will provide for greater utilisation compared to Option 1; estimated to provide $1.17 million more in commercial revenue compared to the 2024/25 fishing year.

243. Feedback and submissions showed mixed support between these options, with recreational and environmental interests supporting the more cautious Option 1, and tāngata whenua and representatives of the commercial rock lobster industry supporting Option 2. Representatives of the commercial kina industry submitted in support of an alternate option which would include the implementation of a proposed kina harvest plan alongside any potential TAC increase (refer to Part 2 '*Kina in Moeraki/East Otago and the harvest plan proposed by Cando Fishing Ltd*').

244. While both options are viable, FNZ is recommending Option 2, to increase the TAC and TACC from the fishing year beginning 1 April 2025.

245. FNZ acknowledges that this may carry some additional risks compared to Option 1. However, the relative difference in risk is considered to be low given the magnitude of the proposed increase (9% increase to the TACC). As highlighted in Part 2 (under '*Independent panel views on CPUE-based management procedures*), there are factors which provide FNZ with confidence in increasing the TAC of CRA 7 under this option, based on the current CRA 7 management procedure. Notably:

- biomass of CRA 7 & 8 is estimated to be well above its B_{MSY} proxy target, and it is highly unlikely that the proposed increase would result in biomass falling below this before the next full assessment is undertaken in 2027/28.
- the most recent full assessment for the combined CRA 7 & 8 stock estimated that biomass of CRA 7 had steadily increased since the late 1990s, which encompasses the eight-year period (refer to Part 4 '*History of the CRA 7 management procedure'*) over which the management procedure previously operated, empirically suggesting it is not inherently risky.

246. FNZ reiterates that the next full stock assessment for CRA 7 & 8 is planned for 2027/28, and the management procedure for CRA 7 will be reviewed subsequently, informed by the inputs of that assessment.

Decision for CRA 7

Option 1

Agree to set the CRA 7 TAC at 137.5 tonnes and, within the TAC, to:

i. Retain the allowance for Māori customary non-commercial fishing interests at 10 tonnes;

ii. Retain the allowance for recreational fishing interests at 5 tonnes;

iii. Increase the allowance for all other sources of mortality to the stock caused by fishing from 8 to 11 tonnes;

iv. Retain the CRA 7 TACC at 111.5 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option 2 *(Fisheries New Zealand preferred option)*

Agree to set the CRA 7 TAC at 150 tonnes and, within the TAC, to:

i. Retain the allowance for Māori customary non-commercial fishing interests at 10 tonnes;

ii. Retain the allowance for recreational fishing interests at 5 tonnes;

iii. Increase the allowance for all other sources of mortality to the stock caused by fishing from 8 to 12 tonnes;

iv. Increase the CRA 7 TACC from 111.5 to 123 tonnes.

Agreed / Agreed as Amended / Not Agreed

Hon Shane Jones

Minister for Oceans and Fisheries

/ / 2025

Chapter 2: Spiny rock lobster (CRA 2) – Hauraki Gulf, Coromandel, and Bay of Plenty

Executive summary

247. You are being asked to make decisions on sustainability measures for the Hauraki Gulf/ Bay of Plenty spiny rock lobster fishery (CRA 2) for 2025/26. Specifically, you are being asked to set the Total Allowable Catch (**TAC**) for CRA 2 and to make a decision on a section 11 closure under the Fisheries Act 1996 (the Act) to close parts of the CRA 2 fishery to commercial and recreational rock lobster fishing.

248. In 2018, in response to concerns regarding stock status, the TAC, Total Allowable Commercial Catch (**TACC**), and recreational allowance of CRA 2 were reduced, followed by a reduction of the recreational daily limit in 2020.

249. The best available information on stock status indicates that CRA 2 biomass at the Quota Management Area (**QMA**) scale has increased in recent years and is projected to continue to increase under current catch settings. This paper considers TAC and TACC increases (ranging from 12.5% to 25% TACC increases). Modelling indicates that at the QMA scale, CRA 2 biomass is likely to continue to increase under each of the three proposed catch settings, albeit at slower rates under the proposed TACC increases.

250. However, you must consider a number of other factors when considering whether a TAC increase meets the requirements of the Act. These include uncertainty in the CRA 2 biomass modelling, concerns of localised depletion in parts of CRA 2, and the role of rock lobster fishing in urchin barren formation.

251. Reports from recreational and customary fishers as well as recently published scientific studies indicate that rock lobster abundance remains low in parts of CRA 2, particularly within parts of the Hauraki Gulf. To help ensure sustainability of the fishery and contribute to the management of urchin barrens, which are prevalent across coastal reefs throughout the Hauraki Gulf, this paper also considers options for a section 11 closure for parts of the inner Hauraki Gulf.

252. The inner Hauraki Gulf is one of the areas where rock lobsters have been described as being functionally extinct.[76] It is considered that suitable habitat exists within parts of the inner Hauraki Gulf to support a much larger rock lobster biomass (although the more sediment affected areas of the innermost parts of the inner Gulf may not be suitable for rock lobster), but that current levels of fishing pressure are preventing the recovery of this already locally depleted part of the CRA 2 stock. It is possible that even low levels of fishing pressure may prevent a future recovery of rock lobster in this area.

253. In response to submissions on the proposed closure, Fisheries New Zealand (**FNZ**) has developed an additional closure option (Option B3) after consultation. This additional option is an amendment of Option B2, extending the closure north to the northern boundary of the QMA which results in a small relative increase to the overall size of the proposed closure and small additional impact on fishers.

254. These closure options are intended to increase the abundance and size of rock lobster within the closed areas, noting that abundance within the proposed closures is not expected to increase uniformly due to spatial variation in recruitment and the availability of suitable habitat.

255. A 2022 High Court Judgment for the neighbouring Northland spiny rock lobster fishery (**CRA 1**) concluded that there is strong evidence that overfishing of rock lobster has significantly contributed to the presence of urchin barrens in the north-east of New Zealand, including within CRA 2. A February 2025 judgment found that immediate steps are needed to address this issue.

256. Rock lobsters are ecologically important predators in New Zealand's rocky reef ecosystems, feeding on a wide range of prey. There is evidence to suggest that predators (including rock lobsters) when at sufficient abundance, can have a significant role in mitigating urchin barrens. The problem of urchin barrens is, however, multi-factorial and will require a range of measures to address effectively.

257. The decisions you make in this CRA 2 sustainability review are not expected, or intended, on their own, to address the issue of urchin barrens in CRA 2. FNZ has an ongoing work programme to address urchin barrens across north-east New Zealand. A number of measures have been implemented to date, and FNZ has briefed you separately on proposed further steps in Northland. FNZ is also engaging with tangata whenua and

[76] Functional extinction implies rock lobsters are so scarce that they are no longer able to fulfil their ecological function as predators of urchins on coastal rocky reefs.

stakeholders on Aotea/Great Barrier Island and with the Hauraki Gulf Fisheries Advisory Group to consider finer scale management measures for the Hauraki Gulf.

258. Tangata whenua have expressed concerns that they have not experienced the increased rock lobster abundance indicated by the stock assessment in their customary fisheries, and that TACC increases should not occur until abundance increases are experienced more widely.

259. In total, 2,379 submissions were received during the consultation. In general, commercial rock lobster representatives support increasing the TACC by 20 tonnes (Option A3) and oppose closing the inner Hauraki Gulf. In contrast, recreational fishing representatives, environmental groups and most individuals support no TACC increase (Option A1) or a reduction in harvest but had mixed views on the proposed closure. Consultation also highlighted that, in general, non-commercial stakeholders are concerned that CRA abundance remains low in many areas of CRA 2 including the Hauraki Gulf. Many non-commercial stakeholders (including the Environmental Law Initiative and the Environmental Defence Society) also expressed concerns at the distribution and persistence of urchin barrens in CRA 2 and consider that larger scale closures are needed.

260. FNZ considers that that the most appropriate decision at this time would be to maintain the current TAC settings (Option A1) and to close the inner Hauraki Gulf to commercial and recreational rock lobster harvest (Option B3, which is slightly larger than Option B2 closure that was consulted on). s9(2)(b)(ii) [redacted]

261. FNZ considers that further work is needed to address existing localised rock lobster depletion, the impact of shifting fishing effort, and to mitigate urchin barrens in CRA 2. FNZ considers that further increasing the abundance and size of rock lobster is likely provide for increased opportunity to meaningfully contribute as predators of urchins and thereby fulfil a role in mitigation of urchin barrens.

262. FNZ intends to implement a higher biomass management target for the April 2026 fishing year and is engaging with stakeholders to understand how further management measures could complement existing and proposed measures. Further management measures could include seasonal closures, area specific recreational daily limits and size limits, and targeted spatial closures to address both rock lobster abundance and urchin barren concerns. FNZ considers it appropriate to further explore these measures and will continue discussions with stakeholders and tangata whenua to further develop management options.

263. However, you must ultimately be satisfied that your current decision on the matters addressed in this advice paper is made in accordance with the purpose and provisions of the Act (i.e., provides for utilisation while doing its part to ensure the sustainability of the stock and the aquatic environment).

[77] s9(2)(b)(ii) [redacted]

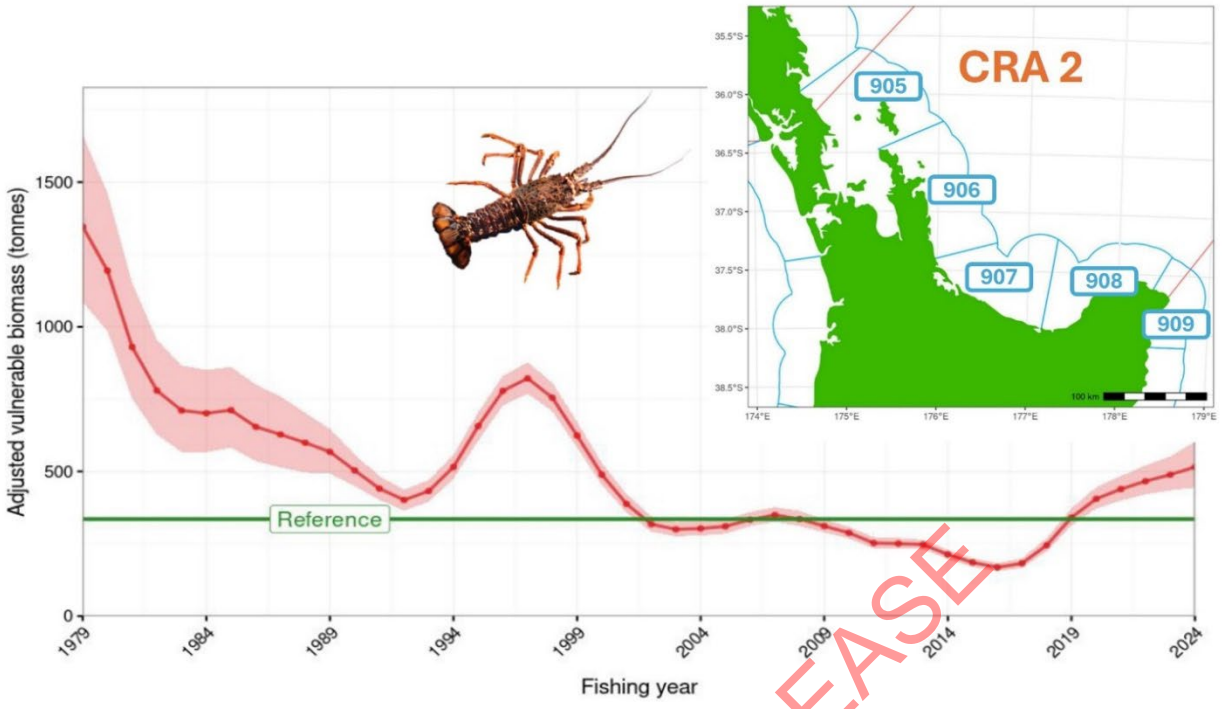

Figure 1: Modelled vulnerable biomass (in tonnes) of spiny rock lobster in CRA 2 from 1979 to the present. Inset map shows the CRA 2 Quota Management Area (QMA) and statistical area boundaries that fall within CRA 2.

Rationale for review

264. Rock lobster is highly valued by customary, recreational, and commercial fishers. The CRA 2 fishery (Figure 1), which includes the Hauraki Gulf, Coromandel, and Bay of Plenty, has a particularly high profile due to its value (an estimated $10.17 million annually from commercial fishery exports), and proximity to large population centres including Auckland and Tauranga.

265. The ecological role of rock lobster as a predator of urchins is also a key consideration in this fishery due to the prevalence of urchin barrens[78] on the north-east coast of New Zealand, including parts of CRA 2. Kina (*Evechinus chloroticus*) is the main barren-forming urchin in CRA 2, although the long-spined urchin (*Centrostephanus rodgersii*) is becoming increasingly common at more exposed localities across CRA 2.

266. In 2018, the TAC for CRA 2 was reduced from 416.5 tonnes to 173 tonnes, including a 60% reduction in the TACC from 200 tonnes to 80 tonnes. This reduction was made in response to sustainability concerns about critically low levels of abundance in the fishery, with the intention that this decision would lead to a doubling of abundance within four to eight years. To further support this rebuild, the recreational daily limit was reduced in 2020 from six to three rock lobsters per fisher per day to help ensure recreational catch does not exceed the 34-tonne annual recreational allowance.

267. A full CRA 2 stock assessment was conducted in 2022. In addition to calculating biomass of the stock, the assessment also determined the vulnerable biomass[79] level that can produce the maximum sustainable yield (**MSY**) from the fishery.[80] Using B_{MSY} [81] as a reference level (a management target, also known as $\mathbf{B_R}$) that is

[78] Urchin barrens are sea urchin dominated areas of rocky reef that would normally support healthy kelp forest but have little or no kelp due to overgrazing by sea urchins. There are two native species of sea urchin in New Zealand, kina (*Evechinus chloroticus*), and long-spined urchin (*Centrostephanus rodgersii*), herein collectively referred to as urchins.

[79] Vulnerable biomass, also known as exploitable biomass, is the biomass of lobsters vulnerable to fishing, i.e., legally harvestable adult rock lobsters. For rock lobsters this is limited to male and female fish above the minimum legal size (**MLS**) at the beginning of the autumn-winter season, excluding females carrying eggs (known as 'in-berry').

[80] Maximum sustainable yield (*MSY*) is the greatest yield that can be achieved over time while maintaining the stock's productive capacity, having regard to the population dynamics of the stock and any environmental factors that influence the stock.

[81] The vulnerable biomass that produces the *MSY*.

tailored to the biological and fishery characteristics of CRA 2 is consistent with the requirement of the Fisheries Act 1996 (**the Act**) to maintain stocks *at or above* a level that can produce the *MSY*.[82]

268. The 2022 stock assessment and subsequent 2023 and 2024 rapid update assessments all indicated that CRA 2 biomass has increased significantly following the 2018 and 2020 catch reductions. The 2024 rapid update estimated vulnerable biomass to be 515 tonnes, which is 54% above B_R (335 tonnes), and that it is projected to increase over the next five years under current catch levels (see Part 4 '*Stock status*'). Consequently, there may be an opportunity to increase utilisation.

269. Fish stock management targets are often set at B_{MSY} by default, but they can be set higher depending on social, cultural, and economic factors, as well as environmental or ecosystem considerations. While the vulnerable biomass target that CRA 2 is managed to is a single-stock target (a traditional method that focuses on managing individual fish stocks), the Act requires the incorporation of wider ecosystem considerations.

270. Rock lobster, as reef predators that feed on urchins, among other species, are an important part of the ecological health and biodiversity of coastal rocky reefs in north-eastern New Zealand. There has been extensive discussion, across various sectors and users of the fishery, regarding the need to increase the abundance of large[83] rock lobster (as well as other urchin predators, such as large snapper and packhorse rock lobster) in Fisheries Management Area 1 (**FMA 1** - which includes both the CRA 1 and CRA 2 QMAs), to reduce the prevalence of urchin barrens (discussed further in Part 4 '*Urchin barrens*').

271. Tangata whenua and stakeholders have expressed ongoing concerns about the abundance of rock lobster in parts of CRA 2, with particular concern about the localised scarcity of rock lobster and the prevalence of urchin barrens within the Hauraki Gulf.

272. FNZ sought feedback from stakeholders, tangata whenua, and the public on three different aspects of CRA 2 management. These are:

a) How should the CRA 2 TAC be set for the upcoming 2025 April fishing year?

b) Should parts of CRA 2 be closed to rock lobster fishing to support recovery of rock lobster populations?

c) What is an appropriate longer term CRA 2 biomass management target (i.e. the amount of rock lobster that FNZ aims to have present in the CRA 2 QMA)?

273. Public feedback from this recent consultation will inform setting an appropriate longer term CRA 2 biomass management target. The upcoming 2025 CRA 2 stock assessment will provide revised estimates of stock biomass and recruitment and updated stock biomass projections. It is intended that this new assessment model will inform the development of new management procedures[84] for CRA 2 that will be designed to iteratively manage the stock biomass at or around the new management target level. FNZ is determining how to implement a Management Target as an enduring consideration in management of CRA and intends to progress this during 2025.

274. For the TAC options proposed, FNZ has assumed a provisional biomass management target of 2x B_R with the best available information (the 2024 rapid update) indicating that the CRA 2 biomass will increase under all proposed TAC options over the next four years (depending on the selected option of the three proposed, CRA 2 biomass is expected to be 1.8-1.95x B_R by 2028). Further information on management targets is discussed in Part 4 '*Management target considerations*'.

275. At this time, FNZ is seeking your decision to set the TAC of CRA 2 under section 13(2)(c) of the Fisheries Act. Your decision will take effect from the beginning of the next fishing year on 1 April 2025. FNZ is also seeking your decision on a proposed spatial closure of the inner Hauraki Gulf, under section 11 of the Act, which could be implemented shortly after April.

[82] Where the target vulnerable biomass reference level is referred to, this is an estimate of B_{MSY} calculated from the stock assessment model that is accepted by the Rock Lobster Working Group (also known as the interim target). This is usually the default target until an agreed management target is set by the Minister.

[83] It has been established that large spiny rock lobster (with a carapace (body) length greater than 130 mm) are unique in their ability to pry large urchins from rocks and consume the animal via the unprotected mouthparts (Flood, 2021). Therefore, increasing the abundance of not just spiny rock lobster but also large spiny rock lobster is required to reduce the prevalence of urchin barrens and support the recovery of kelp forests within CRA 2.

[84] Management procedures are set 'decision rules' that can be used to guide the Minister's setting of commercial catch limits (TACCs) based on changes in abundance (measured by changes in commercial catch rates ('catch-per-unit-effort' or 'CPUE')). Management procedures allow FNZ to respond quickly to changes in stock abundance on an annual basis, as there is a more settled approach for responding to different levels of abundance.

Proposed options and FNZ's recommendations

276. FNZ proposed three TAC options for consultation (Table 1). Option A1 (status quo) retains the current catch settings, including the allowance for other mortality caused by fishing. The allowance for other mortality caused by fishing in Options A2 and A3 are lower than in Option A1 because, if you decide to change the catch settings, FNZ recommends you also update the allowance for other mortality caused by fishing to reflect new estimates which indicate it has decreased since it was last set. The allowances for Options A2 and A3 are based on the current estimate of 'all other sources of mortality caused by fishing' (30 tonnes in 2023/24) and then increasing it by 12.5% and 25% (aligned to relative increases to TACC) to reflect likely increases in other mortality (handling mortality) as a result of increased fishing under these options. Given the difference in the allowance for other mortality caused by fishing proposed between Option A1 and Options A2 and A3, FNZ has characterised the options in this paper based on the proposed change in TACC rather than relative TAC change as this is more reflective of the expected change in fishing under these options.

Table 1: Proposed TAC options (in tonnes) for CRA 2 from 1 April 2025. FNZ's preferred option is highlighted in orange.

Option	TAC	TACC	Allowances		
			Customary Māori	Recreational	All other mortality caused by fishing
Option A1 (status quo)	173	80	16.5	34	42.5
Option A2	174.5 (↑ 1.5)	90 (↑ 10)	16.5	34	34 (↓ 8.5)
Option A3	188.5 (↑ 15.5)	100 (↑ 20)	16.5	34	38 (↓ 4.5)

277. FNZ proposed two spatial options for consultation. Option B1 is the status quo (does not propose a further fishery management measure), while Option B2 proposes to close the inner Hauraki Gulf from rock lobster fishing (see Table 2). Submissions (from NZ Reefs Lab) highlighted a concern that Option B2 would leave a gap between Cape Rodney and the eastern boundary of the Cape Rodney to Okakari Point Marine Reserve, leaving the reef to the west of the marine reserve (Kemps Beach area) open to fishing and at risk of increased effort due to displacement of fishing effort. It was suggested to adjust the north-west terminus of the proposed boundary, moving this from Cape Rodney to Te Arai Point (the QMA boundary between CRA 1 and CRA 2). FNZ sees merit in the proposed modification and have included it as an additional option for you to consider, Option B3 (Table 2). FNZ has provided further analysis of this option below.

Table 2: Proposed spatial management measures. FNZ's preferred option is highlighted in orange.

Option	Action	Description
Option B1	Maintain status quo	No additional spatial management of rock lobster fishing is proposed beyond the existing marine reserves, mātaitai, and proposed new High Protection Areas (**HPA**s) provided for in the Hauraki Gulf / Tīkapa Moana Marine Protection Bill.[85]
Option B2	Close the inner Hauraki Gulf to all commercial and recreational rock lobster fishing	Closure of the inner Hauraki Gulf (specifically waters south of a straight line that extends from the southern boundary of the Cape Rodney-Okakari Point Marine Reserve to Port Jackson Bay, top of the Coromandel Peninsula) to all commercial and recreational rock lobster fishing. This would be addition to existing marine reserves, mātaitai, and proposed new HPAs provided for in the Hauraki Gulf / Tīkapa Moana Marine Protection Bill.
Option B3 (modified B2)	Close the inner Hauraki Gulf to all commercial and recreational rock lobster fishing	Closure of the inner Hauraki Gulf (specifically waters south of a straight line that extends from a point approximately 1 km offshore at the boundary between CRA 1 and CRA 2 (at Te Arai Point) to Port Jackson Bay, top of the Coromandel Peninsula) to all commercial and recreational rock lobster fishing. This would be in addition to existing marine reserves, mātaitai, and proposed new HPAs provided for in the Hauraki Gulf / Tīkapa Moana Marine Protection Bill.

[85] The Hauraki Gulf / Tīkapa Moana Marine Protection Bill is currently awaiting its third reading in Parliament, and the proposed HPA closures under this Bill are not law yet. The proposed CRA 2 inner Hauraki Gulf closure is independent of this Bill and would be implemented under section 11 of the Act, covering the inner Hauraki Gulf as indicated in Figure 2 and overlapping with some of the proposed HPA closures.

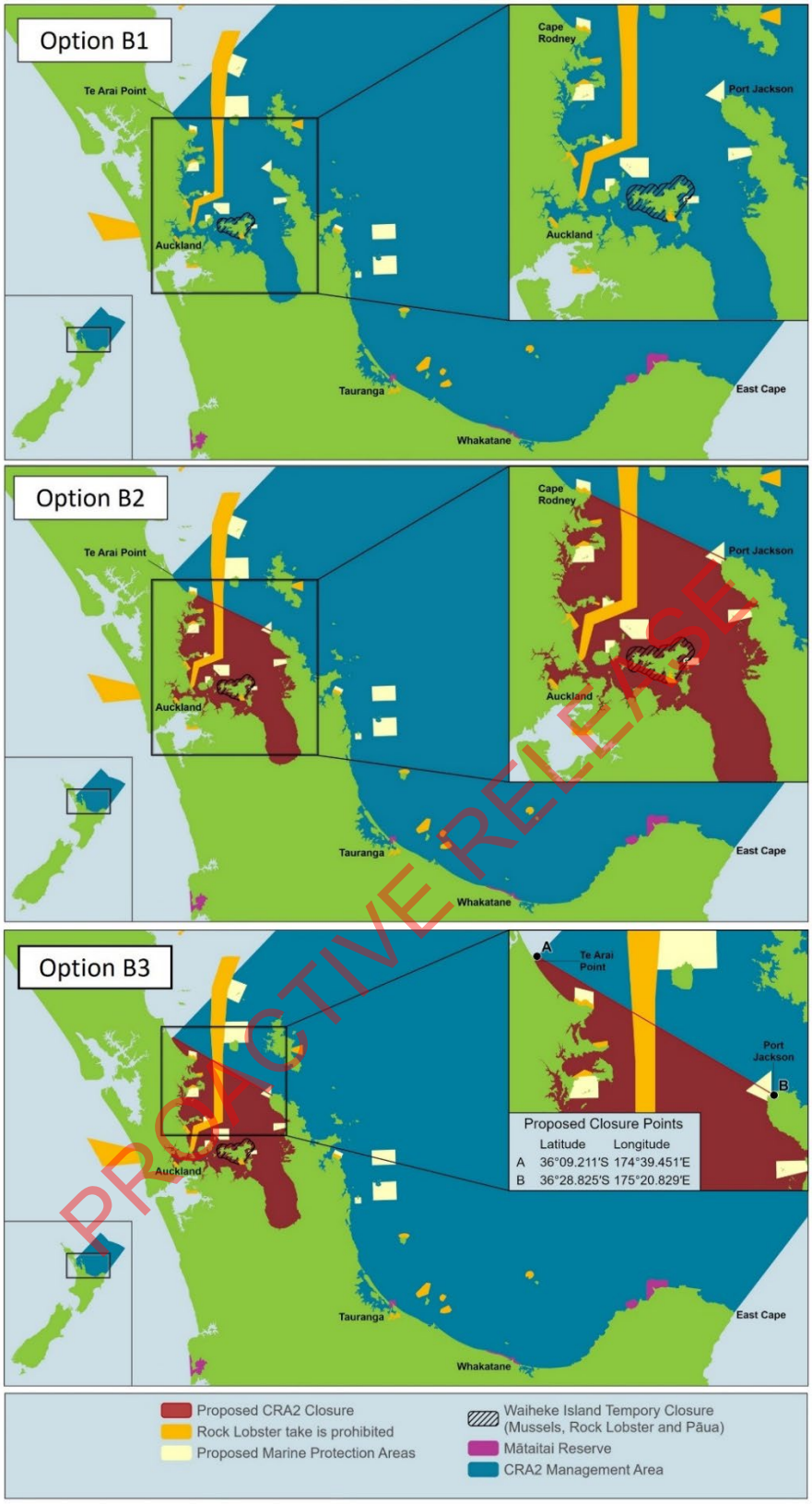

Figure 2: Existing and proposed spatial management measures for the CRA 2 QMA. The upper panel (Option B1) shows existing areas in which harvest of rock lobster is currently or proposed to be prohibited, including marine reserves, mātaitai reserves, section 186A temporary closures, submarine cable and pipeline protection areas, and High Protection Areas (HPAs) proposed in the Hauraki Gulf Marine / Tīkapa Moana Protection Bill. The middle panel (Option B2) includes the proposed spatial closure for all commercial and recreational rock lobster fishing within the inner Hauraki Gulf. The lower panel (Option B3) is a modification of Option B2 to extend the closure to the boundary of CRA 1 and CRA 2.

278. A total of 2,379 submissions were received on the review of CRA 2 during public consultation. There was mixed support across the options from the different interests that submitted. Commercial representatives generally support increasing the TACC by 20 tonnes (Option A3) and oppose closing the inner Hauraki Gulf (Option B2). In contrast, recreational fishing representatives, environmental groups, and most individuals recommend a cautious approach, with most supporting no TAC/TACC increase (Option A1). Within this group, support for the inner Hauraki Gulf closure (Option B2) was mixed, with some submitters supporting the closures while others advocated for smaller more targeted closures.

Table 3: Summary of submissions received on the TAC and spatial closure options. More detail can be found in Table 6 in '*Part 2: Submissions*'.

TAC options	**Option A1** 80-tonne TACC	**Option A2** 90-tonne TACC	**Option A3** 100-tonne TACC
Number of submissions in support	215	7	15
A total of 2,379 submissions provided feedback on the proposed catch setting options, including 2,338 through a submission form set up through LegaSea. 2,142 submitters suggested alternative options regarding the TAC (including TAC/TACC reductions, closure of the fishery, and changes in the management target).			
Spatial management options	**Option B1** No additional closures	**Option B2** Closure of inner Hauraki Gulf	
Number of submissions in support	5	13	
A total of 2,366 submissions provided feedback on the proposed spatial closure, including 2,338 through a submission form set up through LegaSea. 2,348 submitters suggested alternative options including localised closures and finer scale management (as opposed to the QMA as a whole), voluntary closure measures, expanding the proposed closure (including some who explicitly supported B2), or suggesting other areas to close.			

279. The feedback from submissions has been characterised further under the '*Analysis of options*' below. More detail, including other matters raised by submitters, is provided in Part 2 '*Submissions*'.

280. Based on our analysis of these options and incorporating the feedback received, as well as our assessment of the options against legal provisions (see Part 3), FNZ recommends no change to the catch limits (Option A1), and closure of the inner Hauraki Gulf (Option B3). The rationale for this recommendation is set out in Part 5 under '*Conclusions and recommendations*'.

Analysis of options

281. The options proposed for CRA 2 (for both the TAC and the proposed inner Hauraki Gulf spatial closure) are analysed below with an outline of the key risks and benefits for each option, as well as feedback received during consultation. Additional information on and rationale to support current and proposed settings within the TAC can be found below in Table 5 under *'Fishery characteristics and settings'*.

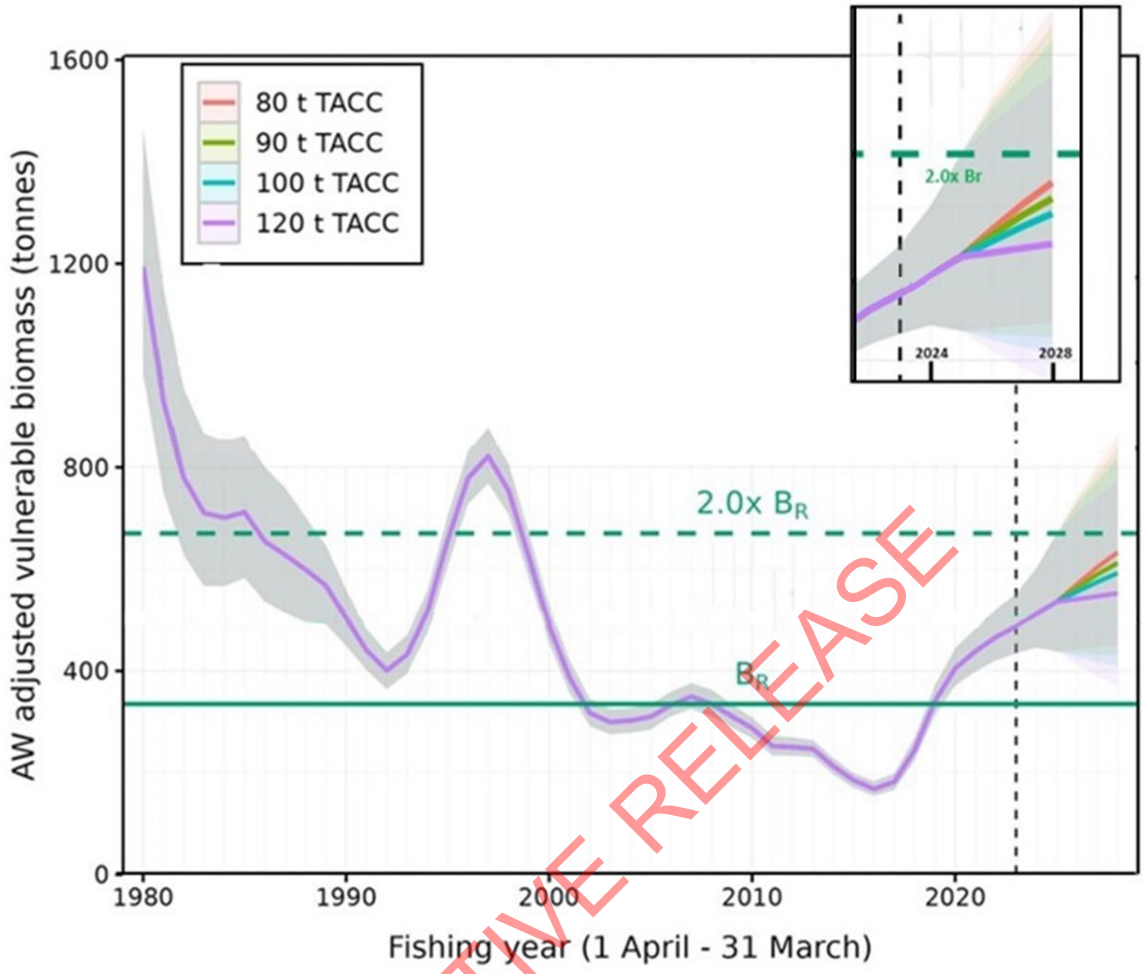

Figure 3: Posterior distribution of the 2024 rapid update model estimates of vulnerable biomass, which have been projected out to 2028. Variable shading intensity indicates the 50% and 90% credible intervals and the solid line indicates the median. The B_R management target is shown as a solid green line. The different projections are based on alternative TACC settings, with 80 tonnes (the current TACC) reflecting the current CRA 2 catch levels.

Option A1 – retain current settings (status quo)									
TAC	173	TACC	80	Customary Māori	16.5	Recreational	34	Other mortality	42.5

Benefits

282. Modelling from the 2024 rapid update assessment indicates that, under current catch levels (i.e. status quo), CRA 2 vulnerable biomass is likely to continue to increase, and reach 1.95x B_R by 2028.

283. This option is expected to see a greater rate of stock biomass increase than Options A2 and A3. In turn, this option should see a rate of CPUE increase above the rate experienced under Options A2 and A3, which should result in increased harvesting efficiency and reduced operating costs to harvest the same amount of rock lobster.

284. There would be no change to the TAC under this option, and therefore a low likelihood of a change in fisher behaviour or additional fishing effort. However, fisher behaviour may change due to other reasons, such as abundance or spatial closures.

285. Of the options proposed, Option A1 is expected to provide the greatest and quickest biomass increase. Therefore, it provides a greater likelihood than Options A2 and A3 that rock lobster biomass will remain at or increase and in combination with other measures (including the possible inner Hauraki Gulf closure, proposed HPAs (**High Protection Areas**), and existing measures to facilitate urchin removals), will better enable rock lobster to play their part in controlling urchin populations and delivering ecosystem functions

Option A1 – retain current settings (status quo)
in CRA 2. However, this certainty cannot be quantified because the abundance and size distribution of rock lobster required, in combination with other predators, to mitigate urchin barren formation is unknown.
Risks
286. This option retains utilisation at the current level, compared to Options A2 and A3 which offer increases to the TACC, so would result in foregone economic benefit.
Feedback received
287. Twenty-four submitters stated their support for this option; fourteen organisations and eleven individuals. Supporters of this option consisted of environmental non-government organisations, two iwi trust boards, community-based organisations, Auckland Council and individuals who either reside or fish in CRA 2.
288. Through LegaSea's online submission form, there were 195 submitters in support of this option.
289. Several submitters consider that the 2022 CRA 2 stock assessment (and subsequent rapid assessment updates) did not align with their personal experience of the fishery (either fishing or diving) or other studies that reviewed fishery-independent data of Hauraki Gulf (see Part 4 '*Stock status*'). A number of submitters questioned FNZ's confidence in the use of CPUE as an index of abundance and were sceptical of the increased CRA 2 biomass shown in recent assessments. Some submitters consider that the fishery is still recovering.
290. Some submitters support this option as it provides the fastest way for the stock to reach the provisional biomass management target of 2x B_R.
291. Several submitters (including NZ Reefs Lab, University of Auckland) support this option but do not support the provisional target of 2x B_R as they consider it is inadequate in terms of ecosystem management and not sufficiently precautionary.
292. The Environmental Defence Society (**EDS**) supports this option as it is the most conservative. However, along with some other submitters, EDS expressed concern that no TAC reductions were proposed by FNZ.
293. Some parties drew attention to aspects of uncertainty in both the current and forecasted performance of the stock (both the reliability of assessments and unknowns associated with climate change) and advocated that a precautionary approach should be adopted, and that this option aligned to this approach. Environment and Conservation Organisations of New Zealand (**ECO**) noted concern that sequential rapid update assessments, following the 2022 CRA 2 stock assessment, showed a more pessimistic estimate of CRA 2 biomass and biomass projections each time (this point was echoed by NZ Reefs Lab).
294. Several advocates for this option consider that a TAC increase does not align with ecosystem-based fisheries management.
295. The Whangamata Ocean Sports Club advocated there be no TAC change until the planned 2025 stock assessment and more work on urchin barrens. However, it also supported the joint recreational submitters, which promoted an alternative TAC option from the ones proposed by FNZ.
296. Aotea Great Barrier Environmental Trust support this option due to concerns that, even with current TAC settings, the possible closure of the inner Hauraki Gulf would have impacts on the rest of the CRA 2 fishery through displacement of both recreational and commercial fishing effort. The Trust considers it a "high-risk strategy" to increase the TAC while making spatial adjustments. Several other submitters also expressed concern about the displacement of fishing to other locations in CRA 2, notably the outer Hauraki Gulf.
297. Ngāti Rehua-Ngātiwai ki Aotea Trust Board supports this option and states opposition to any TAC increase.
298. Ngātiwai Trust Board supports maintaining the current TAC settings.
299. The consensus view of the Mai i ngā Kuri a Whārei ki Tihirau Iwi Fisheries Forum was support for this option.
300. Views expressed at the Ngā Hapu o Ngāti Pōrou Iwi Fisheries Forum most closely align with support for this option.

Option A1 – retain current settings (status quo)

FNZ's analysis and view of this option

301. Based on the 2024 rapid update assessment projections, the proposed TAC CRA 2 biomass under this option is modelled to increase to 1.95x B_R by 2028, and is the fastest rate of biomass increase of the options proposed. Consequently, this option places greatest weight on ecological considerations by providing for the most rapid projected increases in rock lobster biomass in CRA 2 over the short term (four years), and in turn providing the greatest opportunity for rock lobster to fulfil role as a predator of urchins (discussed further in Part 4 '*Management target considerations*').

302. FNZ acknowledges that the vulnerable biomass estimate of CRA 2 in each rapid update assessment has declined since the 2022 stock assessment (discussed in Part 3 '*Information principles: section 10 of the Act*'). There is uncertainty in all vulnerable biomass estimates, however, FNZ considers that these assessments constitute the best available information on the current biomass of CRA 2. FNZ notes that the 2023 and 2024 rapid update assessments were not strictly comparable because updated length data were unavailable in 2023.

303. You should also note that the CRA 2 stock assessment, and rapid updates, include limited fisheries data from statistical area 905 (the northern part of CRA 2 which includes the inner and outer Hauraki Gulf) relative to other parts of the QMA. This is an area where both stakeholder feedback and University of Auckland research[86] suggest the rock lobster population remains depressed, at least in the more western parts of CRA 2. Of the options proposed, FNZ expects Option A1 would result in the least additional rock lobster harvest pressure in statistical area 905. As catch limits are set at the QMA level, it is not possible to increase the TACC while capping the level of harvest coming from this part of the QMA. Retaining rather than increasing catch limits is therefore the least likely (of the TAC options presented) to result in additional adverse ecological effects in northern CRA 2.

304. This option places the greatest emphasis on uncertainty regarding abundance in statistical area 905 and places the most restraint on utilisation (relative to the other TAC options). However, of the options proposed, this option also places greatest weight on increasing stock biomass at the fastest rate) and is expected to result in increased CPUE and provide the greatest opportunity for rock lobster to fulfil the role of a predator of urchins in the QMA.

305. Should you decide to close the inner Hauraki Gulf to rock lobster fishing (Options B2 or B3), FNZ considers that this would likely result in some displaced fishing effort to the outer Hauraki Gulf. If this eventuates, commercial fishers would end up harvesting their ACE across a reduced spatial area which could increase the impacts of fishing in localised areas. Recreational fishers may also move their effort to the outer Gulf. In addition, the proposed High Protection Areas will further reduce the area available to fish. Should you decide to maintain the TAC then fishers will harvest their current level of catch across a reduced area. This could lead to some level of increased fishing effort at localised areas (displacement), with any increase to the TAC potentially resulting in a further increase in effort at these localities. s9(2)(g)(i) [redacted]

Option A2 – 12.5% TACC increase (1% TAC increase)

TAC	174.5	TACC	90	Customary Māori	16.5	Recreational	34	Other mortality	34

Benefits

306. This option provides for a 1.5-tonne increase to the TAC, an 8.5-tonne decrease to other sources of fishing mortality and a 10-tonne increase to the TACC.

307. It is estimated that, under this option, increased landings of rock lobster could provide approximately $1.02 million more in commercial revenue[87] than in the 2024/25 fishing year.

[86] Nessia et al., 2024.

[87] Calculated from the difference between the projected landing revenue (from the extra TACC allocation) using the 2024/25 CRA 2 port price ($101.97 per kilogram), and the projected landing revenue for the current (2024/25) fishing year from CRA 2 ($8.16 million). Note the annual process for determining port price is governed by the Fisheries (Cost Recovery) Rules 2001 (SR 2001/229), which are based on a surveyed price supplied voluntarily by LFRs. The port price for rock lobster is not regionally specific, even though rock lobster from some regions may

Option A2 – 12.5% TACC increase (1% TAC increase)
308. Modelling from the 2024 rapid update indicates that, under this option, CRA 2 vulnerable biomass will reach 1.88x B_R by 2028.
309. This option would allow for a greater rate of stock biomass increase than Option A3, but at a lower rate of increase than Option A1.
Risks
310. The proposed increase in TACC would be expected to lead to increased fishing effort which could intensify in some parts of the QMA. Concerns about localised depletion have been raised by numerous stakeholders across much of CRA 2, but particularly in relation to the inner Hauraki Gulf.
311. The increase in TACC under this option combined with likely catch displacement due to HPAs and proposed inner Hauraki Gulf closure, has potential to result in significantly increased fishing intensity in some areas of the QMA that remain open to fishing. This may result in a decline in rock lobster biomass across these areas. Because there is commercial fishing information is not evenly distributed across the QMA and there is little available fisheries independent data, FNZ has limited ability to monitor consequences of increased TAC on spatial distribution of biomass on a finer scale than the QMA.
312. This option is projected to result in a lower rate of stock biomass increase than Option A1.
313. The biomass increase expected under this option is greater and within a shorter timeframe than Option A3. This would provide a greater likelihood than Option A3 that rock lobster biomass would remain at or increase to a level that in combination with other measures (including the possible inner Hauraki Gulf spatial closure, proposed HPAs, and existing measures to facilitate urchin removals), will allow them to play their part in controlling urchin populations and delivering ecosystem functions in CRA 2. However, this certainty cannot be quantified because the abundance and size distribution of rock lobster required, in combination with other predators, to mitigate urchin barren formation is unknown.
Feedback received
314. An individual submitter (P Clow) supported this option because it is stable and allows a small increase for commercial utilisation, noting the CPUE increase following the 2018 TAC reduction.
315. Through LegaSea's online submission form, there were six submitters in support of this option.
FNZ's analysis and view of this option
316. Option A2 (90-tonne TACC) offers a midpoint option between status quo (Option A1; 80-tonne TACC) and highest proposed TACC increase (Option A3; 100-tonne TACC). This option would allow for some moderate increase in utilisation but gives more consideration to the ecosystem function of rock lobster than Option A3.
317. Should you decide to close the inner Hauraki Gulf (Options B2 or B3), this would affect how rock lobster catch is distributed throughout the QMA as it is likely to displace fishing effort into the remaining open areas. This is also a concern for other closures within the Hauraki Gulf, such as the proposed HPAs. Increasing the TAC would likely compound this concern as fishers would have a greater utilisation opportunity but, with reduced fishing grounds, effort could intensify in certain areas thereby increasing the risk of localised depletion. s9(2)(b)(ii) . How an increase in TAC, and implementing the proposed closure (or not), will affect fisher behaviour is unknown.
318. You should also note that increasing the TACC under this option would likely result in some increased harvest of rock lobster from statistical area 905 (northern CRA 2). This is an area for which the CRA 2 stock assessment, and rapid updates, have limited information relative to the rest of the QMA. Both stakeholder feedback and University of Auckland research[88] suggest the rock lobster population remains more depressed in statistical area 905 relative to the eastern parts of CRA 2. While FNZ considers rock lobster harvest could be sustainably increased in the eastern parts of the CRA 2 fishery (statistical areas 906, 607, 908 and 909), there is some uncertainty about the biomass and therefore the sustainability of

receive a higher price. The quantities used to calculate landing revenue include wharf sales and exclude loss from holding pots. The future calculations assume the full TACC is landed and not exceeded. No economic flow-on effects are quantified, such as impacts on processing and retail.

[88] Nessia et al., 2024.

Option A2 – 12.5% TACC increase (1% TAC increase)
increasing harvest in statistical area 905. Catch settings options which include an increased TACC (Options A2 and A3) would likely increase rock lobster harvest pressure in statistical area 905. As catch settings apply across the whole QMA, it is not possible to increase the TACC while capping the level of harvest coming from this part of the QMA.

Option A3 – 25% TACC increase (9% TAC increase)									
TAC	188.5	TACC	100	Customary Māori	16.5	Recreational	34	Other mortality	38

Benefits

319. This option provides for a 15.5-tonne increase in TAC, a 4.5-tonne decrease to other sources of fishing mortality and a 20-tonne increase to the TACC.

320. This option provides for the highest level of commercial utilisation, when compared with Options A1 and A2.

321. It is estimated this would provide approximately $2.04 million more in commercial revenue[89] annually compared to the 2024/25 fishing year.

322. Modelling conducted as part of the 2024 rapid update indicates that, under this option, CRA 2 vulnerable biomass is projected to reach 1.80x B_R by 2028 (see Figure 3 for credible interval shading that illustrates estimates of uncertainty).

Risks

323. This option is expected to result in a lower rate of stock biomass increase than Options A1 and A2, and therefore the highest level of uncertainty of the stock reaching the 2x B_R biomass management level in the near future.

324. As this option provides the largest of the proposed TAC increases, it comes with the highest risk of increased fishing effort leading to localised depletion. Concerns about localised depletion have been raised by tangata whenua and numerous stakeholders, particularly in relation to the inner Hauraki Gulf.

325. The increase in TACC under this option combined with likely catch displacement due to HPAs and proposed inner Hauraki Gulf closure, could result in significantly increased fishing intensity in areas of the QMA that remain open to fishing. This may result in a decline in rock lobster biomass across these areas. Because the commercial fishing information is not evenly distributed across the QMA and there is little available fisheries independent data, FNZ has limited ability to monitor and manage consequences of increased TAC on spatial distribution of biomass on a finer scale than the QMA.

326. Modelling indicates biomass increases under this option would be expected to be less than the other options. This option provides the lowest likelihood that rock lobster biomass would increase to a level that in combination with other measures (including the possible inner Hauraki Gulf spatial closure, proposed HPAs, and existing measures to facilitate urchin removals), would allow them to play their part in controlling urchin populations and delivering ecosystem functions in CRA 2. However, this certainty cannot be quantified because the abundance and size distribution of rock lobster required, in combination with other predators, to mitigate urchin barren formation is unknown.

Feedback received

327. Ten submitters support this option; eight organisations and two individuals. Supporters of this option consisted of representative organisations of industry participants (including CRAMAC 2, NZ RLIC, the Iwi Collective Partnership and Leigh Commercial Fishermen's Association) and commercial fishers.

328. Through LegaSea's online submission form, there were five submitters in support of this option.

[89] Calculated from the difference between the projected landing revenue (from the extra TACC allocation) using the 2024/25 CRA 2 port price ($101.97 per kilogram), and the projected landing revenue for the current (2024/25) fishing year from CRA 2 ($8.16 million). Note the annual process for determining port price is governed by the Fisheries (Cost Recovery) Rules 2001 (SR 2001/229), which are based on a surveyed price supplied voluntarily by LFRs. The port price for rock lobster is not regionally specific, even though rock lobster from some regions may receive a higher price. The quantities used to calculate landing revenue include wharf sales and exclude loss from holding pots. The future calculations assume the full TACC is landed and not exceeded. No economic flow-on effects are quantified, such as impacts on processing and retail.

Option A3 – 25% TACC increase (9% TAC increase)

329. Many supporters of this option highlight the ongoing socio-economic impacts following the 2018 TAC reduction. These include:

- Associated financial losses and lost opportunity for investment in the fishery.
- According to NZ RLIC, 13 fewer vessels operating within CRA 2 following this reduction.
- It has become harder for some operators to service operating costs and debt; with reports of some fishers struggling to make a viable margin between ACE/operating costs and fish sale.
- Some operators have either had to take secondary employment or diversify fisheries they operate in.
- Operator succession plans disrupted, with reports of some operators not introducing family members into the industry due to economic uncertainty.
- Impacts on mental wellbeing of industry participants and whanau.
- Implications for the wider regional economy that CRA 2 supports.

330. Some submitters referred to the outputs from the stock assessment and rapid updates, and that CRA 2 abundance is projected to continue to increase under this option.

331. CRAMAC 2 highlights that managing CRA 2 at the default management target (B_R) is calculated to allow for *MSY*, so managing the stock above this provides for a conservative approach to managing the fishery.

332. Many supporters of this option consider that a TAC increase is overdue, and that the increased abundance of rock lobster in CRA 2 warranted further utilisation of the stock in earlier years.

333. R Waterhouse submits that a TAC increase is overdue, and that CRA 2 fishers outside the Hauraki Gulf have been unjustifiably penalised.

334. Some submitters (notably NZ RLIC and CRAMAC 2) expressed concern that urchin barren management is informing the review of the TAC (and spatial closure). They draw attention to the uncertainty in the rock lobster abundance threshold required to prevent the formation of urchin barrens, and the role of urchin predators other than rock lobster.

335. In its submission, NZ RLIC (with support from CRAMAC 2 and other industry participants) propose a Code of Conduct for statistical area 905 permit holders. The Code of Conduct was proposed dependent on selection of this option, it encompasses:

- Voluntary statistical area 905 catch limit, that aligns to catch levels since 2018 (13 tonnes, with a limit of 2 tonnes within the inner Hauraki Gulf).
- Voluntary closed season, between Labour Day (October) and 31st March, within the inner Hauraki Gulf (defined as waters south of the line between Tawharanui and Cape Colville).
- Implementing a voluntary maximum grade limit (78mm for males and 97mm for females) and returning rock lobsters above this limit to the sea.
- All statistical area 905 operators to participate in the Voluntary Logbook Programme (see Part 2 '*Voluntary Logbook Programme'*), with NZ RLIC emphasising the importance of this data to monitor rock lobster abundance within statistical area 905.
- Facilitating recognised initiatives to address urchin barrens.

336. NZ RLIC submit that, should the Code of Conduct be adopted, they would monitor and report adherence by:

- Undertake quarterly analysis, using FNZ data, to monitor fishing effort in statistical area 905.
- Request landed grade information from LFRs quarterly and undertake an analysis to confirm whether any spiny rock lobsters landed from statistical area 905 are above F grade.
- Provide an individual report to each of the signatories, and an overall report at the end of each quarter to CRAMAC 2. A yearly report will be presented to relevant organisations (such as the National Rock Lobster Management Group, and the Hauraki Gulf Fisheries Advisory Group).

FNZ's analysis and view of this option

337. FNZ acknowledges the socio-economic impacts following the 2018 TAC reduction and the 2020 recreational daily limit reduction. The subsequent increase in CRA 2 biomass and the positive projections for the stock (anticipated biomass increase over the next 5 years under all proposed options) is a consequence of these reductions in utilisation by all users of the fishery (notably industry participants).

338. FNZ also acknowledges that managing CRA 2 to a higher biomass target (i.e. 2x B_R) is managing the stock more conservatively (as opposed to managing the stock to B_{MSY}) and that as a consequence all fishery

Option A3 – 25% TACC increase (9% TAC increase)

users would forgo utilisation (in the short term) in order to manage the stock to a higher biomass, which should ultimately increase the efficiency of harvesting across all sectors.

339. The 2024 rapid update assessment projects CRA 2 under this option would increase to 1.80x B_R by 2028, but that is the slowest rate of biomass increase of the options proposed.

340. There is uncertainty in the biomass estimates, and this option would apply the least degree of caution with respect to that uncertainty. FNZ notes industry participants' concerns that urchin barren management is informing this review of the CRA 2 fishery. Best available information indicates that predators, including rock lobsters, when present at sufficient abundance and size structure, can have a significant role in mitigating urchin barrens. Furthermore, laboratory-based feeding experiments have shown that only lobster with a carapace length greater than 130 mm are capable of feeding on large urchin (see Part 4 '*Urchin barrens*').

341. However, based on best available information and the findings of judicial review of sustainability decisions for CRA 1[90] (see Part 4 '*Urchin barrens*'), FNZ considers the importance of rock lobster's ecological role as a predator of urchins is a significant consideration you must take into account when setting the CRA 2 TAC. By proposing the greatest increase in utilisation, this option has the least consideration (of the options proposed by FNZ) of rock lobster's ecological role as a predator of urchins.

342. Careful consideration is required regarding the interplay of setting the TAC and the proposed closure of the inner Hauraki Gulf (Options B2 and B3). There is already concern about likely displacement of fishing effort from the proposed HPAs to other areas of CRA 2 (notably the outer Hauraki Gulf) which could lead to localised depletion, and this would be exacerbated by a closure under the Fisheries Act. Increasing the TAC (with this option proposing the highest increase) would likely compound this concern as fishers would have a greater utilisation opportunity but reduced fishing grounds to access. s9(2)(b)(ii) How an increase in TAC, and implementing the proposed closure, would affect fisher behaviour is unknown.

343. FNZ has analysed rock lobster fishing activity since September 2019 within the area that would be covered by the voluntary seasonal closure set out in the proposed industry Code of Conduct. FNZ data shows that nearly all commercial fishing events have occurred outside the proposed voluntary closed season, so it would largely reflect what is already occurring in practice.

344. FNZ commends NZ RLIC's proposed Code of Conduct that would ensure harvest within statistical area 905 is kept within historical levels (approximately 13 tonnes), improve the volume of stock assessment data from this area and facilitate recognised initiatives to address urchin barrens. However, the Code of Conduct does not address how an increase in TAC would be managed in other areas of CRA 2 (notably the rest of the outer Hauraki Gulf) where both localised rock lobster depletion and urchin barrens have been reported. FNZ also notes there is limited detail in the Code of Conduct on how or what industry identifies as "recognised initiatives" to address urchin barrens.

345. FNZ notes that NZ RLIC has indicated the Code of Conduct for operators in statistical area 905 is dependent on you selecting Option A3.

346. FNZ also notes that in this situation you are not currently able to take voluntary measures into account when considering whether the Act requires management action to be taken, however consultation has recently started on an Act amendment that may allow this in the future.

Spatial closure: Option B1 – No additional measures

Benefits

347. s9(2)(b)(ii) .

348. Recreational fishers would also continue to be able to harvest rock lobster from within the inner Hauraki Gulf. However, FNZ has heard from recreational stakeholders and tangata whenua that low abundance of

[90] The Environmental Law Initiative v Minister for Oceans and Fisheries [2022] NZHC 2969 [11 November 2022]

Spatial closure: Option B1 – No additional measures
rock lobster in the inner Hauraki Gulf means neither catch rates nor the recreational or customary fishing experience currently meets expectations. Under this option, FNZ has no expectation that recreational catch rates in the inner Hauraki Gulf will improve, the exception possibly being at the margins of the new HPAs proposed by the Hauraki Gulf / Tīkapa Moana Marine Protection Bill, if enacted.
349. Rock lobster biomass is expected to increase within the proposed HPAs over time. Leaving the inner Hauraki Gulf open to rock lobster harvest would allow recreational and commercial fishers to utilise some portion of the HPA rock lobster biomass through spillover (the movement of fish and other marine life from a marine protected area to nearby fishing grounds). However, any aggregation of fishing effort at the boundaries of the HPAs may lead to localised depletion, which would negate this spillover benefit.
350. This option would not drive any displacement of fishing effort into the outer Hauraki Gulf, other parts of CRA 2 (both commercial and recreational) or into neighbouring QMAs - CRA 1 in particular (recreational only). However, FNZ has heard from recreational fishers some displacement has already occurred as fishing effort shifts from the inner Hauraki Gulf to outer Gulf islands in response to low abundance of rock lobster in the inner Gulf.
351. This option is not expected to lead to increased competition or conflict between recreational and commercial fishers, or among commercial fishers.
Risks
352. This option is unlikely to result in an increase in the abundance of large rock lobster or overall population within the inner Hauraki Gulf, beyond changes that may occur due to the proposed HPAs. Consequently, it is unlikely that this option would result in decreased urchin abundance or grazing behaviour (outside of HPAs) and therefore it is unlikely that there would be a reduction in the prevalence of urchin barrens within the inner Hauraki Gulf.
353. Under this option it is likely that the recreational catch rates of rock lobster and the recreational fishing experience would not improve. Recreational fishers based in the Auckland area who desire better access to the CRA 2 fishery would continue to need to travel beyond the inner Hauraki Gulf, with associated travel costs, and emissions.
354. FNZ has heard from tangata whenua that customary fishers have limited access to the rock lobster fishery both across CRA 2 and more specifically in the inner Hauraki Gulf (due to low abundance of lobster across the area), and that the current distribution and abundance of rock lobster does not meet their aspirations either as customary fishers or kaitiaki of their rohe moana. Under this option, FNZ does not anticipate the customary fishing experience would change significantly. FNZ expects that customary harvest of rock lobster would continue to be limited, and that tangata whenua would continue to struggle to manaaki[91] with this taonga species.
355. A risk of all the spatial management options presented here (Options B1, B2 and B3) is that they do not address concerns raised by tangata whenua and stakeholders around CRA 2 sustainability and localised depletion *outside* of the inner Hauraki Gulf (noting that most reported urchin barrens are concentrated within the Hauraki Gulf).
356. With peer-reviewed studies establishing rock lobster as being depleted and described as functionally extinct in the inner Hauraki Gulf,[92] this option may not meet the purpose of the Act to make decisions that ensure sustainability, including mitigating adverse effects of fishing on the environment.
Feedback received
357. Six submitters explicitly support this option. These were representative organisations of industry participants (such as CRAMAC 2 and Leigh Commercial Fishermen's Association) and commercial fishers. One submitter (C Edwards) stated disagreement with the proposed changes, but provided no further rationale other than 'puts pressure back on fish'.
358. The predominant rationale for supporting this option was concern of fishing effort being displaced following the closure, and compounding abundance concerns in other locations in CRA 2 (notably outer

[91] To cherish, conserve, and sustain.
[92] Miller et al., 2023; Macdiarmid et al., 2013.

Spatial closure: Option B1 – No additional measures
Hauraki Gulf). Some submitters considered increased likelihood of competition (and therefore conflict) could occur between sectors. 359. Some submitters drew attention to the other closures within the inner Hauraki Gulf, such as marine reserves, the temporary closure at Waiheke Island, cable/pipeline protection areas, proposed HPAs, and restrictions relating to Caulerpa. Based on these closures, these submitters consider the closure proposed is not necessary. 360. Some expressed concern regarding how effective a large spatial closure of rock lobster harvest would be to address urchin barrens, drawing attention to the limited evidence of the efficacy of such an approach, and that the proposed closure is unprecedented. 361. In light of the limited evidence, several supporters of this option consider the proposed closure to be unreasonable, with some instead advocating for a more localised approach (i.e. closure of smaller areas to specifically target known areas of urchin barrens).
FNZ's analysis and view of this option
362. The abundance of rock lobster and the extent of urchin barrens both vary across the CRA 2 QMA. Within the Hauraki Gulf, rock lobsters have been described as being functionally extinct. This includes in peer reviewed scientific papers,[93] and in feedback from various stakeholders. FNZ's recreational survey data indicates a decline in both effort and catch in the inner Hauraki (see Part 4 'Proposed spatial closure'). 363. This option would be unlikely to result in any significant change in abundance or size of rock lobster. It therefore is likely to enable little change in the role rock lobster play in the inner Hauraki Gulf environment. This means rock lobster would continue to be unlikely meaningfully contribute to the control of urchin populations in the area.

Spatial closure: Option B2 – Closure of inner Hauraki Gulf to rock lobster harvest
Benefits
364. This option is more likely to lead to an increase in the abundance of large rock lobster, in addition to increasing the overall population, within the inner Hauraki Gulf. 365. Noting that there are also proposed HPAs in the inner Hauraki Gulf, this option is more likely to lead to enhanced rock lobster recovery within the proposed HPAs in the inner Hauraki Gulf as there will be no boundary fishing or edge effect for the HPAs situated in the inner Hauraki Gulf, than under Option B1. In turn this option (B2, along with B3) provides the greatest opportunity to reduce urchin barrens within inner Hauraki Gulf HPAs due to the absence of boundary fishing edge effects for rock lobster and increased abundance of other urchin predators due to the effect of the HPAs. 366. Although it is uncertain whether a rock lobster closure on its own would lead to a decline in urchin barrens, the increased rock lobster biomass across the inner Hauraki Gulf that would be likely to result from this closure may contribute to reducing the prevalence of urchin barrens. 367. Under this option, rock lobster biomass is expected to increase across the inner Hauraki Gulf over time. Recreational, customary Māori, and commercial fishers may be able to utilise some portion of this rock lobster biomass through spillover into the outer Hauraki Gulf. 368. This option is more likely to lead to an increase in the abundance of large rock lobster, in addition to an increase to the overall abundance and biomass, in what has historically been one of the most intensively fished recreational fishing areas within FMA 1. In turn this would be expected to lead to improved future experience and catch rates for recreational and customary fishers. 369. Looking to the future management of the Hauraki Gulf, FNZ considers that once sufficient recovery has occurred, there would be an opportunity to identify areas of inner Hauraki Gulf to be reopened to rock lobster harvest, informed by scientific evidence and an engagement process. Depending on the nature and extent of recovery, the utilisation opportunity may be more limited in these areas than elsewhere in CRA 2. It would be possible to develop bespoke management rules, for example, minimum or maximum size limits, or area-specific daily limits to support the longevity of sustainability and ecological benefits accrued

[93] Nessia et al., 2024

Spatial closure: Option B2 – Closure of inner Hauraki Gulf to rock lobster harvest
during the closed period. This process could also be used to consider whether additional management measures would be appropriate elsewhere in the CRA 2 QMA.
Risks
370. This option would prevent commercial fishers from accessing areas within the inner Hauraki Gulf where they currently harvest rock lobster. s9(2)(b)(ii) [redacted] .
371. As the recreational rock lobster catch has declined and is already considered low within the inner Hauraki Gulf, the proposed closure would not be expected to result in a significant reduction of recreational harvest. Despite this, implementation of the proposed closed area could drive behavioural changes in recreational fishing or diving effort which could result in displacement of fishing effort to other areas. Such a change may displace effort to other areas in CRA 2 or into neighbouring QMAs (particularly CRA 1 to the north).
372. A risk of the spatial management options presented here (Options B1, B2, and B3) is that none address concerns raised by stakeholders (including the Environmental Law Initiative and the Environmental Defence Society) around CRA 2 sustainability, localised depletion and urchin barrens *outside* of the inner Hauraki Gulf. Options B2 and B3, by closing rock lobster fishing in the inner Hauraki Gulf, would have the potential to compound these concerns elsewhere in CRA 2 through the displacement of fishing effort currently situated in the inner Gulf.
373. The interplay of the proposed closure and the TAC options need to be carefully considered. Should a TACC increase be implemented alongside the implementation of the proposed Hauraki Gulf HPAs and the closure of the inner Hauraki Gulf to rock lobster harvest, this could increase competition between and within fishing sectors. In turn this could increase the likelihood of localised depletion occurring, or worsening, in the areas of CRA 2 that remain open to rock lobster harvest. One way to address these concerns could be to specifically manage the rock lobster statistical area 905 (outer Hauraki Gulf) differently across both the recreational and commercial sectors.
374. Closing the inner Hauraki Gulf would increase costs for fishers (both recreational and commercial) who would be forced to travel further to target rock lobster. However, FNZ has heard from recreational fishers that they are already shifting fishing effort away from the inner Gulf in response to low abundance of rock lobster. FNZ has also seen commercial fishing effort decrease in this area over time.
Feedback received
375. Twenty-three submitters stated explicit support for this option. Supporters of this option consisted of environmental non-government organisations (such as Forest and Bird and Environmental Defence Society), community-based organisations, Auckland Council, some commercial entities (including Southern Ocean Seafoods) and individuals who either reside or fish in CRA 2.
376. Nine supporters of this option (including the Environmental Law Initiative and the Environmental Defence Society) advocate to extend the proposed closure to other locations outside of the proposal to counter both the current concerns in these locations, and the potential for localised depletion from anticipated displaced fishing effort as a result of the proposed closure.
377. Many advocates of this option raised concerns of rock lobster abundance in the inner Hauraki Gulf and draw on the fact that rock lobster in this area has been described as functionally extinct by experts, along with anecdotal evidence. Many consider the closure would support a recovery of rock lobster abundance and a restoration of habit/kelp forest cover.
378. Many submitters expressed concerns of how displaced fishing effort would impact the outer Hauraki Gulf, and the potential consequences from this (localised depletion and expansion of urchin barrens).
FNZ's analysis and view of this option
379. FNZ considers a significant spatial closure within the inner Hauraki Gulf is necessary step to increase the overall biomass and abundance of large rock lobster, that in turn can help to address urchin barrens.

Spatial closure: Option B2 – Closure of inner Hauraki Gulf to rock lobster harvest

380. FNZ notes that the evidence on the efficacy of closures in addressing urchin barrens in NZ is predominantly from marine reserves covering smaller areas than proposed in Options B2 and B3.

381. FNZ note a large spatial closure with easily defined boundaries such as this option would simplify compliance enforcement around recreational rock lobster harvest, as fishers who have not left the inner Hauraki Gulf should have no reason to be in possession of rock lobster. Should you choose to adopt this option, FNZ would work with tangata whenua and local stakeholders to establish a monitoring programme to sufficiently understand the ecological and fisheries consequences of the closure. FNZ also recommends a formal review of the efficacy of and continued need for a closure after 10 years.

382. FNZ notes that there may be other fishery management tools that could be used (reduced recreational daily limits, further size limits, etc.) but considers that a large-scale closure of rock lobster harvest is the most effective way to rapidly address rock lobster abundance concerns in the inner Hauraki Gulf.

383. FNZ acknowledges the concerns expressed by stakeholders that a closure would displace fishing effort to other areas of CRA 2, notably the outer Hauraki Gulf (discussed further under '*Other options considered or supported by submitters*'). FNZ considers there is merit in exploring further management measures such as reduced recreational daily limits, and accumulation limits, to address the concerns around displacement to the outer Gulf, particularly if you decide to also increase the catch limit.

384. s9(2)(b)(ii) [redacted]

385. s9(2)(b)(ii) [redacted]

Spatial closure: Option B3 – Closure of inner Hauraki Gulf to rock lobster harvest (modification of Option B2)

386. NZ Reefs Lab proposed adjusting the north-west terminus of the proposed boundary, moving this from Cape Rodney to Te Arai Point (the QMA boundary between CRA 1 and CRA 2).

Benefits

387. The benefits of Option B3 are the same as those listed under the analysis of Option B2, but with additional benefits listed as follows.

388. Under Option B2, the small areas of reef at (a) Te Arai Point, (b) the south end of Pakiri Beach and (c) adjacent to the eastern boundary of the Cape Rodney to Okakari Pt Marine Reserve would be the only coastal areas in northern CRA 2 (north of Jackson Bay, Coromandel) where rock lobster could be harvested. Consequently, it would be expected that there would be a significant aggregation of fishing effort in these locations with the accompanying risk of localised depletion and associated impacts on the marine ecosystem. Option B3 (a modified version of B2) would address this issue by including these three small areas in the proposed closure.

389. This added protection would address edge-effects (aggregation of fishing effort at the boundaries) at both the Cape Rodney to Okakari Point Marine Reserve and the proposed HPAs.

390. Local rock lobster biomass within the Leigh/Omaha area would be expected to increase.

391. This extension would facilitate the overall effectiveness of the proposed closure, and simplify compliance in the Leigh/Omaha area.

Risks

392. Includes the risks listed under the analysis of Option B2.

393. This option would extend the area that both recreational and commercial rock lobster fishers could not access, completely closing the north-west area of CRA 2.

394. s9(2)(b)(ii) [redacted]

395. The broader extent of the area closure proposed under this option could lead to a marginally greater level of effort displacement compared to those areas that would remain open to fishing pressure under Option B2.

396. A risk of all spatial management options presented here (Options B1, B2, and B3) is that none address concerns raised by stakeholders around CRA 2 sustainability, localised depletion and urchin barrens *outside* of the inner Hauraki Gulf. Closing rock lobster fishing in the inner Hauraki Gulf has the potential to compound these concerns elsewhere in CRA 2 through the displacement of fishing effort currently situated in the inner Gulf.

Feedback received

397. NZ Reefs Lab are concerned that Option B2 leaves a gap between Cape Rodney and the eastern boundary of the Cape Rodney to Okakari Point Marine Reserve, and leaves the reef to the west of the marine reserve (Kemps Beach area) open to fishing, which may see increased effort if the proposed closure is implemented.

398. NZ Reefs Lab are concerned that fishing effort concentrating on rocky reef habitat in the north-west areas surrounding the proposed closure will increase the risk of depleting the local rock lobster population and putting added stress on the boundaries of the Cape Rodney to Okakari Point Marine Reserve, negatively impacting its ability to effectively conserve rock lobster.

399. NZ Reefs Lab considers that the proposed amendment to FNZ's proposed Option B2 will see the entirety of the Cape Rodney to Okakari Point Marine Reserve, including the proposed HPAs and the surrounding rocky

Spatial closure: Option B3 – Closure of inner Hauraki Gulf to rock lobster harvest (modification of Option B2)
reef habitat included in the inner Gulf closure area. This will consolidate the inner Gulf closure and maximise its effectiveness, while also simplifying compliance in the Leigh/Omaha area.
400. While not specifically supporting this option, 16 non-LegaSea submitters supported either further developing Option B2 (inner Hauraki Gulf closure) or expanding closures to other areas across the Hauraki Gulf and CRA 2 (see '*Other options considered or supported by submitters*').
FNZ's analysis and view of this option
401. As listed under the Option B2 analysis, FNZ considers a significant spatial closure within the inner Hauraki Gulf is necessary step to increase the overall biomass and abundance of large rock lobster, that in turn can address urchin barrens. Option B3 would extend the closure up to the CRA 1 boundary, and in turn facilitate increasing the biomass of rock lobster up to this area.
402. s9(2)(b)(ii) [redacted]
403. s9(2)(b)(ii) [redacted]
404. FNZ notes that implementing this option would likely displace effort to other areas of CRA 2 (i.e. the outer Hauraki Gulf).

Spatial closure: Option B3 – Closure of inner Hauraki Gulf to rock lobster harvest (modification of Option B2)
405. FNZ is not able to quantify recreational fishing effort within this area, but considers it likely that, like commercial fishing, most effort occurs adjacent to the Cape Rodney to Okakari Point Marine Reserve. FNZ notes that the proposed closure would potentially impact recreational fishers who fish the coastal rocky reefs between the western boundary of Cape Rodney to Okakari Point Marine Reserve and Te Arai Point. However, FNZ notes that recreational fishers would have the western portion of CRA 1 available to them (noting this would place additional travel costs).
406. FNZ considers, in the context of the wider CRA 2 QMA, that the benefits associated with this slight adjustment to the proposed closure warrant it being considered.
407. s9(2)(g)(i) [redacted]

Other options considered or supported by submitters

Closing the CRA 2 fishery or TAC reduction

408. Seven submitters specifically stated it was best to either reduce the TAC or to close the CRA 2 fishery entirely, while some supporters of Option A1 (status quo) questioned why TAC reductions were not considered.

409. The majority of the LegaSea online form submissions (2,132) supported either closing the CRA 2 fishery or reducing the TACC, as did other submitters.

410. Some views expressed by supporters for this outcome include:

- Harvest should be drastically reduced.
- It may be necessary for the Crown to buy back quota and compensate commercial fishers as a strategy to decrease fishing effort.
- Full closure of the fishery is needed to support kelp forest productivity.
- Implement a two-year ban to replenish the stock.
- Implement a total no take marine reserve.

411. The Hauturu Supporters Trust suggested closure of the fishery and rationalises this by suggesting has been no observable impacts on urchin barren reduction following the 2018 TAC reduction.

412. The joint recreational submitters consider a TAC cannot be lawfully set for CRA 2 in its current state, and that all harvest should be paused.

413. While supporting Option A1, Whangamata Ocean Sports Club stated it supported the submission from the joint recreational submitters.

414. FNZ notes that while there is an established relationship between rock lobster abundance and urchin barrens (discussed further in Part 4 '*Management target considerations*' and '*Urchin barrens*'), the contribution of other reef predators (such as snapper) on urchin populations is unknown and the biomass threshold and abundance of large rock lobsters required to enable rock lobster to meaningfully contribute as rocky reef predators is unknown.

415. For these reasons, FNZ considers at the present time that Option A1 (status quo) is an appropriate TAC for the CRA 2 QMA, and that the best available information does not support either a QMA scale TAC reduction or closure. Furthermore, FNZ considers that the proposed options align to the provisional biomass management target of 2x B_R based on the current stock projections.

Further development of Option B2, and other spatial closures

416. Seventeen submitters supported either further developing Option B2 (inner Hauraki Gulf closure) or expanding closures to other areas across the Hauraki Gulf and CRA 2; this included nine submitters who explicitly stated support for Option B2 in their submissions.

417. The majority of the supporters of this alternative option expressed concern that should Option B2 be fully adopted, fishing effort would be displaced to the outer Hauraki Gulf (as well as the wider CRA 2 QMA).

418. NZ Reefs Lab suggests shifting the northern boundary of the closure from Cape Rodney to Te Arai Point (the boundary between CRA 1 and CRA 2). FNZ has consequently developed Option B3 (as discussed above) for your consideration.

419. Some submitters considered that, in light of the current state of rock lobster abundance within the inner Hauraki Gulf, fishing effort displacement is already occurring in the outer Hauraki Gulf.

420. Several submitters consider that Te Hauturu-o-Toi / Little Barrier Island and Aotea / Great Barrier Island require additional fishery management measures and spatial/season closures (this included the Hauraki Gulf Forum, ECO, K Lombard, and A Saunders).

421. R McCulloch advocates for a complete closure of the Hauraki Gulf from commercial fishing.

422. K Prior supports expanding proposed closure to the outer Hauraki Gulf to counter fishing effort displacement.

423. ELI considers that the proposed closure is 'seriously deficient', stating that given the limited commercial landings from the inner Hauraki Gulf it will not restrain commercial fishing effort in this area. It went on to question why further closures have not been proposed in light of urchin barrens in other parts of CRA 2.

424. S Harwood and A Saunders consider that fishing effort displacement is already occurring due to low rock lobster abundance within the inner Hauraki Gulf.

425. s9(2)(b)(ii) [redacted]. FNZ also notes, while recreational effort has declined, it still does occur within the inner Hauraki Gulf (see Part 4 '*Proposed spatial closure*').

426. FNZ acknowledges the concerns of stakeholders and tangata whenua of the potential of effort displacement into the outer Hauraki Gulf and eastern CRA 2 (Coromandel/Bay of Plenty) that might come from the proposed closure if it is implemented, as well as anecdotal reports of localised low rock lobster abundance in areas of the outer Hauraki Gulf.

427. FNZ has considered the suggestion made to close the outer Hauraki Gulf (the rest of statistical area 905) that could counter potential fishing effort displacement from implementing the proposed closure (Option B2 and B3) and assuage current concerns of both localised low rock lobster abundance and urchin barrens in the outer Hauraki Gulf area. FNZ acknowledges these localised concerns from peer-reviewed studies,[94] urchin barren studies (see Part 4 '*Urchin barrens*') and anecdotal feedback. As these concerns are localised, as opposed to being uniform across the whole area, a full statistical area 905 closure is considered to be too blunt to adequately address these. However, FNZ does see possible merit in further management measures in statistical area 905.

428. Regardless, if the proposed spatial closure is implemented or not, FNZ will continue to monitor both fishing activity and rock lobster abundance in CRA 2. Where concerns are identified, FNZ will consider a range of fishery management measures that might be appropriate; this could be small scale spatial closures as well as other fishery management measures (see '*Other fishery management measures*' in this section').

Localised spatial measures instead of Option B2

429. Six submitters consider it is better to make spatial closures more localised, as opposed to a large-scale closure, with many considering fisheries management could be more effective at a targeted, localised scale.

430. Deep End Fish Ltd considers there is more benefit with a targeted localised approach, considering the proposed closure is a blanket approach. The submission goes onto say this approach allows for sustainable fishing in areas of abundance while protecting areas where stock levels require further recovery.

431. While the Ngāti Rehua-Ngātiwai ki Aotea Trust Board did not offer a position on the proposed closure itself, it is concerned that it would displace fishing effort to the outer Hauraki Gulf area, notably Aotea, and this would pose a risk to rock lobster populations and marine ecosystems. I Fordham considers that the proposed closure would be detrimental to Aotea Island due to displaced fishing effort, and instead advocates for seasonal/localised spatial closures and other fishery management measures.

432. D Guzzo submits that all potting should be banned around Leigh.

433. J Smith considers it more effective to put a permanent marine reserve in certain places where the rock lobster can replenish.

[94] Nessia et al. 2024; MacDiarmid 2025

434. NZ RLIC expressed concern at the cumulative impact of closures (both in place and proposed) and drew attention to the fact that there are already 23 closures to rock lobster harvest in CRA 2, 15 within statistical area 905 and 30 closures pending or proposed.

435. NZ RLIC discussed concern with the cumulative displacement of fishing effort that would come with further closures and that this could lead to further environmental impacts, and localised depletion that would impact economic return and increase conflict between different fishery users.

436. NZ RLIC considers that there is no evidence a closure to only lobster will "address" urchin barrens or reduce the extent of urchin barrens. It also considers that the proposal to review the efficacy of the closure after 10 years is optimistic and highlighted that there is no proposed methodology for this review.

437. NZ RLIC went on to say that they considered the proposed closure of the inner Hauraki Gulf is a drastic option that represents the failure to manage issues by more targeted management response. NZ RLIC draws attention to the increase of overall CRA 2 rock lobster abundance following the 2018 TAC reduction and considers more targeted measures should be adopted to constrain catch in the inner Hauraki Gulf and address urchin barrens. NZ RLIC highlight the importance of non-fishing impacts in the Hauraki Gulf, and other predators of urchins in the management of urchin barrens and consider that to be effective the proposed inner Hauraki Gulf closure should encompass all fishing effort, not just rock lobster harvest. Its submission goes onto to highlight other tools that could be explored in the management of urchin barrens.

438. FNZ acknowledges there are other urchin predators (such as snapper and packhorse rock lobster) that play an ecological role in the management of urchin barrens, and their respective ecological contribution in the predation of urchin are unknown. FNZ also notes that the role of both climate change and other anthropogenic impacts on the formation of urchin barrens are unknown. However, FNZ considers there is a need to act immediately to increase rock lobster abundance within the inner Hauraki Gulf, that will provide the greatest opportunity for rock lobster to fulfil its role as a predator of urchins and to contribute to addressing urchin barrens. Therefore, closing this area from rock lobster harvest only provides the most effective mechanism to achieve this.

439. FNZ notes that both trawl and Danish seine fishing methods are prohibited within the inner Hauraki Gulf.

440. Whilst smaller area closures to spiny rock lobster fishing could be considered, they would likely displace fishing effort to surrounding open areas and impede any efforts to improve spiny rock lobster abundance across the inner Hauraki Gulf. The design of a set of smaller areas closures would slow down response to this issue. Additionally, a series of small area closures can also be harder to comply with and enforce, particularly for recreational fishers because it requires detailed education/understanding, and observations or detailed reports of fishing occurring in closed areas.

441. Given the scale of the evidence and concerns associated with rock lobster abundance within the inner Hauraki Gulf, specifically that rock lobsters within the inner Hauraki Gulf are described as functionally extinct, FNZ does not consider closures at finer spatial scales (in lieu of the proposed closure) will sufficiently address these concerns. FNZ considers a large-scale closure is the most effective way to address rock lobster abundance within the inner Hauraki Gulf.

The provisional biomass management target

442. Twenty-five submitters provided feedback, in some form, regarding biomass management targets. Of those, eight submissions provided specific input on the provisional biomass management target that has been proposed by FNZ. The rationale for managing above B_R is discussed in Part 4 '*Management target considerations*'.

443. ELI considers none of the presented options will allow rock lobster to be managed at a level that allows them to play their ecological role as a key predator of urchins. It goes onto question why FNZ has adopted a provisional biomass management target 2x B_R when higher biomass management targets (greater than 3x B_R) would be closer to historical rock lobster biomass and large rock lobster abundance.

444. The Auckland Council questions the provisional biomass management target of 2x B_R and advocated for a biomass management target of at least 2.5x B_R for the short to medium term until more information on the stock is known.

445. Forest and Bird advocates that the TAC should be compatible with a biomass management target of 3x B_R.

446. NZ Reefs Lab considers the provisional biomass management target of 2x B_R as it is not an adequate precautionary buffer against uncertainty, instead advocating for 3.5x B_R as a starting point.

447. Hauturu Supporters Trust advocates for a biomass management target that aligns to 100% kelp forest cover, or if this was not known then at least 3x B_R.

448. J Laurence submits that the biomass management target should be set at 3x B_R at the expense of short-term utilisation.

449. The Ngātiwai Trust Board submits that it supports increasing the biomass management target of 2x B_R, and P Clark considers this is the correct provisional biomass management target for the stock.

450. In terms of the provisional biomass management target itself, the Environmental Defence Society and Stet NZ consider it to be inadequate, while CRAMAC 2 and NZ RLIC support a biomass management target between 1.75x B_R and 2x B_R.

451. FNZ notes that the biomass threshold and abundance of large rock lobsters required to enable rock lobster to meaningfully contribute as rocky reef predators of urchins is unknown, as well as the contribution of other reef predators in the predation of urchins. Furthermore, it is difficult to make long term projections (more than five years) for a given rock lobster TAC in achieving a management target due to the many variables (such as weather events and recruitment dynamics) and therefore rock lobster TACs likely have to be reviewed on a regular basis as information on both stock status and urchin barrens is updated.

452. With a longer-term biomass management target yet to be decided, and the longer-term uncertainties in managing CRA 2 above B_R, FNZ considers that the provisional biomass management target of 2x B_R represents an appropriate biomass management target in the short term. FNZ notes that managing CRA 2 to a higher biomass target (i.e. 2x B_R) is managing the stock more conservatively (as opposed to managing the stock to B_{MSY}), and as a consequence, all fishery users are forgoing utilisation in order to manage the stock to a higher biomass.

453. While managing CRA 2 to a higher biomass may contribute to restoring the ecological function of rock lobster on coastal reefs, it uncertain how climate change and other human induced environmental changes (e.g. sedimentation) might affect rock lobster ecology. Consequently, there may be unforeseen consequences that result from managing CRA 2 to a higher biomass.

454. FNZ considers the provisional biomass management target represents a balanced approach towards an ecosystem-based management for CRA 2 for the immediate term, and that this target can be revised in future. FNZ intends to further develop and implement a new longer term management target during 2025.

455. The planned CRA 2 stock assessment later this year will further inform the development of new CRA 2 management procedures that will be designed to maintain the stock biomass at or around a new long term biomass management target level. FNZ intends to have this new biomass management target, and associated management procedures, for CRA 2 in place by April 2026.

Other fishery management measures

456. Several submitters advocate for further consideration of other fishery management measures, either additional to or in lieu of FNZ's proposed options. This includes further ideas for direct urchin barren management.

457. Management measures proposed by submitters include:

- Seasonal closures
- More marine protected areas.
- Revised minimum size limit.
- Introducing a maximum size limit.
- Localised recreational daily limit.
- Other spatial closures.
- Recreational harvest reporting.

458. Hooked On Barrier Ltd proposes support for potting restrictions for both recreational and commercial.

459. The Ngāti Rehua-Ngātiwai ki Aotea Trust Board advocates for finer spatial scale fisheries management through local bylaws (in collaboration with FNZ) and considers this approach would ensure that the management measures are culturally appropriate, locally relevant and enforceable. They have requested that FNZ continue their collaboration with the Trust Board and the Aotea Ahu Moana project team (who have been monitoring rock lobster abundance and reef ecology at Aotea for the last three years) and develop and implement local management measures.

460. NZ Reefs Lab suggests that packhorse lobster (*Sagmariasus verreauxi*) be included in the proposed inner Hauraki Gulf closure and refers to surveys it has conducted that imply legal size pack horse lobster are rare within the inner Hauraki Gulf. The Environmental Defence Society also advocated to include packhorse

lobster in the proposed spatial closure, as well as subjecting packhorse lobster to same recreational daily limit as rock lobster.

461. FNZ notes that the packhorse (PHC 1) fishery is considered likely to be at or above the biomass management target and unlikely to be overfished, however, there could be localised depletion. Also, there could be further merit in applying the closure to packhorse lobster as well as spiny rock lobster, to help inhibit poaching of rock lobster. This would mean that no lobster could be harvested at all within that area, noting that there is genuine confusion of the two species by fishers and it would simplify compliance enforcement (as fishers, under this scenario, should not be in possession of any type of lobster within the inner Hauraki Gulf). This measure would require further consultation with stakeholders and tangata whenua but should the proposed closure to rock lobster fishing be adopted then a specific packhorse lobster measure could be introduced at a later date.

462. FNZ acknowledges the ideas put forward by stakeholders for further management measures, both within the Hauraki Gulf and wider CRA 2, to both help increase rock lobster abundance and address urchin barrens and considers there is strong merit in exploring this further.

463. FNZ considers that the outputs from the FNZ contracted project 'ZBD2023-03: Summarising and updating knowledge on the distribution of urchin barrens in key regions of New Zealand' (see Part 4 '*Summary of urchin barren work programme to date*') are due in June 2025 and could inform fisheries management and allow for more targeted management actions.

464. Following your decision for this round, FNZ will continue to monitor CRA 2, and any management measures adopted within CRA 1 to manage rock lobster fishing to help mitigate urchin barrens, which could help inform fisheries management in CRA 2.

Alteration of the CRA 2 QMA

465. The joint recreational submitters advocate against a closure of the inner Hauraki Gulf and instead that statistical area 905 (and the wider Hauraki Gulf Marine Park) be separately managed as part of a CRA 2 recovery plan.

466. NZ Reefs Lab (who supported Option B2 and extending it) stated that CRA 2 should be split into two sub-regions representing the Hauraki Gulf Marine Park (905 and 906 statistical areas) and the Bay of Plenty (907 and 908 statistical areas).

467. Friends of Taputeranga Marine Reserve advocated for splitting the CRA 2 QMA between Te Arai Point and East Cape into at least two smaller areas so fine-scale management can be applied.

468. Regulatory alteration to the CRA 2 QMA is provided for either under section 25A or 25B of the Act, to allow for finer scale management. Agreement of at least 75% of CRA 2 quota owners is required, unless you consider it necessary to ensure sustainability (having considered alternative options).

469. FNZ notes a recent NIWA study[95] that challenges the FNZ stock assessment model of CRA 2 rock lobster at the QMA scale, because it does not consider at a smaller scale spatial pattern of puerulus settlement, juvenile and adult movement, abundance, ecological interactions, and fishing. Furthermore, FNZ notes fishery independent data studies that can provide possible insights in the rock lobster abundance and population dynamics within the Hauraki Gulf itself (see Part 4 '*Stock status*').

470. FNZ acknowledges the strong rationale to manage statistical areas 905 and 906 separately, and the submitters providing input on this. However, should you proceed with this, regardless of which mechanism under the Act you used, the process to split the QMA would likely require a lot of time (12 to 24 months). Given the necessity of prompt action, FNZ considers that a QMA alteration will not achieve the desired outcomes for CRA 2 in the most efficient manner.

471. FNZ also note that splitting the CRA 2 QMA would undermine our ability to undertake modelling to inform the setting of future catch limits and other measures for an area such as statistical area 905 on its own, because there is not enough data available from statistical area 905 to support a stand-alone assessment model for this sub-area. Data from other CRA 2 statistical areas are also required to adequately estimate lobster growth and changing levels of annual recruitment, which are considered to be broadly similar across all of CRA 2.

472. In light of the fishery management measures available, FNZ considers there is strong rationale in managing the Hauraki Gulf (or the wider statistical area 905) differently without necessarily altering the CRA 2 QMA. This could be through a localised recreational daily limit, local voluntary measures from industry, local

[95] MacDiarmid (2025)

changes in size limits (discussed under '*Other fishery management measures*'). Following your decision, FNZ will conduct further work, along with local stakeholders to understand the benefits and risks of localised fisheries management measures within this area of CRA 2.

Who will be affected by the proposed changes?

473. The CRA 2 fishery extends from Te Arai Point, south of Whangarei, to East Cape at the easternmost end of the Bay of Plenty. CRA 2 is an important shared fishery with harvesting by customary, recreational, and commercial fishers. Rock lobster are culturally significant to tangata whenua who consider it to be a taonga species.

474. Commercial interests in these stocks include quota owners, vessel owner-operators and contract fishers in the catching sector, Licensed Fish Receivers (LFRs) and retailers and exporters. The interests of these groups are represented through organisations such as CRAMAC 2[96] and NZ RLIC.[97]

475. There are recreational interests in CRA 2. These interests are represented by a range of individuals, groups such as the New Zealand Sport Fishing Council, and various local fishing clubs and associations.

476. Tangata whenua have both commercial and customary interests in these stocks. The rohe of Hauraki/Tāmaki, Mai i Ngā Kuri a Whārei ki Tihirau and Ngā Hapu O Ngāti Porou Iwi Fisheries Forums overlap parts of the CRA 2 QMA.

Input and participation of tangata whenua

477. FNZ has provided for input and participation of tangata whenua through engagement with the Iwi Fisheries Forums (Table 4) by circulating and discussing information on the proposals. FNZ invited feedback from the Forums and offered to provide more detailed information upon request.

478. To date no specific feedback has been received from Hauraki/Tāmaki Iwi (Hauraki Gulf). A summary of feedback from Mai i ngā Kuri a Whārei ki Tihirau and Nga Hapu O Ngāti Porou is provided in Table 4.

479. The Ngāti Rehua-Ngātiwai ki Aotea (Aotea/ Great Barrier Island) and Ngātiwai (east coast of the Northland Region) Trust Boards provided written submissions (Part 4: 'Further detail on submissions received').

480. Ngāti Rehua-Ngātiwai ki Aotea Trust Board submits:

- Deep concern about the current state of kōura (as well as the wider moana) in CRA 2.
- Strong opposition to any TAC increase.
- Finer spatial scale fisheries management through local bylaws (in collaboration with FNZ) are essential and would be more effective to address concerns. These include:
    - Reduced daily limits for individuals, daily limit for boats and reduced accumulation limits.
    - Localised rahui: temporary closures for recovery and protect critical habitats, guided by Ahu Moana surveillance findings.
    - Size limits: increasing minimum size and establishing a maximum size limit.
    - Seasonal closures to safeguard reproductive periods.
- The proposed closure will only displace fishing pressure to other areas.
- Kōura abundance increase, reported by divers, is largely attributed to reduced fishing during the COVID pandemic and access restrictions due to Caulerpa.
- Questions the confidence in the CRA 2 stock assessment in light of studies of fishery-independent data.
- Support for a higher biomass management target that reflect ecological and cultural significance of kōura.

481. Ngātiwai Trust Board submits support for increasing the biomass management target to 2x B_R and maintaining the current TAC settings. The Trust expressed concern regarding the condition of the rock lobster fishery within the inner Hauraki Gulf, but also expressed concern about the displacement of fishing effort associated with the proposed closure, and asks FNZ to work with tangata whenua towards implementing stronger fishery management measures.

Table 4: Iwi Fisheries Forum input to date.

[96] CRAMAC 2 is the commercial stakeholder organization operating in the CRA 2 QMA. CRAMAC 2 membership comprises of CRA 2 quota owners, processors, exporters, and fishermen.

[97] The NZ Rock Lobster Industry Council Ltd (NZ RLIC) operates as the central national agency for the commercial lobster fishing industry. Includes wharf sales and excludes loss from holding pots and value derived outside of the catching sector, such as in processing and retail.

Mai i ngā Kuri a Whārei ki Tihirau (Bay of Plenty)	482. This Forum provided input in February 2025: • There was concern that stock assessment monitoring does not take into account the effects of locally depleted areas, or the ecological role of kōura as a keystone predator (beyond the Hauraki Gulf). • The Forum highlighted that the consultation document did not include the experience of those who live in the Bay of Plenty coastal region, which is that there is localised kōura depletion and especially within the western Bay of Plenty. Some of the Forum members (notably kaitiaki) noted the difference between their experience and the stock assessment/rapid updates. • The Forum expressed concern that if the TACC is increased in conjunction with the proposed closure of the inner Hauraki Gulf, this would result in a shift of fishing effort eastwards and affect the Bay of Plenty and compound concerns with localised depletion (especially the western Bay of Plenty). The Forum further stated that there are current concerns that the other closures and proposed HPAs will result in this fishing effort shift. There was also concern that an increase in TACC could harm customary fishing. • Following a previous hui in August 2024, when there was collective consensus to manage the stock to a higher biomass level so rock lobster can fulfil its role as a predator of urchins, some members considered managing the stock to a biomass level experienced in the mid-1990s (about 2.5x B_R) was appropriate. • The consensus view of the Forum was that the status quo should remain, that monitoring of the stock should continue and be reviewed again in five years. There is a sincere concern that an increase in TACC is likely to affect localised areas that are already experiencing depleted rock lobster abundance. • The Forum highlighted that the consultation did not mention any use of data collected from puerulus monitoring or climate data which would help provide forecasting for future stock levels. • The Forum acknowledged that some of their members participate in the commercial fishery (quota holders, permit holders, etc.) and would likely favour a TACC increase.
Nga Hapu O Ngāti Porou (East Cape)	483. This Forum provided input in October 2024. The Forum also expressed ongoing concern for the abundance of rock lobster in their customary fisheries, with some members expressing a view that there should not be a TAC increase at this time. There was collective consensus that the stock should be managed to a higher biomass level than it currently is.

Fishery characteristics and current settings

Table 5: Fishery characteristics and current settings for CRA 2.

Commercial (TACC)
484. The current TACC is 80 tonnes. Almost all CRA 2 commercial harvest is from potting.
485. Commercial interests in these stocks include a number of quota owners, owner/operators and contract fishers in the catching sector, and LFRs. Ten percent of all CRA 2 shares are Settlement quota, which are held by iwi from the settling of treaty claims to fisheries. The commercial fishing interests of these groups are represented through organisations such as Te Ohu Kaimoana, CRAMAC 2 and NZ RLIC.
486. Based on the last three fishing years, in CRA 2 there have been on average 46 quota owners, and 16 permit holders landing rock lobster catch to eight LFRs. Over the last ten years the number of quota owners in CRA 2 has steadily declined from 51, down to 43 at the start of the 2024/25 fishing year.
487. The 2023/24 fishing year saw six LFRs receiving rock lobster from CRA 2 after a fairly consistent average of ten LFRs receiving CRA 2 rock lobster over the previous nine years.
488. Over the last three fishing years, there were between 16 and 18 vessels landing rock lobster from CRA 2 annually, compared with 29 to 40 vessels operating annually over the previous three decades.
489. Over the last five years the CRA 2 average annual port price[98] revenue has been $6.77 million, while over the same period the estimated average free-on-board[99] export revenue attributable to CRA 2 was $10.17 million.
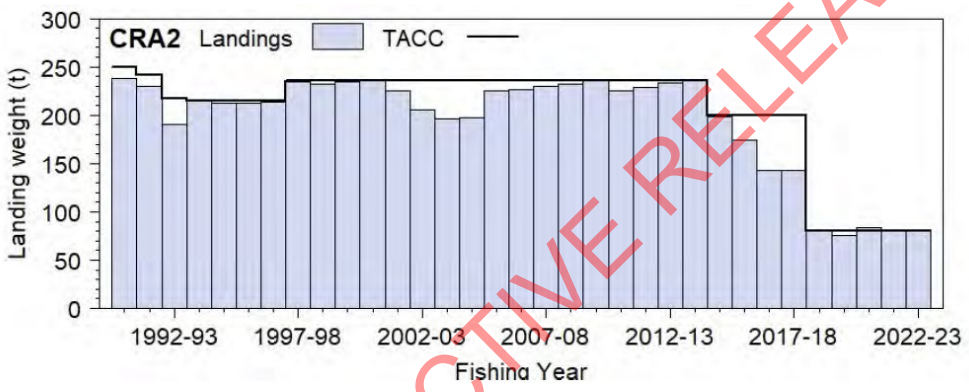
Figure 4: Historical landings and TACC for CRA 2.
Customary Māori
490. The current customary allowance is 16.5 tonnes.
491. CRA 2 customary catch is provided for by the Fisheries (Kaimoana Customary Fishing) Regulations 1998, and regulations 50-52 of the Fisheries (Amateur Fishing) Regulations 2013 (Amateur Regulations).
492. In the last five years, a total of 9,765 unspecified units[100] of rock lobster were reported as authorised for customary harvest from CRA 2, averaging 1989 each year. This information is considered incomplete, because customary take that occurs under the Amateur Regulations for the purposes of hui and tangi is not required to be reported.
493. For the 2022 CRA 2 stock assessment customary catch was modelled at five tonnes, which was split 10%/90% between seasons, with 90% assumed taken in the spring/summer and the balance in the autumn/winter.

[98] Includes wharf sales and excludes loss from holding pots and value derived outside of the catching sector, such as in processing and retail.

[99] Free-on-board is 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. Export prices are not provided as regionally specific for the origin of rock lobster, even though rock lobster from some regions may receive a higher export price. Estimated stock specific export free-on-board revenue assumes that export revenue is proportional to quantity landed.

[100] Customary harvest of rock lobster is usually reported as kilograms or number of individuals. However, in some cases (such as in CRA 2) the unit used is not specified.

494.	FNZ acknowledges that there is uncertainty in the available information that can inform the customary allowance for CRA 2. Therefore, FNZ considers that based on available information, maintaining this allowance at 16.5 tonnes is appropriate and no change has been proposed.
Recreational	
495.	The current allowance for recreational fishing in CRA 2 is 34 tonnes. The majority of recreational harvest is hand gathering via diving, with a smaller amount harvested by potting.
496.	The 2022/23 National Panel Survey (NPS) of Marine Recreational Fishers (Heinemann & Gray, 2024) estimated an annual recreational take of 9.99 tonnes (±3.10 tonnes). This estimate, combined with estimates of Amateur Charter Vessel harvest (0.91 tonnes), and recreational take under section 111 of the Act (recreational harvest taken by commercial fishers) (1.20 tonnes), provides a total estimated recreational catch of 12.10 tonnes.
497.	Annual monitoring of recreational fishing activity in CRA 2 between 2017-18 and 2023-24 suggests that recreational harvest (excluding section 111 harvest) has varied from 30 to 9 tonnes over that time.
498.	It is considered that the current allowance is appropriate and therefore no change has been proposed.
Other sources of mortality caused by fishing	
499.	The current allowance for other sources of mortality caused by fishing is 42.5 tonnes.
500.	Other sources of mortality caused by fishing in CRA 2 include illegal catch, handling mortality caused by the return of under-sized lobsters, berried female lobsters, and high-grading, as well as predation on lobsters by octopus and other predators within pots.
501.	The 2022 CRA 2 stock assessment modelled illegal catch as 20% of the total commercial catch summed over the period 1979–1989, followed by 10% of the summed commercial catch from 1990 to 2021. This assessment modelled illegal catch at 27.4 tonnes.
502.	The 2024 rapid update assessment estimated the handling mortality median value to be 1.48 tonnes, while non-size-limited mortality (illegal + customary) was modelled at 25.65 tonnes.
503.	For the purpose of this consultation, based on the recent stock assessment and rapid update, FNZ has assumed current other mortality caused by fishing to be 30 tonnes.
504.	For Option A1 (status quo) FNZ has proposed not to modify this allowance. For Options A2 and A3, the proposed increase (from 30 tonnes) is scaled as the same increase to the TACC under these options (12.5% for Option A2 and 25% for Option A3).

Deemed value rates

505. FNZ did not propose any deemed value rate changes for CRA 2 as part of this review. However, in recognition of the fact that deemed value and catch limit settings are interlinked (TACC changes can impact deemed values), FNZ welcomed general feedback on the deemed value settings of CRA 2 during consultation.

506. No submissions commented on the deemed value rates for CRA 2.

507. FNZ remains of the view that deemed value changes are not needed for CRA 2 at this time. FNZ is satisfied that the current deemed value rates are consistent with section 75(2)(a) of the Act in that they provide sufficient incentive for fishers to balance their catch with ACE. However, FNZ acknowledges that if the TACC of CRA 2 as changes as a result of this review, subsequent changes in the ACE market may result in the need for the deemed value rates to be re-evaluated in the future.

Part 2: Submissions

508. In total, 2379 submissions were received on the review of CRA 2. Twenty-seven were from representative organisations, and 2352 from individuals.[101]

509. Submitters' support for TAC options is summarised below in Table 6, and support for the spatial closure options is summarised below in Table 7. Several matters beyond the scope of the proposed TAC changes were raised in submissions. These matters have been summarised and responded to below under '*Other matters raised during consultation*'. A more extensive summary of submissions, including rationale, is presented in Part 4 under '*Further detail on submissions received*'. Should you wish to read any full submissions, FNZ has also provided a copy of the submissions to your office.

510. 2338 submissions were received through a submission template that LegaSea set up on its website. This form included several statements which individuals could express support for, in addition to a field where they could provide individualised comments. Table 8 below provides an outline of the statements and how many people supported them.

511. In addition to the specific submissions on CRA stocks, there were six submissions received which did not comment directly in support of specific options or alternatives, but commented generally about catch limits or other aspects of fisheries management. These submissions opposed any increases to commercial catch limits, stating that past catch limit adjustments have negatively affected fish populations and have primarily benefited commercial interests at the expense of recreational fishers.

Table 6: Summary of submissions in relation to the CRA 2 TAC options.

Option A1 – retain current settings (status quo)				
TAC: 173	TACC: 80 t	Customary: 16.5	Recreational: 34	Other mortality: 42.5
Representative bodies and organisations in support: Aotea Great Barrier Environmental Trust Auckland Council Environment and Conservation Organisations of NZ (ECO) Environmental Defence Society (EDS) Friends of Taputeranga Marine Reserve Hauraki Gulf Forum Hooked On Barrier Ltd. Ngātiwai Trust Board Ngāti Rehua-Ngātiwai ki Aotea Trust Board NZ Reefs Lab (University of Auckland) Royal New Zealand Society for the Prevention of Cruelty to Animals Inc. (RNZSPCA) Waiheke Marine Project Whangamata Ocean Sports Club				*Individual submissions in support:* **202** (includes 195 via LegaSea's form submission)
Option A2 – 12.5% TACC increase (1% TAC increase)				
TAC: 174.5	TACC: 90	Customary: 16.5	Recreational: 34	Other mortality: 34
Representative bodies and organisations in support: Nil.				*Individual submissions in support:* **7** (includes 6 via LegaSea's form submission)
Option A3 – 25% TACC increase (9% TAC increase)				
TAC: 188.5	TACC: 100	Customary: 16.5	Recreational: 34	Other mortality: 38
Representative bodies and organisations in support: New Zealand Rock Lobster Industry Council (NZ RLIC) Iwi Collective Partnership CRAMAC 2 Leigh Commercial Fishermen's Association				*Individual submissions in support:* **6** (includes 5 via LegaSea's form submission)

[101] However, it should be noted that many of the individuals noted affiliations with organizations. For many of these submissions it was not made clear whether the individual was submitting on behalf of themselves or the organisation, and their submissions have therefore been counted as individual submissions.

Leigh Fish and Te Henga Ltd. Deep End Fish Ltd. Marina Fisheries Ltd. Southern Ocean Seafoods Wai Whare Charters	
Other – TAC/TACC reduction, closure to fishery, change in management target	
Representative bodies and organisations in support: Environmental Law Initiative (ELI) Forest and Bird 'Joint recreational submitters' (NZ Sport Fishing Council, LegaSea, NZ Angling and Casting Association, NZ Underwater Association) Stet Ltd. Hauturu Supporter's Trust	*Individual submissions in support:* **2,137** (includes 2,132 via LegaSea's form submission)

Table 7: Summary of submissions in relation to the spatial closure options.

Option B1 - No additional measures	
Representative bodies and organisations in support: CRAMAC 2 Leigh Commercial Fishermen's Association Leigh Fish and Te Henga Ltd. Wai Whare Charters	*Individual submissions in support:* **1**
Option B2 - Closure of inner Hauraki Gulf to rock lobster harvest	
Representative bodies and organisations in support: Aotea Great Barrier Environmental Trust Auckland Council Royal New Zealand Society for the Prevention of Cruelty to Animals Inc. (RNZSPCA) Friends of Taputeranga Marine Reserve Waiheke Marine Project Southern Ocean Seafoods	*Individual submissions in support:* **7**
More extensive closure (wider area and/or full no-take closure)	
Representative bodies and organisations in support: Hauraki Gulf Forum Environmental Law Initiative (ELI) Environment and Conservation Organisations of NZ (ECO) Forest and Bird Environmental Defence Society (EDS) NZ Reefs Lab Stet Ltd. Hauturu Supporters Trust Prof. A Jeffs – University of Auckland	*Individual submissions in support:* **7**
Finer scale management and/or other measures	
Representative bodies and organisations in support: 'Joint recreational submitters' (NZ Sport Fishing Council, LegaSea, NZ Angling and Casting Association, NZ Underwater Association) Whangamata Ocean Sports Club Ngāti Rehua-Ngātiwai ki Aotea Trust Board Ngātiwai Trust Board NZ RLIC Deep End Fish Ltd. Hooked on Barrier Ltd.	*Individual submissions in support:* **2341** (includes 2338 via LegaSea's form submission)

Table 8: Summary of statements supported through LegaSea's online submission form.

LegaSea template statements	Number of submissions that agreed with statement
I AM CONCERNED that Fisheries New Zealand is using unverified data to justify increasing the commercial catch limit in the CRA 2 fishery, between Te Arai Point and East Cape.	2206
I URGE the Minister, Shane Jones, to acknowledge that there are significant areas on the northeast coast that are seriously depleted and need to be closed to all crayfish fishing.	1913
I URGE the Minister to take action and direct Fisheries NZ to work with recreational, commercial and mana whenua to develop a recovery plan for crayfish on the northeast coast (CRA 2).	2027
I URGE the Minister to direct Fisheries NZ to develop and support independent surveys to prove how many crayfish can be sustainably harvested from the whole CRA 2 management area, between Te Arai Point and East Cape.	2128
I OBJECT to the Fisheries New Zealand proposal to increase the commercial catch limit for crayfish in the CRA 2 fishery, between Te Arai Point and East Cape.	2272
I DO SUPPORT the Minister in splitting the large CRA 2 Quota Management Area between Te Arai Point and East Cape into at least two smaller areas so fine-scale management can be applied, to rebuild crayfish numbers.	1780
I AM CONCERNED that the Prime Minister is allowing fisheries officials to appease commercial demands instead of prioritising the health of our marine environment and our kids' future fishing interests.	2190
I URGE the Prime Minister, Christopher Luxon, to explain why public concerns and an independent scientific study into the depletion of crayfish in the CRA 2 area are being ignored.	2185
I BELIEVE that feeding Kiwis and leaving more crayfish in the water needs to take priority over exporting our crayfish to China and the USA.	2300

Other matters raised during consultation

Stakeholder feedback on fisheries independent data studies

512. Six submitters provided feedback on fisheries independent data within CRA 2, and its implications on the CRA 2 stock assessment (and subsequent rapid update assessments). Specifically, these are Hanns et al. (2022) and Nessia et al. (2024), that is discussed further in Part 4 '*Stock assessment*', and MacDiarmid (2025).

513. Aotea Great Barrier Environmental Trust submits that conclusions from the fisheries independent data studies align with their own experience with the Hauraki Gulf.

514. The Friends of Taputeranga Marine Reserve Trust advocates for investment into fisheries independent data studies.

515. The EDS criticises the stock assessment model for being too dependent on fishery-dependent data, and the use of CPUE data to estimate stock abundance in light of known limitations.

516. The EDS highlights how both Hanns et al. and Nessia et al. conclusions differ from the CRA 2 stock assessment; specifically, a significantly lower level of biomass relative to B_{MSY} and the increase in biomass, following the 2018 TAC reduction, has been exaggerated by the stock assessment. The submission also comments on MacDiarmid's study, and how it challenges the single unit spatial scale of CRA 2 management and stock assessment, and how stock assessments can be made more smaller scale. EDS refers to these studies to provide further criticism of the stock assessment.

517. ELI highlights limitations of CPUE analysis in estimating abundance, and draw on how the 2013 CRA 2 stock assessment estimated abundance to be above target (which differed from some stakeholders' experience)

and the subsequent 2017 CRA 2 stock assessment estimated abundance to be below the soft limit, that in turn resulted in the 2018 TAC reduction. ELI also makes reference to both Hanns et al. and Nessia et al., highlights how this introduces uncertainty into the stock assessment model, and submits that while FNZ recognises this uncertainty that FNZ has in fact 'trivialised' this in the consultation document.

518. The joint recreational submitters reject the stock assessment (and rapid updates) and state it is 'not fit for purpose'. The submission advocates that the CRA 2 TAC should be informed by fisheries-independent data only, that this data is taken from across the whole of the CRA 2 QMA (not just statistical area 905), and goes on to draw on the conclusions from Nessia et al.

519. In its submission, NZ Reefs Lab, which led the Hanns et al. and Nessia et al. studies:

- Notes there has likely been some recovery in the CRA 2 lobster population following the 2018 TAC reduction, but that both the studies and anecdotal reports indicate that rock lobster populations remain severely depleted with the Hauraki Gulf Marine Park.
- Considers FNZ's position (discussed in Part 4 '*Stock assessment*') is unsubstantiated, and questions how science is integrated into the decision-making process.
- Challenges the use of CPUE in the estimate of stock abundance, considers CPUE reflects changes in fisher behaviour instead of an increase in rock lobster abundance, and highlights CPUE studies have well documented limitations in estimating fishery abundance.
- Considers the stock assessment obscures, and fails to represent, localised rock lobster depletion (based on recent fishery-independent data studies of rock lobster within the Hauraki Gulf Marine Park).
- Draws attention to the subsequent rapid updates following the 2022 CRA 2 stock assessment that showed a declining revision of the vulnerable biomass estimate of CRA 2 following each assessment, and highlights uncertainty in stock projections.

520. In summary, the Nessia et al. study uses a comparison of rock lobster abundance inside and outside marine reserves to estimate that rock lobster populations on shallow reefs in the Hauraki Gulf are at less than 10% of unfished levels.

521. FNZ has considered and does not dismiss these independent studies but considers that the Nessia et al. study overstates the degree to which rock lobster has declined from its unfished state. One reason for this view is that when faced with the choice between an algal covered marine reserve and an immediately adjacent fished reef that will have less algal cover outside of that reserve, pueruli[102] will preferentially settle in a marine reserve, and in doing so be more likely to avoid neighbouring reefs. This effect is more likely to take place either side of a marine reserve boundary. There is evidence that reinforces this concept:

- Studies in Australia on the same species of rock lobster suggests that kelp habitat may be critical to the settlement success of rock lobster pueruli, providing important settlement cues, food, and refuge.[103] The same relationship has yet to be observed in New Zealand[104] and further research is needed to test this. However, given the similarity between ecosystems in Tasmania and New Zealand these potential relationships are important to consider for the management of rock lobster.
- In response to Nessia et al. concluding that there is a higher apparent abundance of sub-legal size rock lobster within no-take marine reserves than in the fished areas, MacDiarmid suggests this could be the result of higher puerulus settlement and/or juvenile survival in areas of higher kelp abundance, typical of these marine reserves.[105] MacDiarmid then goes on to refer to evidence from Australia on pueruli preferential settlement for kelp, and this suggests enhanced settlement through chemical attraction.
- Evidence from Professor Jeffs, as an expert witness on behalf of ELI for the 2024 judicial review of the Minister's 2021/22 and 2022/23 CRA 1 TAC decisions, states:
    - "Research findings consistently point toward kelp habitats on rocky reefs attracting more of the swimming post-larval stages of rock lobsters, known as pueruli, that are looking for suitable settlement habitat."

[102] The puerulus is the post-larval transitional stage between the planktonic phyllosoma and the benthic juvenile rock lobster.
[103] Hinojosa et al., 2015; Hinojosa et al., 2018; Shelamoff et al., 2022.
[104] Stanley et al., 2015; Hesse et al., 2015.
[105] Edgar, 2013.

- "The pueruli of rock lobsters use chemical cues associated with coastal waters to help locate suitable settlement habitats… most seaweed species release chemical compounds into seawater, especially kelp species, and studies in other rock lobster species have shown that such compounds from seaweeds are involved in attracting pueruli to their source… There is also some experimental evidence for the advancement of developmental changes in rock lobster at settlement associated with chemical cues from a brown seaweed typically found associated with kelp habitat in northeastern New Zealand, although a similar advancement was also observed in the presence of rock but not sand."
- "Besides chemical cues, underwater acoustic cues emanating from kelp habitat on rocky reef in New Zealand has also been demonstrated to both attract and promote the more rapid settlement of pueruli of rock lobsters."
- "The actual physical presence of kelp in coastal habitat has also been confirmed to significantly increase the settlement of rock lobster pueruli, possibly as a result of providing an initial point of contact and attachment for swimming pueruli."

522. FNZ acknowledges that differences in rock lobster abundance between inside and outside of marine reserves do occur following settlement, which are partially attributable to targeting rock lobster and other species, as well as other anthropogenic impacts. However, FNZ considers that, in order to reliably estimate rock lobster abundance at unfished levels at the sampled sites, the preferential settlement of pueruli towards a marine reserve habitat to the detriment of settlement in neighbouring fished reefs due to lower quality settlement cues needs to be factored in any analysis.

523. FNZ also agrees that there is merit in comparing fishery-independent and fishery-dependent data to test inferences that are made from these two alternative information sources. To that end, FNZ has recently commissioned a new rock lobster stock assessment contract, which includes an objective for the contracted modellers to work alongside the researchers from the University of Auckland to explore spatio-temporal differences between these two data sets, both at the sites surveyed by the University of Auckland, and across the far wider extent of the CRA 2 commercial fishery. At this time, however, it is FNZ's view that these fishery independent studies do not necessarily provide the best source of information on the status of the CRA 2 stock because:

- Only a small number of sites and areas have been surveyed by the University of Auckland, which are all at the western side of CRA 2 and are not representative of most of the area where commercial and recreational rock lobster harvesting takes place.
- One consequence of these being diver-based surveys is that they do not include any assessment of rock lobster abundance in depths greater than 20 m, whereas the data provided by the commercial fishery covers a far broader depth range including these shallower depths.
- Because of the issue with preferential settlement of pueruli in marine reserves that generate higher quality settlement cues (as argued by Dr MacDiarmid and Professor Andrew Jeffs) resulting in reduced settlement and recruitment into neighbouring fished habitats.

524. Conversely, while not fishery-independent, the stock assessment for CRA 2:

- Is informed by substantial volumes of data that have been collected across the full depth range and spatial extent of the exploited CRA 2 stock since the early 1990s.
- Is an integrated model that is informed by not only CPUE that has been statistically standardised (that accounts for CPUE concerns raised by NZ Reefs Lab), but also by length frequency data recorded both by volunteer commercial fishers and independent at-sea observers, tag release recapture data, and catch history statistics.

525. FNZ therefore considers that there is significant uncertainty associated with the Nessia et al. estimates of stock status, but recognises that further work is required to ensure that any assessment of the CRA 2 stock is informed by the bast available data, and where possible a consensus view of the utility and limitations of each respective data source.

Biomass management targets

526. Twenty-five submitters provided feedback on biomass management targets. Specifically:

- Five submitters supported managing the stock between B_R and 2x B_R.
- Nine submitters supported managing the stock, at a minimum, between 2x B_R and 3x B_R.
- Four submitters specifically stated support for managing the stock greater than 3x B_R.

- Five submitters supported a higher target but did not specify a range.
- Two submitters provided commentary of targets but did not specify their position.

527. The main reasons for increasing the biomass management target beyond B_R were to ensure sustainability of the stock and for better ecological outcomes for the environment (i.e. to address urchin barrens).

528. CRAMAC 2 supports a biomass management target between 1.75x B_R and 2x B_R, stating that CRA 2 should be managed above B_R to ensure an abundant fishery in the future.

529. Southern Ocean Seafoods opposes increasing the biomass management target.

530. The Ngāti Rehua-Ngātiwai ki Aotea Trust Board supports a higher biomass management target that reflects the ecological and cultural significance of kōura.

531. ECO advocates for a biomass management target of at least 3.5x B_R, going onto say that biomass baselines should extend to before the 1980s, and states there are studies going back to the 1940s that can be used.

532. The joint recreational submitters advocate for setting a long-term biomass management target that considers overall ecosystem function.

533. The Hauturu Supporters Trust supports adopting of kelp forest cover targets, instead of biomass management targets, for primary urchin predators and states this should be a 100% kelp forest cover target. It went onto say that if there is currently no framework to implement a kelp forest cover target then 3x B_R should be adopted.

534. While there are differences in how much the biomass management target should be increased, and the rationalisation of why, FNZ notes that for the most part there is strong collective agreement to manage the stock above B_R, and that the predominant reason is to enhance ecosystem function of rock lobster (to address urchin barrens).

535. A key question is that once a longer-term biomass management target is selected, what is an appropriate time frame for the stock to reach this target? While setting a longer-term biomass management target greater than B_R for CRA 2 seeks to address ecological concerns within the QMA, there are also social, cultural, and economic considerations that need to be addressed when setting a longer-term biomass management target and when choosing a way and rate towards that target.

536. For the immediate future, FNZ has set a provisional biomass management target of 2x B_R. As highlighted in Part 1 '*Increasing the provisional biomass management target*', FNZ will be reviewing this provisional target over the next year.

The Hauraki Gulf Fisheries Plan

537. Stet Ltd submits that any increase to the TAC is inconsistent with objective 1.3 of the Hauraki Gulf Fisheries Plan, drawing attention to management action 1.3.4.[106] Stet Ltd goes onto say that 95% kelp forest coverage target should be the key measure before increasing TAC.

538. Forest and Bird advocates for further consideration of the Hauraki Gulf Fisheries Plan, stating that it needs to have a central place in decisions on the management of CRA 2. Like Stet Ltd, it draws attention to management action 1.3.4, noting that although a management plan for restoring kelp beds has not yet been done, the intention is for decisions on CRA 2 to support this work.

539. Forest and Bird also considers management objective 2.1 ('At the QMA level, ensure all harvested stocks of wild marine species are at or above target levels') is relevant. Forest and Bird draws attention to management actions that it considers relevant:

- 2.1.1: Work with tangata whenua and stakeholders (recreational, customary, commercial, non-take) to determine and document their fisheries resource needs and priorities within the Hauraki Gulf.
- 2.1.2: Set management targets and Total Allowable Catches to achieve/restore abundance at stock levels necessary to support the needs and priorities identified in management action 2.1.1 and within an ecosystem-based fisheries management framework.

540. In Part 3 '*Assessment of the proposals against section 11 of the Act*', FNZ has discussed the relevance of the Hauraki Gulf Fisheries Plan in your decision, the relevant management objectives and how the proposed options are consistent with this.

[106] Management action 1.3.4 is to 'Facilitate the co-development of a management plan for restoring healthy kelp forests, which will consider the causes and address the environmental impacts of kina barrens and include management considerations for predator species such as snapper and crayfish.'

541. Specifically, FNZ considers the following management objectives, and underpinning management actions, are relevant:

- Management Objective 1.3: Mitigate the direct and indirect impacts of fishing on the marine food chain.
    - Management Action 1.3.3: Advance scientific research on kina populations to improve understanding of the variation in their spatial distribution, density, and condition.
    - Management Action 1.3.4: Facilitate the co-development of a management plan for restoring healthy kelp forests, which will consider the causes and address the environmental impacts of kina barrens and include management considerations for predator species such as snapper and crayfish.
- Management Objective 2.2: Address localised depletion of fisheries resources within the Hauraki Gulf.
    - Management Action 2.2.1: Define and develop criteria for localised depletion and for setting targets for recovery.
    - Management Action 2.2.2: Collect data and/or initiate research to identify key stocks and areas that may suffer from localised depletion within the Hauraki Gulf.
    - Management Action 2.2.3: For stocks at risk of localised depletion, develop approaches for more responsive management within the park on a per species or species group basis.
    - Management Action 2.2.4: For key stocks utilised by all sectors where localised depletion due to fishing has been identified, explore and where appropriate implement a range of tools to support increasing local abundance, including through:
        - voluntary agreements on complementary measures that will be applied by each of the harvesting sectors (commercial, customary non-commercial and recreational).
        - regulating fishing methods, locations, available seasons and catch limits.
        - an agreed monitoring strategy that is implemented using appropriate monitoring measures for commercial, recreational (including Amateur Charter Vessel) and customary harvest.
        - the use of appropriate customary tools and reporting.

Voluntary logbook programme

542. Both CRAMAC 2 and B Waterhouse draw attention to the importance of the voluntary logbook programme, stating its importance as an input into the CRA 2 stock assessment process.

543. The voluntary logbook programme is an FNZ-contracted data collection programme that is conducted across several NZ rock lobster stocks. It is often a key input for assessments of those stocks as it provides data on catch rates, catch sizes, and proportion of females in berry. It is voluntary for individual fishers to participate in the logbook programme and provide this additional data. CRA 2 industry participants made a strong commitment to the voluntary logbook programme when it was first introduced in 1993, and this design remains the primary source of stock monitoring information in this fishery.

544. The programme involves individual fishers measuring every lobster from four designated pots, a subset of their daily effort. These measurements encompass length frequency (tail width) and maturity status of each rock lobster caught in the designated pot. The programme is characterised by a smaller number of measurements per vessel over a larger group of fishers to attain an adequate sample size.

545. CRAMAC 2 states that due to uncertainties with mandatory electronic reporting CPUE data since 2019 (when rock lobster fishers transitioned from paper-based catch, effort and landing reports to electronic reporting) the voluntary logbook programme CPUE data has been invaluable for the stock assessment. CRAMAC 2 goes onto say that without this data it is unlikely a reliable stock assessment could have been undertaken in CRA 2 since 2018. FNZ notes that there was previously a high degree of correlation between the logbook and the paper-based Catch Effort Landing Return CPUE indices, before the introduction of the current Electronic Reporting System.

546. FNZ acknowledges the importance of the voluntary logbook programme as an important input into the CRA 2 stock assessments and rapid assessment updates and helps build confidence in these assessments by reducing the uncertainty in the estimates they produce, and in turn helps enhance best available information available on the fishery that underpins fishery management settings.

Other sources of mortality to the stock caused by fishing

547. Auckland Council considers FNZ Compliance input should be sought for this allowance as it incorporates illegal fishing.

548. NZ Reefs Lab, D Guccione, and P Clow expressed concern with how the proposed allowances for other source of fishing mortality were formed.

549. As highlighted in Part 1 '*Fishery characteristics and current settings*', based on the recent stock assessment and rapid update, FNZ has assumed current other mortality caused by fishing to be 30 tonnes. While Option A1 (as status quo) does not modify the TAC, for the proposed Options A2 and A3 the proposed allowance is scaled with the proposed TACC increase; 12.5 % and 25% respectively. This approach has been taken as FNZ does not have updated modelling of how the proposed TACC changes will impact handline mortality, nor is there an updated estimate of illegal catch. This is discussed further in Part 1 '*Proposed options and FNZ's recommendations*'.

550. The Fisheries Assessment Plenary acknowledges that the estimates of illegal catch, from the stock assessment, in CRA 2 is unreliable.

551. It is anticipated the upcoming CRA 2 stock assessment will provide revised estimates of both handling mortality and illegal catch.

NRLMG views

552. The National Rock Lobster Management Group (NRLMG)[107] met following consultation, however some members representing Te Ohu Kaimoana and ECO were unable to attend, therefore the views expressed at the NRLMG meeting may not be representative of the whole membership.

553. The New Zealand Sport Fishing Council summarised its template and submissions (using AI software) and its proposed option, going onto say that its main concern is environmental impact and adverse impacts of fishing. NZ Underwater Association concurred with this summary and went onto say that in light of the high level of uncertainty that a conservative approach should be exercised.

554. Both NZ RLIC and the NZ Sport Fishing Council agreed that the proposed inner Hauraki Gulf closure is a blunt mechanism. The NZ Sport Fishing Council went onto say that a wider management plan for statistical area 905 is required.

555. NZ RLIC provided commentary on the proposed CRA 2 Code of Conduct (see Part 1 '*Analysis of options*'), going onto say that CRA 2 operators acknowledge there are problems within the Inner Hauraki Gulf and are seeking relief from the TACC reductions in 2018. NZ RLIC stated that implementation of this proposal was contingent on Option A3 (the 100 tonnes TACC) being adopted and would need to be reconsidered if this did not happen.

556. The NZ Sport Fishing Council reiterated its position, per the written joint submission it made, that it did not support an increase to the TACC.

557. NZ Underwater Association considered that current catch levels in statistical area 905 do not indicate signs of recovery and that the Code of Conduct proposes to maintain current catch levels. NZ RLIC disagreed with this, noting that operators have experienced material increases in catch rates within the areas fished.

558. NZ RLIC noted that the stock assessment indicates that the rebuild, in the areas fished, will continue with a TACC increase. It went onto say that the footprint in statistical area 905 has not changed materially in recent years and is unlikely to be affected by the TAC proposals. However, it considered the marine protection areas proposed for the Hauraki Gulf will change where commercial fishers are operating. In regard to monitoring the proposed Code of Conduct, NZ RLIC noted industry will analyse the data and that there is geo-positional reporting under the electronic reporting system, and this will enable them to examine where catch is taken from.

559. On the topic of economic difficulties being faced by CRA 2 operators, the NZ Sport Fishing Council consider measures to increase the CPUE (i.e. increase rock lobster abundance) will alleviate the costs for flexible costs such as fuel and bait. It also suggested that a Maximum Economic Yield (MEY) model rather than a *MSY* model may be needed. NZ RLIC disagreed CPUE increase was the answer to address economic concerns, and that that more ACE is needed to alleviate these financial challenges. NZ RLIC also mentioned that CRAMAC 2 supported a higher biomass management target, and consequently this was managing the stock beyond *MSY*.

[107] Since 1992, the National Rock Lobster Management Group (NRLMG) has assisted with advice on catch limits, regulatory changes, and management actions relating to spiny rock lobster fisheries. The NRLMG is a national-level, multi-stakeholder group comprising representatives of tangata whenua, recreational, and commercial fishing sectors, environmental organisations, and FNZ. The NRLMG's management goal is for all spiny rock lobster fisheries "to be managed and maintained at or above the assessed and agreed reference levels, using a comprehensive approach that recognises a range of customary Māori, recreational, commercial, and environmental concerns and values".

560. The NZ Sport Fishing Council stated that there are a number of submissions from experts and eNGOs that support status quo, and that weight should be given to this. It went on to say that management targets rely on the current estimate of B_R, and that they anticipate the upcoming CRA 2 stock assessment will provide a significant revision of B_R. It also drew attention to the submissions, mostly from ENGOs, that highlighted concerns with CPUE-based stock assessment models.

561. NZ RLIC reaffirmed its position stated in its written submission. It acknowledged the need to increase rock lobster abundance, noting that Option A3 will still allow for a forecasted stock increase. It opposes the proposed closure of the inner Hauraki Gulf due to concerns with fishing effort displacement, and that the proposed closure is an abdication of responsibility to act consistently with the requirements under the Act. It further explained that it is important to provide objective advice to the Minister on the trade-offs associated with managing at biomass targets higher than B_{MSY}, particularly to note that targets around 3 -3.5 times B_R will have substantial impacts on utilisation.

562. The NRLMG members who were present did not reach consensus on options regarding the TAC options for CRA 2.

563. FNZ did not receive a position from Te Ohu Kaimoana. See Part 4 '*Further detail on submissions received*' for a summary of both NZ RLIC's and the joint recreational submitters' written views.

564. While ECO were not present to provide their position, their views are summarised in their separate submission (see Part 4 '*Further detail on submissions received*').

Hauraki Gulf Fisheries Plan Advisory Group

565. The Hauraki Gulf Fisheries Plan Advisory Group[108] met following the consultation period and discussed options proposed for CRA 2. The group did not find a consensus view on any of the options. Advisory group members have all independently made submissions that express their personal and organisation views.

[108] The HGFAG was established in 2022 to support the development and implementation of the Hauraki Gulf Fisheries Plan. Members have expertise in fisheries management, fisheries science and environmental policy and represent a range of fisheries management interests. https://www.mpi.govt.nz/fishing-aquaculture/sustainable-fisheries/strengthening-fisheries-management/revitalising-the-hauraki-gulf-government-action-on-the-sea-change-plan/

Part 3: Assessment against relevant legal provisions

Overview

566. You are being asked to make a decision under section 13 of the Act, to set the TAC for CRA 2. At the same time, you are being asked to make a decision under section 11 of the Act whether to close the inner Hauraki Gulf portion of CRA 2 to recreational and commercial rock lobster fishing. These are sustainability measures. Before setting or varying a sustainability measure, you must adhere to section 11 of the Act. When making your decision you must also act consistently with the requirements in section 5 (Application of international obligations and Treaty of Waitangi (Fisheries Claims) Settlement Act 1992); Section 8 (Purpose); Section 9 (Environmental principles); Section 10 (Information principles).

567. Guidance for you on the meaning of sections 5 and 8 and how they should be applied for decision making (for all the stocks being reviewed as part of this round) is provided in Addendum 1 '*Legal overview*'.

568. On the following pages, FNZ has provided:

- a series of tables outlining our assessment of the proposed changes against sections 9, 10, 11, and 13 of the Act. Information to support this assessment can be found in Part 4 (*Supporting information*).
- information on kaitiakitanga, which you must have particular regard to under section 12(1)(b), and mātaitai reserves and other customary management tools which are relevant to your decision making under section 21(4).

Assessment of the proposals against section 13 of the Act

569. Table 9 below outlines FNZ's assessment of the proposed options for CRA 2 against section 13(2)(c) of the Act. This assessment has been informed by the best available information on the status of the stock (summarised in Part 4 under '*Stock status*'), and the information discussed in *'Information on biology, interdependence, and environmental factors'* within Part 4 (*Supporting information*).

Table 9: Assessment of the TAC proposals for CRA 2 under section 13(2)(c) of the Act.

Section 13(2)(c)	570. The biomass of CRA 2 can be reliably estimated in relation to B_{MSY} (the level of biomass required to support the maximum sustainable yield) using the 2022 stock assessment and 2024 rapid update assessment, which showed both vulnerable and spawning stock biomass to be high relative to the biomass management target. Both vulnerable and spawning stock biomass are projected to increase over time. Uncertainties associated with the stock assessment are discussed under 'Information principles: section 10 of the Act'. 571. While the biomass of the stock is estimated to be above B_{MSY}, there is a desire among many stakeholders to manage biomass to an even higher level above B_{MSY}. As noted above, FNZ also considers that biomass should be moved to a higher level; toward 2x B_R at a minimum, to help rock lobster better fulfil their ecosystem role as a predator of urchins. 572. FNZ is proposing three TAC options, all of which intend to move the stock toward a higher level above B_{MSY}. A change to the TAC (per any of these options) would be made under section 13(2)(c) of the Act. A TAC set under this section of the Act must enable the level of any stock whose current level is above that which can produce the maximum sustainable yield to be altered in a way and at a rate that will result in the stock moving towards or above a level that can produce the maximum sustainable yield, while having regard to the interdependence of stocks. 573. FNZ's view is that the three proposed TAC options would all be consistent with the objective of enabling the stock to move to a level above that which can produce the *MSY*. This is reinforced by the forward projections from the stock assessment model, which project that biomass will continue increasing under all three options. 574. The way and rate at which the stock will increase towards a higher level will depend on the TAC setting. Under Option A1 (status quo) the stock is likely to reach a higher biomass level more quickly (projected to reach 1.95x B_R by 2028) than if the TAC were increased under Option A2 (projected to reach 1.88x B_R by 2028) or Option A3

	(projected to reach 1.80x B_R by 2028). Way and rate considerations are discussed further below within this table.
Harvest Strategy Standard (HSS) See 'The Harvest Strategy Standard' in Addendum 1 '*Legal overview*' for more information.	575. Two alternative measures of biomass for the CRA 2 stock have been provided by the 2022 assessment model and subsequent updates, spawning stock biomass (***SSB***) and vulnerable biomass. These two alternative measures of biomass for the stock are required because: a) The Harvest Strategy Standard for New Zealand Fisheries (**HSS**) specifies that the default biomass management target is 40% B_0, the soft limit 20% B_0, and the hard limit is 10% B_0, and specifies that these should be determined relative to the *SSB* of the unfished level; and b) The maximum sustainable yield for CRA 2 can only be calculated from the vulnerable biomass component of the stock, which is the component that provides yield from the fishery. 576. Because these two measures of biomass are not directly comparable, the current stock status cannot be directly assessed relative to both the soft and hard limits and the B_{MSY} (B_R) target level on the same plot, and they are shown below independently of each other in Figure 5. 577. FNZ has undertaken research to determine B_{MSY} for rock lobster with B_{MSY} reference levels tailored to the biological and fishery characteristics of each rock lobster stock. They are constructed to be consistent with the requirements of the Act to maintain stocks at or above a level that can produce maximum sustainable yield, while meeting the risk constraints in the HSS. B_{MSY} reference levels represent a default biomass management target. 578. Because of the points covered above, the biomass management target (B_R) for CRA 2 is a B_{MSY} proxy (rather than being 40% SB_0). The 2024 rapid update assessment estimates CRA 2 vulnerable biomass to be at 154% B_R and spawning biomass to be at 38% of SB_0, (well above the soft and hard limits). Spawning and vulnerable are both expected to increase under all the proposed TAC options remaining above B_R and hard and soft limits. With respect to the suggested provisional biomass management target of 2x B_R (200% B_{MSY}), all TAC options proposed are expected to lead to the stock eventually increasing in biomass towards this biomass management target, albeit at different rates of biomass increase for each option. The TAC increases proposed under Options A2 and A3 will reduce the rate of biomass increase, as opposed to maintaining the current TAC (see Figure 3).
Section 13(2)(c) Interdependence of stocks	579. Evidence suggests predation upon rock lobsters by octopus, rig, blue cod, grouper, southern dogfish, seals, and other rock lobsters. These species have relatively broad diets, and it is unlikely that any of them are dependent on rock lobster as a food source. 580. Rock lobsters are ecologically important predators in New Zealand's rocky reef ecosystems, where they can exert top-down regulation of prey populations. Rock lobsters are known to prefer bivalves but they do eat a wide variety of foods such as crabs, starfish, seaweeds, small fish, and sea urchins (being the few predators known to eat larger urchins). At least on the northeast coast of New Zealand (but possibly at other locations), predation on urchins by rock lobster can play a significant role in determining the prevalence and distribution of urchin barrens (discussed in Part 4 '*Urchin barrens*'). 581. It is important to note that kelp and other macroalgal species are indirectly affected by fishing for rock lobster (as well as harvest of other species that feed on sea urchins). Removal of rock lobster (and other urchin predators) reduces predation on sea urchins, which graze on macroalgae (including kelp) and some benthic invertebrates, though the density of rock lobster abundance required that will result in the formation of urchin barrens is unknown (also noting there are other reef-based predators that predate on urchins). Under reduced predation, urchins can increase in abundance and over-graze kelp, resulting in reef habitat devoid of macroalgae. These areas are known as urchin barrens.

	582. There is uncertainty about the biomass of rock lobster that would need to be left unharvested in CRA 2 to enable rock lobster to fulfil their ecological function as a predator of sea urchins. 583. There is some uncertainty regarding how much TAC changes for CRA 2 would impact rock lobster size and age distribution, and what size and age distribution of rock lobster would be required to mitigate and remedy existing urchin barrens and avoid the formation of new urchin barrens. 584. In the immediate term, FNZ proposes to provisionally manage CRA 2 stock biomass to 2x B_R, with the proposed TAC options expected to increase the stock's biomass towards this biomass management target at different rates. TAC options that propose either no or minimal increase to catch allowances are expected to lead to a greater rate of biomass increase compared to TAC options that allow a greater increase to catch allowances. 585. FNZ considers that a suite of management controls, including approaches to (a) reduce urchin biomass at particular sites and (b) increase the abundance of a range of urchin predators such as snapper, will be required to address the issue of urchin barrens.
Section 13(2)(c) Way and rate that will result in the stock moving above a level that can produce the *MSY*	586. Approaches to the way in which, and rate at which, a stock is moved above the biomass management target include, but are not limited to, different rates of reduction to TACs and TACCs (e.g., immediate or gradual/phased), gear modifications/restrictions (i.e., to increase selectivity), and closed areas (e.g., spawning or nursery grounds). 587. All TAC options proposed are expected to lead to the stock eventually increasing in biomass to 2x B_R, albeit each option at a different way and rate. The TAC increases proposed under Options A2 and A3 will increase the amount of time it will take for the stock to reach 2x B_R (a longer way and rate), as opposed to maintaining the current TAC (see Figure 3).
Section 13(3) Factors to have regard to in considering the way and rate the stock is moved towards or above B_{MSY}	588. In considering the way and rate at which a stock is moved towards or above a level that can produce the maximum sustainable yield, you must have regard to the social, cultural, and economic factors they consider relevant. 589. Maintaining the CRA 2 TAC, while a faster rate to 2x B_R, will provide for no further opportunity for commercial utilisation of the fishery. However, benefits associated with attaining a higher stock biomass management target are anticipated to be realised more quickly: 590. Improved CPUE, improved efficiency, and reduced operating costs for commercial fishers. 591. Better catch rates and experience for customary and recreational fishers. 592. Ecological benefits associated with a higher abundance of rock lobster, that in turn may have wider social, cultural, and economic implications associated with better ecosystem health. 593. While a longer rate to 2x B_R, increasing the CRA 2 TAC as proposed under Options A2 and A3 will provide further opportunity for commercial utilisation of the fishery. The benefits associated with a higher stock biomass management target are still anticipated to be realised, albeit more slowly than maintaining the current TAC. 594. Potential increases to export earnings associated with a TAC increase (Options A2 and A3) are discussed in Part 1 '*Analysis of Options*'. 595. Commercial stakeholders potentially affected by a TAC change (quota owners, fishers, and LFRs) are discussed in Part 1 '*Fishery characteristics and settings*'.

Kaitiakitanga

596. Tangata whenua can provide information on how they exercise kaitiakitanga, and on their values, goals, and objectives for fisheries, through Iwi Fisheries Forums and through Iwi Fisheries Plans, which set out iwi views on the management of fisheries resources and fish stocks.

597. As noted above in Part 1 '*Input and participation of tangata whenua*', three Iwi Fisheries Forums represent iwi with interests in CRA 2.

598. Mai i ngā Kuri a Whārei ki Tihirau, has a fisheries plan which lists rock lobster, kina, and kelp as taonga species. The plan also sets out objectives for management of fish stocks. Objectives relevant to this review include:

    a) Management Objective 1: Iwi fisheries management activities support the growth and wellbeing of our people.

    b) Management Objective 2: Iwi are actively engaged with others to increase their fisheries potential within environmental limits.

    c) Management Objective 3: The fisheries environment is healthy and supports a sustainable fishery.

    d) Management Objective 4: Tino rangatiratanga is advanced to ensure that iwi driven goals are achieved.

599. FNZ considers that the proposed management measures presented in this paper generally contribute towards these objectives, as they aim to support sustainability of the fishery and the surrounding ecosystem. However, as noted in Table 4 above, some members of the Mai i ngā Kuri a Whārei ki Tihirau Forum have expressed opposition to increasing the TAC of CRA 2 until an abundance increase has been observed. This suggests that of the TAC options proposed, the forum members consider Option A1 (the status quo) would best meet their Fisheries Plan objectives.

600. FNZ sought further input from tangata whenua on how the proposed measures for CRA 2 may or may not provide for kaitiakitanga as exercised by tangata whenua, and how tangata whenua consider the proposed measures may affect their rights and interests in this stock. No further input was received.

601. Currently within the Nga Hapu O Ngāti Porou Iwi Fisheries Forum there are 11 draft hapū plans that are in the final stages of completion and are expected to be signed off by the relevant hapū management unit soon. The Nga Hapu O Ngāti Porou Iwi Fisheries Forum is also currently preparing a forum fisheries management plan.

602. Customary tools under the Fisheries (Kaimoana Customary Fishing) Regulations 1998 and the Act enable tangata whenua to autonomously manage important customary fishing grounds in ways that best fit local customary practices in the form of mātaitai reserves, taiāpure, and temporary closures.

603. Where a hapū or iwi manage their customary fishing activities under the Fisheries (Kaimoana Customary Fishing) Regulations 1998 they are able to determine their own customary practices, which can include the exercise of kaitiakitanga to remove kina to rebalance the ecosystem of their customary fishing grounds.

604. In addition, recent approval of a traditional non-commercial fishing use under regulation 52(1) of the Amateur Fishing Regulations enables the taking, disposal, culling, or translocation of kina from traditional fishing grounds to manage the population of kina to maintain the balance of the ecosystem.

Mātaitai reserves and other customary management tools

605. Section 21(4) of the Act requires that, when allowing for Māori customary non-commercial interests, you must take into account any mātaitai reserve in that is declared by notice in the Gazette under regulations made for the purpose under section 186, and any area closure or any fishing method restriction or prohibition imposed under section 186A or 186B.

606. The mātaitai reserves, area closures, fishing method restrictions, and prohibitions that apply in CRA 2 are listed in Table 10 below.

607. It is not anticipated that the proposed TAC changes for CRA 2 would negatively impact the availability of these species in these areas, given their increasing abundance and the distribution of commercial fishing effort outside of these areas.

608. There could be some potentially positive effects in these areas in the distant future if the proposed spatial closure is implemented. Furthermore, a higher biomass management target could potentially have positive

effects in these areas through a higher CRA 2 biomass, meaning greater abundance of rock lobster and greater abundance of large rock lobsters.

609. The legal overview in Addendum 1 provides more information on the relevance of mātaitai reserves and other customary management tools for TAC decisions (refer to '*Section 21 of the Act - Matters to be taken into account in setting or varying any total allowable commercial catch'*).

Table 10: Mātaitai reserves and other customary management tools that apply to CRA 2.

Customary area	Management type
Te Maunga o Mauao Te Rae o Kohi Raukokore Te Kopa o Rongokānapa	**Mātaitai reserve** Commercial fishing is not permitted within mātaitai reserves unless regulations state otherwise (Te Kopa o Rongokānapa allows some limited commercial catch).
Maketu	**Taiāpure** All types of fishing are permitted within a taiāpure. The management committee can recommend regulations to manage commercial, recreational, and customary fishing.
Waiheke Island	**Temporary closures** Section 186A temporary closures are used to restrict or prohibit fishing of any species of fish, aquatic life, or seaweed or the use of any fishing method. Waiheke Island – closed to mussel, rock lobster, and pāua harvest. Other temporary closures that are present within the CRA 2 QMA but do not apply to CRA 2: • Umupuia Beach – closed to cockle harvest only. • Te Mata and Waipatukahu – closed to pipi, cockle, mussel, and oyster harvest.

Assessment of the proposals against section 9 of the Act

610. Table 11 below outlines FNZ's assessment of the proposed options for CRA 2 against the environmental principles in section 9 of the Act which you must take into account when considering the current measures proposed. This assessment has been informed by our knowledge of the current environmental impact of this fishery, which is discussed under *'Information on environmental impacts'* within Part 4 (*Supporting information*).

Table 11: Assessment of the proposals for CRA 2 under section 9 of the Act.

Associated or dependent species should be maintained above a level that ensures their long-term viability - Section 9 (a) of the Act	611. Associated or dependent species includes any non-harvested species taken or otherwise affected by the taking of any harvested species. This includes protected species such as marine mammals and seabirds, and invertebrate species which are caught incidentally. Other harvested species (e.g. packhorse rock lobster and snapper) are not directly relevant to this principle but have also been discussed in this section for completeness. You must take into account the effects of fishing on these species under section 11(1)(a). 612. Potting is the primary method for rock lobster harvest in CRA 2. Pots are considered to be set too deep for seabirds to enter; there have been no recorded seabird interactions within the CRA 2 fishery over the last decade. 613. Potting fisheries can interact with marine mammals by entangling species such as humpback whales and orcas. However, these events are rare. Within the CRA 2 fishery there has been one mammal interaction reported with pot or trapping gear over the last decade. 614. Incidental fish and invertebrate catch in CRA 2 is predominantly packhorse rock lobster and snapper (landed), and octopus and red moki (mostly released alive). 615. FNZ is proposing: • TAC options ranging from status quo to a 9% increase, which encompass either maintaining the TACC or an increase up to 25% (see Part 1 '*Analysis of proposed options'*). While there is a higher probability of increased fishing effort under any TAC increase, as noted above, the CRA 2 potting fishery rarely interacts with seabirds, mammals, or any species of conservation concern. Given this, FNZ

	considers it unlikely that any of the proposed TAC options would threaten the long-term viability of any associated or dependent species. • Setting a provisional biomass management target of 2x B_R, a higher biomass management target than at present. Therefore, in the longer term, there is a reduced probability of attributable interactions and/or any threat to the long-term viability of any associated or dependent species. • A spatial closure of the inner Hauraki Gulf (see Part 4 '*Proposed spatial closure*'). Closure of the inner Hauraki Gulf would be expected to lead to the elimination of rock lobster harvest within this area, and in turn significantly reduce the probability of attributable interactions and/or any threat to the long-term viability of any associated or dependent species within this area. However, this could lead to a redistribution and aggregation of effort in other locations within CRA 2, notably on the boundary of the proposed spatial closure, which could significantly increase the likelihood of attributable interactions and/or any threat to the long-term viability of any associated or dependent species. Not proceeding with the proposed closure means this probability would not reduce within the inner Hauraki Gulf and may increase if there is an increase to the TAC.[109] 616. Furthermore, if the proposed spatial closure proceeds, it would be expected that some associated species within the inner Hauraki Gulf might indirectly benefit as the ecosystem changes that is expected to favour enhanced biodiversity.
Biological diversity of the aquatic environment should be maintained - Section 9(b) of the Act	617. Potting is the main method of targeting rock lobster commercially. Previous studies have shown that potting is likely to have very little direct effect on non-target species. However, one study that reviewed the impact of crustacean potting on benthic assemblages noted that while these potted areas were characterised by species indicative of a healthy reef system, it did note there was a potential concern of potting damage on long-lived, slow growing taxa.[110] Any change of fishing effort as a result of the proposed TAC options is considered unlikely (in most cases) to have a direct impact on the biological diversity of the aquatic environment, caution may be required when considering benthic environments that could be sensitive to potting damage. 618. Fishing for rock lobster can indirectly impact biological diversity of the aquatic environment because of the relationship between abundance and size distribution of rock lobster and the abundance of urchins, which graze on kelp (discussed further in Part 4 'Urchin barrens'). The abundance and size distribution implications for biodiversity under each option are discussed in Part 1 '*Analysis of proposed options*'. 619. FNZ is proposing: • TAC options ranging from status quo to a 9% increase, which encompass either maintaining the TACC or an increase up to 25% (see Part 1 'Analysis of options'). Within these options, a greater TAC increase would provide for more utilisation of the fishery, that in turn would likely constrain rock lobster abundance, which in turn would reduce the likelihood that rock lobster can fulfil their ecological role. This would likely result in a lower amount of biological diversity than what would be expected if a smaller/no TAC increase was implemented. • Setting a provisional biomass management target of 2x B_R, a higher biomass management target than at present. Therefore, in the longer term, there is a higher probability of increasing rock lobster abundance, which in turn increases the likelihood that rock lobster can fulfil their ecological role. This would likely result in higher biological diversity within CRA 2 than what would be expected if the stock were managed to a lower biomass level. 620. A spatial closure of the inner Hauraki Gulf (see Part 4 'Proposed spatial closure'). Closure of the inner Hauraki Gulf is expected to lead to the elimination of rock lobster harvest within this area, and in turn is expected to lead to an increase in biomass and the abundance of large rock lobster. In the long term, this is expected to lead to an increase in rock lobster abundance and in turn increase their ecological role within in

[109] This is only a relevant consideration in setting the TAC if you decide to implement the proposed closure.[110] Gall et al., 2020.
[110] Gall et al., 2020.

	the inner Hauraki Gulf, which increases the likelihood of an increase in biological diversity. However, this could also lead to a redistribution and aggregation of effort in other locations within CRA 2, notably on the boundary of the proposed spatial closure, which could significantly increase the harvest of rock lobster in those areas, the reduction of their ecological role as a predator, and in turn may lead to a reduction in biodiversity. [111]
Habitat of particular significance for fisheries management should be protected - Section 9(c) of the Act	621. The main methods for taking rock lobster are potting and hand-gathering. Both methods are considered to have low levels of benthic impact. 622. FNZ has identified eight potential habitats of particular significance for fisheries management in the CRA 2 QMA (see Part 4 '*Habitats of particular significance for fisheries management*'). All but one do not overlap with areas where rock lobster fishing occurs, and none include kelp as a key species, meaning it is unlikely that the options for CRA 2 proposed here would result in a risk of adverse effects for any of these habitats. Potting for rock lobster in one potential habitat of particular significance, Craddock Channel, is spatially localised, and whilst the distribution of the biogenic habitat of dog cockles and horse mussels is unclear at present, it is considered likely to be resilient to impacts from cray potting. 623. The proposal to close the inner Hauraki Gulf to all rock lobster fishing would include closing access to three potential habitats of particular significance to fisheries management (Whangateau Harbour, Kawau Bay, and East Tāmaki Strait/Ponui Island) for the purpose of rock lobster fishing. As there is no known fishing for CRA 2 over the potential habitats of particular significance for fisheries management, and the methods for taking rock lobster have low levels of benthic impact, the closure would be unlikely to have a direct effect on the potential habitat of particular significance for fisheries management in CRA 2. 624. While FNZ does not currently have evidence available to support the identification of specific (spatially-defined) areas of kelp-dominated habitat as potential habitat of particular significance for fisheries management, FNZ recognises the likely importance of kelp-dominated habitat in supporting settlement, recruitment, and productivity of a number of species, including rock lobster. The options proposed here have potential to support kelp recovery in the long term.

Assessment of the proposals against section 11 of the Act

Table 12: Assessment of the proposals for CRA 2 under section 11 of the Act.

You must take into account:	
Effects of fishing on any stock and the aquatic environment – section 11(1)(a)	625. "*Effect*" is defined widely in the Act.[112] The direct effects of fishing for CRA 2 need to be considered, as well as the indirect effects of this fishing on the surrounding ecosystem. 626. Information relevant to the direct effects of fishing on these stocks is described throughout this paper, particularly in Part 1 under '*Analysis of options*' and '*Fishery characteristics and settings*', and in Part 4 under '*Stock status*'. 627. The direct effects of fishing for other stocks caught in the CRA 2 fishery are summarised above in Table 9, and further detailed below in Part 4 under '*Information on environmental impacts*'. 628. Indirect effects of fishing for other species, for example, potential impacts of fishing for rock lobster's food chain, are summarised under the '*Interdependence of stocks*' part of Table 9, and Table 11. Further background analysis about potential indirect effects is provided in Part 4 under 'Urchin barrens' and 'Information on biology, interdependence, and environmental factors'.

[111] This is only a relevant consideration in setting the TAC if you decide to implement the proposed closure.

[112] Section 2(1) of the Act defines "effect" to mean the direct or indirect effect of fishing, and includes any positive, adverse, temporary, permanent, past, present, or future effect. It also includes any cumulative effect, regardless of the scale, intensity, duration, or frequency of the effect, and includes potential effects.

	629. The magnitude of the effects of fishing on the CRA 2 stock, other associated stocks and species, and the wider environment, will vary depending on the TAC for CRA 2, the biomass management target for the fishery, and the implementation of any area closures. Greater effects are likely to occur under higher TAC settings (as discussed in Part 1 '*Analysis of options*'), and you must consider this in your decisions on these measures. You must also consider that the proposed closure in the inner Hauraki Gulf would remove effects of rock lobster fishing on the stock and environment within that area. However, as noted above, this could potentially also result in increased effects of fishing in the remaining areas of CRA 2 due to displacement of effort. 630. FNZ considers that the proposed TAC options, and proposed spatial closure, for this stock appropriately balances the utilisation opportunity that exists against these potential effects.
Existing controls that apply to the stock or area – section 11(1)(b)	631. A range of existing management controls apply to CRA 2. These are listed below and apply to both recreational and commercial fishers unless noted otherwise. (a) Gear restrictions: the use of spears for taking rock lobsters is prohibited. Recreational fishers are also prohibited from using spring loaded loops or lassos, or from using set or baited nets for taking rock lobster. (b) Number of pots (recreational only): there is a maximum number of pots that may be used, set, or possessed in New Zealand fisheries waters on any day for recreational purposes. Recreational fishers are restricted to three pots. Two or more recreational fishers on a vessel are restricted to a combined total of six pots. (c) Escape apertures: a fisher must not set, use, or possess on a vessel a rock lobster pot, unless the pot has at least two rectangular apertures (other than the mouth of the pot) through which undersize rock lobsters are able to escape. (d) Must be measurable: rock lobster must be possessed in a state that can be measured. (e) Size restrictions: rock lobsters have a minimum legal size of 60 mm tail width for females and 54 mm tail width for males. (f) Prohibited states: it is illegal to take or possess rock lobsters carrying external eggs (in berry), or rock lobsters in the soft-shell stage (post moulting). (g) **Telson clipping (recreational only)**: A person who takes any rock lobster from CRA 2 must, on taking the rock lobster, cut one-third of the telson off the tail fan. (h) **Area closures**: There are several mātaitai reserves, taiāpure, and section 186A closures area closures within CRA 2 (see Part 2 '*Mātaitai reserves and other customary management tools'*). Two marine protected areas, within Tauranga Harbour and the Motiti Islands, in CRA 2 prevent commercial and recreational fishing (not including kina harvest or Māori non-commercial customary fishing rights). Both recreational and commercial fishing are subject to restrictions and prohibitions within the Hauraki Gulf, Kawau Island, Whangaparaoa Peninsula, Great Barrier Island Cable Protection Zones. There are also eight marine reserves protected under the Marine Reserves Act (1971), in which all types of fishing are prohibited; Cape Rodney - Okakari Point, Tāwharanui, Long Bay – Okura, Motu Manawa-Pollen Island, Te Matuku, Whanganui A Hei (Cathedral Cove), Tuhua (Mayor Island), and Te Paepae o Aotea (Volkner Rocks). Marine reserves are not fisheries management tools but are included here as examples of area restrictions that apply to CRA 2. (i) Daily limits (recreational only): no person may take or possess more than three rock lobsters within the combined daily limit of six rock lobsters (rock lobster and packhorse combined).

The natural variability of the stock – section 11(1)(c)	632. Rock lobster stocks generally have a high level of natural variability. Populations can fluctuate rapidly in response to changes in the environment, which can affect the recruitment, abundance, and availability of rock lobsters. This variability is taken into account in the stock assessments used to inform the development of TAC options. 633. Environmental factors that are thought to influence the productivity of rock lobster populations include water temperature, ocean currents, shelter availability, and food availability.[113] Rock lobster grow at different rates around New Zealand, and female lobster mature at different sizes.[114] 634. Given the number of environmental variables that can influence the productivity (notably recruitment) of rock lobster, any modification of the TAC should be approached with caution. 635. The natural variability of CRA 2 with respect to climate change is discussed in Part 4 '*Environmental conditions affecting the stock*'.
Hauraki Gulf Marine Park Act - section 11(2)(c)	636. Section 11(2)(c) of the Fisheries Act 1996 requires you to have regard to sections 7 and 8 of the Hauraki Gulf Marine Park Act 2000 when varying the TAC relating to stocks with boundaries intersecting with the Park. 637. Section 7 recognises the national significance of the Hauraki Gulf and section 8 sets out objectives for management of the Hauraki Gulf Marine Park. 638. The boundaries of the Hauraki Gulf Marine Park intersect with CRA 2. 639. The proposed options discussed in this paper aim to promote sustainable use of the CRA 2 resource. Regarding the proposed spatial closure that seeks to rebuild rock lobster abundance within the inner Hauraki Gulf, there would be some negative implications for social, economic, and recreational well-being in the short term, but this would improve in the long-term, along with improved cultural wellbeing. 640. FNZ considers that the proposed options discussed in this paper are consistent with the objectives of the Hauraki Gulf Marine Park Act.
Fisheries plans, and conservation and fisheries services – section 11(2A)	**The Hauraki Gulf Fisheries Plan** 641. The Revitalising the Gulf: Government action on the Sea Change Plan strategy (**Revitalising the Gulf**) is relevant to the future management of the portion of CRA 2 that lies within the Hauraki Gulf Marine Park. A key fisheries output from Revitalising the Gulf is the area specific fisheries plan approved under section 11A of the Act. The Hauraki Gulf Fisheries Plan has three desired outcomes: • Healthy, functioning aquatic ecosystems that support sustainable fisheries; • Fisheries resources are at levels which meet the needs of Treaty partners and stakeholders; and, • Inclusive and integrated regional participation in the governance of fisheries. 642. There are also new marine protection proposals for the Hauraki Gulf Marine Park which would overlap CRA 2 (discussed in Part 4 '*Proposed spatial closure*'). 643. FNZ considers that the proposed changes to the CRA 2 catch limits would be consistent with the desired outcomes, management objectives and actions in the Hauraki Gulf Fisheries Plan. 644. The Hauraki Gulf Fisheries Plan proposes specific management measures to support the sustainability[115] and improved future management of kina within the Hauraki Gulf Marine Park.[116] 645. One of these management actions (1.3.4) is to facilitate the co-development of a management plan for restoring healthy kelp forests, which will consider the causes and address the environmental impacts of urchin barrens and include management considerations for predator species such as snapper and rock lobster. FNZ considers

[113] Linnane et al., 2010.
[114] Annala, 1983.
[115] Management Objective 2.2: 'Address localised depletion of fisheries resources within the Hauraki Gulf'.
[116] Management Objective 1.3: 'Mitigate the direct and indirect impacts of fishing on the marine food chain'.

that the options proposed align to the required management considerations because:

- Setting a provisional biomass management target of 2x B_R, a higher biomass management target than at present. Managing CRA 2 to a higher biomass level considers the ecological role that rock lobsters play as a predator of urchins, by ensuring there are more rock lobsters in the environment then there would be if the stock was managed to B_R. More rock lobsters mean more predation potential on kina populations and in turn goes some way towards decreasing the potential of kina over consuming algae, including kelp.
- All proposed TAC options are expected to lead to the stock eventually increasing in biomass towards the provisional biomass management target (2x B_R), albeit at different rates of biomass increase for each option.
- Closure of the inner Hauraki Gulf is expected to lead to the elimination of rock lobster harvest within this area, and in turn significantly increase the potential for rock lobster biomass to increase in this area. More rock lobsters would mean more predation potential on kina populations and in turn would go some way towards decreasing the potential of kina over consuming algae, including kelp. Not proceeding with the proposed closure means this is unlikely to occur, so Option B1 does not align with this.[117]

646. With respect to management objective 2.2, 'Address localised depletion of fisheries resources within the Hauraki Gulf', FNZ considers that the options proposed align to the required management considerations because:

- Setting a provisional biomass management target of 2x B_R, a higher biomass management target than at present. Managing CRA 2 to a higher biomass would go some way towards allowing more rock lobsters in the environment then there would be if the stock was managed to B_R. More rock lobsters in CRA 2 overall would mean more rock lobster in localised areas that are not depleted (source populations), so there is increased likelihood, through larval dispersal and adult migration, of localised areas of depletion being replenished by these source populations.
- All proposed TAC options are expected to lead to the stock eventually increasing in biomass towards the provisional biomass management target (2x B_R), albeit at different rates of biomass increase for each option.
- Closure of the inner Hauraki Gulf is expected would lead to the elimination of rock lobster harvest within this area, and in turn significantly increase the potential for rock lobster biomass to increase in this area. While the rate the of biomass increase is uncertain, over time it is expected it would increase to a level that can go some way towards addressing localised rock lobster depletion in this area.
- FNZ is in discussion with local tangata whenua and stakeholders to consider and develop further management measures for the outer Hauraki Gulf.

Fisheries and conservation services:

647. Fisheries services of relevance to the options in this paper include the research used to monitor stock abundance, such as contracted projects for stock monitoring and stock assessment, tag deployment and recapture. Fisheries services include the tools used to enforce compliance with management controls in the fishery. Furthermore, the FNZ contracted research project[118] is another relevant service (discussed in Part 4 under 'Supporting information' and 'Summary of urchin barren work programme to date)'.

648. FNZ initiated observer coverage within CRA 2 for the 2024/25 financial year, which will help verify fisher-reported data. However, prior to this there has been no observer or on-board camera coverage of CRA 2. Fisheries Compliance regularly monitors the CRA 2 area to ensure that management controls are being adhered to.

[117] This is only a relevant consideration in setting the TAC if you decide to implement the proposed closure.
[118] ZBD2023-03: Summarising and updating knowledge on the distribution of kina barrens in key regions of New Zealand.

You must have regard to:	
Relevant statements, plans, strategies, provisions, and documents - section 11(2)	**Regional plans:** 649. There are two regional councils (Waikato Regional Council and Bay of Plenty Regional Council) and two unitary authorities (Auckland Council and Gisborne District Council) that have coastlines within the boundaries of CRA 2. Each of these authorities have policy statements and plans to manage the coastal and freshwater environments, including terrestrial and coastal linkages, ecosystems, and habitats. 650. FNZ has reviewed these documents and the provisions that might be considered relevant can be found in **Addendum 2**. 651. FNZ considers the proposed measures and options for CRA 2 to be consistent with these provisions, which are of a general nature and focus mostly on maintaining the natural character and diversity of the marine environment. There are no provisions specific to rock lobster.
Non-mandatory relevant considerations	
Other plans and strategies	Te Mana o te Taiao (Aotearoa New Zealand Biodiversity Strategy) 652. FNZ considers that the sustainability measures proposed for CRA 2 are generally consistent with relevant objectives of Te Mana o te Taiao – the Aotearoa New Zealand Biodiversity Strategy. This includes Objective 10, which is to ensure that ecosystems are protected, restored, resilient and connected from mountain tops to ocean depths; and Objective 12, which is to manage natural resources sustainably. The Revitalising the Gulf: Government action on the Sea Change Plan strategy (Revitalising the Gulf) 653. This plan is relevant to the future management of the portion of CRA 2 that lies within the Hauraki Gulf Marine Park. A key fisheries output from this strategy is the area specific fisheries plan approved under section 11A of the Act; The Hauraki Gulf Fisheries Plan.

Information principles: section 10 of the Act

654. The best available information relevant to CRA 2 is presented throughout this paper, and uncertainties in the information have been highlighted where relevant. Table 13 below provides an additional summary of the best available information and key areas of uncertainty, unreliability, or inadequacy in that information.

Table 13: Best available information and key areas of uncertainty for CRA 2.

Best available information	Key areas of uncertainty, unreliability, or inadequacy
Stock status of CRA 2: The best available information on the status of CRA 2 (in relation to B_{MSY}) comes from a full scientific stock assessment using standardised CPUE. The most recent full stock assessment was conducted in 2022, based on data up to the 2021 April fishing year. Subsequent updates to the stock assessment have been undertaken annually, with the most recent rapid assessment update undertaken in 2024. The results of these assessments are described in detail within the November 2024 Fisheries Assessment Plenary and have been summarised throughout this paper where relevant	The majority of the data used in the stock assessment, and subsequent rapid updates, to assess stock status relies on fishery-dependent data (data collected by commercial fishers). Fishery-dependent data can be biased by changes in fishing efficiency, and does not cover areas not commercial fished (such as the majority of the inner Hauraki Gulf). There are limited fishery independent assessments available from CRA 2 that FNZ is aware of: Hanns et al (2022) which is discussed in this table below, and Nessia et al (2024), but FNZ does not consider this the best source of information on the status of CRA 2 as discussed in Part 2 '*Stakeholder feedback on fisheries independent data studies*' and Part 4 '*Stock status*'. Noted uncertainties at the time of the last stock assessment summarised in the November 2024 Plenary Report are outlined as the following: • Estimates of recreational catch are uncertain, and the estimates of illegal catch are unreliable.

Best available information	Key areas of uncertainty, unreliability, or inadequacy
(in particular, in Part 3 under *'Stock Status'*).	• Tag-based growth may not represent growth of underlying population. The stock assessment, and subsequent rapid updates, estimates the abundance of rock lobster in the whole of the CRA 2, and is limited in their ability to assess rock lobster abundance at finer spatial scales (localised) within CRA 2.
Customary, recreational, and illegal fishing estimates: The best available information on CRA 2 customary, recreational, and illegal fishing is presented in Part 1 under '*Fishery characteristics and settings'*. Recreational catch information relies heavily on the results of the 2022/23 NPS, additional information is provided by boat ramp sampling (creel surveys).	The NPS provides some spatial information but does not provide detailed spatial data on the distribution of recreational fishing across the CRA 2 QMA. The NPS panel tends to have low participation in specialised fisheries like rock lobster which can result in lower precision for harvest estimates. Uncertainty from boat ramp sampling has been incorporated with uncertainty in the annual harvest estimates from the NPS 2024 publication for CRA 2. FNZ has contracted additional recreational surveys for CRA 2 for 2024/25 which will provide an annual estimate of recreational harvest. Additional surveys through to at least 2028/29 are being considered. There is uncertainty in the magnitude and distribution of customary, recreational, and illegal fishing occurring in each rock lobster statistical area of CRA 2. The information on authorised customary harvest in CRA 2 is considered incomplete.
Location and extent of urchin barrens: *Estimating the extent of urchin barrens and kelp forest loss in northeastern Aotearoa, New Zealand* (Kerr et al., 2024). New Zealand Aquatic Environment and Biodiversity Chapter 13 '*Trophic and ecosystem-level effects'*, and Doheny et al. (2023).	Kerr et al. (2024) estimated the percentage of shallow rocky reef habitat that comprises urchin barrens at seven sites between Maitai Bay at the Northland Peninsula to Tāwharanui Peninsula in the Hauraki Gulf, then extrapolated this information to estimate the extent of urchin barrens across the region (30% urchin barren coverage) based on the extent of rocky reef habitat. Other information on the location and extent of urchin barrens in CRA 2 is cited in Doheny et al. (2023). Particular areas of uncertainty in defining the percent cover of barrens for a given location relate to the depth cut off for shallow reefs, which can be different depending on the study. Note these studies do not consider urchin barrens that may occur within CRA 2 that are outside the Hauraki Gulf. Urchin barrens are known to occur across the whole of CRA 2 but are particularly concentrated within the Hauraki Gulf. FNZ has contracted a research project to estimate the extent of urchin barrens between 2 m and 10 m water depth from Cape Reinga to East Cape using satellite imagery. The results are expected to provide a spatially comprehensive and current map of urchin barren distribution for the entire area (final results are expected in June 2025).
The effect of fishing on urchin barren formation and the efficacy of marine reserves in reversing barrens and restoring kelp forest habitat: New Zealand Aquatic Environment and Biodiversity Chapter 13 '*Trophic and ecosystem-level effects'*, and Doheny et al. (2023).	Key information knowledge gaps pertaining to the relationship between rock lobster, other predators, and urchin barrens, as well as the management required to mitigate urchin barrens are outlined in pages 66-73 and 78 of Doheny et al. (2023). Information gaps most relevant to this fishery include: a. The overall CRA 2 biomass threshold and abundance of large rock lobsters (as one of the few key urchin predators) required to enable them to meaningfully contribute as rocky reef predators, including helping mitigate urchin barren formation.

Best available information	Key areas of uncertainty, unreliability, or inadequacy
	b. The relative importance of rock lobster to other urchin predators in reducing or reversing barren formation, e.g., how packhorse rock lobster contribute to urchin predation across urchin size classes in comparison to rock lobster. c. The extent to which the trophic effects of fishing interact with changing sea temperatures, ocean acidification, eutrophication, sedimentation, and invasive species needs to be further explored. This includes the future impact that climate change and marine heat waves will have on rock lobsters, and urchin and macroalgae abundance and distribution. d. The design of closures required to support ecosystem recovery.
Finer spatial scale studies of CRA 2 MacDiarmid, A. (2025). What is an appropriate spatial scale for ecosystem-based fishery management of kōura, spiny lobster *Jasus edwardsii,* in the Hauraki Gulf Marine Park, Aotearoa New Zealand? Fisheries Research, 281, 107261.	MacDiarmid reviewed the management of CRA 2 at the single unit QMA spatial scale and concluded that managing at the current QMA scale violates the modelling assumption of a unit stock because of smaller scale spatial patterns of puerulus settlement, juvenile and adult movement, abundance, ecological interactions, and fishing. It is FNZ's view that there are not sufficient data available to conduct separate stock assessments for sub-regions of CRA 2.
Fishery-independent studies of CRA 2 Hanns, B J; Haggitt, T; Shears, NT (2022) Marine protected areas provide unfished reference information to empirically assess fishery status. Biological Conservation.	Potting surveys inside and outside Cape Rodney and Tāwharanui marine reserves, in 2018 and 2019, were used to assess the value of using lightly fished populations inside marine reserves to assess stock status empirically. The surveys also generated length frequency distributions for populations in the marine reserves. The dive surveys after 2019 did not show large increases in abundance relative to previous surveys (contrary to the 2022 CRA 2 stock assessment). This study was followed by the Nessia et al. (2024) study (discussed in Part 4 under *'Supporting information'* and *'Stock status'*).
Observer coverage	FNZ has initiated FNZ Observer coverage within CRA 2 for the 2024/25 financial year, which will help verify fisher reported data. However, prior to this there has been no observer coverage in CRA 2. FNZ has, for the most part made some assumptions about fishing and environmental interactions based on fisher-reported data that has not been independently verified (such as an on-board FNZ observer), such as fishing effort, catch information or protect species interactions.
Environmental impacts	Best available information has been assessed to identify potential habitats of particular significance for fisheries management. Given their distribution in relation to rock lobster fishing and their ecological characteristics, FNZ does not consider direct or indirect effects of the options proposed are likely.

Part 4: Supporting information

Stock status

655. For the purpose of stock assessment and management, rock lobsters are assumed to constitute separate fish stocks within each rock lobster QMA. However, there is likely to be some degree of relationship and/or exchange between fish stocks in these QMAs, either as a result of migration, larval dispersal, or both.

656. Rock lobster differs from many other fish stocks managed under the QMS in that a large portion of the total and spawning biomass is not legally harvestable and is not therefore considered to be vulnerable to fishing. This is because rock lobster that are in berry (a female lobster carrying fertilized eggs under her tail) or lobsters in a soft-shell state (post-moulting) are not allowed to be harvested. Consequently, the vulnerable biomass refers to that portion of a stock's biomass that is available to fisheries, i.e., legally harvestable adult rock lobsters (that are also often referred to as the exploitable biomass). For rock lobsters this is limited to male and female fish above the MLS at the beginning of the autumn-winter season, excluding berried females. Spawning stock biomass (*SSB*) refers to sexually mature females only. This includes females that are sexually mature but smaller than the minimum legal size who are not vulnerable to the fishery (i.e., cannot be landed legally).

657. CRA 2 vulnerable biomass has been through two recent declines. The first, in the late-1990s and early 2000s following a period of increased abundance, and then a second period of decline from about 2007 through to 2018 (Figure 5). In response to low biomass levels, resulting from the more recent decline, in 2015/2016 the CRA 2 industry voluntarily shelved 25 tonnes of the 200-tonne TACC, even though the operation of the management procedures did not require a TACC reduction. The amount of shelving was increased to 49 tonnes for 2016/17 and 2017/18.

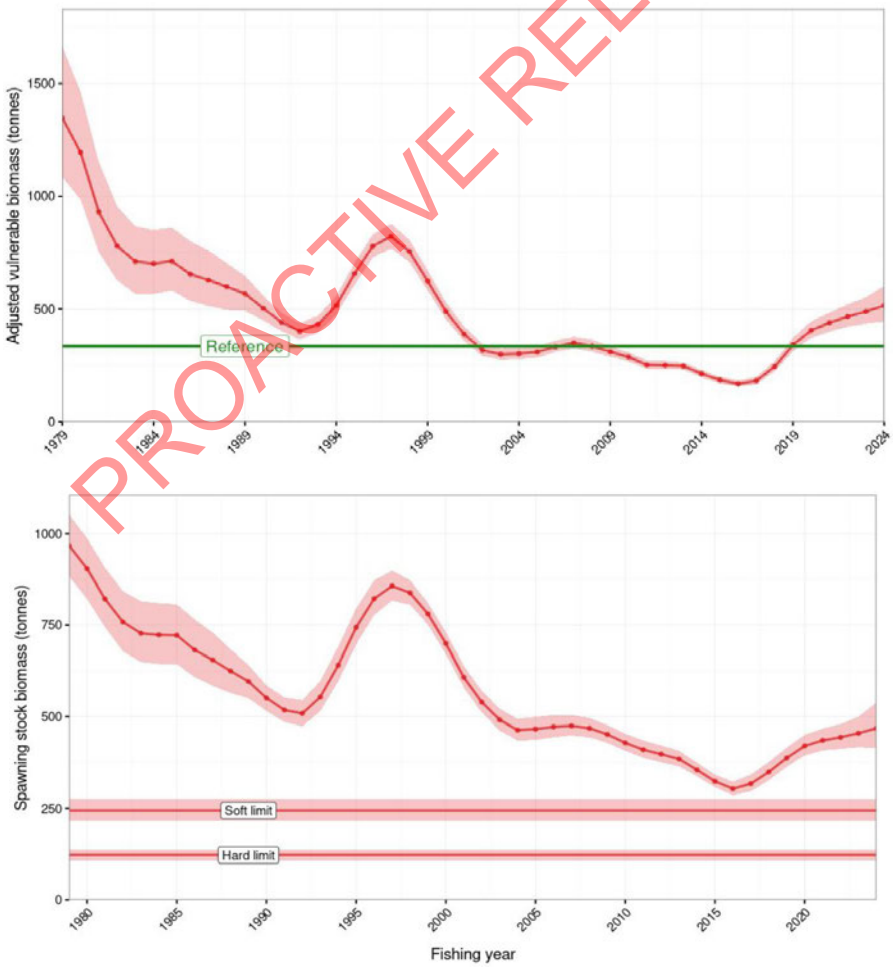

Figure 5: Posterior distribution of the 2024 rapid update model estimates of vulnerable biomass (upper panel) and female *SSB* (lower panel) estimates, which have been projected out to 2028. Variable shading intensity indicates the 50% and 90% credible intervals and the solid line indicates the median. The B_R interim target is shown as a solid green line and the distributions of the soft (20% SB_0) and hard (10% SB_0) limits are also shown.

658. A full stock assessment was conducted in 2017 in which CRA 2 vulnerable biomass was estimated to be at about half of the management target (B_R) and the spawning biomass (SB_0)[119] was assessed as being close to the soft limit (20% SB_0; Figure 5).[120] At that point the TAC was reduced for 2018/19 from 416.5 tonnes to 173.1 tonnes. This reduced TAC comprised an 80-tonne TACC, 34 tonnes for recreational catch, 16.5 tonnes for customary harvest, and 42.5 tonnes for 'other fishing mortality' (Table 5). The number of commercial vessels operating in CRA 2 dropped to below 20 after this drop in TACC, compared with 29 to 40 vessels operating in the previous three decades. There were 16 commercial vessels participating in the CRA 2 fishery in 2022/23.[121] The recreational daily limit was also reduced from six to three lobsters in 2020.

659. Following cuts to the TAC and recreational daily limit, a full quantitative stock assessment was conducted in 2022. One key difference between this and the previous full assessment of CRA 2 in 2017 was that lower and more plausible levels of historical recreational and illegal catch were assumed than those used in 2017, which had resulted in an overestimation of the productivity of this stock at that time. The assessment used a Bayesian length-based model that was informed by commercial CPUE, length-frequency, sex-ratio, and tag release/recapture data. The assessment showed that showed that CRA 2 biomass had increased significantly since 2020 in response to the decrease in exploitation rate. Vulnerable biomass was estimated to be 68% above B_R and spawning biomass was 40% SSB_0 (effectively doubling since the 2017 assessment). Vulnerable biomass and spawning stock biomass were also projected to continue to increase, at least over the five years model projection period.

660. Rapid updates of the CRA 2 assessment, which do not aim to replace full stock assessments but complement these by providing inference about stock status in the interim years between full assessments, were conducted in 2023 and 2024. The updates used the 2022 base case model, settings, and assumptions, but incorporated the most recent CPUE, tagging, length-frequency and sex ratio data reported for the 2022/23 and 2023/24 fishing years. The rapid updates confirmed the findings of the 2022 assessment, although the most recent estimates of where the CRA 2 stock sits relative to unfished spawning and unfished vulnerable biomass are a little lower, and projections of growth slightly slower than in the 2022 and 2023 models. The 2024 update suggests that CRA 2 vulnerable biomass is currently at 154% of B_R and is projected to increase towards 200% of B_R in 2028 (under current harvest settings). Over the same projection period spawning biomass is also expected to increase to 42% of SB_0 (from the current estimate of 38% SB_0).

661. A full quantitative stock assessment is planned for CRA 2 in 2025, which will provide a fully revised estimate of stock biomass and recruitment. It is intended that this new assessment will inform the setting of a TAC appropriate to the new higher biomass management target, and the evaluation of new management procedures for CRA 2 that will be designed to manage the stock at or around the new target level.

Comparison of fishery-independent survey data with the CRA 2 stock assessment

662. While the assessments described above indicate the CRA 2 stock is well above the current biomass management target and that biomass has grown significantly since TAC was reduced in 2018, research papers published by Hanns et al. (2022) and Nessia et al. (2024) challenge some of the assessment's findings.

663. The Nessia et al. (2024) study (which builds on the earlier work of Hanns et al. (2022)) compares rock lobster populations on shallow reefs (less than 20 m depth) in three marine reserves with six fished locations across the Hauraki Gulf rock lobster statistical areas 905 and 906 (Figure 6) to provide a fisheries-independent assessment of this important fishery and the degree of recovery following the 2018 TAC reductions. They found that total, vulnerable, and spawning stock biomass were 12-43 times greater within marine reserves compared to fished locations. Using marine reserve populations as proxy estimates of unfished biomass they estimated that rock lobster populations on shallow reefs in the Hauraki Gulf are at less than 10% of unfished levels. This study contrasts with the fisheries-dependent stock assessment (and associated rapid updates) that estimates rock lobster biomass across the whole of CRA 2 at about 41% of unfished spawning biomass. Based on monitoring of lobster populations inside and outside of three marine reserves, little evidence was found that rock lobster populations in the Hauraki Gulf had recovered since large commercial catch reductions in 2018.

664. The authors also challenge the stock assessment's interpretation of increasing CPUE (which informs the index of abundance). They cite literature suggesting that CPUE may not always reflect actual abundance due to the influence of exogenous factors on catch rates, such as target species biology, environmental conditions, fishing gear type and configuration, and fisher behaviour. In the case of CRA 2, they suggest that

[119] SB_0, also known as virgin spawning biomass (also referred to in this paper as unfished biomass), is the theoretical carrying capacity of the spawning biomass of a fish stock. In some cases, it refers to the average spawning biomass of the stock in the years before fishing started. More generally, it is the average over recent years of the biomass that theoretically would have occurred if the stock had never been fished.

[120] The soft limit is a biomass limit, below which the requirement for a formal, time-constrained rebuilding plan is triggered.

[121] Starr (2024).

the increase in CPUE that occurred immediately followed the 2018 TAC reduction might be due to fishers focussing on high productivity areas to harvest the smaller catch limit, rather than being a sign of increased rock lobster abundance and biomass.

665. FNZ acknowledges there is merit in using fisheries-independent data to compare with fisheries-dependent data, which can provide input in the development and revision of a stock assessment model and there are numerous examples of this approach. However, FNZ notes the following differences in the two data types to assess rock lobster abundance:

- The 2022 CRA 2 stock assessment model (which informs the 2024 rapid assessment update) is based solely on single species (rock lobster) fishery dynamics, and does not account for all other human-induced effects on the marine ecosystem. The stock assessment model uses an ongoing time series of rock lobster catch and effort within the whole of CRA 2, whereas the Nessia et al. (2024) study reviews rock lobster abundance at specific sites within the Hauraki Gulf at specific points in time.
- The Nessia et al. (2024) estimate of stock status relative to *SSB* is not directly comparable to the 2022 CRA 2 stock assessment model's estimate of abundance. The study assumes that the biomass of rock lobster outside of the marine reserve would revert to a biomass level observed within marine reserves if all forms of rock lobster harvest ceased, regardless of any other fishing or human induced stressors that this environment may have experienced since these marine reserves, were first established.
- While the impacts of fishing for rock lobster would have contributed to the current state of the marine environment and ecosystem outside of marine reserves, the higher density of rock lobster within marine reserves, compared to outside marine reserves (notably sub-legal lobster that are not directly impacted by commercial and recreational fisheries, see Figure 4 of Nessia et al. 2024), cannot be attributed solely to fishing effort targeting this species. The higher abundance of rock lobster observed inside marine reserves will in part be due to rock lobster's preference for a biological environment that has developed in the absence of fishing for all species (and other human activities), which in turn attracts rock lobster and causes aggregations of localised high rock lobster abundance.

666. FNZ considers that while the Nessia et al. (2024) study can provide possible insights in the rock lobster abundance and population dynamics within the Hauraki Gulf itself, given the reasons mentioned and limited comparable other fishery independent studies, caution should be exercised when extrapolating the Nessia et al. (2024) study to make inferences on rock lobster abundance outside of the areas surveyed, the wider CRA 2 fishery; especially when making direct comparisons to the 2022 CRA 2 stock assessment. Therefore, FNZ considers that at this stage, the 2024 rapid assessment update (that is underpinned by the 2022 CRA 2 stock assessment) constitutes the best information on the state of rock lobster populations within CRA 2.

667. FNZ is in discussions with the University of Auckland to explore how more direct quantitative analytical comparisons can be made between the data presented by Nessia et al. (2024) and the data used to inform the current stock assessment for CRA 2. This may lead to aspects of the data and/or results from the surveys undertaken by Nessia et al. being incorporated in future CRA 2 stock assessments.

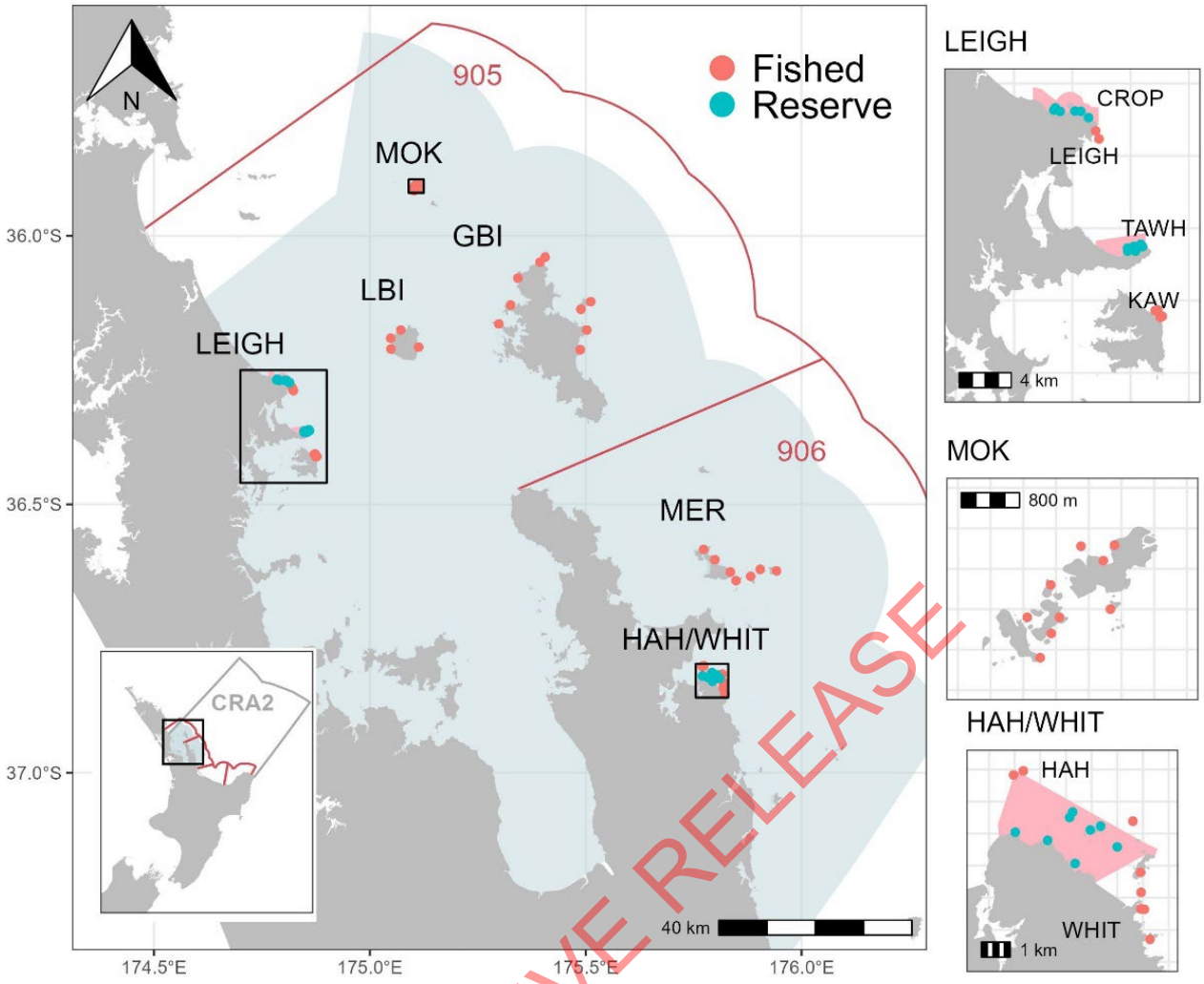

Figure 6: Sites and locations across the Hauraki Gulf Marine Park (light blue shaded area) and rock lobster statistical areas 905 and 906 (boundaries depicted by red lines) surveyed by Nessia et al. (2024). No-take marine reserves (shown as pink shaded areas) include CROP (Cape Rodney-Okakari Point Marine Reserve), TAWH (Tāwharanui Marine Reserve), and HAH (Te Whanganui-o-Hei/Cathedral Cove Marine Reserve). Fished locations include MOK (The Mokohinau Islands), GBI (Aotea/Great Barrier Island), LBI (Hauturu/Little Barrier Island), LEIGH (coastal Leigh), KAW (Kawau Island), MER (Mercury Islands), WHIT (Whitianga, sites adjacent to HAH). Figure taken from Nessia et al. 2024.

Independent panel views on rapid update assessments

668. In 2024, an independent panel of three international scientists met to evaluate the assessment methods and processes used to inform the management of rock lobster stocks in New Zealand. This included a review of the assessment models used, associated biological reference points, management procedures, and the use of rapid assessment updates to inform fisheries management.[122] The panel established a series of 25 recommendations for future work to improve the assessment processes used. A full report with details of these recommendations was published in August 2024. FNZ is still working through all the panel's recommendations and their potential implications for our assessment processes moving forward.

669. The review included some recommendations related to the use rapid update assessments in stock assessment and fisheries management. In particular, the panel was concerned there was increased risk to the stock if rapid update assessments are used to increase TACC between full assessments. The panel recommended that a way be found to demonstrate that increased risk is not a problem where rapid update assessments are used to increase TACC, or only use them to either keep the TACC stable or decrease it.

670. While options to increase the TACC are not recommended, in the current situation for CRA 2, FNZ does not consider that any of the proposed options pose a risk to the sustainability of this stock in the immediate term because:

[122] de Lestang et al., 2024.

- The rapid update assessment is informed by updated length frequency data, in addition to updated logbook CPUE data,
- The stock is currently estimated to be at 154% of the current management target;
- Model projections suggest that the stock biomass will continue to increase under any of the proposed options; and
- A full reassessment of the CRA 2 stock is scheduled for 2025.

Management target considerations

671. Laboratory-based feeding experiments have shown that only lobster with a carapace (body) length greater than 130 mm are capable of feeding on the full-size range of kina.[123] Therefore, increasing the abundance of large rock lobsters is expected to be an effective mechanism to reduce the abundance of urchins, and therefore the prevalence urchin barrens within CRA 2.

672. FNZ has contracted modelling to understand the implications of managing at alternative targets on the population structure of CRA 2 (see Figure 7 in Part 4 '*Additional figures*'). This figure shows how the abundance of larger lobster capable of predating on urchins of any size is estimated to increase as the CRA 2 stock is managed to a higher level relative to the current B_{MSY} interim target level.

673. There will be additional biological consequences of managing the stock at different biomass targets for the species that interact with rock lobster, as well as social, cultural, and economic consequences for the stakeholders of the CRA 2 fishery, such as higher catch rates for commercial fishers and hence economic efficiency, albeit at slightly lower annual catch limits.

674. FNZ notes that urchin abundance above a certain density will result in urchin barrens, and that this density threshold will vary between locations depending on environmental conditions.[124] There is no definitive knowledge of the threshold of predator abundance required to reverse urchin barrens, in part because this will also depend on the localised abundance of other urchin predator species such as snapper. This uncertainty around the biomass threshold required to prevent or reverse barrens must be considered, amongst other matters such as the maintenance of biological diversity and any adverse effects of fishing and socio-economic impacts, when developing management targets and catch settings.

675. Urchin barrens were first documented in the Hauraki Gulf in the 1960s[125] and became a dominant feature of coastal rocky reefs across north-eastern New Zealand over the following two decades. Data is not available to allow us to reliably estimate the biomass of all urchin predator species at the time when urchin barrens were first becoming established at large scales. The currently modelled time series of rock lobster biomass only extends to 1980 (Figure 3), when the lobster biomass is estimated to have been more than 3.5 times greater than the default management target (more than 3.5x B_R), and more than twice the current biomass. It is likely the rock lobster biomass was even greater during the time before urchin barrens were common and widespread. Managing CRA 2 biomass to 3.5x B_R may bring CRA 2 nearer to the abundance of large rock lobster and overall population required to meaningfully play an increased role as a predator of urchins and prevent the formation, or reduce the extent, of urchin barrens within CRA 2. However, this abundance threshold is unknown.

676. FNZ considers that it is appropriate, taking into account the species and ecological benefits listed above, to manage CRA 2 biomass to a level above B_R. Therefore, FNZ has developed the proposed TAC options to align with a provisional biomass management target of 2x B_R (twice the default target). This provisional biomass management target of 2x B_R allows for development of options for TAC settings from April 2025 (see '*Analysis of TAC options*' below), all of which are projected to support increasing the abundance of rock lobsters in CRA 2 and therefore supports setting a higher long term biomass management target subsequently. The 2024 rapid update assessment indicates that CRA 2 is currently above the default biomass management target and is estimated to be at approximately 1.54x B_R.

677. FNZ sought feedback in the recent consultation from tangata whenua and stakeholders on what they would consider an appropriate longer term management target for the CRA 2 fishery. FNZ will use this feedback to consider a longer-term biomass management target.

678. A further consideration for setting a new longer term biomass management target is the socio-economic impact (which includes both costs and benefits), including the way and rate of achieving a higher biomass management target (i.e., what management actions and timeframes are used to move the stock to the

[123] Andrew & MacDiarmid (1991)
[124] Shears & Babcock 2004; Doheny et al., 2023.
[125] Dromgoole, 1964.

desired biomass level). While setting a longer-term biomass management target greater than B_R for CRA 2 would seek to address ecological concerns within the QMA, there are also social, cultural, and economic considerations that need to be addressed when setting a longer-term biomass management target and when choosing a way and rate towards that target.

679. Moving the stock to a greater biomass management target over a shorter time frame would require a higher rate of biomass increase, and therefore likely a more significant constraint on utilisation would be necessary. This constraint would impact participants in the commercial fishery (for example fishers, LFRs, and exporters) and recreational fishers. In contrast, moving the stock to a greater biomass over a longer time frame would likely require a lower rate of biomass increase, which would likely place a lower constraint on utilisation.

680. For the TAC options proposed, FNZ has assumed a provisional biomass management target of 2x B_R with the best available information (the 2024 rapid update) projecting CRA 2 biomass to increase under all proposed TAC options over the next four years (depending on the selected option, CRA 2 biomass is expected to be 1.8-1.95x B_R by 2028).

681. Should a higher biomass management target than 2 x B_R be chosen for CRA 2, it will take longer to reach that biomass. There is also increased uncertainty around the rate at which CRA 2 biomass will increase beyond our five-year projections (Figure 3) as growth over that period will be determined by future recruitment and environmental influences that cannot be accurately predicted this far out.

682. While a key objective of managing CRA 2 to a higher biomass management target is to bring the rock lobster population back to levels nearer to the biomass found in the ecosystem prior to the spread of urchin barrens, it is impossible to predict how this biomass will perform under current environmental conditions, which have changed substantially since the 1960s (due to factors including climate change and coastal development). Consequently, it is possible that managing rock lobster to a higher biomass would not result in a rock lobster biomass and population size structure that is sufficient to prevent the formation or reduce the extent of existing urchin barrens in CRA 2.

683. This uncertainty must be considered when evaluating the potential ecological, social, cultural, and economic consequences of any management decision. For this reason, taking a stepwise approach towards increasing the stock biomass could be rationalised. That is, FNZ considers there is merit in setting a moderately increased long term biomass management target initially, before looking to increase the long-term biomass management target even further once the initial target has been achieved.

684. An upcoming stock assessment in 2025 will further inform the development of new CRA 2 management procedures that will be designed to maintain the stock biomass at or around a new biomass management target level. FNZ intends to have this new biomass management target, and associated management procedures, for CRA 2 in place by April 2026.

Proposed spatial closure

Rationale

685. Spatial management (which can include temporary, seasonal, and permanent closures to fishing) is used extensively in natural resource management to address sustainability and biodiversity issues, but also to optimise yields, address conflict between commercial and non-commercial fishers, protect key parts of the life cycle of harvested species, and protect key habitats.[126]

686. Within CRA 2, the inner Hauraki Gulf[127] (FNZ has defined the inner Hauraki Gulf as the waters south of a straight line that extends from the southern boundary of the Cape Rodney-Okakari Point Marine Reserve to Port Jackson Bay, top of the Coromandel Peninsula[128]; Figure 2) has been identified as an area where rock lobster abundance is low[129] and the lack of natural predators of sea urchins, including rock lobster, has contributed to a significant adverse effect on the ecosystem. Specifically, large areas of kelp forest have been replaced by extensive areas of urchin barrens. Urchin barrens have been identified in other locations across CRA 2 but are known to be particularly prevalent within the Hauraki Gulf.

687. FNZ considers the low rock lobster biomass in the inner Hauraki Gulf to be both an issue of sustainability for this part of the CRA 2 fishery (particularly for areas more easily accessed by recreational and customary fishers) and an issue of biodiversity, because of the contribution that rock lobsters make towards naturally controlling the abundance of urchins and therefore the formation of urchin barrens. Rock lobster are now frequently described by some scientists and in the media as being functionally extinct in the Hauraki Gulf,[130] with the implication that they are so scarce that they are no longer able to fulfil their ecological function as predators of urchins on coastal rocky reefs (discussed further in Part 4 '*Urchin barrens*').

688. Within the inner Hauraki Gulf, there are a number of spatial management measures either planned or already in place that protect rock lobster from harvest. These include full no-take marine reserves (at Tāwharanui, Waiheke Island, and Long Bay) and a section 186A temporary closure around Waiheke Island (Figure 2). Rock lobster potting is also prohibited within a number of submarine cable and pipeline protection areas (although there is limited rock lobster habitat within these areas). Additionally, the Hauraki Gulf / Tīkapa Moana Marine Protection Bill proposes seven new High Protection Areas (**HPA**s) within this inner Hauraki Gulf area.[131]

689. FNZ considers that the current situation in the inner Hauraki Gulf (high prevalence of urchin barrens and a low abundance of rock lobster) could warrant additional spatial measures to assist:

    a) rebuilding the rock lobster population in the inner Hauraki Gulf to a level that allows this species to fulfil its ecosystem function as a predator of urchins within this area; and

    b) rebuilding the rock lobster population to a level that supports a sustainable fishery in this area.

690. Consequently, FNZ has sought feedback on a proposal to close the inner Hauraki Gulf (Figure 2) to commercial and recreational rock lobster harvest.

691. FNZ considers that the proposed spatial closure would complement any modification of the CRA 2 TAC settings, to ensure that rock lobster biomass can increase within the Hauraki Gulf to a level that allows this species to fulfil its ecosystem function as a predator of urchins.

692. This spatial closure would be implemented under section 11 of the Act, which can apply to both recreational and commercial fishers and may be put in place to ensure sustainability. A section 11 closure would not prevent customary fishing authorisations being issued by Tangata Kaitiaki.[132]

693. The best available scientific information indicates that the implementation of no-take marine protected areas is an effective means to rebuild the abundance of urchin predators (including snapper and rock lobster) and reduce urchin abundance. There are currently no examples of this type of restoration occurring outside of full no-take marine protected areas.[133]

[126] Dichmont et al., 2013.
[127] The Hauraki Gulf Marine Park Act 2000 defines the Hauraki Gulf as the coastal marine area on the east coast of Auckland region and Waikato region.
[128] This definition aligns with Option B2 that was consulted on.
[129] Miller et al., 2023; Macdiarmid et al., 2013.
[130] Macdiarmid et al., 2013.
[131] New marine protections in the Hauraki Gulf/Tīkapa Moana
[132] Authorised under the Fisheries (Kaimoana Customary Fishing) Regulations 1998 or regulations 50 -52 of the Fisheries (Amateur Fishing) Regulations 2013.
[133] Doheny et al., 2023.

694. To address the low abundance of rock lobster in the inner Hauraki Gulf, FNZ is proposing a rock lobster-only fishing closure. FNZ considers this approach will complement the current network of already established and proposed no-take marine protected areas (marine reserves and HPAs) in the inner Hauraki Gulf, to protect urchin predators including rock lobster, packhorse rock lobster, and snapper within those areas.

695. At the wider Hauraki Gulf scale, there is evidence that existing management measures in the snapper (SNA 1) fishery have proved successful at rebuilding snapper biomass (FNZ – Plenary, 2024). This trend is expected to continue over time, resulting in a snapper population structure that is increasingly capable of contributing to urchin predation throughout the Hauraki Gulf. The packhorse (PHC 1) fishery is considered likely to be at or above the biomass management target and unlikely to be overfished (see the packhorse rock lobster chapter in the November 2024 Fisheries Assessment Plenary).

696. While the proposed large-scale closure of commercial and recreational rock lobster harvest would be the first of its kind in NZ, rock lobster populations have been known to respond positively to reductions or cessation in fishing pressure, both in CRA 2 and elsewhere (i.e. TAC reductions leading to recent biomass increases in CRA 2 and increases CRA 7 and CRA 8 since early 2000s; increases in rock lobster abundance and size within marine reserves). Consequently, FNZ considers the proposed closures are likely to be the most effective tool available in the short term to address low rock lobster abundance in the inner Hauraki Gulf.

697. In contrast, there is uncertainty around the effectiveness of large rock lobster only fishing closures for addressing the prevalence of urchin barrens, as our experience and understanding of successful barrens restoration is almost exclusively from full no-take marine protected areas. Despite this uncertainty, FNZ considers that this closure will result in increased rock lobster abundance thereby providing a greater opportunity for rock lobster to fulfil its role as a predator of urchins and to contribute to addressing urchin barrens in the Hauraki Gulf area of CRA 2.

Existing and proposed spatial management measures (including closures) in CRA 2

698. There are no section 11 area closures currently in place for rock lobster in CRA 2.

699. There are several customary closures within CRA 2 that have been implemented under the Act including mātaitai reserves, taiāpure, and section 186A temporary closures (listed in Part 2 '*Mātaitai reserves and other customary management tools*'). FNZ recognises customary management areas are important tools for tangata whenua to manage their fisheries in a way that best fits their rohe moana.

700. There are eight marine reserves[134] within CRA 2 (listed in Part 3 '*Assessment of stock proposals against section 11 of the Act*') where harvest of all marine species is prohibited.

701. The Hauraki Gulf Marine Park[135] is, for the most part, situated within CRA 2. Within CRA 2, twelve closures are proposed as part of the Hauraki Gulf / Tīkapa Moana Marine Protection Bill[136] that will prohibit harvest of rock lobster harvest. These are:

a) Mokohīnau Islands High Protection Area
b) Te Hauturu-o-Toi / Little Barrier Island High Protection Area
c) Slipper Island / Whakahau High Protection Area
d) Cape Colville High Protection Area
e) Aldermen Islands / Te Ruamahua (north) High Protection Area
f) Aldermen Islands / Te Ruamahua (south) High Protection Area
g) Kawau Bay High Protection Area
h) Tiritiri Matangi High Protection Area
i) The Noises High Protection Area
j) Rangitoto and Motutapu High Protection Area
k) Pakatoa and Tarahiki / Shag Island High Protection Area
l) Motukawao Islands High Protection Area

Spatial characteristics of the CRA 2 fishery within the inner Hauraki Gulf

702. The best available information regarding the recreational harvest of rock lobster in CRA 2 comes from recreational boat ramp sampling and National Panel Surveys (**NPS**).[137] Recent boat ramp sampling data

[134] Marine reserves are not fisheries management tools, but are included here as examples of area restrictions present within CRA 2.
[135] Defined in the Hauraki Gulf Marine Park Act 2000.
[136] Progress of the Bill can be found here and a copy of the Bill is available here.
[137] Maggs et al., 2024.

suggests that recreational rock lobster harvest (fish per trip) within the inner Hauraki Gulf has progressively declined since 2011/12 (see Figure 8).

703. Survey data also suggests that:

a) The abundance of lobster in the inner Hauraki Gulf is lower than in other areas in CRA 1 and CRA 2.

b) The number of dive and snorkelling trips targeting reef species (including rock lobster) has declined across CRA 2 over time (see Figure 9). Notably, survey data indicated a decline in the number of reported trips in the inner Hauraki Gulf, which is the area in which over half of the recreational effort in FMA 1 takes place.

704. s9(2)(b)(ii) [redacted]

The proposed closure

705. There is consensus among marine scientists that spatial closures of areas to rock lobster harvest will be an effective measure to increase the overall biomass and abundance of large rock lobster, that in turn may address urchin barrens.

706. FNZ is proposing a section 11 spatial closure within the inner Hauraki Gulf (Figure 2), with two slightly varied designs; Option B2 and Option B3.

707. FNZ considers that the proposed closure should complement any modification of CRA 2 TAC settings to ensure that, within the Hauraki Gulf, rock lobster biomass can increase to a level at which this species can fulfil its ecological role as a predator of urchins, naturally controlling the abundance of sea urchins and therefore the formation of urchin barrens.

708. FNZ acknowledges that closing the inner Hauraki Gulf will affect some commercial CRA 2 fishers. However, this is unlikely to restrain their ability to fish in other areas of CRA 2 where almost all effort and catch within the CRA 2 QMA occurs.

709. FNZ considers that the decline in recreational harvest of rock lobster from the inner Hauraki Gulf (both trips and catch) is a concerning trend, implying a reduction in the abundance of rock lobster. FNZ therefore considers that closing this area to both commercial and recreational harvesting of rock lobster is an appropriate response.

710. It is envisioned that this proposed closure would be in place until such a time that the biomass and population structure of rock lobster in the inner Hauraki Gulf has risen to a level that:

a) allows this species to fulfil its ecosystem function as predators of urchins within this area; and

b) can support a sustainable fishery.

711. Ecological monitoring of no-take marine protected areas within CRA 2 suggests it may take 15 or more years for ecological function to be restored in a full no-take marine reserve.[138] However, the time frame for rebuilding rock lobster biomass in a rock lobster-only closures within New Zealand is unknown, as is the impact this will have on the prevalence of urchin barrens.

712. If implemented, FNZ proposes to:

a) undertake the monitoring required to sufficiently understand the ecological and fisheries consequences of the closure; and

b) review the efficacy of and continued need for this proposed closure after 10 years.

713. FNZ considers that an appropriate ecological baseline for the inner Hauraki Gulf, against which future responses to management can be assessed, is provided by existing and ongoing studies, which include surveys of rock lobster and urchin distribution and population structure and the mapped distribution of urchin barrens across the inner Hauraki Gulf (see Part 4, '*Summary of urchin barren work programme to date*').

[138] Babcock et al, 2010; Shears & Babcock, 2003; Leleu et al., 2012.

Additional figures

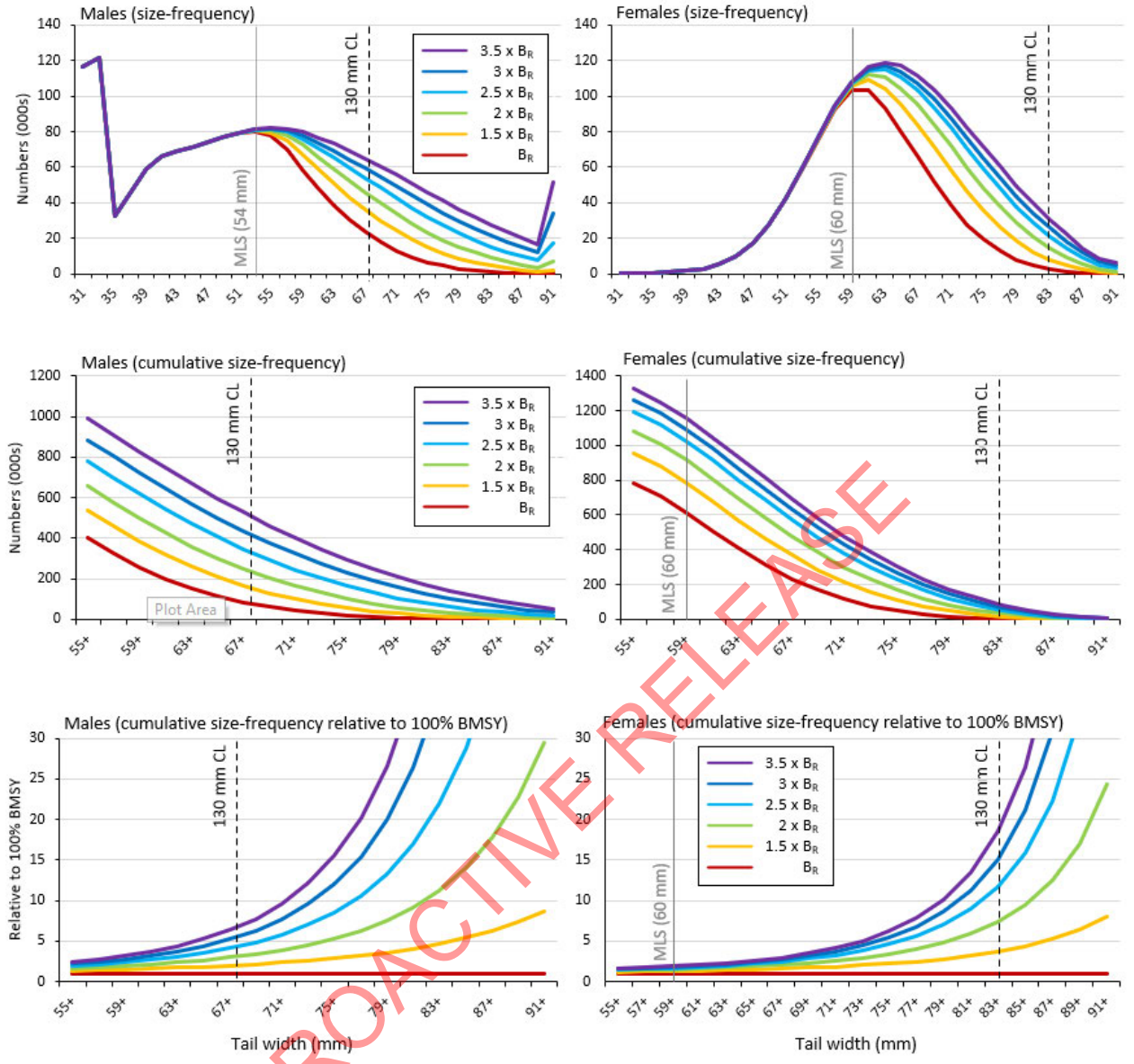

Figure 7: Predicted numbers of male (left) and female (right) rock lobster in CRA 2 under different biomass management targets. The 1.5x B_R data provides an indication of the current CRA 2 population structure that is estimated to be at 1.54 B_R. The minimum legal-size limits for males (54 mm tail width) and for females (60 mm) are indicated by grey vertical lines. Tail widths that equate to 130 mm carapace length (CL)[139] for each sex are indicated by dashed vertical lines, which is the size at which rock lobster are considered capable of eating any size urchin. The upper panels show frequency of large (≥130 mm CL) rock lobster. The middle panels show cumulative frequency of large rock lobster, and the lower panels indicate cumulative abundance of different size classes that are larger than each size class, relative to B_R which is the current interim biomass management target.

[139] Lobster carapace length is measured from the back of the eye socket to the end of the carapace, parallel to the midline.

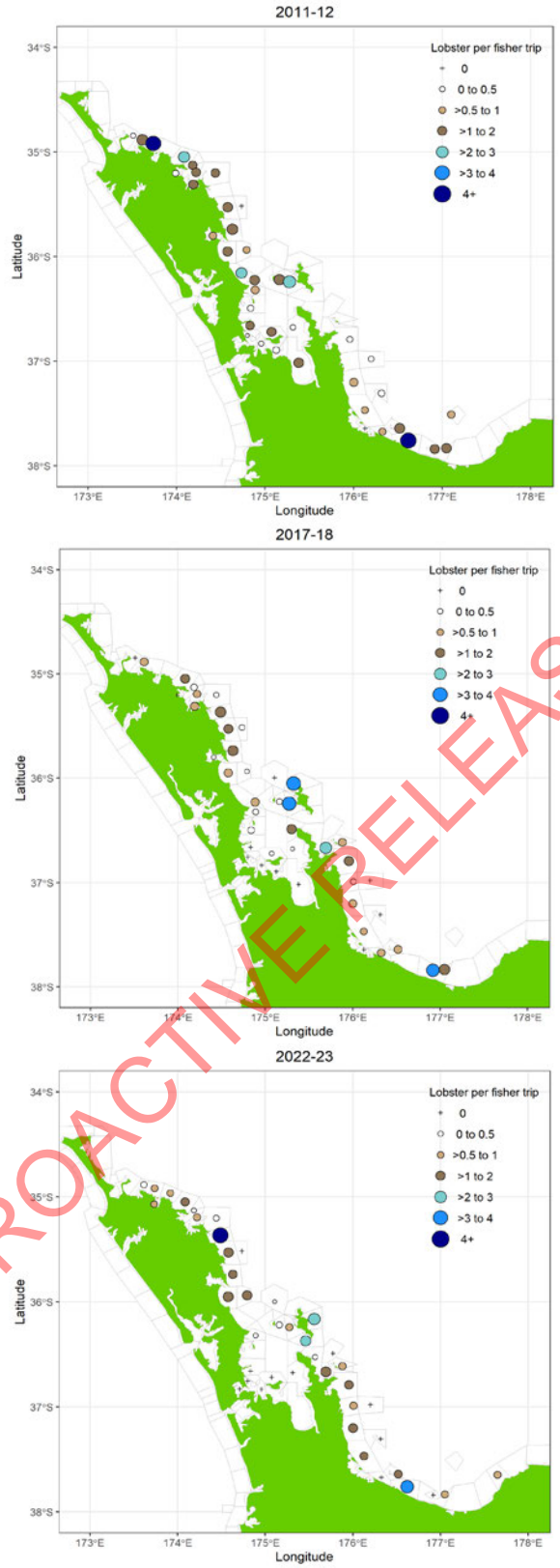

Figure 8: Average number of individual rock lobsters caught per recreational dive/snorkel fishing trip. Data taken from additional boat ramp sampling conducted in conjunction with the NPS during survey years. This provides an indication of the relative abundance in those areas where targeting of rock lobster took place, showing the abundance of lobster in the inner Hauraki Gulf appears lower than in other areas in CRA 1 and CRA 2, and increasingly so over the time series.

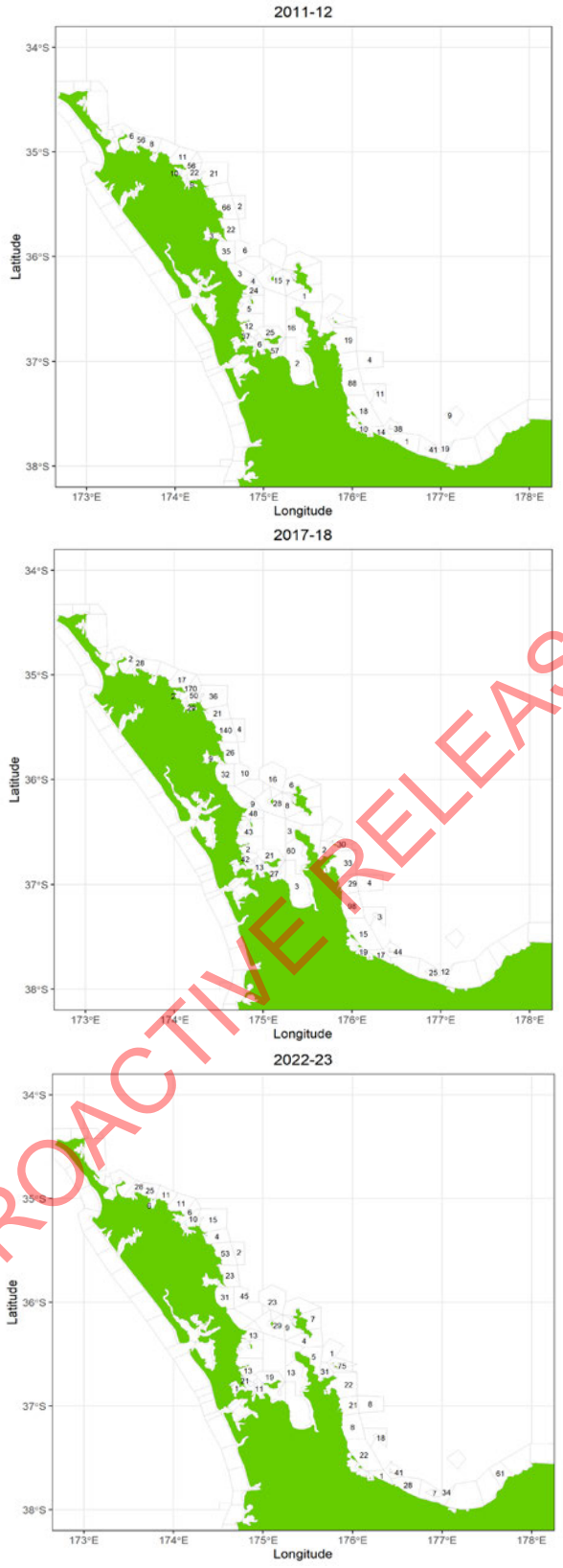

Figure 9: Number of trips reported by interviewed divers/snorkelers targeting reef species (including rock lobster, packhorse rock lobster and kina). Data taken from additional boat ramp sampling conducted in conjunction with the NPS during survey years. The figures denote the number of trips where fishers reported diving/snorkelling for reef species, from which rock lobster catch rates estimates have been calculated (Figure 8).

Urchin barrens

714. Urchin barrens are sea urchin dominated areas of rocky reef that would normally support healthy kelp forest but have little or no kelp due to overgrazing by sea urchins.[140]

715. Rock lobsters are ecologically important predators in New Zealand's rocky reef ecosystems. The best available information indicates that predators, including rock lobsters, when present at sufficient abundance and size structure can have a significant role in mitigating sea urchin barrens,[141] which are less biologically diverse environments than the kelp forest habitats they replace.

716. *Evechinus chloroticus* (**kina**) is the dominant barren-forming urchin species in New Zealand, although the subtropical urchin *Centrostephanus rodgersii* (**long-spined urchin**) has recently been reported as increasing in parts of northern New Zealand, forming extensive urchin barrens on offshore Islands including in the Poor Knights Marine Reserve.[142] FNZ recognises that barrens caused by the long-spined urchin are an increasing issue and rock lobster and packhorse rock lobster (*Sagmariasus verreauxi*) are potentially the only predators that can consume the largest long-spined urchins in New Zealand.[143]

717. Urchin barrens are not ubiquitous across rocky reefs and tend to be restricted to different depth zones determined by environmental conditions. On moderately exposed coasts, the shallow reef (0–3 m water depth) tends to be occupied by brown macroalgae,[144] intermediate depths (3–8 m water depth) are where urchin barrens normally occur (especially those caused by kina), and deeper reefs (>8 m water depth) are dominated by kelp forests (*Ecklonia radiata*).[145] Grazing of macroalgae and other invertebrates by *C. rodgersii,* the long-spined urchin, tends to result in barrens forming at greater depths, commonly below 10-12 m. On more exposed reefs, barrens form on deeper sections of reef (12–20 m), while in more sheltered conditions barrens are restricted to shallower depths.[146] Urchin barrens tend to not form in very sheltered areas that experience high sediment loads, or areas with freshwater inputs or excessive wave action.

718. Multiple factors can cause kelp decline (including sedimentation, disease, and marine heatwaves). However, in northeastern New Zealand, fishing of top reef predators is considered to be a key factor behind the proliferation of kina, resulting in extensive kelp loss and the formation and expansion of urchin barrens.[147] Our understanding of this relationship is based on observations of the concurrent recovery of kelp and of urchin predators (including snapper, *Chrysophrys auratus,* and rock lobster) inside marine reserves in north-eastern New Zealand,[148] and the positive effect of protection from fishing on the abundance of kelp and predators inside seven marine reserves from the Three Kings Islands to the Bay of Plenty.[149]

719. The loss of kelp forests in coastal ecosystems negatively impacts fisheries productivity, biodiversity, and ocean carbon sequestration. Urchin barrens support a far lower level of biodiversity relative to kelp forests due to the loss of ecosystem services that macroalgae provides. These include providing complex three-dimensional habitat that fish and shellfish feed and shelter in and the provision of organic matter that contributes to productivity both on rocky reefs where kelp grows, and in non-reef habitats to which algal detritus is transported.[150] Furthermore, the loss of kelp forests and associated biodiversity may make these reefs less resilient to the impacts of climate change,[151] which would likely impact the productivity of marine ecosystems on the north-east coast (FMA 1) of New Zealand.

720. Once established, urchin barrens are stable and persistent. Studies have shown that urchin abundance must be reduced to very low levels (<1 m^2) for urchin barrens to revert to a kelp or macroalgae dominated habitat.[152]

721. While urchin barrens are known to be common across the coastal reefs of much of north-east New Zealand, there is no comprehensive record or map of their distribution to support tangata whenua and stakeholder engagement or inform management decision-making. An urchin barren mapping project, funded by FNZ in 2024 (see Part 4 '*Summary of urchin barren work programme to date*'), is currently underway and is

[140] Doheny et al., 2023.
[141] FNZ's working definition, for the purpose of identifying those areas that are of concern, is "sea urchin dominated areas of rocky reef that would normally support healthy kelp forest but have little or no kelp due to overgrazing by sea urchins" (taken from Doheny et al, 2023).
[142] Sweatman, 2021.
[143] Balemi & Shears, 2023.
[144] Fucalean algae which belongs to the order *Fucales* and are commonly found in marine environments.
[145] Choat & Schiel, 1982; Shears & Babcock, 2004.
[146] Shears et al., 2004.
[147] 2024 Aquatic Environment Biodiversity Report, Chapter 13: Trophic and Ecosystem Level Effects – in review (and references within).
[148] Babcock et al., 1999; Shears & Babcock, 2003; and Leleu et al., 2012
[149] Edgar et al., 2017.
[150] Udy et al., 2019.
[151] Bernhardt & Leslie, 2013; Duffy et al., 2016.
[152] Filbee-Dexter & Scheibling 2014; Ling et al., 2015; Shears & Babcock, 2003.

expected to provide more detailed and up to date information on the distribution of urchin barrens, in waters between 2 m and 10 m water depth, between Cape Reinga and East Cape. The spatial dataset will act as a baseline to monitor future change or recovery and facilitate the management of fishing effects on urchin barrens. This may provide valuable information to help guide urchin barren management within CRA 2. The final results are expected in June 2025.

722. A literature review, conducted as part of this mapping project, has identified and collated records of urchin barren coverage across north-eastern New Zealand (including CRA 2). This includes studies conducted in the northern part of CRA 2 that are published in either peer-reviewed scientific journals or in university graduate student theses (see Table 14 and Figure 10). FNZ notes that the studies of urchin barren coverage included in this compilation have been conducted at different spatial scales, with each representing a snapshot at specific points in time. This review also does not include any information about the distribution of urchin barrens on reefs south of Te Whanganui-o-Hei/Cathedral Cove Marine Reserve (Hahei) in southern Hauraki Gulf. Consequently, caution should be exercised when inferring current urchin barren coverage across the whole of CRA 2.

723. Also, regarding the judicial review of sustainability decisions for CRA 1,[153] the High Court was satisfied that:

- Rock lobsters have an important ecological role in coastal ecosystems
- Their primary ecological role is as a predator in shallow water areas.
- In New Zealand, rock lobsters prey upon sea urchins/kina.
- Kina are an important herbivore on rocky reefs in north-eastern New Zealand because they can consume entire kelp forests and other seaweeds.
- Generally, the ecological role of rock lobsters as a predator influences the ecological role of the species they prey on.
- Where there are fewer rock lobsters, there is an increased population of kina, thereby increasing the grazing activity of kina, and resulting in the loss of stands of seaweed, particularly kelp forests, in coastal areas, described as a “trophic cascade”.
- There is strong evidence that trophic cascade has significantly contributed to the presence of kina barrens in the north-east of New Zealand, within both CRA 1 and CRA 2.
- There are other factors, such as water temperature, water depth, storm damage, sediment and kelp disease that may impact on the prevalence of kina barrens.

724. FNZ acknowledges the following uncertainties regarding urchin barren management:

- The relative contribution of other reef predators (such as snapper) on urchin populations is unknown.
- The biomass threshold and abundance of large rock lobsters required to enable rock lobster to meaningfully contribute as rocky reef predators, including helping mitigate urchin barren formation, is unknown.
- Limited understanding on the long-term impacts of climate change on kelp forest health and urchin barren formation.
- The contribution of other anthropogenic impacts, such as sediment load changes from land use, on urchin barren formation is unknown.

[153] The Environmental Law Initiative v Minister for Oceans and Fisheries [2022] NZHC 2969 [11 November 2022].

Table 14: Recent studies of urchin barren coverage within northern portion of CRA 2.

Location	Year studied	Estimated proportion of reef covered by urchin barrens	Publication
Mokohinau Islands	2019	Barren coverage 4% of shallow reef in 1978 and 26% of shallow reef in 2019.	Lawrence, K. (2019). Mapping long-term changes in reef ecosystems using satellite imagery. University of Auckland Thesis.
Te Hauturu-o-Toi/Little Barrier	2019	Urchin barrens covered 32.72% of reef.	Dartnall, L. (2022). The extent of kina barrens over time at Hauturu-o-Toi and the Noises Islands. University of Auckland Thesis.
Cape Rodney to Okakari Point Marine Reserve	2019	Urchin barrens covered 2% of shallow reef.	Lawrence, K. (2019). Mapping long-term changes in reef ecosystems using satellite imagery. University of Auckland Thesis
	2006	Urchin barrens covered 44.7 hectares in 1977, 4.5 hectares in 2006.	Leleu, K., Remy-Zephir, B., Grace, R., & Costello, M. J. (2012). Mapping habitats in a marine reserve showed how a 30-year trophic cascade altered ecosystem structure. Biological Conservation, 155, 193-201.
Tawharanui	2006	Tāwharanui (38% barren coverage on shallow reefs at fished sites and 2% barren coverage on shallow reefs at marine reserve sites) and Leigh (39% barren coverage on shallow reefs at fished sites and 1% barren coverage on shallow reefs at marine reserve sites)	Kerr, V. C., Grace, R. V., & Shears, N. T. (2024). Estimating the extent of urchin barrens and kelp forest loss in northeastern Aotearoa, New Zealand. New Zealand Journal of Marine and Freshwater Research, 1–22.
Noises Islands	2019	Urchin barrens covered 49.5% of reef.	Dartnall, L. (2022). The extent of kina barrens over time at Hauturu-o-Toi and the Noises Islands. University of Auckland Thesis.
Long Bay	2020	No urchin barrens observed at fished or reserve sites.	Kulins, S. (2021). Investigating the ecological effects of Long Bay-Okura Marine Reserve. University of Auckland Thesis.
Te Whanganui-o-Hei/Cathedral Cove Marine Reserve (Hahei)	2014	20% coverage of reef outside of the reserve. 5% coverage of reef inside the reserve.*	Kibele, J., & Shears, N. (2017). Mapping rocky reef habitats on the eastern Coromandel Peninsula with multispectral satellite imagery (No. 12557259). Hamilton, New Zealand: Waikato Regional Council.
	2015	Urchin barren coverage not quantified, observed at some sites. Appears *Carpophyllum flexuosum* replacing barrens.	Haggitt, T. (2017). Te Whanganui a Hei Marine Reserve Habitat Mapping, Report prepared by eCoast for Department of Conservation.
Waiheke	2016	Urchin barren coverage not quantified, observed at some sites.	Haggitt, T. (2016) Ecological survey of Waiheke Island north-west coastline, report prepared by eCoast for Auckland Council and Hauraki Gulf Conservation Trust.

* Urchin barren coverage was combined with turfing algae coverage for analysis.

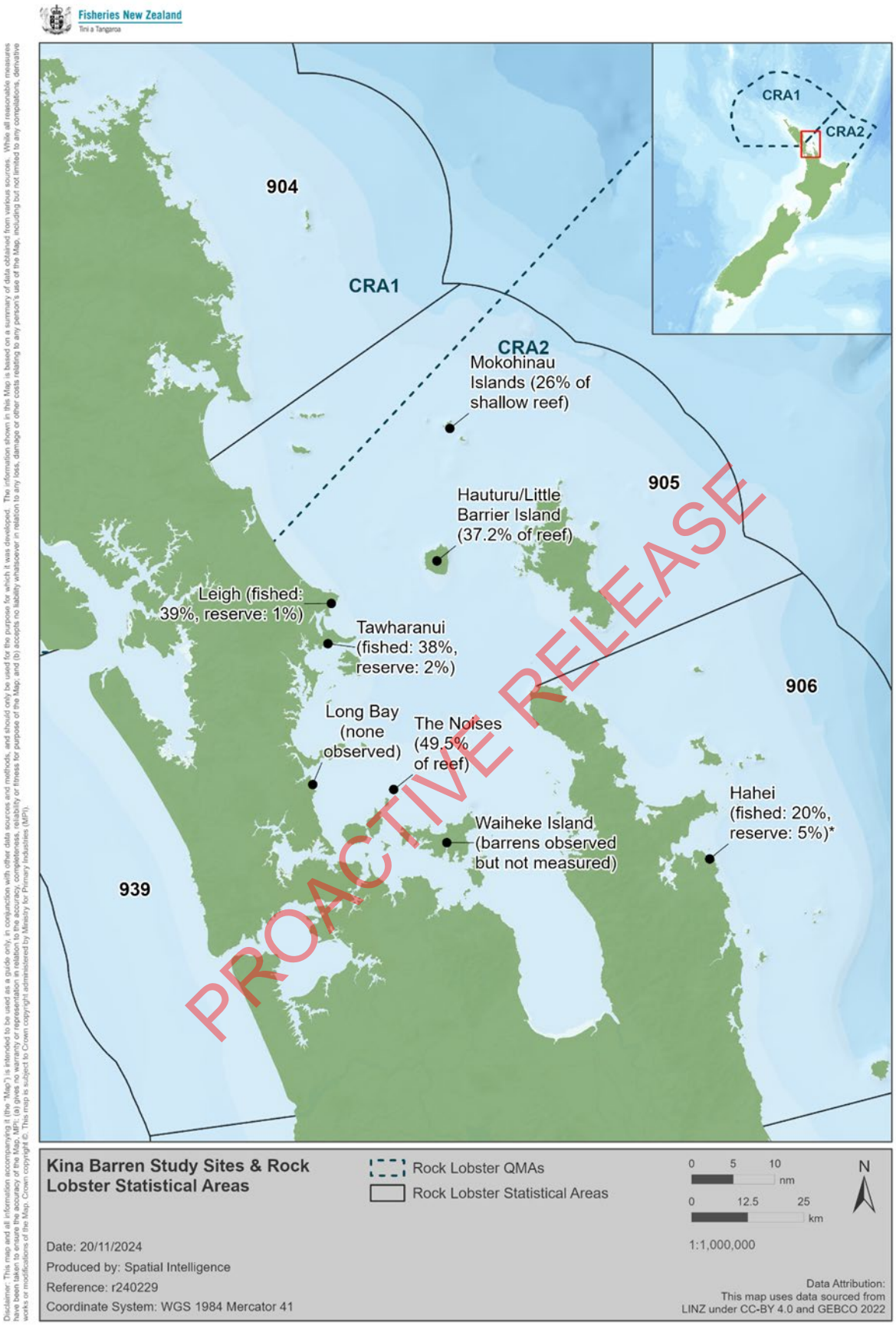

Figure 10: Map of coastal reef locations within the northern portion of CRA 2 where known urchin barrens occur, that have been compiled by an FNZ literature review (see Table 14).

725. FNZ has already implemented a range of management measures to facilitate urchin removals, including increasing the recreational daily limit for urchins in SUR 1A and SUR 1B,[154] and authorising a new special permit purpose and a new traditional non-commercial fishing use to provide for the culling, translocation, and removal of urchins (see '*Summary of urchin barren work programme to date*' below).

726. Removing urchins is a management action that can accelerate kelp forest restoration at local scales, but it does not address underlying ecosystem imbalances which contribute to the formation of urchin barrens. Evidence from marine reserves in northeastern New Zealand has shown that increased abundance of large urchin predators (including rock lobster and snapper) can assist in reversing urchin barrens and support the re-establishment of kelp forest habitat. Studies have shown that recovery of kelp forest habitat within no-take reserves can take decades.[155] However, it is thought this could occur more quickly if combined with urchin removals. A recent study in the Hauraki Gulf that involved removing ~403,000 individual kina and 166 long-spined urchins from just 7.1 hectares of shallow reef, led to the recovery of a kelp forest within two years of the removal taking place. However, it should also be noted that this exercise was incredibly labour intensive and that the ecological benefits are likely to be temporary as urchin abundance had begun to increase 2 years post removal.[156]

727. In addition to consuming sea urchins, the presence of rock lobster and snapper can influence sea urchin grazing behaviour. A study in northern New Zealand found that inside marine reserves in the presence of predators such as rock lobster and snapper, sea urchins are more likely to exhibit cryptic behaviour, where they remain in cracks and crevices and consume already detached pieces of drifting algae (instead of roaming openly across the reef, actively seeking out algae to consume).[157]

728. The relative importance of rock lobster as a predator of urchins compared to other species, such as snapper, has not been quantified. Urchin predation by fish such as snapper has been linked directly to the predator mouth size (i.e., how wide snapper can open their mouths), with larger fish capable of consumer larger urchins. Urchin predation by rock lobster is less size dependant because rock lobster can use their claws to pry large urchins from rocks and open them via the urchins' unprotected mouthparts. However, laboratory-based feeding experiments have shown that only lobster with a carapace length greater than 130 mm are capable of feeding on large kina (>90 mm test diameter).[158] In CRA 2, 130 mm carapace length equates to 83 mm tail width (**TW**) for females and 68 mm TW for males (Figure 7, see Part 4 '*Additional figures*').[159]

729. It is likely that the best way to ensuring rock lobster are able fulfil their ecological role as a key predator of urchins is to maintain an appropriate overall abundance of large rock lobster. While there is currently little information to identify what constitutes an 'appropriate overall abundance' of rock lobster to reduce or reverse the spread of urchin barrens, it is likely to be higher than the number of large lobster currently present in urchin barren dominated habitats.

730. Rock lobster has been described as being functionally extinct in the Hauraki Gulf, meaning they are no longer large or abundant enough to play an ecological role in controlling urchin densities in the area.[160]

731. FNZ acknowledges that fisheries management responses to address urchin barrens should consider measures to raise the abundance of additional urchin predators apart from rock lobster (including snapper and packhorse rock lobster).

732. The loss of ecosystem services and biodiversity associated with the replacement of kelp forest with urchin barren can be viewed as an adverse effect on the aquatic environment. Given evidence that fishing of urchin predators contributes to urchin barren formation, managing fishing under the Act must include consideration of this effect by avoiding,[161] remedying, or mitigating urchin barrens.[162]

733. Guidance on whether remedying of this adverse effect is required over mitigation or avoidance is not provided in the Act and has not been provided by the Courts. While 'avoiding' is not a reasonable management response to the existing urchin barrens as they have already formed, you have discretion as to

[154] The recreational daily limit is a combined limit for kina (*Evechinus chloroticus*) and the long-spined urchin (*Centrostephanus rodgersii*)
[155] Babcock et al., 2010; Shears & Babcock, 2003; and Leleu et al., 2012.
[156] Miller et al., 2023.
[157] Spyksma et al., 2017.
[158] Andrew & MacDiarmid, 1991.
[159] Webber et al., (2024).
[160] Macdiarmid et al., 2013.
[161] 'Avoid' is not defined in the Act, however the Courts have considered similar provision contained in section 5(2)(c) of the Resource Management Act 1991 and defined 'avoiding' as 'not allowing' or 'preventing the occurrence of'. Definitions of 'remedy' and 'mitigate' were not provided by the Courts.
[162] Section 8(2)(b), Fisheries Act 1996.

whether mitigating or remedying existing urchin barrens is required. FNZ has identified mitigation[163] of existing urchin barrens and avoiding the formation of new urchin barrens as an appropriate short-term measure.

Summary of urchin barren work programme to date

734. It is important to note that potential sustainability measures for rock lobster are not intended as the sole measure to address urchin barrens. FNZ acknowledges a comprehensive set of measures is required to respond to the causes and effects of urchin barrens, these measures aim to:

- Reduce the number of urchins found in barrens to allow kelp to regrow, and
- Increase the abundance and efficacy of urchin predators (including but not limited to rock lobster) to provide for more predation of urchins.

735. In addressing the effects of urchin barrens, a number of measures have been approved to facilitate removal of urchins from areas of concern. These include:

(a) An increase to the recreational daily limit for kina (combined *Evechinus chloroticus* and *Centrostephanus rodgersii*) in Fishery Management Area 1 from 50 kina per fisher per day to 150 kina per fisher per day.[164]

(b) Approval of a traditional non-commercial fishing use under regulation 52(1) of the Amateur Fishing Regulations to allow the taking, disposal, culling, or translocation of kina from traditional fishing grounds to manage the population of kina to maintain the balance of the ecosystem as a traditional non-commercial fishing use.

(c) Approval of a new special permit purpose to enable the removal of sea urchins for the management or prevention of urchin barrens.[165]

736. Additionally, measures to increase rock lobster abundance in the CRA 2 region have already been implemented and include:

(a) Although not a response to the issue of urchin barrens, in 2018 the TAC for CRA 2 was reduced from 416.5 tonnes to 173 tonnes, including a 60% reduction in the TACC: from 200 tonnes to 80 tonnes. This cut was made in response to address critically low levels of abundance in the fishery and was projected to double the abundance within four to eight years. In 2020 the recreational daily limit was reduced from six to three rock lobsters per fisher per day to help ensure that recreational catch did not exceed the 34-tonne annual recreational allowance.

(b) In August 2024, you approved a two-year fishing closure at Waiheke Island to help increase the abundance of rock lobster.[166]

737. FNZ has also sought input and participation from tangata whenua and undertaken pre-engagement with stakeholders on a range of measures both specific to rock lobster and wider measures. This included:

(a) In July and August 2023, held a series of management workshops with the National Rock Lobster Management Group and the joint applicants on the 2022 CRA 1 Judicial Review (ELI, Forest & Bird, and Te Uri o Hikihiki Hapū). The workshops were to discuss the management tools identified in paragraph 168 above for the purpose of facilitating input from tangata whenua and stakeholders regarding the costs and benefits of these proposed tools and to identify additional tools they may propose for consideration.

(b) A hui in May 2024 (hosted by you) to engage with the local community in Northland to discuss initiatives and management tools to reduce the spread and extent of urchin barrens.

(c) FNZ attended Iwi Fisheries Forums in Northland on multiple occasions to provide information on research undertaken and progress with the wider urchin barren work programme and to gain input on rock lobster management measures.

[163] To mitigate urchin barrens, there is likely a continuum of different management outcomes which range from the restoration of urchin barrens on a large spatial scale to some measure of reduction in the extent of urchin barrens in parts of the region or reducing the expansion of urchin barrens.
[164] Review of the recreational daily kina limit in fishery management area 1 (the east coast of the upper North Island)
[165] Enabling the removal of sea urchins for the management or prevention of urchin barrens
[166] Temporary fishery closures in the Hauraki Gulf | NZ Government (mpi.govt.nz)

738. FNZ has contracted a range of research and facilitated workshops to assist in identifying knowledge gaps regarding the causes and distribution of urchin barrens[167] and has now begun research to begin filling these gaps. Relevant research and work include:

(a) In 2023, FNZ funded a literature review to better understand the current state of knowledge informing the trophic cascade hypothesis and fishing pressure in relation to sea urchin barren habitat on coastal rocky reef systems within New Zealand.[168]

(b) During 2023 and 2024, FNZ participated in a Sustainable Seas National Science Challenge case study to develop a decision-making tool for evaluating management approaches to urchin barrens.

(c) In March 2023, FNZ facilitated a national kina barren science workshop to prioritise science needs to address sea urchin barrens in fisheries management decisions.[169]

(d) In 2024, FNZ contracted research project ZBD2023-03: Summarising and updating knowledge on the distribution of urchin barrens in key regions of New Zealand. This project is expected to collate existing data on the spatial and temporal extent of sea urchin barrens in New Zealand (mapping project), identify information gaps, and collect additional data for the upper North Island (Cape Reinga to East Cape) to inform management and monitor future change. This could inform further fishery management measures in future.

Information on biology, interdependence, and environmental factors

739. This information supports FNZ's assessment of the proposals against section 13 of the Act in 'Part 3: Assessment against *relevant legal provisions*'. Information in this section was derived from the CRA 2 chapter of the November 2024 Fisheries Assessment Plenary and the Aquatic Environment and Biodiversity Annual Review (**AEBAR**), except where cited otherwise.

Interdependence of stocks

740. Information on the role rock lobster play in the prevalence and distribution of sea urchin barrens is discussed above in Part 4 '*Urchin barrens*'.

Biological characteristics

Distribution and movement

741. Rock lobsters are mainly found on reef habitat and sometimes on sandy seafloor down to 200 m water depth.

742. Macroalgae (kelp) increases structural complexity and provides habitat and food for prey species of rock lobster. Kelp is also consumed directly by rock lobster.[170]

743. Adult rock lobsters are generally considered to have a small home range once settled (i.e., less than 5 km). However, they also exhibit patterns of movement at various life stages. This includes movement into shallow water seasonally for moulting and mating, and females move to the edges of reefs to spawn their eggs. Some migrations consist of large numbers of rock lobsters moving together.

Growth, maturity, and reproduction

744. Although rock lobsters have not been aged, they are thought to be relatively long-lived. Individuals in Australia are considered to live at least 20 years.[171] Size at maturity varies between rock lobster stocks with 50% of CRA 2 females being potentially egg bearing in the mid 53 mm tail width class.

745. Female rock lobsters produce eggs once a year and can produce between 40,000 to 600,000 eggs in a single reproductive event, with larger females producing more eggs than smaller females.[172] Eggs incubate for 3 to 4 months on the underside of the female's tail, held in place by small hairs.[173]

[167] Doheny et al., 2023.
[168] Available at: AEBR 324 Fishery-induced trophic cascades and sea urchin barrens in New Zealand: a review and discussion for management (mpi.govt.nz)
[169] See section 8 in AEBR 324 Fishery-induced trophic cascades and sea urchin barrens in New Zealand: a review and discussion for management (mpi.govt.nz)
[170] MacDiarmid et al., 2013.
[171] Linnane et al., 2021.
[172] Green & Gardener, 2009.
[173] Kelly et al., 1999.

746. Mating occurs in autumn, with the eggs hatching in spring. Larval development can last 12 to 24 months and occurs far offshore.[174] Because of the long larval life of rock lobsters, the origins of larvae are difficult to determine. Larvae hatched in one area may be retained in that area by local eddy systems, carried to other areas by currents, or lost to New Zealand entirely. For most areas, larvae may originate a considerable distance from the settlement site.

747. A study which modelled the locations that rock lobster hatch and settle around New Zealand estimated that most rock lobster which hatch in CRA 2 become entrained in the East Cape and Wairarapa Eddies and settle downstream in CRA 3 and 4. However, rock lobster that settle in CRA 2 appear to originate from North Cape to Kaikōura (including CRA 1, CRA 2, CRA 3, and CRA 4).[175]

748. After the larval phase, puerulus settle on coastal rocky reef and less frequently on complex seaweeds and bryozoans. Rocky reef in shallow water less than 20 m deep[176] is critical settlement habitat for rock lobsters and provides the conditions and substrates key for kelp habitat in New Zealand.[177] Pueruli of rock lobsters use chemical cues associated with coastal waters to help locate settlement habitats.[178]

749. The time lag from puerulus settlement to recruitment in the CRA 2 stock assessment models (at 32–34 mm TW) was estimated to be shorter than the two to three years for CRA 3, depending on locality, based on an analysis of juvenile growth information from Gisborne Wharf and Stewart Island.[179]

750. Evidence from Australia suggests that kelp habitat is important for rock lobster settlement, and that declines in kelp habitat could negatively affect rock lobster productivity.[180] For example, in Tasmania juvenile rock lobster showed increased recruitment and survival in kelp compared to long-spined urchin barren habitat[181] and larger reefs with kelp appear critical to the recruitment of rock lobsters.[182]

751. In New Zealand, pueruli have been observed to detect and respond to both underwater sounds (acoustic cues) and substrate or chemical cues from different habitats, with seaweed and rock substrates increasing settlement and speeding up moulting.[183] Underwater sounds can provide orientation cues for pelagic crustacean larvae, expedite settlement and initiate settlement behaviour.[184]

752. Juvenile rock lobster are more vulnerable to predation in urchin barrens compared to kelp habitats during the day and potentially during dusk/dawn, but not during the night when they are typically active.[185] Kelp habitats also provide more of the preferred invertebrate prey for juvenile lobsters,[186] potentially increasing nutrition and growth, further research is required to confirm this relationship.

753. Recent analysis indicates a potential relationship between sea surface temperature and rock lobster recruitment, where relatively warm years were associated with poorer recruitment in northern regions.[187]

Predator-prey interactions

754. Rock lobsters are ecologically important predators in New Zealand's rocky reef ecosystems, where they can exert top-down regulation of prey populations.[188] They consume a broad range of prey, including molluscs, crustaceans, annelid worms, macroalgae, echinoderms, sponges, bryozoans, fish, foraminifera, and brachiopods.[189] They strongly prefer soft-sediment bivalves over rocky reef prey and make nocturnal foraging movements away from the reef.[190] Their feeding rates vary seasonally in relation to moulting and reproductive cycles.

755. Rock lobsters can also consume urchin. While rock lobsters prefer soft-sediment bivalves over urchins and consumption of sea urchins varies seasonally with moulting stage they are one of the few predators that can

[174] Bradford et al., 2014; Chiswell & Booth, 2008.
[175] Chiswell & Booth, 2008.
[176] Puerulus settlement takes place mainly in depths less than 20 m, but not uniformly over time or between regions. Settlement indices measured on collectors can fluctuate widely from year to year.
[177] Booth et al., 1991.
[178] Hinojosa et al., 2018.
[179] Roberts & Webber, 2022.
[180] Hinojosa et al., 2015; Hinojosa et al., 2018; Shelamoff et al., 2022.
[181] Hinojosa et al., 2015.
[182] Shelamoff et al., 2022.
[183] Stanley et al., 2015.
[184] Stanley et al., 2012.
[185] Hesse et al., 2016.
[186] Taylor, 1998.
[187] Roberts & Webber, 2024 – in review
[188] Pinkerton et al., 2008.
[189] MacDiarmid et al., 2013.
[190] Flood, 2021.

eat large sea urchins.[191] Laboratory experiments found that predation on large sea urchins is limited to large rock lobsters.[192]

756. Evidence from Australia suggests that rock lobsters of all sizes (including small lobsters: 65-109 mm carapace length) consume the long-spined sea urchin *Centrostephanus rodgersii* Although the size of long-spined urchins consumed by lobsters was not investigated by this study, they were found to be less prominent in the diet of lobsters sampled from the established urchin barren site suggesting that long-spined urchins in barrens may exceed the size suitable for rock lobster predation.[193]

757. In addition to consuming sea urchins, the presence of rock lobster and snapper can influence urchins indirectly. A study by Spyksma et al. (2017) in northern New Zealand found that increased presence of predators such as rock lobster and snapper inside marine reserves increases cryptic behaviour (hiding in crevices) by sea urchins.

758. The ecological role rock lobster plays in sea urchin abundance, and hence the occurrence of sea urchin barrens, is discussed further under the headings '*Spatial closures*' and '*Assessment of proposals against section 9 of the Act*'.

759. Predation on rock lobsters is known from a variety of fish species. Published scientific observations suggest octopus, rig, blue cod, grouper, southern dogfish, seals, and other rock lobsters are predators of rock lobsters.[194]

Environmental conditions affecting the stock

760. FNZ's assessment of the proposed options for CRA 2 against the environmental principles in section 9 of the Act which you must take into account when considering the CRA 2 TAC are discussed in Part 3 '*Assessment against relevant legal provisions, Assessment of the proposals against section 9 of the Act*'.

761. Rock lobster spend an extended time in the planktonic larval phase, swimming and drifting in the ocean for up to 24 months. Therefore, larvae hatched in one area may be retained in that area by local eddy systems, carried to other areas by currents, or lost to New Zealand entirely. For most areas, larvae may originate a considerable distance from the settlement site. The number of 'puerulus', the final planktonic developmental phase of rock lobster, that settle to the sea floor varies among areas and from year to year.

762. Puerulus settlement may be affected by environmental factors such as the amount of suitable habitat available, the persistence of storms, prevailing ocean currents, sea temperature, food availability, and predation. Large numbers of puerulus larvae also die before reaching suitable habitat, which is due in part to predation, but may also be a result of unfavourable environmental conditions.

763. Evidence from Australia suggests that kelp habitat may be critical to the settlement success of rock lobster (*Jasus edwardsii*) pueruli, providing important settlement cues, food, and refuge.[195] The same relationship has yet to be observed in New Zealand[196] and further research is needed to test this. However, given the similarity between ecosystems in Tasmania and New Zealand these potential relationships are important to consider for the management of rock lobster. Kelp does support both food sources and shelter for later life stages of rock lobster in New Zealand,[197] suggesting the health of coastal kelp forests is likely tightly linked to the health of the rock lobster population.

764. Information on variability in rock lobster growth, size at maturity, available abundance, mortality, and recruitment is incorporated into the stock assessments that inform rock lobster management.

Climate change

765. The ocean around New Zealand is, in some regions, warming at a rate well in excess of the global average.[198] While the extent to how this will impact the wider ecosystem is unknown, it can be expected that there will be an impact on rock lobster, including their spatial variability.

766. Recent assessment indicates a potentially negative relationship between sea surface temperature and rock lobster recruitment in northern New Zealand.[199] This work is provisional and requires further investigation, however this could be a significant development. Organisms such as rock lobsters are particularly

[191] Flood, 2021; Andrew & MacDiarmid, 1991.
[192] Andrew & MacDiarmid, 1991.
[193] Smith et al, 2023.
[194] MacDiarmid et al., 2013.
[195] Hinojosa et al., 2015; Hinojosa et al., 2018; Shelamoff et al., 2022.
[196] Stanley et al., 2015; Hesse et al., 2015.
[197] MacDiarmid & Kelly, 2013.
[198] Sutton & Bowen, 2019.
[199] Roberts & Webber, 2024 – in review

susceptible to ocean acidification because it lessens their ability to lay down calcified body structures during each moult.[200] Changes to ocean circulation patterns also have the potential to affect the recruitment of the rock lobster, given the extended larval stage. Extended periods of extremely warm ocean temperatures known as marine heatwaves are increasing in intensity and frequency across the globe with trends predicted to accelerate under future climate change. New Zealand experienced several extended periods of marine heatwaves in recent years,[201] causing a range of impacts including temporary southern migrations of warm-water fish and loss of ecologically important seaweeds.[202] Marine heatwaves may have direct effects on rock lobster through temperature stress affecting their physiological condition[203] or indirect effects through impacts on associated habitats e.g., kelp forests. Lobster have been flagged as a particularly vulnerable species to climate impacts.[204]

Information on environmental impacts

767. This information supports FNZ's assessment of the proposals against section 9 of the Act in in Part 3 (*Assessment against relevant legal provisions*).

Protected species

Seabirds

768. Management of seabird interactions with New Zealand's commercial fisheries is guided by the National Plan of Action – Seabirds 2020 (**NPOA-Seabirds**). The NPOA-Seabirds sets out the New Zealand government's commitment to reducing fishing-related captures and associated mortality of seabirds. The vision of the NPOA-Seabirds is that New Zealanders work towards zero fishing-related seabird mortalities.

769. Management actions and research under the NPOA-Seabirds are guided and prioritised based on the seabird risk assessment that breaks down the risks to seabird population by fishery groups. The most recent seabird risk assessment was published in 2023.

770. There have been no reported interactions with seabirds in CRA 2 fishery in the last 10 years. This is likely due to the primary fishing method being potting, with pots usually set too deep for seabirds to enter.

Mammals

771. In New Zealand waters, marine mammal entanglements with pot fishing gear have been documented since 1980. A recent study on cetacean interactions with potting fisheries[205] found that from 1980 to the present, 1-2 entanglement events of cetaceans per year were reported on average. However more recently, from 2010-2020, an average of 4-5 entanglement events per year have been recorded.

772. Nationally, the most recorded entanglements over time have involved humpback whales, followed by orca. Within the CRA 2 fishery there has been one mammal interaction reported with pot or trapping gear over the last 10 years.

773. Methods to reduce impacts on cetaceans from interactions and entanglements with pot and trap fishing gear include modified fishing practices, spatial/temporal management, and active untangling of entrapped cetaceans. Actively untangling is the main documented response to addressing entanglements in New Zealand to date.

774. Guidance for commercial pot fishers has been distributed by NZ RLIC. This guidance includes proactive approaches to reduce the risk of cetacean entanglements with fishing gear, providing information on whale identification, best practice approaches to mitigation, and reporting requirements.

Fish and invertebrate bycatch

775. When rock lobster was targeted in CRA 2 from the 2018/19 to 2023/24 fishing years, the most frequently reported incidental species caught in the CRA 2 target fishery were packhorse rock lobster (PHC 1), octopus, red moki and snapper (SNA 1 and SNA 2). Packhorse rock lobster and snapper are landed as bycatch while octopus and red moki are mostly considered to have been released alive.

[200] Bell et al., 2023; Hepburn et al., 2011.
[201] Salinger et al., 2019; Bell et al., 2023.
[202] Thomsen et al., 2019; Salinger et al., 2020; Thomsen et al., 2021.
[203] Oellermann et al., 2020.
[204] Cook et al., 2024.
[205] Pierre et al., 2022.

776. PHC 1 overlaps with CRA 2. The 2020 stock assessment considered to the stock to be Likely to be at or above the target and Unlikely to be overfished.

777. SNA 1 overlaps CRA 2 while SNA 2 very slightly overlaps with CRA 2 at the far east of the Bay of Plenty (from Cape Runaway to East Cape); both are managed under the QMS. Under the National Inshore Finfish Fisheries Plan SNA 1 is a Group 1 stock[206] and SNA 2 is a Group 2 stock.[207]

778. SNA 1 consists of two sub stocks:

- SNA 1 East Northland, with the 2023 stock assessment considered the stock to be About as Likely as Not (40–60%) to be at or above the target and About as Likely as Not (40–60%) to be overfished.
- SNA 1 Hauraki Gulf/Bay of Plenty, with the 2023 stock assessment considered the stock to be Very Likely to be at or above the target and Very Likely to be overfished.

779. SNA 2 consists of two sub stocks with SNA 2 North the only sub stock overlapping with CRA 2. The 2022 stock assessment was unable to determine the stock status in relation to its target, so the stock status is unknown.

Biological diversity of the environment

780. Potting is the main method of targeting rock lobster commercially and is assumed to have very little direct effect on non-target species. FNZ is not aware of any information that exists regarding the benthic effects of potting in New Zealand.

781. A study on the effects of lobster pots on the benthic environment was completed in a report on the South Australian rock lobster fisheries.[208] This fishery is likely to be the most comparable to New Zealand because the lobster species is the same (*Jasus edwardsii*) and many of the same species are present, although pots and how they are fished may differ. The report concluded that the amount of algae removed by pots (due to entanglement) probably has no ecological significance.

782. Species within an ecosystem interact through a number of mechanisms including feeding or predation commonly referred to as trophic links within an overall 'food web.' Changes to the abundance, size structure, and functional type[209] of a species can affect both its predators and prey through trophic interactions.[210] Changes in the abundance of one species may go on to affect other species that are neither its predators nor its prey. Changes within an ecosystem are therefore linked and can impact multiple trophic levels, affecting biodiversity and ecosystem resilience.

783. As outlined in the 2023 Aquatic Environment and Biodiversity Report No. 324, kelp provides a wide and diverse range of services, including:

- Providing energy and organic matter to rocky reef ecosystems as well as adjacent intertidal and deepwater ecosystems;
- Providing complex three-dimensional structures which support high levels of biodiversity through both shelter and food subsidies; and
- Cultural ecosystem services through harvestable food and materials as well as recreational and tourism opportunities.

784. It is important to note that kelp is indirectly affected by fishing for predators (see Part 4 '*Urchin barrens*' above). The removal of predators, including rock lobster, can reduce predatory control of the abundance of urchins, which graze on kelp. The magnitude of this relationship depends on many factors that vary regionally. Biotic factors include (but are not limited to) fishing pressure, population dynamics of predators, prey and kelp and ecosystem resilience. Abiotic factors in include temperature, turbidity and chemistry (among others)). An over-abundance of urchins and the over grazing of kelp systems can result in urchin barrens. Kelp forests are an important habitat and food source for many rocky reef dwelling species. Therefore, in making a decision, you must give consideration to the indirect impacts of rock lobster fishing on species that directly rely on kelp.

[206] A Group 1 stock's status is determined using fully quantitative stock assessments to provide high levels of information, certainty of stock status and assurance of the stock's sustainability.
[207] A group 2 stock is usually monitored with partial quantitative stock assessments, which are mostly based on trends in relative abundance. Future population (biomass) projections are not provided for.
[208] Casement & Svane, 1999.
[209] 'Functional type' refers to the collection of life history and ecological characteristics of an organism, including whether it is an herbivore, carnivore or omnivore, its feeding behaviour (including size of prey) location in the water column/benthos, and mobility.
[210] Rosas-Luis et al., 2017.

785. Kelp habitats are likely to be important for a range of harvested and non-harvested species, and any reduction in such habitats is therefore likely to be adverse to rock lobster and other species that rely on kelp for shelter or food.

786. Fishing-induced trophic cascades, kelp grazers (e.g., butterfish), and other impacts on the ecosystem due to fishing, sedimentation, and climate change can have long term impacts on kelp abundance and distribution. In turn, this could potentially negatively impact the suitability of rocky reef habitat for juvenile and adult rock lobsters as a refuge for settlement, as well as the availability of their prey species.

Habitat of particular significance for fisheries management

787. Using the best available information, FNZ has identified eight potential habitats of particular significance for fisheries management in CRA 2. A description of those areas and their sensitivities, why they are considered particularly significant, and the current measures in place that restrict fishing in those areas can be found in Table 15.

Table 15: Potential habitats of particular significance for fisheries management within the CRA 2 QMA.

Habitat of particular significance	Attributes of habitat	Reasons for particular significance	Risks/Threats	Existing protection measures	Evidence
Cape Runaway	Moki spawning grounds around both sides of Cape Runaway and south to roughly 37° 37.2'S 177° 56.8'E (Mātauranga) and east/south to Mahia (Fisheries New Zealand, 2024). FNZ has no data describing a specific association between habitat and spawning; however, moki only spawn in this area, usually in August-September.	Spawning (Moki)	Potential CRA 2 fishing impacts: • Impact of potting on benthos considered to be low (see Part 2 '*Assessment of the proposals against section 9 of the Act*'). • Hand gathering of rock lobster considered very unlikely to impact benthic habitats. • Interruption of prey relationship (see Part 3 '*Urchins*'). Non-fishing impacts: • Vessels anchoring over sensitive benthic habitat. • Sedimentation from land-based practices (turbidity). • Eutrophication from land-based practices and finfish farming. • Nutrient enrichment and chemical pollutants from land-based practices. • Nutrient enrichment from aquaculture. • Additional aquaculture facilities over seagrass.	• Trawling and Danish seining prohibited. • Pair trawling and pair Danish seining prohibited. • Any fishing with nets is banned for cultural reasons in a small, inshore area from Cape Runaway to the south. • The potential habitat of particular significance for fisheries management appears to lie somewhat within mātaitai (but this requires confirmation).	Mātauranga noted in Fisheries New Zealand, 2024. Jones et al., 2016.
Colville Channel	Blue cod - mixed biogenic reef: horse mussels, dog cockles (Jones et al., 2016; M Morrison, pers. comm.; C Duffy, pers. comm.) Over 30 m water depth, structure supports benthic foraging of juveniles. Scallops – shell hash with fine filamentous material e.g. algae, tube worms (M Morrison, pers. comm.).	Nursery (Blue cod) Shellfish bed (Scallops)		• Inshore PSH MHS trawl net prohibited. • Trawling and Danish seining prohibited. • Pair trawling and pair Danish seining prohibited.	Jones et al., 2016. M Morrison, pers. comm. C Duffy, pers. comm.
Coromandel Harbour and north along coast to off Colville Bay	Water column – snapper spawning (Zeldis and Francis, 1998). Spawning habitats in coastal waters adjacent to harbours, estuaries, and coastal embayments known to be important nurseries (Zeldis 1993; Zeldis and Francis 1998; Morrison et al., 2019) Seasonal presence of juvenile snapper on mud with burrows and low-density horse	Spawning and nursery (Snapper)		• Inshore PSH MHS trawl net prohibited. • Trawling and Danish seining prohibited. • Pair trawling and pair Danish seining prohibited.	Campbell, 2023. Morrison et al., 2019. Zeldis 1993. Zeldis and Francis, 1998.

Habitat of particular significance	Attributes of habitat	Reasons for particular significance	Risks/Threats	Existing protection measures	Evidence
	mussels (Morrison et al., 2019; Campbell, 2023)				
Craddock Channel	Blue cod - mixed biogenic reef: horse mussels, dog cockles (M Morrison, pers. comm., C Duffy, pers. comm.) Over 30 m water depth, structure supports benthic foraging of juveniles. Water column to east of channel known for snapper spawning (Zeldis and Francis 1998; Jones et al., 2016).	Nursery (Blue cod) Spawning (Snapper)		• Inshore PSH MHS trawl net prohibited. • Trawling and Danish seining prohibited. • Pair trawling and pair Danish seining prohibited.	Zeldis and Francis, 1998. Jones et al., 2016 C Duffy, pers. comm. M Morrison, pers. comm.
Port Fitzroy, Great Barrier Island	Mud with burrows, low density horse mussels provides structure, feeding opportunities (zooplankton) and refuge from predation (Morrison, 2021; M Morrison pers. comm.;). Continuity with spawning habitats in coastal waters (Zeldis and Francis, 1998) adjacent to harbours, estuaries, and coastal embayments, known to be important nurseries.	Nursery (Snapper)		• Inshore PSH MHS trawl net prohibited. • Trawling and Danish seining prohibited. • Pair trawling and pair Danish seining prohibited.	Morrison 2021. Zeldis and Francis, 1998. M Morrison, pers. comm. C Duffy, pers. comm.
Kawau Bay	Muddy seafloor habitats with large burrow complexes and/or horse mussel beds (Backhurst and Cole, 2000; Thrush et al., 2002; Parsons et al., 2020; M. Morrison, pers. comm.) with associated epifauna, including sponges in some places (Francis, 1995). Seasonal presence of juvenile snapper (Francis, 1995, Morrison et al., 2019; Parsons et al., 2020; Campbell, 2023; M. Morrison, pers. comm.) Continuity with spawning habitats in coastal waters (Zeldis and Francis, 1998) adjacent to harbours, estuaries, and	Nursery (Snapper)		• Trawling and Danish seining prohibited. • Pair trawling and pair Danish seining prohibited. • Submarine Cable and Pipeline Protection - small area in south of bay.	Backhurst and Cole, 2000 Campbell, 2023 Francis 1995. Morrison et al., 2019. Parsons et al., 2020 Thrush et al., 2002. Zeldis and Francis, 1998. M Morrison, pers. comm. C Duffy, pers. comm.

Habitat of particular significance	Attributes of habitat	Reasons for particular significance	Risks/Threats	Existing protection measures	Evidence
	coastal embayments, known to be important nurseries.				
East Tamaki Strait	Mud with burrows, and horse mussels (M Morrison, pers. comm.). Site is close to spawning habitats in coastal waters adjacent to harbours, estuaries, and coastal embayments, known to be important nurseries (Morrison et al., 2019).	Nursery (Snapper)		• Trawling and Danish seine prohibited. • Pair trawling and pair Danish seining prohibited.	Morrison et al., 2019. M Morrison, pers. comm. Clinton Duffy, pers. comm.
Whangateau Harbour	Sheltered, clear waters, strong tidal mixing (M Morrison pers. comm.). Small area of seagrass (Lowe, 2013) Parore - connectivity to other habitats important - ontogenetic shift from *Hormosira* (Neptune's necklace) covered intertidal reefs to *Carpophyllum* kelp forests inside harbour entrance then out to coastal reefs with brown algae (Morrison, 1990). Parore changes habitat over first year of life: 2-3 months on the *Hormosira* reefs, then movement to estuarine *Carpophyllum* forests. Juvenile kahawai, grey mullet, sand and yellow belly flounder, spotties, trevally, snapper (Morrison et al., 2014), and further evidence for juvenile snapper using the reef (Campbell et al., 2024)	Nursery (Parore and snapper)		• Inshore PSH MHS trawl net prohibited. • Pair trawling and pair Danish seining prohibited. • Danish seine nets, trawl nets, box or teiche nets, trammel nets, purse seine nets, or lampara nets in rivers, streams, lakes, lagoons, or estuaries.	Campbell et al., 2024. Lowe, 2013. Morrison, 1990. Morrison et al., 2009. Morrison et al., 2014. M Morrison, pers. comm.

Further detail on submissions received

Submitter	Option A				Option B			Notes
	A1	A2	A3	Other	B1	B2	Other	
Organisations								
Aotea Great Barrier Environmental Trust	✓					✓		Supports a biomass management target greater than 3.5x B_R. Highlights contrasts between stock assessment and fishery-independent data studies. Supports Option A1, stating concerns with fishery modelling and displacement of fishing effort if B2 is implemented. Advocates for further consideration of Aotea is fishery management decisions. Supports a conservative fishery management approach.
Auckland Council	✓					✓		Considers A1 will allow the stock to rebuild in the shortest time possible. Opposes Option B1, supports Option B2 to rebuild of rock lobster habitats in the inner Hauraki Gulf but has concern with displacement of fishing. Advocates for an ecosystem approach to fisheries management. Opposes the current default biomass management target, supports a management target of 2.5x B_R for the short to medium term until more information becomes available. Advocates for further monitoring and research.
CRA 2 Rock Lobster Management Company Ltd (CRAMAC 2)			✓		✓			States that a TAC increase is overdue, that A3 is appropriate to make the CRA 2 fishery financially viable, and that that TAC settings should not be driven by urchin barren formation. Considers that the proposed closure will result in displacement of fishing effort to areas of healthy reef, and that finer scale spatial measures are required. Supports a biomass management target between 1.75x B_R and 2x B_R. Advocates for further research on non-fishing impacts on rock lobster. Considers a NZ RLIC's code of conduct (that focuses on statistical area 905) would be an appropriate management tool. Highlights voluntary logbook programme's input into rock lobster fishery stock assessments.
Deep End Fish Ltd			✓				✓	Considers A3 balances sustainable recovery and economic needs and should be paired with a robust management procedure. Considers spatial measures should be more localised (statistical area-based), as opposed to a 'blanket' approach.
Environment and Conservation Organisations of NZ Inc. (ECO)	✓					✓	✓	Advocates for a precautionary approach. Considers the proposed closure, while positive, is likely to be insufficient and should include key areas with urchin barrens, notably Te Hauturu-o-Toi/Little Barrier Island. Draws attention to the rock lobster fishery having the highest carbon footprint in the fishing industry and suggests that FNZ should consider the impacts of climate change in formulating its recommendations. Expresses concern regarding differences between paper and ERS reporting not being resolved. Advocates that NZ's Harvest Strategy is

Submitter	Option A				Option B			Notes
	A1	A2	A3	Other	B1	B2	Other	
								reviewed and aligned with an ecosystem focus and international best practice. Does not support management targets below 50%SSB and equivalent levels of vulnerable biomass, states supports a biomass management target of at least 3.5x B_R, going onto say that biomass baselines should go before 1980s. Expresses concern that stock assessment has overestimated stock abundance, drawing attention to how subsequent rapid updates have had a downward revision of stock abundance since 2022 CRA 2 stock assessment. Suggests FNZ should establish smaller management units to manage rock lobster.
Environmental Defence Society (EDS)	✓					✓		Supports Option A1 as the most conservative option but concerned no TAC reductions are proposed, states opposition to increasing the TAC. Supports B2 as a minimum step but considers this a failure as it should include spatial measures across the wider CRA 2. Supports a biomass management target of 3.5x B_R and considers 2x B_R is inadequate. Advocates for further fishery management measures. Critical of stock assessment (advocating caution in its use) as proposed options inadequately consider fisheries-independent data, and the effects of global warming on future stock projections. Advocates for spatial mapping of wider depth ranges for long-spined urchins (*Centrostephanus rodgersii*). Critical of management procedures.
Environmental Law Initiative (ELI)				✓			✓	Considers none of the presented options will allow rock lobster to be managed at a level that allows them to play their ecological role as a key predator of urchin. Considers none of the options will sufficiently avoid, remedy or mitigate the adverse effects of commercial fishing. States adopting a biomass management target of 3x B_R is consistent with best available information. Critical of how fisheries-independent studies have been incorporated into uncertainty of stock assessment. Considers additional spatial measures and that proposed spatial closure is deficient.
Forest and Bird				✓		✓		Advocates that the TAC should be compatible with a biomass management target of 3x B_R, which should be the set CRA 2 biomass management target to address urchin barrens. While supports B2, also suggests that other CRA 2 localities should be identified for fishery management spatial tools in advance of the April 2026 sustainability round. States that as it is not clear what 'mitigation' looks like, considers that prioritising the 'avoidance' of urchin barrens, and then 'remediation' of urchin barrens, is more consistent with the Act than the 'mitigation' of urchin barrens.

Submitter	Option A				Option B			Notes
	A1	A2	A3	Other	B1	B2	Other	
Friends of Taputeranga Marine Reserve	✓					✓		Objects to a TACC increase. Supports sub-dividing the CRA 2 QMA in two to allow finer scale management. Considers rock lobster abundance depleted in northern CRA 2 following fisheries-independent data studies, advocating for further investment in this type of study.
Hauraki Gulf Forum	✓					✓	✓	Does not support increasing TACC due to urchin barrens concerns. Supports B2, and extending this closure to include Te Arai, Mahurangi to Hauturu and Mokohinau. Supports biomass management targets that provide for better ecological outcomes.
Hauturu Supporters Trust				✓			✓	Highlights that 2018 reductions have had no observable impact on reducing urchin barrens. Advocates that the entire CRA 2 fishery should be closed. States that the biomass target should be aligned to ensuring 100% kelp forest cover, otherwise 3x B_R.
Hooked On Barrier Ltd	✓						✓	Considers recreational limits are too high and that there should be a maximum legal size for rock lobster. Suggests fine scale spatial measures are better such as localised catch limits, rahui in supported by surveillance, seasonal closures, no take reserves, and potting restrictions. Also supports a higher biomass target, at a minimum 2.5x B_R.
Iwi Collective Partnership			✓					Considers A3 is a balanced and sustainable approach.
Lee Fish Limited T/A Leigh Fish and Te Henga Ltd			✓		✓			Considers A3 is very conservative and will support local fishing industry participants and respective communities. Considers further spatial restrictions on fishers are unreasonable and opposes proposed closure. Unreservedly supports CRAMAC 2's submission, notably NZ RLIC's code of conduct for statistical area 905.
Leigh Commercial Fishermen's Association			✓		✓			Supports NZ RLIC's code of conduct, a 'mountains to sea' holistic management approach, more research on land-based causes of urchin barrens and kelp forest decline, and mandatory reporting. Opposes proposed closure due to displacement of fishing effort and that it does not address non-fishing impacts. Advocates that local commercial fisher knowledge should be utilised and for further dialogue between all stakeholders to discuss respective concerns.
Marina Fisheries Ltd			✓					Considers that the abundance of rock lobster has increased significantly since the 2018 TAC reduction.
New Zealand Rock Lobster Industry Council Ltd (NZ RLIC)			✓				✓	Submits that the projection biomass increase for CRA 2 provides an opportunity to make a modest increase in the TACC to 100 tonnes while still allowing the stock to continue its rebuild trajectory. Discusses ongoing socio-economic impacts of 2018 reduction and

Submitter	Option A				Option B			Notes
	A1	A2	A3	Other	B1	B2	Other	
								considers TAC review overdue. States that whatever the extent of the role of lobsters as a predator of urchins, along with other predators and other a range of other factors that affect both urchins and macrophytes, the rebuild trajectory will continue and the biomass of lobsters will increase, and the proportion of larger rock lobsters in CRA 2 will continue to grow under Option A3. Considers that a closure to the inner Hauraki Gulf, in combination with the large number of other closures in CRA 2, will lead to fishing effort displacement and localised depletion and that this represents a failure to actively manage the issues in the inner Hauraki Gulf by more targeted management interventions. Highlights that the CRA 2 operators fishing in the Hauraki Gulf have developed a formal Code of Conduct that will limit catch to recent levels in statistical area 905 and the inner Hauraki Gulf with the TACC increase, close the inner Hauraki Gulf from commercial fishing between Labour Day and the end of March each year, and that all large lobster will be returned. Considers that the Code of Conduct provides credible alternative to the proposed closure, accompanied by constraint on recreational fishing, to increase abundance in the Hauraki Gulf. Highlights that there is no scientific evidence that closures to only rock lobster fishing will address the prevalence of urchin barrens. Considers that measures need to be taken to directly remove urchins, particularly from barren environments, through controlled removals or directed harvesting. Supports a biomass management target between 1.75x B_R and 2x B_R, and highlights that managing to a higher biomass would seriously impact on utilisation. Supports a prompt decision on biomass management targets as a step toward developing and implementing a management procedure.
Ngāti Rehua-Ngātiwai ki Aotea Trust Board	✓						✓	Concerned about the current state of rock lobster (as well as the wider moana) in CRA 2. Oppose any TAC increase. Advocates for finer spatial scale fisheries management through local bylaws (in collaboration with FNZ) and states that the proposed closure will only displace fishing pressure. Considers rock lobster abundance increase is largely attributed to reduced fishing during the COVID pandemic and access restrictions due to Caulerpa. Questions stock assessment. Supports a higher biomass management target that reflect ecological and cultural significance of kōura.
Ngātiwai Trust Board	✓						✓	Supports increasing the biomass management target to 2x B_R. Concerned about displacement of fishing effort associated with proposed closure. Asks FNZ to work with tangata whenua towards implementing stronger fishery management measures.

Submitter	Option A				Option B			Notes
	A1	A2	A3	Other	B1	B2	Other	
NZ Reefs Lab (University of Auckland Institute of Marine Science)	✓					✓	✓	States NZ Reefs Lab's research demonstrates poor state of many rocky reef ecosystems within the Hauraki Gul Marine Park and the contrast in reef health between marine reserves and fished areas. Draws on differences between stock assessment and rapid update provides support that stock assessment has over estimated rock lobster abundance. Considers FNZ's consideration of fisheries-independent data is unsubstantiated. Supports a biomass management target of 3.5x B_R as a starting point, stating the provisional target of 2x B_R is not an adequate precautionary buffer against uncertainty. Supports Option B2, as well as is extending it to Te Arai Pt. Advocates that packhorse lobster (*Sagmariasus verreauxi*) is included in the closure. Opposes an increase to the TACC. Advocates sub-dividing the CRA 2 QMA to reflect smaller spatial scale life-cycle patterns and aligns better with the Fisheries Act.
The NZ Sport Fishing Council and LegaSea ('the joint recreational submitters')				✓			✓	Considers a TAC cannot be lawfully set for CRA 2 in its current state, opposing any TAC increase, and that all harvest should be paused. Rejects proposed options, stating they do not meet the statutory duty to ensure sustainability. Advocates for a recovery plan, the division of the CRA 2 QMA, and that respective catch limits are informed by fisheries-independent data and are precautionary. Advocates for a biomass management target that contributes to overall ecosystem function over the long-term. Also recommends the disestablishment of the NRLMG. Rejects FNZ's stock assessment and rapid assessment updates, stating that they are not fit for purpose and advocates for greater use of fisheries-independent data. Goes onto say that the Nessia et al. 2024 study aligns with their experience with statistical area 905. Advocates for greater controls on effort (input controls).
Royal New Zealand Society for the Prevention of Cruelty to Animals (RNZSPCA)	✓					✓		Supports a higher biomass management target (3x B_R). Considering uncertainties in rock lobster biomass thresholds for urchin barren formation and climate change, advocates for a precautionary approach. Considers that the current rock lobster abundance does not warrant a TAC increase. Supports research of anthropogenic stressors on rock lobster populations.
Southern Ocean Seafoods			✓			✓		Supports the maximum proposed TAC increase that also allows biomass increase. Supports rebuild of rock lobster in the inner Hauraki Gulf. Opposes biomass target increase.
Stet Ltd				✓		✓	✓	Disagrees with stock assessment, advocates for full closure of CRA 2, and considers any increase to the TAC is inconsistent with the Hauraki Gulf Fisheries Plan. Further states that any increase to the TAC should not occur until there has been an observed increase in rock lobster and that a 95% kelp forest coverage target has been set. Advocates for better

Submitter	Option A				Option B			Notes
	A1	A2	A3	Other	B1	B2	Other	
								reporting of recreational and customary harvest. Also states support for B2, and extending this to the Pākiri River Mouth and better monitoring of customary harvest in this area. Supports a biomass management target of 3x B_R.
University of Auckland				✓			✓	Considers FNZ has not proposed a clear pathway to measure and reverse environmental impacts of CRA 2 fishery. Advocates for more spatial measures around the Hauraki Gulf.
Waiheke Marine Project	✓					✓		Advocates current TAC to maximise the rebuild of CRA 2. Supports B2, suggesting increasing the coverage of the proposed closure. Supports a higher biomass management target, 2.5x B_R.
Whangamata Ocean Sports Club	✓						✓	Considers there should be no TAC change until the planned 2025 stock assessment and more work on urchin barrens. States proposed closure does not address wider concerns in CRA 2, notably eastern Coromandel, and concerned about displaced fishing effort from spatial closures. Advocates for a precautionary approach to fishery management, further research and localised approach to spatial management. Supports the submission from the joint recreational submitters.
Individuals								
A Abraham						✓		Supports B2 to restore rock lobster population and address urchin barrens.
A Saunders	✓						✓	Considers any TAC increase will put further pressure on rock lobster population, and it should be maintained or reduced. Considers Aotea should be included in closure due to concern of displaced fishing effort at Aotea, that is already occurring. Concerned about ongoing impacts of Caulerpa. Advocates for more localised monitoring.
B de Lambert	✓					✓		Also supports increasing the biomass management target.
B Waterhouse			✓		✓			Considers TACC increase is sustainable. Questions science and no definition of urchin barrens, lack of baseline data. Discusses socio-economic issues with 2018 TAC reduction. Opposes closure due to displacement of fishing effort.
B Winlove				✓			✓	Advocates for a precautionary approach to rock lobster nationally. Suggests subdivision of CRA 2 into 3 areas, closure of the whole Hauraki Gulf Marine Park to all rock lobster harvest, commissioning a 'proper' survey of CRA 2 and establishing a management target of 50% virgin biomass of CRA 2.

Submitter	Option A				Option B			Notes
	A1	A2	A3	Other	B1	B2	Other	
C Patchell				✓				Does not think there is a fair increase across sectors.
C Reed						✓		Supports ban of rock lobster harvest from inner Hauraki Gulf, except for customary harvest that should be monitored.
D Guccione	✓							Considers fishery is still recovering, that CRA 2 is not near to maximum economic yield, and that a precautionary approach should be taken. Considers uncertainty in climate change should be factored in options.
E Ferguson	✓							Advocates for further fishery management measures such as changes to size limits and recreational harvest reporting. Suggests developing a kelp forest monitoring system.
G Edney	✓					✓		Only supports Option A1, opposes TAC increase, noting concern that there is no option to reduce TAC and considers this is incompatible with an ecosystem approach. Supports B2 but concerned with fishing pressure shifting to outer islands of the Hauraki Gulf. Considers that there is an error in its estimate of the current biomass level at 1.54x B_R because FNZ has not taken a precautionary approach in its calculation. Advocates for a higher biomass management target of 3x B_R. Supports localised fisheries management of Aotea.
H Grace				✓				Advocates for a two-year ban on rock lobster harvest.
I Fordham	✓						✓	States that rock lobster abundance is critically low, opposes TAC increase. Considers that proposed closure will be detrimental to Aotea Island due to displaced fishing effort, instead advocates for other fishery management measures.
J Laurence				✓		✓	✓	Considers that the proposed closure should be extended to include the area from Te Arai Point to Mokohinau Islands to Arid Island to Cuvier Island to Port Charles. Advocates that the biomass management target should be set at 3x B_R at the expense of short-term utilisation. Considers that CRA 2 should be sub-divided into 2 zones. Advocates for a comprehensive economic analysis to understand the impacts closures against continued fishing.
K Lombard						✓	✓	Supports B2 and advocates it should be extended to include Little Barrier and Great Barrier Islands (due to fishing effort displacement). Considers rock lobster functionally extinct at Great Barrier Island.
K Prior						✓	✓	Also thinks closure should be extended to outer Hauraki Gulf to counter redistribution of fishing effort.

Submitter	Option A				Option B			Notes
	A1	A2	A3	Other	B1	B2	Other	
M Graeme						✓		States strong need to address urchin predator loss.
N Rist	✓							Expresses concern with commercial harvest.
P Clark				✓		✓	✓	Advocates for a downwards revision of the TAC. States it may be necessary for Crown to buy back quota and compensate commercial fishers. Supports a higher biomass management target. Also supports several other management measures, such as better urchin barren mapping and seasonal closures across the wider CRA 2 area.
P Clow		✓				✓		Supports biomass management target of 2x B_R and considers this will address fluctuations in recruitment. Supports proposed closure in light of Auckland population.
P Thompson	✓							Does not support a TACC increase for CRA 2 (notably Bay of Plenty and East Cape) as rock lobster hard to come by.
R McCulloch							✓	Supports complete closure of all commercial fishing across the whole Hauraki Gulf.
R Waterhouse			✓		✓			Considers a TACC increase in overdue, and that commercial fishers outside the Hauraki Gulf have been unjustifiably penalised. States that the proposed closure of the inner Hauraki Gulf should be delayed until proposed HPAs are in place. Advocates for better estimates of recreational and customary harvest.
S Harwood	✓					✓		Considers Options A1 and B2 support recovery of the fishery and that inner Hauraki Gulf rock lobster abundance is so low that fishers are already forced to fish outside of the area.
T Morgan	✓						✓	Does not support any increase to the TACC. Considers a more nuanced spatial approach is required that accounts for the geographical diversity of the QMA.
General submissions (not specific to CRA 2)								
A Spence				✓			✓	Considers none of the options are viable for adequate stock recovery, and harvest should be drastically reduced.
C Edwards	✓				✓			Disagrees with proposed changes.
D Guzzo							✓	Thinks rock lobster potting should be banned from Leigh area and that rock lobster abundance is 'pittance' compared to what it was.

Submitter	Option A				Option B			Notes
	A1	A2	A3	Other	B1	B2	Other	
J John				✓				Advocates for a restructuring of the fisheries management system in response to concerns with the fisheries market.
J Smith							✓	Generic feedback on commercial fishery and suggests permanent marine reserve at specific locations to restore kōura populations.
M Spence							✓	Does not agree with any of the options. Advocates that the only viable option is total no-take marine reserve.

Part 5: Conclusions and recommendations

788. Following a TAC reduction in 2018 and a recreational daily limit reduction in 2020 from six to three rock lobsters per fisher per day, CRA 2 biomass has increased significantly. The 2024 rapid assessment update of the CRA 2 stock assessment estimates vulnerable biomass to be at 154% of the interim management target (B_R) and continuing to increase under current catch settings. The degree of uncertainty in this estimate is illustrated in Figure 3.

789. This increase in biomass has not been uniform across CRA 2, with both anecdotal reports and scientifically peer-reviewed studies suggesting localised depletion of rock lobster abundance in specific areas of CRA 2, notably locations within the Hauraki Gulf (i.e. within statistical area 905).

790. You are being asked to decide on a TAC for CRA 2 for the April 2025 fishing year and to consider closing the inner Hauraki Gulf to all commercial and recreational rock lobster fishing. FNZ considers these two decisions are not mutually exclusive and should be considered together.

791. The best available information indicates that urchin predators, including (but not solely) rock lobsters, when present at sufficient abundance and size structure, can have a significant role in mitigating urchin barrens. This information comes from peer-reviewed scientific studies and is reflected in the judgment from the recent CRA 1 litigation.

792. FNZ acknowledges that:

- The relative contribution of other reef predators (such as snapper) on urchin populations is uncertain.
- The biomass threshold and abundance of large rock lobsters required to enable rock lobster to meaningfully contribute as rocky reef predators, including helping mitigate urchin barren formation, is unknown.
- The contribution of climate change and different anthropogenic impacts on ecosystem health is unknown.

793. However, there is an established problem of urchin barrens in North-East New Zealand (including CRA 2) and the best available information shows there is an inverse relationship between rock lobster abundance and urchin abundance. In making your decision, in consideration of the adverse effects of fishing, you must consider the ecological role rock lobster play in the predation of urchins.

794. FNZ considers that it is appropriate, taking into account the ecological role of rock lobster as a predator of urchins, to manage CRA 2 biomass to a level above the current B_{MSY} target level (B_R). All proposed TAC options align with a provisional management target of 2x B_R (twice the default target) and are projected to support increasing the abundance of rock lobsters in CRA 2 (albeit at a slower rate with higher TAC levels). FNZ intends to review this biomass management target for the April 2026 fishing year.

795. The best available information suggests that rock lobster are functionally extinct within the inner Hauraki Gulf. s9(2)(b)(ii) [redacted]. Recreational fishing effort in this area has declined over the last 14 years, as has recreational catch.

796. FNZ data indicates that while fishing activity within the inner Hauraki Gulf is low, it is still occurring in an area where there is low abundance of rock lobster. While there are already some existing area closures, and the proposed High Protection Areas are expected to be implemented soon, FNZ considers these will not be sufficient to increase abundance of rock lobster across the inner Hauraki Gulf.

797. FNZ considers that the proposed closure of rock lobster harvest within the inner Hauraki Gulf is the most effective way to increase rock lobster abundance in this area and in the longer term will be beneficial to all users of the fishery within the Hauraki Gulf. Therefore, FNZ recommends you agree to close the inner Hauraki Gulf to rock lobster fishing (with Option B3 being FNZ's preferred option).

798. There remains some uncertainty around the effectiveness of this 'first of its kind' large rock lobster only fishing closure for addressing the prevalence of urchin barrens. This is because the understanding of successful urchin barren restoration is almost exclusively from full no-take marine protected areas. Despite this uncertainty, FNZ considers that this closure will result in increased rock lobster abundance and size, thereby providing a greater opportunity for rock lobster to fulfil its role as a predator of urchins and to contribute to mitigating urchin barrens in the Hauraki Gulf area of CRA 2. Should you decide in favour of this proposal, FNZ will work with tangata whenua and local stakeholders to consider whether existing monitoring

is sufficient to understand the ecological and fisheries consequences of the closure. FNZ will review the efficacy of and continued need for this closure after 10 years.

799. FNZ has presented for your consideration Option B3, a modification of Option B2, that was proposed by NZ Reefs Lab during the consultation. Option B3 would extend the proposed spatial closure from Cape Rodney to Te Arai Point (the QMA boundary between CRA 1 and CRA 2). FNZ has listed the benefits of extending the proposed closure, and considers that it is appropriate to be presented to you as an option. While the initial proposed closure (Option B2) is a significant management tool in itself, FNZ considers that Option B3 would provide further opportunity to increase rock lobster abundance and provide for greater opportunity for rock lobster to fulfil its role as a predator of urchins and contribute to addressing urchin barrens in the Hauraki Gulf area of CRA 2.

800. In your decision for both the proposed closure and the CRA 2 TAC, you must also consider the likelihood of impacts of fishing effort displacement within CRA 2: notably the wider Hauraki Gulf and east coast of the Coromandel. Given the proposed inner Hauraki Gulf closure, there is a strong concern that this will displace fishing effort to this area. With the low rock lobster abundance within the inner Hauraki Gulf already, several stakeholders and tangata whenua already consider this displacement has started to occur and will intensify, especially if the TAC is increased and if the proposed closure is implemented.

801. Recent consultation has shown there is strong agreement among local stakeholders to pursue further management measures to address possible displacement of fishing effort. Additional management measures could include seasonal closures, area specific recreational daily and size limits, and targeted spatial closures to address both rock lobster abundance and urchin barren concerns. FNZ has started engaging with stakeholders to understand how this could work and the implications on both CRA 2 and other fisheries within the Hauraki Gulf. FNZ considers it appropriate to further explore these measures and will continue discussions with stakeholders and tangata whenua to further develop management options.

802. In 2025, more information will become available to support the development of management measures to address localised depletion of rock lobster and urchin barrens in the wider Hauraki Gulf area. This includes an urchin barren mapping project and ongoing ecosystem monitoring inside and outside marine protected areas, which may provide valuable information to help guide urchin barren management within CRA 2. FNZ will provide advice later in the 2025 calendar year on further management options that take into account the results of the urchin barren mapping research project due in June.

803. Such fishery management measures applied to areas of the Hauraki Gulf Marine Park must also align with the appropriate management objectives listed within Hauraki Gulf Fisheries Plan, notably to address localised depletion of rock lobster and to facilitate the co-development of a management plan for restoring healthy kelp forests. FNZ considers this approach can be complementary to an overarching management strategy to address similar concerns across the wider north-east New Zealand coastal marine environment.

804. Whether you decide to implement the proposed closure of the inner Hauraki Gulf, in the absence of fine scale fishery management measures that can address localised concerns in the outer Hauraki Gulf, FNZ recommends maintaining the status quo for the TAC (Option A1).

805. FNZ considers that a moderate increase to the TAC (Option A2) could be considered by you. However, this option gives less weight to concerns and evidence about localised rock lobster depletion. This option also gives less weight to uncertainty raised by fisheries independent abundance studies and to the uncertain impact on fishing effort intensification and displacement. This option gives less consideration than Option A1 to increasing rock lobster abundance and size to a level at which rock lobsters play a role in mitigating urchin barrens.

806. FNZ considers that, of the TAC options proposed, the highest proposed TAC increase (Option A3) gives the least weight to concerns and evidence about localised rock lobster depletion. This option gives the least weight to uncertainty raised by fisheries independent abundance studies and to the uncertain impact on fishing effort intensification and displacement. This option gives less consideration than Options A1 and A2 to increasing rock lobster abundance and size to a level where they play a role in mitigating urchin barrens. FNZ acknowledges NZ RLIC's Code of Conduct in support of this option (and on condition that Option A3 is adopted), however, FNZ notes that in this situation you are not currently able to take voluntary measures into account when considering whether the Act requires management action to be taken.

807. TAC increases could be considered following implementation of additional fishery management measures for CRA 2 (such as the higher biomass management target) and the outer Hauraki Gulf and/or other areas of CRA 2. These measures could address the expected consequences that would come from increased fishing effort and any resulting changes in the distribution of fishing effort within the outer Hauraki Gulf.

808. FNZ notes that an upcoming CRA 2 stock assessment will provide an updated estimate of the CRA 2 rock lobster abundance and projections, that will inform setting of a new biomass management target and the creation of management procedures that are anticipated to be implemented in April 2026. Implementation of a new management target will require public consultation.

s9(2)(h)

Decision for the TAC of CRA 2

Option A1 *(Fisheries New Zealand preferred option)*

Agree to set the CRA 2 TAC at 173 tonnes and, within the TAC, to:

i. Retain the allowance for Māori customary non-commercial fishing interests at 16.5 tonnes;

ii. Retain the allowance for recreational fishing interests at 34 tonnes;

iii. Retain the allowance for all other sources of mortality to the stock caused by fishing at 42.5 tonnes;

iv. Retain the CRA 2 TACC at 80 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option A2

Agree to set the CRA 2 TAC at 174.5 tonnes and, within the TAC, to:

i. Retain the allowance for Māori customary non-commercial fishing interests at 16.5 tonnes;

ii. Retain the allowance for recreational fishing interests at 34 tonnes;

iii. Decrease the allowance for all other sources of mortality to the stock caused by fishing from 42.5 to 34 tonnes;

iv. Increase the CRA 2 TACC from 80 to 90 tonnes.

Agreed / Agreed as Amended / Not Agreed

OR

Option A3

Agree to set the CRA 2 TAC at 188.5 tonnes and, within the TAC, to:

i. Retain the allowance for Māori customary non-commercial fishing interests at 16.5 tonnes;

ii. Retain the allowance for recreational fishing interests at 34 tonnes;

iii. Decrease the allowance for all other sources of mortality to the stock caused by fishing from 42.5 to 38 tonnes;

iv. Increase the CRA 2 TACC from 80 to 100 tonnes.

Agreed / Agreed as Amended / Not Agreed

Hon Shane Jones

Minister for Oceans and Fisheries

/ / 2025

Decision for the spatial closure in CRA 2

Option B1

Agree to retain the status quo, with no additional spatial management of rock lobster fishing beyond the existing marine reserves, mātaitai, and proposed new High Protection Areas (HPAs) provided for in the Hauraki Gulf / Tīkapa Moana Marine Protection Bill.

Agreed / Agreed as Amended / Not Agreed

OR

Option B2

Agree to close the inner Hauraki Gulf (specifically waters south of a straight line that extends from the southern boundary of the Cape Rodney-Okakari Point Marine Reserve to Port Jackson Bay, top of the Coromandel Peninsula) to all commercial and recreational rock lobster fishing.

Agreed / Agreed as Amended / Not Agreed

OR

Option B3 *(Fisheries New Zealand preferred option)*

Agree to close of the inner Hauraki Gulf (specifically waters south of a straight line that extends from a point approximately 1 km offshore at the boundary between CRA 1 and CRA 2 (at Te Arai Point) to Port Jackson Bay, top of the Coromandel Peninsula) to all commercial and recreational rock lobster fishing.

Agreed / Agreed as Amended / Not Agreed

Hon Shane Jones

Minister for Oceans and Fisheries

/ / 2025

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Addendum 1: Legal overview

Overview of powers and obligations under the Fisheries Act

815. This addendum provides an assessment of key information as it relates to your decision-making under the Fisheries Act 1996 (**the Act** or **the Fisheries Act**).

Decisions Ministers may make in relation to sustainability reviews

816. Provisions of the Act allow you, as Minister for Oceans and Fisheries, to make decisions on sustainability measures:

Part 3: Sustainability measures

- Section 11 sets out various matters that you must take into account or have regard to when setting or varying sustainability measures;
- Section 13 enables you to set or vary a TAC for a quota management stock before the start of a fishing year and sets out the requirements and matters you must have regard to in doing so;
- Section 14 enables you to set or vary an alternative TAC for a quota management stock listed in Schedule 3 of the Act.

Part 4: Quota Management System

- Section 20 enables you to set or vary a TACC for a quota management stock before the start of a fishing year; and
- Section 21 requires that before setting the TACC for any stock, you first make allowances for Māori customary non-commercial fishing interests, recreational interests, and all other mortality to the stock caused by fishing.
- Section 75 enables you to set or vary deemed value rates to provide an incentive for fishers not to exceed the available annual catch entitlement (**ACE**).

817. In making decisions on those matters there are several things you are required to do and take into account. These are outlined below.

Recent judgment on decision in CRA 1

818. In *Environmental Law Initiative v Minister for Oceans and Fisheries* (the CRA 1 judgment), a judicial review of the Minister's 2023/24 TAC decision on the basis that the decision failed to adequately address the role of rock lobster in avoiding, remedying or mitigating urchin barrens and failed to provide for the input and participation of tangata whenua.[211] Boldt J declared that the Minister's decision was unlawful because:

- There was no evidence the reductions he selected would allow rock lobster to play their part in controlling kina populations or delivering ecosystem functions;
- The Minister did not take account of the best available information; and
- The Minister did not turn his mind to the possibility of a greater reduction in the recreational catch, which would have addressed the problem of kina barrens in the northeastern part of the fishery more closely than any of the options be considered.

819. Though declarations were not issued, the judgment made the following comments in relation to input and participation:

- that section 12(1)(b) will often require something more than the Iwi Fisheries Forum model, especially if the Ministry is advised that for some hapū tikanga dictates a different approach.
- The Minister's section 12(1)(b) duty extends further than the usual administrative law requirements of consultation with affected parties. There is a clear distinction between the "consultation" with interested persons and organisations required by section 12(1)(a) and the

[211] [2025] NZHC 177.

"input and participation" of tāngata whenua required by section 12(1)(b). Input and participation implies active collaboration.

- The process to date has allowed for the input and participation of tangata whenua, the details of which are addressed in the decision documents.

820. The Crown is currently considering whether to appeal the CRA 1 judgment.

821. There are some similarities between each of the crayfish Quota Management Areas (**QMA**s), particularly between CRA 1 and CRA 2. Urchin barrens are present in both CRA 1 and CRA 2. The CRA judgment was based on the specific facts of that QMA and the way those were addressed in the decision document. The judgment emphasised the need for the Minister, when setting a TAC and allowances, to ensure their decision is in accordance with the purpose of the Act. In discussing the purpose of the Act, Boldt J referenced the recent *Tarakihi* Supreme Court case.[212] His Honour commented that another way of saying that 'utilisation may not jeopardise sustainability'[213] is that if fishing cannot occur in an environmentally sustainable way, it cannot occur at all.[214] The CRA 1 judgment also refers to the requirements of section 13 when setting a TAC and that the Minister must set the TAC in light of the principles of the Act (sections 9 and 10). These decision documents acknowledge the best available information, and provide advice on any uncertainty, unreliability or inadequacy of the information.[215] The decision documents also consider the role that rock lobster play in the ecosystem, and how that can be considered in the decisions.[216] A closure under section 11 is proposed to manage localised depletion in CRA 2.

822. The process to date has allowed for the input and participation of tangata whenua, the details of which are addressed in the decision documents.

Overarching requirements

Application of the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992 – section 5(b) of the Act

> **5 Application of international obligations and Treaty of Waitangi (Fisheries Claims) Settlement Act 1992**
> This Act shall be interpreted, and all persons exercising or performing functions, duties, or powers conferred or imposed by or under it shall act, in a manner consistent with—
> (a) New Zealand's international obligations relating to fishing; and
> (b) the provisions of the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992.

823. You must act in a manner consistent with the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992 (**the Settlement Act**). Section 5(b) of the Act requires that the Act be interpreted and people making decisions under the Act do so in a manner that is consistent with the Settlement Act. Section 10 of the Settlement Act provides that non-commercial customary fishing rights continue to be subject to the principles of the Treaty of Waitangi and give rise to Treaty obligations on the Crown.

824. Section 10 of the Settlement Act also requires you to consult and develop policies and programmes to recognise and give effect to the use and management practices of tangata whenua in the exercise of non-commercial fishing. Consistent with this section, FNZ has worked with iwi to develop engagement processes that enable iwi to work together to reach a consensus where possible and to inform FNZ on how tangata whenua wish to exercise kaitiakitanga with respect to fish stocks in which they share rights and interests and how those rights and interests may be affected by sustainability measures proposed.

825. For information on input and participation of tangata whenua, see '*Consultation – sections 12 and 21 of the Act*' below.

Application of international obligations – section 5(a) of the Act

826. You must also act in a manner consistent with New Zealand's international obligations relating to fishing. The international obligations FNZ considers most relevant are the United Nations Convention on the Law of the Sea (**UNCLOS**)[217] and the United Nations Convention on Biological Diversity (**Biodiversity Convention**).[218]

[212] *Seafood New Zealand Limited v Royal Forest and Bird Protection Society of New Zealand* [2024] NZSC 111 (often referred to as *Tarakihi* case), referred to in *Environmental Law Initiative v Minister for Oceans and Fisheries* [2025] NZHC 177 at [14] and [20].
[213] [2024] NZSC 111 at [83].
[214] [2024] NZSC 111 at [101].
[215] As required by the Fisheries Act 1996, section 10.
[216] As required by the Fisheries Act 1996, sections 9, 11 and 13.
[217] Convention on the Law of the Sea 1833 UNTS 397 (opened for signature 10 December 1982, came into force 16 November 1994).
[218] Convention on Biological Diversity 1760 UNTS 79 (opened for signature 5 June 1992, came into force 29 December 1993).

827. UNCLOS provides that States have the sovereign right to exploit their natural resources subject to an overriding duty to protect and preserve the marine environment (articles 192 and 193). Articles 61 and 62 of the UNCLOS are particularly relevant. It was recognised that these articles "drive the focus of the Fisheries Act on exploitation of fishery stocks within sustainability limits" by the Court of Appeal in the Kahawai case.[219] The requirements in Article 61, and the general duty to protect and preserve the marine environment in article 192 have the effect of requiring you to consider the effects of fishing on the wider ecosystem. These ecosystem considerations are also acknowledged in the Act (via the requirement for you to consider the interdependence of species under section 13 of the Act when making a decision as to TAC, as well as through sections 9 and 11 of the Act).[220]

828. The Biodiversity Convention is the international legal instrument for "the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilisation of genetic resources".[221] It sets out a range of obligations on its signatories. Although New Zealand gives effect to this convention in a variety of ways (including under other legislation), the Act specifically recognises the importance of biodiversity in section 9(b) of the Act and the requirement to ensure the sustainability of the aquatic environment (section 8 of the Act).

The purpose of the Act – section 8 of the Act

8 Purpose

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

(2) In this Act,—

ensuring sustainability means—

(a) maintaining the potential of fisheries resources to meet the reasonably foreseeable needs of future generations; and

(b) avoiding, remedying, or mitigating any adverse effects of fishing on the aquatic environment

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

829. The Supreme Court has stated that the purpose statement incorporates "the two competing social policies reflected in the Act" and that "both policies are to be accommodated as far as is practicable in the administration of fisheries under the quota management system".[222] It has also stated "in the attribution of due weight to each policy that [the weight] given to utilisation must not be such as to jeopardise sustainability. Fisheries are to be utilised, but sustainability is to be ensured".[223]

830. The practical effect of section 8 is that, when deciding something under a particular section of the Act (such as operating provisions like sections 13 and 20) your powers must be exercised to promote the policy and objectives of the Act. That is, in deciding whether a proposal fits within the scope of the Act, you must keep section 8 in mind and act in a way that promotes the Act's objectives. Subject to this constraint, however, "the nature and scope of [your] powers and the restrictions on them are as is provided for in the operating provisions of the Act".[224]

Environmental principles - section 9 of the Act

9 Environmental principles

All persons exercising or performing functions, duties, or powers under this Act, in relation to the utilisation of fisheries resources or ensuring sustainability, shall take into account the following environmental principles:

(a) associated or dependent species should be maintained above a level that ensures their long-term viability:

(b) biological diversity of the aquatic environment should be maintained:

(c) habitat of particular significance for fisheries management should be protected.

831. 'Associated or dependent species' is interpreted in the Act to mean any non-harvested species taken or otherwise affected by the taking of any harvested species. 'Biological diversity' means the variability among living organisms, including diversity within species, between species, and of ecosystems.

[219] *Sanford Ltd v New Zealand Recreational Fishing Council Inc* [2008] NZCA 160 at [25].
[220] As stated in *Environmental Law Initiative v Minister for Oceans and Fisheries* [2022] NZHC 2969 at [16].
[221] Convention on Biological Diversity 1760 UNTS 79 (opened for signature 5 June 1992, came into force 29 December 1993), art 1.
[222] *New Zealand Recreational Fishing Council Inc v Sanford Ltd* [2009] NZSC 54 at [39].
[223] *New Zealand Recreational Fishing Council Inc v Sanford Ltd* [2009] NZSC 54 at [39].
[224] *New Zealand Recreational Fishing Council Inc v Sanford Ltd* [2009] NZSC 54 at [59].

832. To support taking into account section 9(c) of the Act, FNZ has produced a guidance document for the identification of habitat of particular significance for fisheries management (**HoPS**) and taking into account that they should be protected. FNZ has taken the term 'protect' in the context of HoPS to mean taking necessary measures that would avoid, remedy, or mitigate any adverse effect of fishing that could undermine the particular significance of the habitat in supporting life-history stages of fisheries resources.

833. In our advice to you for CRA 2 and CRA 7, FNZ has taken section 9(c) into account using the best available information (based on peer-reviewed, published sources) and have undertaken an assessment of potential adverse effects from fishing on potential HoPS (see Part 3 within Chapters 1 and 2).

Information principles: Uncertainties and unknowns - section 10 of the Act

10 Information principles

All persons exercising or performing functions, duties, or powers under this Act, in relation to the utilisation of fisheries resources or ensuring sustainability, shall take into account the following information principles:

(a) decisions should be based on the best available information:
(b) decision makers should consider any uncertainty in the information available in any case:
(c) decision makers should be cautious when information is uncertain, unreliable, or inadequate:
(d) the absence of, or any uncertainty in, any information should not be used as a reason for postponing or failing to take any measure to achieve the purpose of this Act.

834. Section 2(1) of the Act defines "best available information" to mean "the best information that, in the particular circumstances, is available without unreasonable costs, effort, or time."

Consultation – sections 12 and 21 of the Act

Section 12 of the Act

12 Consultation

(1) Before doing anything under any of sections 11(1), 11(4), 11A(1), 13(1), 13(4), 13(7) , 14(1), 14(3), 14(6), 14B(1), 15(1), and 15(2) or recommending the making of an Order in Council under section 13(9) or section 14(8) or section 14A(1), the Minister shall—

(a) consult with such persons or organisations as the Minister considers are representative of those classes of persons having an interest in the stock or the effects of fishing on the aquatic environment in the area concerned, including Māori, environmental, commercial, and recreational interests; and

(b) provide for the input and participation of tangata whenua having—

(i) a non-commercial interest in the stock concerned; or

(ii) an interest in the effects of fishing on the aquatic environment in the area concerned—

and have particular regard to kaitiakitanga.

835. Before making a decision on sustainability measures, you must consult with people or organisations you consider represent those classes of people who have an interest in the stock or the effects of fishing on the aquatic environment in the area concerned, including Māori, environmental, commercial, and recreational interests. After making decisions, you must provide the reasons for your decisions to the people consulted.

Input and participation of tangata whenua

836. Before undertaking any sustainability process you must provide for the input and participation of tangata whenua who have a non-commercial interest in the stock or an interest in the effects of fishing on the aquatic environment in the area concerned.

837. Input and participation of tangata whenua into the sustainability decision-making process is provided mainly through Iwi Fisheries Forums, which have been established for that purpose. Each Iwi Fisheries Forum can develop an Iwi Fisheries Forum Plan that describes how the iwi in the Forum exercise kaitiakitanga over the fisheries of importance to them, and their objectives for the management of their interest in fisheries. Iwi Fisheries Forums may also be used as entities to consult iwi with an interest in fisheries.[225]

838. The Ministry has worked with iwi to develop engagement processes that enable iwi to work together to reach a consensus where possible and to inform the Ministry on how tangata whenua wish to exercise kaitiakitanga with respect to fish stocks in which they share rights and interests, and how those rights and interests may be affected by sustainability measures proposed by the Ministry.

[225] However, FNZ also engages directly with Iwi (outside of Forums) on matters that affect their fisheries interests in their takiwā (district) and consults with any affected Mandated Iwi Organisations and Iwi Governance Entities where needed.

839. The stock-specific advice chapters within this decision document provide information about the input and participation of tangata whenua undertaken for each review, and describe the feedback provided by tangata whenua on the proposals.

Kaitiakitanga

840. In considering the views of tangata whenua, you are required to have particular regard to kaitiakitanga.[226] Information provided by forums, and iwi views on the management of fisheries resources and fish stocks, as set out in Iwi Fisheries Plans, are ways that tangata whenua can exercise kaitiakitanga in respect of fish stocks.

841. As noted above, section 12(1)(b) of the Act requires that before undertaking any sustainability process you shall provide for the input and participation of tangata whenua who have a non-commercial interest in the stock or an interest in the effects of fishing on the aquatic environment in the area concerned.

842. The Court of Appeal discussed the distinction between "have regard" and "have particular regard" in the Kahawai case and stated:[227]

> *One would expect that the term "particular regard" has a meaning that involves a greater obligation on the decision-maker than the requirement to have "regard" to a consideration. Parliament must have intended that the former imported a more onerous obligation than the latter.*

843. And that:[228]

> *[W]here the decision-maker is required to have particular regard to a number of factors of varying relevance, which are expressed as general purposes rather than specific criteria, the decision-maker must be permitted to discount those which are not relevant and give varying weight to those that are. In those circumstances, the requirement to have particular regard requires the decision-maker to satisfy himself or herself that the decision meets those of the purposes which are of most relevance, to the extent that that can be achieved in harmony with other relevant considerations applying to the decision.*

Section 21 of the Act

21 Matters to be taken into account in setting or varying any total allowable commercial catch

(1) In setting or varying any total allowable commercial catch for any quota management stock, the Minister shall have regard to the total allowable catch for that stock and shall allow for—
  (a) the following non-commercial fishing interests in that stock, namely—
    (i) Māori customary non-commercial fishing interests; and
    (ii) recreational interests; and
  (b) all other mortality to that stock caused by fishing.

(2) Before setting or varying a total allowable commercial catch for any quota management stock, the Minister shall consult such persons and organisations as the Minister considers are representative of those classes of persons having an interest in this section, including Māori, environmental, commercial, and recreational interests.

(3) After setting or varying any total allowable commercial catch under section 20, the Minister shall, as soon as practicable, give to the parties consulted under subsection (2) reasons in writing for his or her decision.

(4) When allowing for Māori customary non-commercial interests under subsection (1), the Minister must take into account—
  (a) any mataitai reserve in the relevant quota management area that is declared by the Minister by notice in the Gazette under regulations made for the purpose under section 186:
  (b) any area closure or any fishing method restriction or prohibition in the relevant quota management area that is imposed by the Minister by notice in the Gazette made under section 186A.

(5) When allowing for recreational interests under subsection (1), the Minister shall take into account any regulations that prohibit or restrict fishing in any area for which regulations have been made following a recommendation made by the Minister under section 311.

844. When setting the TACC you must make allowances for Māori customary non-commercial fishing interests, recreational interests, and all other mortality to the stock caused by fishing. Before setting the TACC, you must consult with people and organisations that you consider are representative of those classes of people having an interest in the TACC, including Māori, environmental, commercial, and recreational interests. After making decisions, you must give those consulted the reasons for your decisions.

[226] The Fisheries Act defines kaitiakitanga to mean "the exercise of guardianship; and, in relation to any fisheries resources, includes the ethic of stewardship based on the nature of the resources, as exercised by the appropriate tangata whenua in accordance with tikanga Māori", where tikanga Māori refers to Māori customary values and practices.

[227] *Sanford Ltd v New Zealand Recreational Fishing Council Inc* [2008] NZCA 160 at [99].

[228] *Sanford Ltd v New Zealand Recreational Fishing Council Inc* [2008] NZCA 160 at [99].

845. The Courts have considered what is involved in making allowances for non-commercial interests. In *Snapper 1*[229] the Court of Appeal said that the recreational allowance is simply the best estimate of what recreational fishers will catch while subject to the controls you decide to impose, such as daily limits and minimum sizes. Having set the TAC, you may apportion it among the relevant interests.[230]

846. The Supreme Court in the Kahawai case[231] endorsed this approach and said that the words 'allow for' require you both to take into account the interests and make provision for them in the calculation of the TACC.[232] The Court further noted that:[233]

> *The sequential nature of the method of allocation provided for in s 21 does not indicate that non-commercial fishing interests are to be given any substantive priority over commercial interests. In particular, the allowance for recreational interests is to be made keeping commercial interests in mind.*

847. Under the customary fishing regulations,[234] customary take is regulated through the authorisation system which requires that all customary fishing is to be undertaken in accordance with tikanga and the overall sustainability of the fishery. This framework was put in place to give effect to legal obligations in the Settlement Act.[235]

848. When allowing for Māori customary non-commercial fishing interests, you must take into account any mātaitai reserves, area closures or fishing method restrictions or prohibitions in the relevant area. The mātaitai reserves and other customary management tools relevant to each review are set out within their respective consultation documents.

849. When allowing for recreational interests you must take into account any regulations that prohibit or restrict fishing under section 311 of the Act.

Judicial guidance on allocation decisions under section 21

850. Relevant judicial findings provide useful guidance in terms of your allocation decisions under section 21 of the Act.

851. In the Kahawai case, the Supreme Court said that the wording of the Act sets out a particular order of decisions – after allowing for Māori customary non-commercial fishing interests, recreational fishing interests, and all other sources of mortality, the remainder constitutes the TACC.[236] On their ordinary meaning the words "allow for" require you both to take into account those interests, and to make provision for them in the calculation of the TACC.[237] That does not, however, mandate any particular outcome.[238]

852. Importantly, the Act does not confer priority for any interest over the other[239] and does not limit the relative weight which you may give to the interests of competing sectors.[240] It leaves that judgement to you.

853. The Courts have also provided guidance as to the nature of the allowances to be provided. Where there are competing demands exceeding an available resource it could perhaps be said you can "allow for" use by dispensing a lesser allotment than complete satisfaction, creating not a full priority but some degree of shared pain.[241] The requirement to "allow for" the recreational interest can be construed as meaning to "allow for in whole or part".[242] The Supreme Court stated that the Act envisages that the allowance for recreational interest, as well as Māori customary fishing interests and the TACC, will be a reasonable one in all the circumstances.[243]

854. Section 21 is concerned with allocation of a limited resource and that what is allowed for non-commercial fishing interests will impact on the total allowable commercial catch.[244] The consideration of the wellbeing

[229] *New Zealand Fishing Industry Association Inc v Minister of Fisheries* CA 82/97, 22 July 1997 (Snapper 1).
[230] At [17].
[231] *New Zealand Recreational Fishing Council Inc v Sanford Ltd* [2009] NZSC 54, [2009] 3 NZLR 438 (Kahawai)
[232] At [55].
[233] At [61].
[234] Fisheries (South Island Customary Fishing) Regulations 1999 and the Fisheries (Kaimoana Customary Fishing) Regulations 1998
[235] Where the customary regulations don't apply customary fishing is regulated under regulations 50-52 of the Fisheries (Amateur Fishing) Regulations 2013 and a similar authorisation system applies.
[236] *New Zealand Recreational Fishing Council Inc v Sanford Ltd* [2009] NZSC 54 at [53].
[237] *New Zealand Recreational Fishing Council Inc v Sanford Ltd* [2009] NZSC 54 at [55].
[238] *Sanford Ltd v New Zealand Recreational Fishing Council Inc* [2008] NZCA 160 at [57].
[239] *New Zealand Recreational Fishing Council Inc v Sanford Ltd* [2009] NZSC 54 at [65].
[240] *Sanford Ltd v New Zealand Recreational Fishing Council Inc* [2008] NZCA 160 at [61].
[241] *Roach v Kidd* HC Wellington CP715/91, 12 October 1992 at 16 per McGechan J.
[242] *New Zealand Federation of Commercial Fishermen Inc v Minister of Fisheries* HC Wellington CP237/95, 24 April 1997 at 150 per McGechan J.
[243] *New Zealand Recreational Fishing Council Inc v Sanford Ltd* [2009] NZSC 54 at [65].
[244] *New Zealand Recreational Fishing Council Inc v Sanford Ltd* [2009] NZSC 54 at [53].

factor (as expressed in section 8 of the Act) requires a balance of competing interests, especially in the case of a shared fishery.[245]

855. In terms of recreational interests, the Supreme Court stated that: [246]

> *Although what the Minister allows for is an estimate of what recreational interests will catch, it is an estimate of a catch which the Minister is able to control. The Minister is, for example, able to impose bag and fish length limits. The allowance accordingly represents what the Minister considers recreational interests should be able to catch but also all that they will be able to catch. The Act envisages that the relevant powers will be exercised as necessary to achieve that goal.*

856. No implied obligation to attain proportionality between commercial and recreational catch arises from the legislation. The imprecise [estimation] of the recreational catch precludes strict proportionality.[247] Further, the Court of Appeal said: [248]

> *We can see no reason why either as his primary purpose or as a consequence of some other purpose the Minister should not be able to vary the ratio between commercial and recreational interests….*
> *If over time a greater recreational demand arises it would be strange if the Minister was precluded by some proportional rule from giving some extra allowance to cover it, subject always to his obligation to carefully weigh all the competing demands on the TAC before deciding how much should be allocated to each interest group.*

857. The High Court said earlier in that case: [249]

> *It is not outside or against the purposes of the Act to allow a preference to non-commercials … to the disadvantage in fact of commercials and their valued ITQ rights, even to the extent of the industry's worst case of a decision designed solely to give recreationalists greater satisfaction. Both are within the Act.*

858. The Courts have also emphasised the importance of decisions undertaken for sustainability purposes not being undermined by increased fishing by one or other of the fishing sectors. In the Snapper 1 case the High Court said: [250]

> *[W]hen Parliament empowered the Minister to reduce the TACC for conservation purposes—not to improve recreational catch rate—it expected the Minister to take any concurrent steps necessary to minimise sabotage by recreational fishing. . . The significant point is that both law and common sense dictate that a Minister should not reduce the TACC for conservation reasons unless able to take, and taking, reasonable steps to avoid the reduction being rendered futile through increased recreational fishing.*

859. While this statement relates to reduction of the TACC, the principle equally applies in situations where measures are enacted to rebuild a fishery. Litigation relating to management decisions for kahawai involved this very issue, where the failure to agree to a reduction in the daily bag limit was found to be unlawful.[251]

860. With respect to quota granted to iwi under the Settlement Act and the Māori Fisheries Act 1989, in the Snapper 1 case the Court of Appeal said: [252]

> *Under the settlement Māori became holders of quota along with all other holders. Their rights were in our view no more and no less than those of non-Māori quota holders….*
>
> *Under s5 of the 1996 Act the Minister in making future decisions is obliged to act in a manner consistent with the Settlement Act. The idea that the settlement is any the less just, honourable and durable should Māori quota be reduced, is unpersuasive. An asset which Māori obtained under the settlement had within it the capacity for diminution ... If that capacity is lawfully realised, there cannot be any complaint on the basis that the settlement has been broken or has not proved durable. Something which was liable to happen under the settlement has happened. A reduction in TACC, which is otherwise lawful, cannot be viewed as a decision by the Minister inconsistent with the Settlement Act.*

861. While the Court of Appeal was dealing with a TAC/TACC reduction for sustainability purposes, the same principle would apply in terms of an adjustment of the ratio of the TAC allocated to commercial and non-commercial fishing interests.

[245] *Sanford Ltd v New Zealand Recreational Fishing Council Inc* [2008] NZCA 160 at [61].
[246] *New Zealand Recreational Fishing Council Inc v Sanford Ltd* [2009] NZSC 54 at [56].
[247] *New Zealand Fishing Industry Association Inc v Minister of Fisheries* CA82/97, 22 July 1997 at 18.
[248] *New Zealand Fishing Industry Association Inc v Minister of Fisheries* CA82/97, 22 July 1997 at 17-18.
[249] *New Zealand Federation of Commercial Fishermen Inc v Minister of Fisheries* HC Wellington CP237/95, 24 April 1997 at 89 per McGechan J.
[250] *New Zealand Federation of Commercial Fishermen Inc v Minister of Fisheries* HC Wellington CP237/95, 24 April 1997 at 102 per McGechan J.
[251] *New Zealand Recreational Fishing Council Inc v Minister of Fisheries* HC Auckland CIV 2005-404-4495, 21 March 2007 at [110]-[126] per Harrison J.
[252] *New Zealand Fishing Industry Association Inc v Minister of Fisheries* CA82/97, 22 July 1997 at 20-21.

Statutory considerations relevant to TAC and TACC decisions

862. Below is a summary of your main statutory considerations for varying sustainability measures under the Act. The stock-specific details relating to these considerations have been set out later within the individual stock chapters of this document.

Sustainability measures – section 11 of the Act

11 Sustainability measures

(1) The Minister may, from time to time, set or vary any sustainability measure for 1 or more stocks or areas, after taking into account—

(a) any effects of fishing on any stock and the aquatic environment; and

(b) any existing controls under this Act that apply to the stock or area concerned; and

(c) the natural variability of the stock concerned.

(2) Before setting or varying any sustainability measure under subsection (1), the Minister shall have regard to any provisions of—

(a) any regional policy statement, regional plan, or proposed regional plan under the Resource Management Act 1991; and

(b) any management strategy or management plan under the Conservation Act 1987; and

(c) sections 7 and 8 of the Hauraki Gulf Marine Park Act 2000 (for the Hauraki Gulf as defined in that Act); and

(ca) regulations made under the Exclusive Economic Zone and Continental Shelf (Environmental Effects) Act 2012; and

(d) a planning document lodged with the Minister of Fisheries by a customary marine title group under section 91 of the Marine and Coastal Area (Takutai Moana) Act 2011—

that apply to the coastal marine area and are considered by the Minister to be relevant.

(2A) Before setting or varying any sustainability measure under this Part or making any decision or recommendation under this Act to regulate or control fishing, the Minister must take into account—

(a) any conservation services or fisheries services; and

(b) any relevant fisheries plan approved under this Part; and

(c) any decisions not to require conservation services or fisheries services.

(3) Without limiting the generality of subsection (1), sustainability measures may relate to—

(a) the catch limit (including a commercial catch limit) for any stock or, in the case of a quota management stock that is subject to section 13 or section 14, any total allowable catch for that stock:

(b) the size, sex, or biological state of any fish, aquatic life, or seaweed of any stock that may be taken:

(c) the areas from which any fish, aquatic life, or seaweed of any stock may be taken:

(d) the fishing methods by which any fish, aquatic life, or seaweed of any stock may be taken or that may be used in any area:

(e) the fishing season for any stock, area, fishing method, or fishing vessels.

Fisheries Plans – section 11A of the Act

11A Fisheries plans

(1) The Minister may from time to time approve, amend, or revoke a fisheries plan.

(2) A fisheries plan approved under subsection (1) may relate to 1 or more stocks, fishing years, or areas, or any combination of those things.

(3) Without limiting anything in subsection (2), a fisheries plan may include—

(a) fisheries management objectives to support the purpose and principles of the Act:

(b) strategies to achieve fisheries management objectives, which may include—

(i) sustainability measures set or varied under any of sections 11, 13, 14, and 15:

(ii) rules to manage the interaction between different fisheries sectors:

(c) performance criteria to measure the achievement of the objectives and strategies:

(d) conservation services or fisheries services:

(e) contingency strategies to deal with foreseeable variations in circumstances.

863. Under section 11A, you may approve or revoke fisheries plans. To date, national fisheries plans have been approved for inshore, deepwater and highly migratory species, the Hauraki Gulf fisheries, the Foveaux Strait oyster fishery, PAU 3 (A & B), and PAU 4 (Chatham Islands).

864. Other plans and strategies that are not mandatory considerations under section 11 of the Act may be considered relevant to sustainability reviews.

865. **Conservation services** means **outputs** produced in relation to the adverse effects of commercial fishing on protected species, as agreed between the Minister responsible for the administration of the Conservation Act 1987 and the Director-General of the Department of Conservation, including:

a) research relating to those effects on protected species,
b) research on measures to mitigate the adverse effects of commercial fishing on protected species, or
c) the development of population management plans under the Wildlife Act 1953 and Marine Mammals Protection Act 1978.

866. **Outputs** means the **goods** and services that are produced by a department, Crown entity, Office of Parliament, or any other person or body.

867. **Fisheries services** means **outputs** produced for the purpose of this Act as agreed between the Minister and the chief executive; and includes:

a) the management of fisheries resources, fishing, and fish farming,
b) the enforcement of provisions relating to fisheries resources, fishing, and fish farming,
c) research relating to fisheries resources, fishing, and fish farming, including stock assessment and the effects of fishing and fish farming on the aquatic environment

The Hauraki Gulf Marine Park Act 2000

868. Section 11 of the Fisheries Act requires you to have regard to sections 7 and 8 of the Hauraki Gulf Marine Park Act 2000 (**HGMPA**) when setting or varying a TAC that includes the area of the Hauraki Gulf as defined in that Act. Section 13 of the HGMPA requires that you have particular regard to sections 7 and 8 of the HGMPA when setting or varying TACCs and deemed value rates.

7 Recognition of national significance of the Hauraki Gulf

(1) The interrelationship between the Hauraki Gulf, its islands, and catchments and the ability of that interrelationship to sustain the life-supporting capacity of the environment of the Hauraki Gulf and its islands are matters of national significance.

(2) The life-supporting capacity of the environment of the Gulf and its islands includes the capacity—

a. to provide for—

(i) the historic, traditional, cultural, and spiritual relationship of the tangata whenua of the Gulf with the Gulf and its islands; and

(ii) the social, economic, recreational, and cultural well-being of people and communities:

b. to use the resources of the Gulf by the people and communities of the Gulf and New Zealand for economic activities and recreation:

c. to maintain the soil, air, water, and ecosystems of the Gulf.

869. Section 7 of the HGMPA recognises the national significance of the Hauraki Gulf. Section 8 sets out objectives for management of the Gulf. The HGMPA is discussed in Chapter 1.

8 Management of the Hauraki Gulf

To recognise the national significance of the Hauraki Gulf, its islands, and catchments, the objectives of the management of the Hauraki Gulf, its islands, and catchments are—

a. the protection and, where appropriate, the enhancement of the life-supporting capacity of the environment of the Hauraki Gulf, its islands, and catchments:

b. the protection and, where appropriate, the enhancement of the natural, historic, and physical resources of the Hauraki Gulf, its islands, and catchments:

c. the protection and, where appropriate, the enhancement of those natural, historic, and physical resources (including kaimoana) of the Hauraki Gulf, its islands, and catchments with which tangata whenua have an historic, traditional, cultural, and spiritual relationship:

d. the protection of the cultural and historic associations of people and communities in and around the Hauraki Gulf with its natural, historic, and physical resources:

e. the maintenance and, where appropriate, the enhancement of the contribution of the natural, historic, and physical resources of the Hauraki Gulf, its islands, and catchments to the social and economic well-being of the people and communities of the Hauraki Gulf and New Zealand:

f. the maintenance and, where appropriate, the enhancement of the natural, historic, and physical resources of the Hauraki Gulf, its islands, and catchments, which contribute to the recreation and enjoyment of the Hauraki Gulf for the people and communities of the Hauraki Gulf and New Zealand.

870. Section 13 of the HGMPA requires that decisions under various acts, including the Fisheries Act, that affect the Hauraki Gulf must have particular regard to sections 7 and 8 of the HGMPA. This applies to the setting or varying of TACCs and deemed values.

13 Obligation to have particular regard to sections 7 and 8

Except as provided in sections 9 to 12, in order to achieve the purpose of this Act, all persons exercising powers or carrying out functions for the Hauraki Gulf under any Act specified in Schedule 1 must, in addition to any other requirement specified in those Acts for the exercise of that power or the carrying out of that function, have particular regard to the provisions of sections 7 and 8.

871. The HGMPA is relevant to your decision making for CRA 2, which includes rock lobster in the Hauraki Gulf. The relevance of the HGMPA for the proposed measures in CRA 2 is discussed further within the specific chapter of advice for CRA 2.

Relevant strategies and plans

872. Within the individual stock chapters of this document we have highlighted which strategies and plans are important to consider for those stocks and their proposed sustainability measures (including those plans which you must take into account or have regard to under the Act).

873. Te Mana o te Taiao (the Aotearoa New Zealand Biodiversity Strategy) is also broadly relevant to the proposed changes for both stocks.[253] Te Mana o te Taiao sets a strategic direction for the protection, restoration and sustainable use of biodiversity, particularly indigenous biodiversity in New Zealand. The strategy sets a number of objectives and goals across three timeframes. The most relevant to setting sustainability measures for fish stocks are Objectives 10 and 12:

874. **Objective 10:** Ecosystems and species are protected, restored, resilient and connected from mountain tops to ocean depths. Relevant goals within Objective 10 include:

- **10.1.1** Prioritised research is improving baseline information and knowledge of species and ecosystems.
- **10.4.1** Significant progress has been made in identifying, mapping, and protecting coastal ecosystems and identifying and mapping marine ecosystems of high biodiversity value.
- **10.5.1** A framework has been established to promote ecosystem-based management, protect, and enhance the health of marine and coastal ecosystems, and manage them within clear environmental limits.
- **10.6.1** A protection standard for coastal and marine ecosystems established and implementation underway.

875. **Objective 12:** Natural resources are managed sustainably. Relevant goals within Objective 12 include:

- **12.1.1** Environmental limits for the sustainable use of resources from marine ecosystems have been agreed on and are being implemented.
- **12.1.2** Marine fisheries are being managed within sustainable limits using an ecosystem-based approach.
- **12.1.3** Marine fisheries resources are abundant, resilient, and managed sustainably to preserve ecosystem integrity.
- **12.2.1** The number of fishing-related deaths of protected marine species is decreasing towards zero for all species.
- **12.2.2** The direct effects of fishing do not threaten protected marine species populations or their recovery.
- **12.2.3** The mortality of non-target species from marine fisheries has been reduced to zero.

[253] Te Mana o te Taiao is not a mandatory consideration under section 11 of the Act. However, the strategy is intended to guide in maintaining biodiversity, consistent with the purpose of the Act and the environmental principle under section 9(b) that biological diversity of the aquatic environment should be maintained.

876. FNZ is working with the Department of Conservation and other agencies on implementation plans for the strategy. As part of those plans, we have identified areas of focus and actions for FNZ in delivering Government biodiversity objectives including progression to a more integrated ecosystem-based approach to managing fisheries. In that context, the individual stock chapters contain information on potential impacts on biodiversity, ecosystem function, and habitat protection, consistent with your legislative obligations and the intent of Te Mana o te Taiao.

Total allowable catch – section 13 of the Act

877. The TAC sets the total quantity of a stock that can be harvested each year. The TAC is set to ensure that stock abundance is at or above the level that will produce the maximum sustainable yield (***MSY***). In cases where stock abundance is below the level that will produce *MSY*, the TAC is varied in a way that will help move abundance back toward a level that supports *MSY*. After setting or varying the TAC for a stock, a separate decision arises for allocating the TAC. This involves deciding what portion of the TAC is available for Māori customary non-commercial fishing interests, recreational interests, all other mortality to the stock caused by fishing,[254] and commercial fishing (the TACC).

Figure 1: The Total Allowable Catch and components within it.

878. You have considerable discretion in determining the allocation between sector interests (there is no legal priority given to one sector over the other), provided you have considered the relevant factors.

[254] The allowance for all other sources of mortality to a stock caused by fishing is intended to capture matters such as illegal take, discards, and incidental mortality from fishing gear. This allowance can be difficult to estimate and typically varies depending on the likely level of illegal take and predominant fishing methods used.

13 Total allowable catch

(1) Subject to this section, the Minister shall, by notice in the Gazette, set in respect of the quota management area relating to each quota management stock a total allowable catch for that stock, and that total allowable catch shall continue to apply in each fishing year for that stock unless varied under this section, or until an alteration of the quota management area for that stock takes effect in accordance with sections 25 and 26.

(2) The Minister shall set a total allowable catch that—

(a) maintains the stock at or above a level that can produce the maximum sustainable yield, having regard to the interdependence of stocks; or

(b) enables the level of any stock whose current level is below that which can produce the maximum sustainable yield to be altered—

(i) in a way and at a rate that will result in the stock being restored to or above a level that can produce the maximum sustainable yield, having regard to the interdependence of stocks; and

(ii) within a period appropriate to the stock, having regard to the biological characteristics of the stock and any environmental conditions affecting the stock; or

(c) enables the level of any stock whose current level is above that which can produce the maximum sustainable yield to be altered in a way and at a rate that will result in the stock moving towards or above a level that can produce the maximum sustainable yield, having regard to the interdependence of stocks.

(2A) For the purposes of setting a total allowable catch under this section, if the Minister considers that the current level of the stock or the level of the stock that can produce the maximum sustainable yield is not able to be estimated reliably using the best available information, the Minister must—

(a) not use the absence of, or any uncertainty in, that information as a reason for postponing or failing to set a total allowable catch for the stock; and

(b) have regard to the interdependence of stocks, the biological characteristics of the stock, and any environmental conditions affecting the stock; and

(c) set a total allowable catch—

(i) using the best available information; and

(ii) that is not inconsistent with the objective of maintaining the stock at or above, or moving the stock towards or above, a level that can produce the maximum sustainable yield.

(3) In considering the way in which and rate at which a stock is moved towards or above a level that can produce maximum sustainable yield under subsection (2)(b) or (c), or (2A) (if applicable), the Minister shall have regard to such social, cultural, and economic factors as he or she considers relevant.

(4) The Minister may from time to time, by notice in the Gazette, vary any total allowable catch set for any quota management stock under this section by increasing or reducing the total allowable catch. When considering any variation, the Minister is to have regard to the matters specified in subsections (2), (2A) (if applicable), and (3).

(5) Without limiting subsection (1) or subsection (4), the Minister may set or vary any total allowable catch at, or to, zero.

(6) Except as provided in subsection (7), every setting or variation of a total allowable catch shall have effect on and from the first day of the next fishing year for the stock concerned.

879. If you consider that stock levels (being the current level of the stock, or the level which can produce the *MSY*) cannot be estimated reliably using the best available information, you must not use the absence of or uncertainty in that information as a reason for postponing or failing to set a TAC. You must set a TAC for the stock using the best available information and that is not inconsistent with the objective of maintaining the stock at or above or moving the stock towards or above a level that can produce *MSY*. In doing so you must have regard to the interdependence of stocks, the biological characteristics of the stock, and any environmental conditions affecting the stock.

880. When moving a stock towards or above a level that can produce the maximum sustainable yield under subsection (2)(b) or (c), or (2A), you must have regard to any social, cultural, and economic factors you consider relevant when considering the way and rate at which a stock is moved. This is relevant to your decision making for CRA 2 (rock lobster in the Hauraki Gulf, Coromandel, and Bay of Plenty), and FNZ has reflected this within our advice for this stock in Chapter 1.

881. Section 13 also provides information about when you can vary any TAC, that decisions must be notified in the *Gazette*, and about when decisions come into force.

Maximum sustainable yield

882. As noted above, section 13 of the Act requires you to set a stock's TAC at a level that maintains the stock at or above a level that can produce the maximum sustainable yield (***MSY***).

883. *MSY* is defined under the Act as 'the greatest yield that can be achieved over time while maintaining the stock's productive capacity, having regard to the population dynamics of the stock and any environmental factors that influence the stock'. A number of factors contribute to the determination of a stock's *MSY*, including how fast the species grows, when and how they reproduce, and the pattern of harvesting in the fishery. Typically, *MSY* for a fish stock is also variable over time, because of changes in productivity and environmental factors.

884. Scientific working groups often estimate *MSY*-compatible reference points for stocks based on the best available information, and management working groups can set fishery or stock targets that consider these estimates as an input. Where *MSY*-compatible reference points are not available for a stock, FNZ will use the default reference points of the Harvest Strategy Standard.

885. In the context of this review there are a number of stocks for which *MSY* is not able to be estimated due to a lack of available scientific information. Proposals for changes in catch limits for these stocks have been based on the best available information (which is often an assessment of trends in catch) and are considered to be not inconsistent with the objective of maintaining the stock at or above, or moving the stock towards or above, a level that can produce *MSY* as provided for by section 13(2A) of the Act.

The Harvest Strategy Standard

886. The Harvest Strategy Standard (**HSS**) is a policy statement of best practice in relation to the setting of fishery and stock targets and limits for fish stocks in New Zealand's Quota Management System (**QMS**). It is intended to provide guidance as to how fisheries law will be applied in practice, by establishing a consistent and transparent framework for decision-making to achieve the objective of providing for utilisation of New Zealand's QMS species while ensuring sustainability.

887. In the Tarakihi case[255] the Supreme Court considered whether the HSS and Operational Guidelines are mandatory relevant considerations for the Minister, and agreed that they are not. The Court held that the HSS and Operational Guidelines may contain "best available information" for the purposes of section 10 of the Fisheries Act, but the relevance of such information to any particular TAC decision depends on its accuracy, as a statistical matter, and the extent to which any underlying assumptions apply to that TAC decision.

888. It is important to note that a minimum requirement for satisfying the HSS is that fishery or stock targets will be set at the level of *MSY*-compatible reference points (however, they may also exceed this minimum requirement).

889. The HSS outlines FNZ's approach to relevant sections of the Act and, as such, forms a core input to FNZ's proposals on the management of fisheries, particularly the setting of TACs under section 13.

890. The HSS assists us to decide when a review of sustainability and related settings for a stock may be warranted, by establishing reference points and guidance for the fisheries management responses when stocks are at those reference points. The HSS establishes default targets and limits as a minimum standard (set out in Table 1).

Table 1: Guidelines on default targets as set out in the Harvest Strategy Standard.

Reference point	Default	Management response
Management target	Differs depending on productivity of the stock. 40% unfished biomass (B_0)[256] is the default target for low-productivity stocks	Stock permitted to fluctuate around this management target. TAC/TACC changes will be employed to keep the stock around the target (with at least a 50% probability of being at the target).
Soft limit	½ B_{MSY}[257] or 20% B_0, whichever is higher	A formal, time-constrained rebuilding plan will be implemented if this limit is reached.
Hard limit	¼ B_{MSY} or 10% B_0, whichever is higher	The limit below which fisheries will be considered for closure.

[255] *Seafood New Zealand Limited v Royal Forest & Bird Protection Society of New Zealand Incorporated and Others* (SC 99/2023) [2024] NZSC 111.
[256] B_0, the level of unfished (virgin) biomass of a fish stock, is the theoretical carrying capacity of recruited or vulnerable biomass. It represents the level of biomass a fish population would eventually return to if fishing was halted.
[257] B_{MSY} is the biomass that enables a fish stock to deliver the maximum sustainable yield.

Reference point	Default	Management response
Rebuild strategy		Stocks that have fallen below the soft limit should be rebuilt back to at least the target level in a time frame between T_{min} and 2*T_{min} with an acceptable probability. Stocks will be considered to have been fully rebuilt when it can be demonstrated that there is at least 70% probability that the target has been achieved and there is at least 50% probability that the stock is above the soft limit.[258] T_{min} is the number of years to rebuild a stock to the target, in the absence of fishing.

Categories used to describe stock status in relation to the target and limits

891. In cases where a fish stock's status is known in relation to its management target and/or hard or soft limit,[259] we use probability categories to define the status and surrounding uncertainty. These categories relate to the probability of stocks being 'at or above' biomass targets, below biomass limits, and above overfishing thresholds. Categorisations are derived from our Fisheries Assessment Plenary.[260] Table 2 below provides a summary of the category descriptions and their associated probabilities.

Table 2: Descriptions of stock status and their represented probabilities.

Description	Probability
Virtually Certain	> 99 %
Very Likely	> 90 %
Likely	> 60 %
About as Likely as Not	40–60 %
Unlikely	< 40 %
Very Unlikely	< 10 %
Exceptionally Unlikely	< 1 %

892. For example, if a fish stock is described as 'Very Likely' to be at or above management target, this means that there is a more than 90% probability that the fish stock is at or above its management target (in this case the stock is most likely well above its target). Note that the designations reflect both the model-based estimates and the level of robustness of the models as determined by FNZ's peer review processes.

893. Fish stocks fluctuate due to environmental variation and can never be maintained 'at' a particular level: fisheries managers aim to ensure that stocks fluctuate around their management targets, and TAC/TACC changes are employed to keep the stocks near those management targets. Generally, this means that FNZ attempts to manage fisheries so that stocks are at least About as Likely as Not (40-60% probability) to be at or above their management targets.

894. Within our advice to you, we have used these categories where applicable and included the associated probabilities within parentheses.

[258] A stock that has a probability of 70% of having achieved the target must have more than a 50% probability of being above the soft limit. Fisheries New Zealand notes this was an error and that the 50% should have been a higher number, such as 80% or 90%.

[259] This is the case for fish stocks in which TACs are being set or varied under section 13(2)(a), (b), or (c) of the Act.

[260] Fisheries Assessment Plenaries summarise fisheries, biological, environmental, and stock assessment information for NZ's commercial fish species and groups. The Plenaries, which are released annually in May and November (two different versions covering different stocks) provide our best available information on stock status for QMS fish stocks, including rock lobster. FNZ incorporates new research and information into the plenaries on an annual basis. This research and information is reviewed through a plenary working group process (led by FNZ's science team) that includes input from fisheries scientists, subject matter experts and fisheries stakeholders.

Setting and variation of the total allowable commercial catch (TACC) – section 20 of the Act

20 Setting and variation of total allowable commercial catch

(1) Subject to this section, the Minister shall, by notice in the Gazette, set in respect of the quota management area relating to each quota management stock a total allowable commercial catch for that stock, and that total allowable commercial catch shall continue to apply in each fishing year for that stock unless varied under this section, or until an alteration of the quota management area for that stock takes effect in accordance with sections 25 and 26.

(2) The Minister may from time to time, by notice in the Gazette, vary any total allowable commercial catch set for any quota management stock by increasing or reducing that total allowable commercial catch.

(3) Without limiting the generality of subsections (1) and (2), the Minister may set or vary a total allowable commercial catch at, or to, zero.

(4) Every total allowable commercial catch set or varied under this section shall have effect on and from the first day of the next fishing year for the quota management stock concerned.

(5) A total allowable commercial catch for any quota management stock shall not—

(a) be set unless the total allowable catch for that stock has been set under section 13 or section 14; or

(b) be greater than the total allowable catch set for that stock.

895. Once the TAC is set for a stock, you must set the Total Allowable Commercial Catch (**TACC**) for the stock. The TACC cannot be larger than the TAC for a stock.

Statutory considerations relevant to deemed value rate decisions

Deemed value framework

896. The Quota Management System is the backbone of New Zealand's fisheries management regime and includes a total of 642 fish stocks representing 98 species or species groups. Balancing catch against catching rights is key to ensuring the integrity of the QMS.

897. On the first day of each fishing year,[261] all quota owners are allocated ACE, based on their share of quota and the current TACC. ACE may be freely traded between fishers to balance against catch. Under the catch balancing regime, deemed values are charges that commercial fishers must pay for every unprocessed kilogram of QMS fish landed in excess of their ACE holdings ($/kg).

898. The purpose of the deemed values regime is to provide incentives for individual fishers to acquire or maintain sufficient ACE to cover catch taken over the course of the year while allowing flexibility in the timing of balancing, promoting efficiency, and encouraging accurate catch reporting. By achieving this purpose, deemed values act to protect the long-term value of stocks and support kaitiakitanga[262] by providing incentives for the overall commercial catch for each QMS stock to remain within the total available ACE.

899. The effectiveness of the incentive to balance catch against ACE is dependent on individual fishers' compliance with landing and reporting requirements, their responses to the incentives provided, and the impact of other incentives such as those created by market conditions.

Deemed value rates

900. Deemed values are the charges that commercial fishers must pay for every unprocessed kilogram of QMS fish landed in excess of their ACE holdings ($/kg). By providing incentives for commercial catch to not exceed the available ACE, deemed values are a key component of the catch balancing regime.

901. You have discretion to set or vary deemed value rates for stocks, by Gazette Notice, under section 75 of the Act. Your requirements for consultation on deemed values are outlined under section 75A of the Act.

902. FNZ has not provided guidance on deemed value setting within this addendum because deemed value rate changes are not being proposed for CRA 2 or CRA 7 (note that deemed value rates are the same for all rock lobster stocks). If you are interested in further analysis and advice regarding rock lobster deemed value rates, FNZ can provide this separately upon request.

[261] Depending on the stock, fishing years commence 1 October, 1 April, and 1 February.

[262] The Act defines kaitiakitanga to mean "the exercise of guardianship; and, in relation to any fisheries resources, includes the ethic of stewardship based on the nature of the resources, as exercised by the appropriate tangata whenua in accordance with tikanga Māori", where tikanga Māori refers to Māori customary values and practices.

Addendum 2: Table of regional plan provisions and policy statements

903. This table is linked to FNZ's assessment of sustainability proposals under section 11(2) of the Act. FNZ has reviewed these provisions and policy statements and plans relevant for each of the fish stocks and proposals under review. The provisions are not stock-specific, and for the most part, are of a general nature and focus mostly on land-based stressors on the marine environment.

Regional Council	Document	Relevant sections
Auckland	**Auckland Council Regional Policy Statement**	2.4.7 Auckland's coastal environment is a fundamental part of its heritage and is sensitive to the adverse effects of inappropriate subdivision, use and development. It is also essential for the Region's social and economic wellbeing. The Hauraki Gulf and its islands are resources of regional and national significance for navigation and port purposes, fishing, recreation, tourism and settlement. The Hauraki Gulf Marine Park Act 2000 requires the Council maintains the interrelationship between the Hauraki Gulf, its islands and catchments to sustain the life supporting capacity of the environment. Harbours, such as the Mahurangi, sustain a variety of recreational uses as well as commercial shell fisheries. The catchment also contains large tracts of forest and some urbanisation. These potentially conflicting uses must be carefully managed to ensure this diversity of use is sustainable and the resource qualities are maintained. **7 Coastal Environmental** 7.3 Objectives 2. To protect outstanding natural features and landscapes, areas of significant indigenous vegetation and significant habitats of indigenous fauna, and significant historic and cultural places and areas in the coastal environment. **7.4.4 Policies: Natural character of the coastal environment** 1. The natural character of the coastal environment shall be preserved, and protected from inappropriate subdivision, use and development by: d) areas of indigenous vegetation and habitats of indigenous fauna and associated processes; g) habitat important for preserving the range, abundance and diversity of indigenous and migratory coastal species; (ii) In all other areas, avoiding any adverse effects which result in the significant reduction in habitat important for preserving the range and diversity of indigenous and migratory coastal species within the Auckland Region.
	Auckland Unitary Plan	**Section B6 – Mana Whenua** Section B6.3.2 of the Auckland Unitary Plan states its policy to: "(4) Provide opportunities for Mana Whenua to be involved in the integrated management of natural and physical resources in ways that do all of the following: (a) Recognise the holistic nature of the Mana Whenua world view; (b) Recognise any protected customary right in accordance with the Marine and Coastal Area (Takutai Moana) Act 2011; and (c) Restore or enhance the mauri of freshwater and coastal ecosystems."

Regional Council	Document	Relevant sections
		Section B7 – Natural Resources Section B7.1 of the Auckland Unitary Plan notes that the combination of urban growth and past land, coastal and freshwater management practices have placed increasing pressure on land and water resources including habitats and biodiversity. Section B7.7 of the Auckland Unitary Plan states that: Coastal and marine ecosystems are also subject to change, damage or destruction from inappropriate subdivision, use and development, as well as natural processes. Areas containing threatened ecosystems and species require effective management to protect them, and enhance their resilience which is important for the long-term viability of indigenous biodiversity and to help respond to the potential effects of climate change. Effectively addressing these issues requires a combination of regulatory and voluntary efforts. Areas of high ecological value have been identified as significant ecological areas using significance factors set out in the schedules of the Unitary Plan. (See Schedule 3 Significant Ecological Areas – Terrestrial Schedule and Schedule 4 Significant Ecological Areas – Marine Schedule.) The coastal marine area has not yet been comprehensively surveyed for the purpose of identifying marine significant ecological areas. Those that have been identified may under-represent the extent of significant marine communities and habitats present in the sub-tidal areas of the region. It is important that both areas be considered together because of the dynamic and interconnected nature of coastal environments and because the classes may change over time as more knowledge is gained and as pressures on receiving environments change. There is evidence that even moderate levels of degradation can result in ecosystem level changes, and it is not yet known how reversible these changes might be. **Section B8 – Coastal Environment** Section B8.3.2 of the Auckland Unitary Plan lists policies for use and development, including: Provide for use and development in the coastal marine area that: (a) Have a functional need which requires the use of the natural and physical resources of the coastal marine area; (b) Are for the public benefit or public recreation that cannot practicably be located outside the coastal marine area; (c) Have an operational need making a location in the coastal marine area appropriate and that cannot practicably be located outside the coastal marine area; or (d) Enable the use of the coastal marine area by Mana Whenua for Māori cultural activities and customary uses. **Section B8.5. Managing the Hauraki Gulf/Te Moana Nui o Toi/Tīkapa Moana** Section B8.5 lists objectives and policies provide guidance on giving effect to the Hauraki Gulf Marine Park Act. Objectives include: (1) The management of the Hauraki Gulf gives effect to sections 7 and 8 of the Hauraki Gulf Marine Park Act 2000. (2) Use and development supports the social and economic well-being of the resident communities of Waiheke and Great Barrier islands, while maintaining or, where appropriate, enhancing the natural and physical resources of the islands.

Regional Council	Document	Relevant sections
		(3) Economic well-being is enabled from the use of the Hauraki Gulf's natural and physical resources without resulting in further degradation of environmental quality or adversely affecting the life-supporting capacity of marine ecosystems. Policies include: Integrated management (1) Encourage and support the restoration and enhancement of the Hauraki Gulf's ecosystems, its islands and catchments. (2) Require the integrated management of use and development in the catchments, islands, and waters of the Hauraki Gulf to ensure that the ecological values and life-supporting capacity of the Hauraki Gulf are protected, and where appropriate enhanced. (3) Require applications for use and development to be assessed in terms of the cumulative effect on the ecological and amenity values of the Hauraki Gulf, rather than on an areaspecific or case-by-case basis. (4) Maintain and enhance the values of the islands in the Hauraki Gulf. (5) Avoid use and development that will compromise the natural character, landscape, conservation and biodiversity values of the islands, particularly in areas with natural and physical resources that have been scheduled in the Unitary Plan in relation to natural heritage, Mana Whenua, natural resources, coastal, historic heritage and special character. (6) Promote the restoration and rehabilitation of natural character values of the islands of the Hauraki Gulf. (7) Ensure that use and development of the area adjoining conservation islands, regional parks or Department of Conservation land, does not adversely affect their scientific, natural or recreational values. (8) Enhance opportunities for educational and recreational activities on the islands of the Hauraki Gulf if they are consistent with protecting natural and physical resources, particularly in areas where natural and physical resources have been scheduled in the Unitary Plan in relation to natural heritage, Mana Whenua, natural resources, coastal, historic heritage and special character. (9) Identify and protect areas or habitats, particularly those unique to the Hauraki Gulf, that are: (a) significant to the ecological and biodiversity values of the Hauraki Gulf; and (b) vulnerable to modification; (10) Work with agencies and stakeholders to establish an ecological bottom line, or agreed target, for managing the Hauraki Gulf's natural and physical resources which will do all of the following: (a) provide greater certainty in sustaining the Hauraki Gulf's ongoing life-supporting capacity and ecosystem services; (b) assist in avoiding incremental and ongoing degradation; (c) co-ordinate cross-jurisdictional integrated management and effort to achieve agreed outcomes; (d) better measure the success of protection and enhancement initiatives; (e) assist in establishing a baseline for monitoring changes; (f) enable better evaluation of the social and economic cost-benefits of management; and (g) provide an expanded green-blue network linking restored island and mainland sanctuaries with protected, regenerating marine areas where the ecological health and productivity of the marine area will be enhanced.

Regional Council	Document	Relevant sections
		Providing for the relationship of Mana Whenua with the Hauraki Gulf (11) Work in partnership with Mana Whenua to protect and enhance culturally important environmental resources and values of the Hauraki Gulf that are important to their traditional, cultural and spiritual relationship with the Hauraki Gulf. (12) Incorporate mātauranga Māori with western knowledge in establishing management objectives for the Hauraki Gulf. (13) Require management and decision-making to take into account the historical, cultural and spiritual relationship of Mana Whenua with the Hauraki Gulf, and the ongoing capacity to sustain these relationships. Maintaining and enhancing social, cultural and recreation values (14) Identify and protect the natural and physical resources that have important cultural and historic associations for people and communities in and around the Hauraki Gulf. (15) Identify, maintain, and where appropriate enhance, areas of high recreational use within the Hauraki Gulf by managing water quality, development and potentially conflicting uses so as not to compromise the particular values or qualities of these areas that add to their recreational value. (16) Encourage the strategic provision of infrastructure and facilities to enhance public access and recreational use and enjoyment of the Hauraki Gulf. Providing for the use of natural and physical resources, and for economic activities (17) Provide for commercial activities in the Hauraki Gulf and its catchments while ensuring that the impacts of use, and any future expansion of use and development, do not result in further degradation or net loss of sensitive marine ecosystems. (18) Encourage the strategic provision of infrastructure and facilities that support economic opportunities for the resident communities of Waiheke and Great Barrier islands. (19) Promote economic development opportunities that complement the unique values of the islands and the Hauraki Gulf. **Section B8.6** summarises the reasons of adopting the proposed policies, including: • The coastal environment and the resources of the coastal marine area comprise some of the most important taonga to Mana Whenua, who have a traditional and on-going cultural relationship with the coast. • Auckland's richly varied coastal environment is a finite resource with high environmental, social, economic and cultural values. Its coasts and harbours are among its most highly valued natural features. It is the location of New Zealand's largest commercial port and international airport. The marine industry, transport and aquaculture activities all contribute to social and economic well-being. • The coastal marine area also provides a range of ecosystem services, including providing food, assimilating discharges from land into coastal waters and enabling a range of coastal uses that support the economic well-being of people and communities. • Promoting use and development that provides for social and economic opportunities while avoiding further degradation of the marine environment of the Gulf.

Regional Council	Document	Relevant sections
		Section D9 – Significant Ecological Areas Significant Ecological Areas – Marine are identified areas of significant indigenous vegetation or significant habitats of indigenous fauna located in the coastal marine area. Policies for managing these areas include: (12) Manage the adverse effects of use and development on the values of Significant Ecological Areas – Marine, taking into account all of the following: (a) The extent to which existing use and development already, and in combination with any proposal, impacts on the habitat, or impedes the operation of ecological and physical processes; (b) The extent to which there are similar habitat types within other Significant Ecological Areas – Marine in the same harbour or estuary or, where the significant ecological area - marine is located on open coast, within the same vicinity; and (c) Whether the viability of habitats of regionally or nationally threatened plants or animals is adversely affected, including the impact on the species population and location.
Bay of Plenty	**Regional Policy Statement**	**Part Two (Issues and objectives)** Objective 20 The protection of significant indigenous habitats and ecosystems, having particular regard to their maintenance, restoration and intrinsic values. **Part Three (Policies and methods)** Policy IR 6B: Promoting consistent and integrated management across jurisdictional boundaries Collaboration and information sharing between agencies with different responsibilities in the coastal environment such as fisheries and conservation should be encouraged to promote integrated and efficient resource management.
	Bay of Plenty Regional Coastal Environmental Plan	**Part 2, Section 2 – Objectives** Objective 1 of this section seeks to "achieve integrated management of the coastal environment" by: (a) Providing a consistent, efficient and integrated management framework; (b) Adopting a whole of catchment approach to management of the coastal environment; (c) Recognising and managing the effects of land uses and freshwater-based activities (including discharges) on the coastal marine area; (d) Enabling the exercise of kaitiakitanga; (e) Planning for and managing: i. cumulative effects; and ii. the effects of climate change; and (f) Promoting the sustainable management of the Bay of Plenty coastal fisheries.

Regional Council	Document	Relevant sections
		Part 5 Methods, 1.2 Natural Heritage Method 3A: Support research to identify areas in the Bay of Plenty region where ecosystems and biodiversity values are being, or are likely to be, adversely effected by fishing activities, and investigate the options available to manage such activities for the protection of indigenous biodiversity. Method 19AA: Council will partner with tangata whenua for additional spatial mechanisms for the coastal marine area that identify and protect: (a) Areas or sites of cultural, biodiversity and/or natural character value that may require additional protection and/or restoration; Areas or sites of cultural, biodiversity and/or natural character value that are, or are likely to be, adversely affected by activities (including fishing), and options to manage such activities for the protection of cultural, biodiversity and/or natural character values.
Gisborne	**Gisborne District Council – The Tairāwhiti Resource Management Plan**	**Section C3.6 – Tangata Whenua** Under Policy 7, the Plan notes that: The RMA does not address Fisheries issues which are dealt with under the Fisheries Act or the Marine Reserves Act. Council may, however, advocate for the protection of special areas in the Coastal Marine Area that support traditional fishing or food gathering areas to the responsible agencies on behalf of or in conjunction with Iwi or hapu authorities, This policy is designed to recognise this advocacy role and supports Objective C3.6.2(3), which is to "maintain the integrity of the relationship of Māori with their culture, traditions, ancestral lands, and other resources."
Waikato	**Bay of Plenty Regional Coastal Environmental Plan**	**Part 2, Section 2 – Objectives** Objective 1 of this section seeks to "achieve integrated management of the coastal environment" by: (g) Providing a consistent, efficient and integrated management framework; (h) Adopting a whole of catchment approach to management of the coastal environment; (i) Recognising and managing the effects of land uses and freshwater-based activities (including discharges) on the coastal marine area; (j) Enabling the exercise of kaitiakitanga; (k) Planning for and managing: iii. cumulative effects; and iv. the effects of climate change; and (l) Promoting the sustainable management of the Bay of Plenty coastal fisheries. **Part 5 Methods, 1.2 Natural Heritage** Method 3A: Support research to identify areas in the Bay of Plenty region where ecosystems and biodiversity values are being, or are likely to be, adversely effected by fishing activities, and investigate the options available to manage such activities for the protection of indigenous biodiversity.

Regional Council	Document	Relevant sections
		Method 19AA: Council will partner with tangata whenua for additional spatial mechanisms for the coastal marine area that identify and protect: (b) Areas or sites of cultural, biodiversity and/or natural character value that may require additional protection and/or restoration; Areas or sites of cultural, biodiversity and/or natural character value that are, or are likely to be, adversely affected by activities (including fishing), and options to manage such activities for the protection of cultural, biodiversity and/or natural character values.
	Regional Coastal Plan for Waikato	**Section 3.4 – Protection of Coastal Processes** 3.4.3 Policy – Biodiversity Ensure the protection of biodiversity, the inter-relatedness of coastal ecology, and the natural movement of biota within the coastal marine area. **Section 13.1 – Integrated Management Across Boundaries** 13.1.2 Policy – Coastal Environmental Inter-Relationships When managing the use, development and protection of the coastal environment, provide for: (a) The interconnected nature of the coastal environment; and (b) The inter-relationships between natural and physical resources; and (c) The potential for adverse effects to occur; and (d) The range of social, cultural and economic values within the Region. **Section 17.2 – Natural Character, Habitat and Coastal Processes** 17.2.3 – Consultation with the Ministry of Fisheries Environment Waikato, in conjunction with the Ministry of Fisheries, will advocate management practices to resource users harvesting marine life that: i Do not adversely affect significant or extensive areas of indigenous vegetation and habitat of indigenous fauna; ii Avoid sensitive inshore areas; and iii Ensure marine ecosystems and fish stock are managed sustainably.
Otago	**Otago Regional Policy Statement**	**Policy 3.1.9 Ecosystems and indigenous biological diversity** Manage ecosystems and indigenous biological diversity in terrestrial, freshwater and marine environments to: Maintain or enhance: a) Ecosystem health and indigenous biological diversity including habitats of indigenous i. fauna; ii. Biological diversity where the presence of exotic flora and fauna supports indigenous

Regional Council	Document	Relevant sections
		iii. biological diversity; b) Maintain or enhance as far as practicable: i. Areas of predominantly indigenous vegetation; ii. Habitats of trout and salmon unless detrimental to indigenous biological diversity; iii. Areas buffering or linking ecosystems **Policy 5.4.9 Activities in the Coastal Marine Area** In the coastal marine area minimise adverse effects from activities by all of the following: b) Avoiding activities that do not have a functional need to locate in the coastal marine area; c) When an activity has a functional need to locate in the coastal marine area, giving preference d) to avoiding its location in: i. Areas of significant indigenous vegetation and significant habitats of indigenous fauna; ii. Outstanding natural features, landscapes and seascapes; iii. Areas of outstanding natural character; iv. Places or areas containing historic heritage of regional or national significance; v. Areas subject to significant natural hazard risk; e) Where it is not practicable to avoid locating in the areas listed in b) above, because of the functional needs of that activity: i. Avoid adverse effects on the values that contribute to the significant or outstanding nature of b)i.-iii; ii. Avoid significant adverse effects on natural character in all other areas of the coastal environment; iii. Avoid, remedy or mitigate adverse effects on values as necessary to preserve historic heritage of regional or national significance; iv. Minimise any increase in natural hazard risk through mitigation measures; v. avoiding, remedying, or mitigating adverse effects on other values;
	Regional Plan: Coast for Otago	**Section 1.1: Purpose of the Plan** The purpose of this Plan is to provide a framework for the integrated and sustainable management of Otago's coastal marine area. **Section 2.10.2: Fisheries Act 1983** This Regional Plan: Coast for Otago does not contain any provisions relating to the management or allocation of the fishery resource within Otago's coastal marine area. **Objective 5.3.1** To provide for the use and development of Otago's coastal marine area while maintaining or enhancing its natural character, outstanding natural features and landscapes, and its ecosystem, amenity, cultural and historical values.