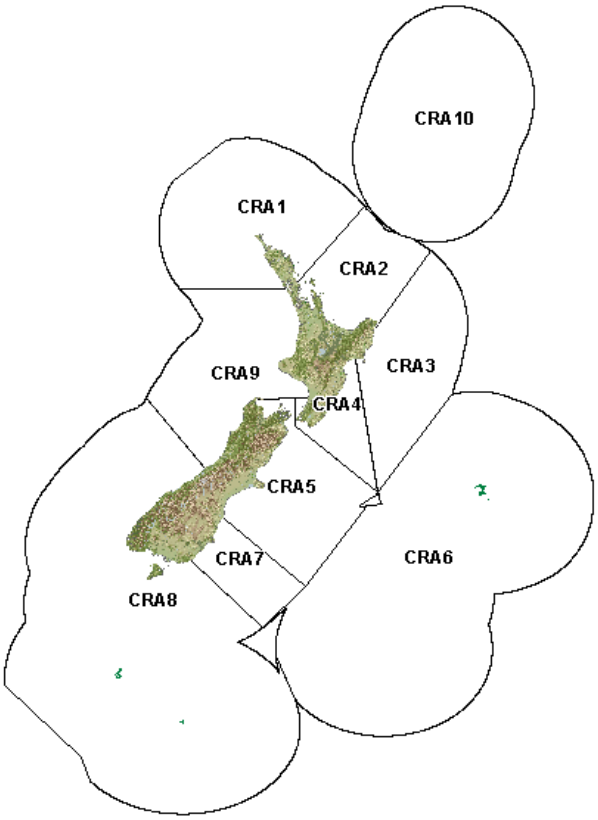
NEW ZEALAND ROCK LOBSTER FISHERIES

FINAL ADVICE

REVIEW OF SUSTAINABILITY MEASURES AND OTHER MANAGEMENT CONTROLS FOR 1 APRIL 2011



3 MARCH 2011

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EXECUTIVE SUMMARY

1. You are being asked to make decisions on sustainability measures and other management controls for spiny and packhorse rock lobster stocks to apply from the 2011-12 fishing year beginning on 1 April 2011. Your decisions relate to:

   a) Whether to use new management procedures to guide Total Allowable Catch (TAC) setting in CRA 5 (Canterbury/Marlborough) and CRA 7 (Otago) spiny rock lobster stocks;

   b) Proposed TACs and sector allowances for CRA 4 (Wellington/Hawkes Bay), CRA 5 (Canterbury/Marlborough), CRA 7 (Otago) and CRA 8 (Southern) spiny rock lobster stocks; and

   c) Proposed deemed value rates for all spiny and packhorse rock lobster stocks.

2. Proposed TAC, Total Allowable Commercial Catch (TACC) and non-commercial allowance options for CRA 4, CRA 5, CRA 7 and CRA 8 spiny rock lobster stocks are outlined in Table 1 below. The proposals are based on the operation of previously used management procedures for CRA 4 and CRA 8, two alternative management procedure options for CRA 7 (a previously used and a proposed revised management procedure), and a proposed new management procedure for CRA 5.

Stock	Option	TAC	TACC	Customary Allowance	Recreational Allowance	Other mortality
CRA 4	**Option 1:** Be guided by the CRA 4 Management Procedure and increase the TAC and TACC	661.9 tonnes	466.9 tonnes	35 tonnes	85 tonnes	75 tonnes
	Option 2: Retain the current TAC and allowances	610.625 tonnes	415.625 tonnes	35 tonnes	85 tonnes	75 tonnes
CRA 5	**Option 1:** Be guided by the proposed new CRA 5 Management Procedure, and increase the TAC and vary the allowances	522.1 tonnes	350 tonnes	10 tonnes	110.1 tonnes	52 tonnes
	Option 2: Retain the current TAC and allowances	467 tonnes	350 tonnes	40 tonnes	40 tonnes	37 tonnes
CRA 7	**Option 1:** Be guided by the proposed revised CRA 7 Management Procedure and retain the current TAC	104.5 tonnes	84.5 tonnes	10 tonnes	5 tonnes	5 tonnes
	Option 2: Be guided by the current CRA 7 Management Procedure and reduce the TAC and TACC	95.7 tonnes	75.7 tonnes	10 tonnes	5 tonnes	5 tonnes
	Option 3: Retain the current TAC and allowances	104.5 tonnes	84.5 tonnes	10 tonnes	5 tonnes	5 tonnes
CRA 8	**Option 1:** Be guided by the CRA 8 Management Procedure and reduce the TAC and TACC	1053 tonnes	962 tonnes	30 tonnes	33 tonnes	28 tonnes
	Option 2: Retain the current TAC and allowances	1110 tonnes	1019 tonnes	30 tonnes	33 tonnes	28 tonnes

Table 1: *Proposed TAC and allowances options for CRA 4, CRA 5, CRA 7 and CRA 8.*

3. A central consideration when choosing whether to use a management procedure to guide TAC setting in a fishery is whether the procedure enables you to set a TAC that complies with section 13 of the Fisheries Act 1996 (the Act). Section 13 requires you to set a TAC that moves the stock to, or maintains the stock at, a size at or above *Bmsy* or at a level that is not inconsistent with this objective.

4. All the management procedures included and applied in this final advice have a high probability of maintaining stock levels at or above *Bmsy* or the agreed proxy (ie, *Bref*). The National Rock Lobster Management Group (NRLMG) considers the use of management procedures to guide TAC setting improves overall sustainability outcomes by being responsive to changes in abundance in the stock.

5. Management procedures are operated each year and deliver a TAC result annually that is consistent with your statutory obligations. However, you are free to choose any alternative TAC based on your assessment of best available information. You also have discretion on how to allocate the TAC among Maori customary non-commercial fishing interests, recreational interests, other sources of fishing-related mortality and the TACC.

CRA 4 (Wellington/Hawkes Bay)

6. No reliable estimate of *Bmsy* is available for CRA 4. Instead, an agreed *Bmsy* proxy, *Bref* is used.

7. Best available information on CRA 4 stock status suggests stock size increased strongly between 2008 and 2009 but declined slightly in 2010. A reliable indicator of relative stock size in CRA 4, standardised autumn-winter commercial catch-per-unit-effort (CPUE), increased from 0.57 kg/potlift in 2008 to 0.87 in 2009, and then to 0.86 kg/potlift in 2010.

8. There is no agreement among submitters or NRLMG members on a recommended TAC, TACC and allowances option for CRA 4.

9. The TAC increase proposed under Option 1 is specified by the CRA 4 Management Procedure that you agreed to use in March 2009 to guide your TAC setting decisions in the fishery (this is the management procedure's last year of operation before a scheduled review in 2011). Within the TAC, the NRLMG recommends that you increase the TACC only from 415.625 to 466.9 tonnes. Under this option, it is likely that the commercial sector will benefit the most from the proposed TACC increase through the ability to take greater yield and potentially increase their revenue. Utilisation benefits for customary Maori and recreational interests are likely to be maintained under this option because ongoing application of the CRA 4 Management Procedure is designed to maintain stock size well above the *Bmsy* proxy, *Bref*.

10. Under Option 2 the current CRA 4 TAC would be retained for the 2011-12 fishing year. Retaining the current TAC should result in increased abundance compared to Option 1 and improved fishing success for all sectors by way of increased CPUE for commercial fishers, as well as increased fishing success for non-commercial fishing.

11. The NRLMG notes that the majority of submitters support Option 2 because they prefer a more cautious approach to CRA 4 TAC setting than Option 1. A number of commercial CRA 4 quota share owners indicated support for Option 1, but in general there is a preference for Option 2 from the quota share owners.

CRA 5 (Canterbury/Marlborough)

12. Best available information on CRA 5 stock status indicates the current stock is well above *Bmsy.* A reliable indicator of relative stock size in CRA 5, standardised commercial offset year CPUE, increased in each of the past four years to its current historical high of 1.79 kg/potlift.

13. There is no agreement among submitters or NRLMG members on a recommended management option for CRA 5.

14. CRA 5 submitters and NRLMG members are divided in their support for the CRA 5 management procedure. Following consultation, commercial and customary members of the NRLMG indicated a preference not to implement the management procedure at this time. On the other hand, recreational members would like to see the CRA 5 management procedure used in TAC setting from April 2011, conditional on allocation decisions for 2011-12 being driven by the management procedure results.

15. The option to increase the TAC is driven by the proposed new CRA 5 Management Procedure (Option 1) and reflects the Rock Lobster Fisheries Assessment Working Group's (RLFAWG's) assumptions of current non-commercial catch levels and other sources of fishing-related mortality. Under Option 1, the proposed allowance for customary Maori would decrease from 40 to 10 tonnes, the allowance for recreational interests would increase from 40 to 110.1 tonnes and the allowance for other sources of fishing-related mortality (eg, illegal fishing) would increase from 37 to 52 tonnes. However, there is considerable uncertainty around the estimates of CRA 5 non-commercial catches and other mortality. No change is proposed to the TACC under this option.

16. Under Option 2 the current CRA 5 TAC and allowances would be retained.

17. Both options (Option 1 and Option 2 (the *status quo*)) are consistent with your statutory obligations to maintain the stock above *Bmsy.* Commercial and customary NRLMG members consider that there is no urgent need to amend the TAC given stakeholder views and no sustainability concerns. Recreational members support amendment to the TAC in line with the proposed CRA 5 management procedure.

18. MFish NRLMG members consider that:

    a) Given the lack of overall agreement among submitters or NRLMG members;

    b) There are no sustainability or utilisation concerns; and

    c) Neither option would alter any sectors current ability to harvest as no additional controls are proposed on catch;

    there is no need to adjust the TAC and therefore allowances for the 2011-12 fishing year.

19. You are, however, free to adjust the CRA 5 TAC and allowances. The only new information on which to base adjustments is from the management procedure, which is not at this time supported by all NRLMG members.

CRA 7 (Otago)

20. No reliable estimate of *Bmsy* is available for CRA 7. Instead, an agreed *Bmsy* proxy, *Bref* is used.

21. Best available information on CRA 7 stock status suggests stock size declined between 2008 and 2009 but increased slightly in 2010. A reliable indicator of relative stock size in CRA 7,

standardised offset year commercial CPUE, decreased from 2.09 kg/potlift in 2008 to 0.80 in 2009, and then up to 0.96 kg/potlift in 2010.

22. The NRLMG recommends that you be guided by the proposed revised CRA 7 Management Procedure and agree to retain the current CRA 7 TAC and allowances for the 2011-12 fishing year (Option 1).

23. The NRLMG considers that the proposed revised CRA 7 Management Procedure will result in improved biomass levels over the medium and long terms. The revised CRA 7 Management Procedure is expected to provide more stability in the TAC: there would be fewer changes in the TAC than under the current CRA 7 Management Procedure (Option 2). Utilisation benefits are also likely to be improved or at least maintained under Option 1 because the revised CRA 7 Management Procedure is expected to maintain the CRA 7 stock well above the reference level (the *Bmsy* proxy, *Bref*); good fishing success for all sectors is likely to be provided in the future.

24. The NRLMG notes that the majority of submitters support Option 1; however, one submitter indicated support for Option 3 (retain the current TAC and allowances).

CRA 8 (Southern)

25. Best available information suggests the current CRA 8 stock is above *Bmsy*. A reliable indicator of relative stock size in CRA 8, standardised commercial offset year CPUE, increased in every year between 1999 and 2009 but decreased by 16% in 2010 to 3.11 kg/potlift.

26. The NRLMG recommends that you be guided by the CRA 8 Management Procedure and decrease the CRA 8 TAC from 1110 to 1053 tonnes (Option 1). In March 2008 a previous Minster indicated support for the use of the CRA 8 Management Procedure to guide TAC-setting for this stock until the 2012-13 fishing year. The NRLMG notes that the proposed decrease in TAC is due to the conservative nature of the management procedure and is not due to sustainability concerns.

27. Within the TAC, the NRLMG recommends you decrease only the TACC, from 1019 to 962 tonnes.

28. The NRLMG notes all submitters support the proposed CRA 8 TAC and TACC decrease.

Deemed Value Rates for all Spiny and Packhorse Rock Lobster Stocks

29. The NRLMG recommends for all spiny and packhorse rock lobster stocks that you increase the annual deemed value rate from $100 to $110 per kg, increase the interim deemed value rate from $75 to $99 per kg, and, as a consequence, adjust the differential deemed value rates. All submitters on deemed values support the NRLMG's recommendation.

30. The recommendations were developed in accordance with the principles outlined in the Ministry of Fisheries 2007 Deemed Value Standard[1] and the statutory considerations in relation to deemed value rates set out in the Act.

[1] The 2007 Deemed Value Standard sets out a process for managing the setting, reviewing and amendment of deemed value rates. For more information about the Standard please refer to the NZ Fisheries InfoSite.

SUMMARY OF RECOMMENDATIONS

CRA 4 (Wellington/Hawkes Bay)

1. In relation to the CRA 4 fishery, the NRLMG recommends that, for the fishing year commencing on 1 April 2011, you:

EITHER

a) ***Agree*** to be guided by the CRA 4 Management Procedure; *and* Yes / ~~No~~

i) ***Agree*** to increase the CRA 4 TAC from 610.625 to 661.9 tonnes;

And, within this,

ii) ***Retain*** the customary allowance of 35 tonnes;

iii) ***Retain*** the recreational allowance of 85 tonnes;

iv) ***Retain*** the allowance for other sources of fishing-related mortality at 75 tonnes;

v) ***Increase*** the TACC from 415.625 to 466.9 tonnes.

OR

b) ***Agree*** to retain the current CRA 4 TAC and allowances. Yes / No

CRA 5 (Canterbury/Marlborough)

2. In relation to the CRA 5 fishery, the NRLMG recommends that, for the fishing year commencing on 1 April 2011, you:

EITHER

a) ***Agree*** to be guided by the CRA 5 Management Procedure; *and* Yes / No

i) ***Agree*** to increase the CRA 5 TAC from 467 to 522.1 tonnes;

And, within this,

ii) ***Decrease*** the customary allowance to 10 tonnes;

iii) ***Increase*** the recreational allowance to 110.1 tonnes;

iv) ***Increase*** the allowance for other sources of fishing-related mortality to 52 tonnes;

v) ***Retain*** the TACC of 350 tonnes.

OR

b) ***Agree*** to retain the current CRA 5 TAC and allowances. Yes / ~~No~~

CRA 7 (Otago)

3. In relation to the CRA 7 fishery, the NRLMG recommends that, ~~for the fishing year commencing on 1 April 2011~~, you:

EITHER

a) ***Agree*** to be guided by the *revised* CRA 7 Management Procedure (NRLMG recommended option); ~~*and*~~ from 2012 Yes / ~~No~~

~~i) ***Agree*** to retain the current CRA 7 TAC and allowances.~~ As amended

~~*OR*~~ AND, for the fishing year commencing on 1 April 2011

~~b) ***Agree*** to be guided by the *current* CRA 7 Management Procedure; *and*~~ Yes / No

i) ***Agree*** to decrease the CRA 7 TAC from 104.5 to 95.7 tonnes; As amended

And, within this, ✓

ii) ***Retain*** the customary allowance of 10 tonnes; ✓

iii) ***Retain*** the recreational allowance of 5 tonnes; ✓

iv) ***Retain*** the allowance for other sources of fishing-related mortality at 5 tonnes; ✓

v) ***Decrease*** the TACC from 84.5 to 75.7 tonnes. ✓

OR

c) If you any reason you choose not to use the *revised* or *current* CRA 7 Management Procedures; ~~Yes~~ / No

i) ***Agree*** to retain the current CRA 7 TAC and allowances.

CRA 8 (Southern)

4. In relation to the CRA 8 fishery, the NRLMG recommends that, for the fishing year commencing on 1 April 2011, you:

EITHER

a) ***Agree*** to be guided by the CRA 8 Management Procedure (NRLMG recommended option); *and* Yes / No

ii) ***Agree*** to decrease the CRA 8 TAC from 1110 to 1053 tonnes;

And, within this,

iii) ***Retain*** the customary allowance of 30 tonnes;

iv) ***Retain*** the recreational allowance of 33 tonnes;

v) ***Retain*** the allowance for other sources of fishing-related mortality at 28 tonnes;

vi) ***Decrease*** the TACC from 1019 to 962 tonnes.

OR

b) ***Agree*** to retain the current CRA 8 TAC and allowances. ~~Yes~~ / No

All Spiny and Packhorse Rock Lobster Stocks (CRA1-9, PHC1)

5. In relation to deemed value rates for all spiny and packhorse rock lobster stocks, the NRLMG recommends that, for the fishing year commencing on 1 April 2011, you:

EITHER

a) ***Agree*** to increase the annual deemed value rate from $100.00 to $110.00 per kg. Yes / No

AND

b) ***Agree*** to increase the interim deemed value rate from $75.00 to $99.00 per kg. Yes / No

AND

c) ***Agree*** to increase the differential deemed value rates as per the following table: Yes / No

Differential rates	
Catch in excess of ACE holdings	**Deemed value rate**
0-20 %	$ 110.00 per kg
> 20 %	$ 132.00 per kg
> 40 %	$ 154.00 per kg
> 60 %	$ 176.00 per kg
> 80 %	$ 198.00 per kg
> 100 %	$ 220.00 per kg

OR

d) ***Agree*** to retain the current annual, interim and differential deemed value rates.

~~Yes~~ / No

Leigh Mitchell
For Acting Chief Executive

~~AGREED~~ / AGREED AS AMENDED / ~~NOT AGREED~~

Hon Phil Heatley
Minister of Fisheries and Aquaculture

23 /03/ 2011

INTRODUCTION

PURPOSE OF THIS DOCUMENT

36. This document provides you with the National Rock Lobster Management Group's (NRLMG's) final advice on the review of sustainability measures and other management controls for rock lobster fisheries for the 2011-12 fishing year. The document is equivalent to a Ministry of Fisheries (MFish) final advice paper.

37. There are three sections in this document:

    a) **Section One** outlines proposed new management procedures to guide Total Allowable Catch (TAC) setting in CRA 5 (Canterbury/Marlborough) and CRA 7 (Otago) spiny rock lobster stocks

    b) **Section Two** outlines proposed TACs and allowances for the CRA 4 (Wellington/Hawkes Bay), CRA 5 (Canterbury/ Marlborough), CRA 7 (Otago) and CRA 8 (Southern) spiny rock lobster stocks

    c) **Section Three** outlines proposed deemed value rates for all spiny and packhorse rock lobster stocks.

38. **Your decisions are requested by Friday, 11 March 2011**. This will enable gazettal of any decisions to change the TAC and allowances or deemed values for a stock prior to the 2011-12 fishing year beginning 1 April 2011.

TERMINOLOGY IN THE DOCUMENT

Management Procedures

39. A management procedure is a tool used to guide the setting of catch limits. Management procedures are becoming more widely used, especially in South Africa, Australia, Europe, North America and New Zealand. A management procedure:

    a) Specifies what data will be used to make catch limit decisions;

    b) Specifies how the data will be collected and analysed;

    c) Contains a harvest control rule (a mathematical equation that determines what the specific output of the procedure will be, such as the exact TAC or Total Allowable Commercial Catch (TACC)); and

    d) Has been extensively simulation-tested using an operating model that is a model of the fishery system being managed.

40. Under a management procedure approach, agreement is obtained among managers and stakeholders before the procedure is implemented: they agree about the data inputs, the way the inputs will be treated to make inferences, the harvest control rule and the period for which the management procedure will be used. Extensive simulation testing of the procedure is undertaken to ensure it will deliver the desired outcomes.

41. The advantages of a management procedure approach, over the conventional approach of periodic stock assessments followed by decision making, are:

a) The process leads to explicit definition of management objectives;

b) All participants in the fishery can become involved in the choice of procedure;

c) Uncertainty in all facets of the assessment and management process can be addressed;

d) Greater certainty of achieving outcomes is provided;

e) Reduction in the need for regular stock assessments, freeing resources for other research; and

f) The process is more understandable to fishers than the conventional approach.

42. Agreed management procedures are currently in place for the following New Zealand rock lobster fisheries: CRA 3 (Gisborne), CRA 4 (Wellington/Hawkes Bay), CRA 7 (Otago) and CRA 8 (Southern) and have been used by Ministers' of Fisheries to guide statutory TAC setting in these fisheries for varying amounts of time. The oldest example of the use of management procedures is in CRA 7 and CRA 8, where they have been successfully used to guide TAC setting since 1996, first to rebuild the stocks and then to maintain them above reference levels with high probability.

Sustainability Indicators (Bmsy, Bref, Bmin)

43. The NRLMG uses sustainability indicators to report on stock health and to evaluate the effectiveness of management options. For most rock lobster stocks, performance is reported against sustainability reference levels and a minimum stock size.

44. Three sustainability indicators are relevant to evaluation of the proposals presented in this document:

a) The statutory reference level, ***Bmsy***. TACs for rock lobster stocks are set under section 13 of the Fisheries Act 1996 (the Act). Section 13 requires you to set TACs for rock lobster stocks that move the stocks to, or maintain the stocks at, a level at or above *Bmsy*, or that is not inconsistent with this objective.

b) The proxy reference level, ***Bref***. When a *Bmsy* estimate is absent or unreliable, alternative proxy reference levels are used. Proxy reference levels are a way of setting a TAC that is not inconsistent with the objective of maintaining a stock at or above, or moving the stock towards a level that can maintain the maximum sustainable yield. This "not inconsistent" approach is set out in section 13(2A) of the Act where you consider that current biomass or *Bmsy* cannot be estimated reliably using best information. *Bref* is generally a stock size at or above the stock size associated with a period in the fishery that showed good productivity and was demonstrably safe.

c) The minimum stock size, ***Bmin***. *Bmin* is either the stock size associated with lowest abundance in the observed history of the fishery or *½ Bref*.

45. For all these indicators, the stock size is measured in terms of vulnerable biomass. "Vulnerable biomass" is the total quantity of lobsters available to the fishery (ie, it does not include lobsters that cannot be harvested such as undersize lobsters and berried female lobsters).

46. The NRLMG's management goal is for all 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 Maori, amateur, commercial and environmental concerns and benefits*". In order to be consistent with the management goal the NRLMG has specified a desired performance in relation to sustainability indicators, which is:

    a) A stock size above the agreed proxy (*Bref*) at least 50% of the time;

    b) A stock size that remains above the minimum (*Bmin*) with 90% probability; and

    c) A spawning stock size that remains above 20% of its unfished level with high probability.

47. Extensive simulation-testing based on operating models of the stocks and associated fisheries suggest that all the management procedures discussed in this document achieve the desired performance in relation to the sustainability indicators.

The Harvest Strategy Standard

48. In October 2008, MFish released the Harvest Strategy standard for New Zealand fisheries (the HSS), which specifies performance standards for Quota Management System species. The NRLMG considers the management procedures previously agreed for CRA 4, CRA 7 and CRA 8, and the proposed new management procedures for CRA 5 and CRA 7, to be consistent with the HSS.

49. The Guidelines for Harvest Strategy Standards (MFish 2008) describe the *Bref* concept as follows: "Conceptual proxies for BMSY, FMSY and MSY are qualitative surrogates that can be used in the absence of adequate information to directly estimate these reference points themselves. The conceptual interpretation embraces the spirit and intent of section 13 of the Act. It can be used in cases where there is insufficient information to estimate BMSY, FMSY or MSY explicitly, or where such estimates may be unreliable because, for example, there is little or nothing known about the stock recruitment relationship. Conceptual BMSY: In cases where the relationship between CPUE and abundance can be assumed to be more or less proportional, or where some other form of relationship has been derived from data, it may be reasonable to select an appropriate historical period when both CPUE and catches were relatively high and to use this CPUE level as a target. *The best example in current use in New Zealand is that for rock lobster.*" [emphasis added]

ROCK LOBSTER FISHERIES

50. The spiny rock lobster (*Jasus edwardsii*) has always been important to Maori and has supported increasingly important recreational and commercial fisheries. Spiny rock lobsters support one of the country's oldest commercial fisheries, and are one of the seafood industry's top export earners. The packhorse rock lobster (*Sagmariasus verreauxi*) makes up less than 1% of commercial rock lobster landings. Estimates of non-commercial catches are unknown but non-commercial fishers are known to target packhorse rock lobster to the North of New Zealand.

51. For information on fishery and biological characteristics of spiny and packhorse rock lobsters refer to sections in the 2010 NRLMG Annual Report.

SECTION 1: PROPOSED NEW MANAGEMENT PROCEDURES TO GUIDE TAC SETTING IN CRA 5 AND CRA 7

52. In this section, proposed new management procedures to guide TAC setting in CRA 5 (Canterbury/Marlborough) and CRA 7 (Otago) rock lobster fisheries from the 2011-12 fishing year onwards are outlined and discussed.

REASONS FOR NEW MANAGEMENT PROCEDURES

53. New management procedures for CRA 5 and CRA 7 were developed for different reasons during 2010.

54. In 2009, the CRA 5 rock lobster fisheries commercial stakeholder organisation (CRAMAC 5) adopted a voluntary procedure to shelve annual catch entitlement (ACE) when catch per unit effort (CPUE) fell below a specified threshold. The rule has not been triggered, but CRAMAC 5 wanted a mechanism that offered the prospect of future TACC increases if stock abundance continued to increase. The NRLMG agreed to develop a formalised and simulation-tested management procedure for CRA 5 in 2010 to replace this voluntary procedure.

55. In 2010, CRAMAC 7 requested a review of the current CRA 7 Management Procedure to obtain more stability in the TAC. The NRLMG agreed that a revised CRA 7 Management Procedure should be developed in 2010.

RELEVANT STATUTORY CONSIDERATIONS

56. A central consideration when choosing whether to use a management procedure to guide TAC setting in a fishery is whether the procedure enables you to set a TAC that complies with section 13 of the Act. Section 13 requires you to set a TAC that moves the stock to, or maintains the stock at, a size at or above *Bmsy* or at a level that is not inconsistent with this objective.

57. The NRLMG is confident that application of the proposed new CRA 5 Management Procedure and application of either the current or proposed revised CRA 7 Management Procedures will ensure that you set a TAC that has a high probability of maintaining stock levels at or above *Bmsy* or the agreed proxy (ie, *Bref*).

58. A full assessment of the management options against key statutory criteria is carried out in Section Two: *Proposed TACs and allowances for CRA 4, CRA 5, CRA 7 and CRA 8*.

CONSULTATION AND SUBMISSIONS

59. On 13 December 2010, MFish released the NRLMG's initial advice on proposals to review sustainability measures and other management controls for rock lobster fisheries for the 2011-12 fishing year. The NRLMG's initial advice was posted on the MFish website at www.fish.govt.nz and tangata whenua, fishery stakeholders and other interested parties were notified of the proposals.

60. Written submissions were requested by 2 February 2011.

61. The following organisations, groups, companies and individuals submitted on the NRLMG initial advice paper "*Proposal to use new Management Procedures to guide TAC setting in CRA 5 and CRA 7*":

National Representative Organisations

- New Zealand Recreational Fishing Council (NZRFC)
- New Zealand Rock Lobster Industry Council (NZ RLIC)
- option4/New Zealand Sports Fishing Council (option4/NZSFC)
- Te Ohu Kaimoana Trustee (Te Ohu).

Regional Representative Organisations, Groups or Companies

- CRA 5 Rock Lobster Industry Association Incorporated (CRAMAC 5)
- Ngai Tahu Seafood, Ngai Tahu Fisheries Settlement Ltd. & Toitu Te Whenua (Ngai Tahu)
- Otago Rock Lobster Industry Association Incorporated (CRAMAC 7)
- Te Runanga O Ngati Kuia Charitable Trust (Ngati Kuia)
- Totaranui Ltd. (a subsidiary of Te Atiawa Manawhenua Ki Te Tau Ihu Trust) (Totaranui).

Individuals

- Ross Divett (Mr Divett) – *MFish recreational forum representative and Christchurch police dive club representative.*
- Ted Howard (Mr Howard) – *president of the Kaikoura boating club.*

62. Full copies of the submissions are provided in Attachment 5. Each submission is described, and matters raised in the submission discussed, in the following sections as relevant.

63. The NRLMG notes many submitters commented on or proposed other management measures that are outside the scope of the initial consultation document and this advice process. These management measures are discussed briefly in the 'Other Matters' section towards the end of this document.

PROPOSED NEW MANAGEMENT PROCEDURE TO GUIDE TAC SETTING IN THE CRA 5 ROCK LOBSTER FISHERY

CRA 5 Management Options

64. The NRLMG proposes that you consider two management options for CRA 5.

65. Under **Option 1**, you would use the CRA 5 Management Procedure to guide statutory TAC setting for CRA 5. The specifications of the CRA 5 Management Procedure are described in detail in Attachment 2.

66. It is proposed that you would be guided by the operation of the CRA 5 Management Procedure when setting the TAC for CRA 5 until the 2016-17 fishing year. During 2015, the management procedure would be reviewed.

67. Under **Option 2**, periodic stock assessments (which are relatively infrequent because of resource constraints) would continue to guide TAC setting for CRA 5. Seasonal CPUE information would be used to monitor stock abundance between stock assessments.

Submissions Received

68. The NRLMG received nine submissions relating to the proposed management options for CRA 5.

69. Te Ohu, Totaranui, Ngati Kuia and Mr Divett support the use of the CRA 5 Management Procedure to guide TAC setting in CRA 5 (Option 1).

70. The NZRFC also supports the use of the CRA 5 Management Procedure but their support is conditional on the resolution of a number of issues being resolved within a two-year timeframe and the recreational allowance being increased as specified by the management procedure.

71. Mr Howard strongly opposes any move to the proposed new CRA 5 Management Procedure, based upon CPUE, until there is a function within the management procedure that includes something functionally equivalent to a "minimum decile CPUE measure".

72. Joint submitters option4 and NZSFC do not agree with the use of the CRA 5 Management Procedure until the CRA 5 fishery is managed to sufficient abundance levels that enable people in the region to provide for their social, economic and cultural well-being.

73. CRAMAC 5, NZ RLIC and Ngai Tahu did not express support for either option but noted they do not support the use of the CRA 5 Management Procedure unless immediate and effective measures are implemented to audit, monitor and if necessary constrain non-commercial removals, including illegal removals, to the allowances set in the TAC decision.

NRLMG Discussion of Relevant Matters Raised in Submissions

74. There is no agreement among submitters or NRLMG members on a preferred management option for CRA 5. No submitters specifically indicated support for Option 2.

75. The NRLMG notes in general there appears to be a lack of knowledge and understanding, particularly by non-commercial submitters, about the use of management procedures in rock lobster fisheries. The NRLMG proposes to explore ways to address this issue and improve accessibility to relevant information. Te Ohu confirms it is working with some iwi to improve their understanding of rock lobster fisheries management.

Stock Sustainability and Utilisation

76. Te Ohu, Totaranui and Ngati Kuia express support for the use of management procedures for managing rock lobster fisheries for the reasons identified in the initial advice paper; however, they believe management procedures have limitations. These submitters consider that management procedures do not necessarily deal with localised depletion because they use a CPUE which is calculated using data from across the whole Quota Management Area (QMA). However, Te Ohu and Ngati Kuia note that, despite this shortcoming, management procedures are still the best tool that we have for managing rock lobster stocks.

77. The NZRFC expressed support for the CRA 5 Management Procedure on the provision that several issues are addressed within a two-year timeframe. These issues include: 1) the use of CPUE from the entire fishery does not allow for the fine-scale management needed to address the issue of localised depletion; 2) the introduction of a measure of minimum CPUE; and 3) a continued need to monitor puerulus settlement and take it into account in the management procedure. Mr Howard expresses points similar to those of the NZRFC.

78. Mr Divett and joint submitters option4 and NZSFC express similar concerns to Te Ohu, Ngati Kuia, NZRFC and Mr Howard about the use of CPUE in management procedures, including

whether CPUE can reliably track stock abundance and identify localised depletion issues within a QMA.

79. In response to the comments made by submitters above:

- The NRLMG is confident that standardised commercial CPUE can be considered a reliable indicator of relative stock size. But having a good stock size within the overall CRA 5 area does not prevent local variations in lobster abundance and CPUE within CRA 5.
- The NRLMG notes that CPUE for a statistical area (a QMA sub-area) can vary over time and between areas: some statistical areas within a QMA consistently have a higher CPUE than other areas. This variation can occur as a result of environmental factors, such as water temperature, food availability and habitat type, or changes to fishing behaviour.
- The NRLMG advises that the CRA 5 Management Procedure is developed to ensure sustainability and provide for utilisation at the QMA level consistent with the Quota Management System (QMS); it is not designed to manage fine-scale areas or address local depletion issues. Fine-scale management issues are best resolved as part of discussion between fishers at a local level.

80. The NZRFC and Mr Howard express concern that, if the management procedure simply relies on CPUE, and there is no measure of recruitment, it is possible to have recruitment failure which could lead to a stock collapse before the management procedure proposes a TAC reduction. These submitters consider there is a continued need to monitor puerulus settlement and take it into account in the management procedure.

- The NRLMG acknowledges that recruitment to rock lobster stocks is highly variable. This recruitment variability was taken into account when evaluating the CRA 5 Management Procedure.
- The NRLMG note that puerulus settlement is monitored annually within CRA 5. Work is also ongoing to understand better the relationship between puerulus settlement and subsequent recruitment to the fishery.

81. The NZRFC and Mr Howard also suggest the management procedure should have a measure of minimum CPUE for a fine-scale management area which could then become a trigger for moving the TAC up or down. These submitters suggest this would then provide incentives for commercial fishers to leave sufficient abundance in shared areas, including areas of significance to recreational fishers.

- The NRLMG advises that a minimum CPUE measure for a fine-scale management area does not have merit when managing a stock at the QMA level. As discussed above, the CRA 5 Management Procedure was not developed to address fine-scale local depletion issues and these issues are best resolved as part of discussion among fishers at a local level.

82. Joint submitters option4 and NZSFC indicate that they cannot agree to the application of the proposed CRA 5 Management Procedure until the CRA5 fishery is managed to sufficient abundance levels to enable people in the region to provide for their social, economic and cultural well-being. These submitters suggest a more cautious target of 35% original biomass for managing rock lobster fisheries.

- The NRLMG advises the CRA 5 stock is currently well above 35% virgin biomass. The stock's current biomass is approximately 5 times *Bmsy* and current CPUE is at its historical high. Anecdotal information, provided by submitters, suggests that current CRA 5 stock abundance is providing good utilisation benefits for all sectors.

Stakeholder Acceptance

83. When the CRA 5 Management Procedure was developed in late 2010 there was a high degree and support among CRAMAC 5, partly because the procedure incorporated key elements of the voluntary management procedure that they had used since 2009. However, CRAMAC 5, NZ RLIC and Ngai Tahu are not comfortable with using the CRA 5 Management Procedure unless immediate and effective measures are implemented to audit, monitor and if necessary constrain non-commercial removals, including illegal removals, to the allowances set in the TAC decision.

84. NZ RLIC added in their submission that Option 1 is informed by one of a suite of CRA 5 Management Procedures developed by the Rock Lobster Fisheries Assessment Working Group (RLFAWG) in 2010. An alternative management procedure option that could have resulted in a modest TACC increase from 2011 was turned down by CRAMAC 5 and industry representatives of the RLFAWG in favour of Option 1, which is a more conservative management procedure.

85. Te Ohu, Totaranui and Ngati Kuia advise that South Island Iwi are currently working with MFish to establish an Iwi Fisheries Management Plan for Te Wai Pounamu. Iwi specifically state they want to reserve the right to review the CRA 5 Management Procedure should they identify it is a good idea to do so through their planning process.

- The NRLMG requests that it be kept informed of any proposals to review the CRA 5 Management Procedure.

Analysis

86. An analysis of the options to guide TAC setting in CRA 5 is set out below.

Option 1 - Agree to use the CRA 5 Management Procedure to Guide TAC setting in CRA 5

87. Under Option 1, it is proposed that you would use the proposed new CRA 5 Management Procedure to guide statutory TAC setting for CRA 5 from the 2011-12 fishing year onwards, beginning 1 April 2011.

Stock Sustainability

88. Use of the CRA 5 Management Procedure to guide TAC setting in CRA 5 is unlikely to pose any risk to stock sustainability because ongoing application of the CRA 5 Management Procedure is expected to:

a) Maintain the stock above *Bmsy* and *Bmin* with greater than 95% probability;

b) Maintain spawning stock biomass well above 20% of its unfished level, which is consistent with the MFish Harvest Strategy Standard.

89. The use of the CRA 5 Management Procedure is consistent with the statutory objective of managing the stock at or above *Bmsy* and is also robust from the standpoint of stock sustainability because the management procedure:

a) Was chosen from a set of management procedures that were evaluated for performance against sustainability criteria;

b) Has been tested using a model of the CRA 5 fishery based on the 2010 CRA 5 stock assessment model, which was accepted by the MFish Plenary in 2010;

c) Has been tested for robustness to uncertainties, including uncertainties in recruitment, in the level of non-commercial catches and in the stock assessment results; the procedure was robust to these uncertainties and desired performance against the sustainability indicators was maintained; and

d) Is responsive to changes in abundance in the stock.

Utilisation Benefits

90. Simulation-testing of the CRA 5 Management Procedure indicates that, as well as maintaining the stock well above *Bmsy*, the management procedure would maintain the current utilisation benefits of the fishery for all sectors over the medium to long terms.

91. The CRA 5 Management Procedure delivers a TAC result that consists of four separate components: a component for the TACC, a component for recreational catch, a component for customary catch and a component for illegal fishing.

92. The effect of the proposed CRA 5 Management Procedure on the costs and benefits conferred on any one sector would depend on allocation decisions. An assessment of proposed allowances is in Section 2 – *Proposed TACs and allowances for CRA 4, CRA 5, CRA 7 and CRA 8.*

Option 2 - Continue to use Periodic Stock Assessment to Guide TAC Setting in CRA 5

93. Under Option 2, periodic stock assessments would continue to guide TAC setting for CRA 5 (the *status quo*). Compared with Option 1, using periodic stock assessments to guide TAC setting for CRA 5:

a) Is less responsive to observed changes in stock abundance in the fishery;

b) Provides lesser certainty of achieving desired sustainability and utilisation outcomes; and

c) May result in less cost efficient management of the fishery.

Conclusion

Position of NRLMG sector members

94. Following consultation, commercial and customary members of the NRLMG indicated a preference to maintain the *status quo* for CRA 5 at this time. On the other hand, recreational members would like to see the CRA 5 Management Procedure used in TAC setting from April 2011, conditional upon issues discussed above being addressed within a two-year timeframe and the recreational allowance being increased as specified by the application of the CRA 5 Management Procedure.

95. Commercial and customary NRLMG members support the *status quo* because:

a) Commercial members are concerned that the design of the CRA 5 Management Procedure (ie, where CPUE needs to increase above 2.4 kg/potlift before a TACC increase is specified) may not provide for greater levels of commercial utilisation in the future. This is particularly concerning in the situation where they consider there is no effective constraint on non-commercial removals to the allowances specified.

b) Customary members consider it inappropriate to use an estimate of 10 tonnes to represent customary catch in the evaluation of the CRA 5 Management Procedure and that 40 tonnes (the current customary allowance) should be used instead.

c) Commercial and customary members note that neither the status of the stock nor the status of existing legitimate fishing activities are compromised by a one year delay to a TAC decision.

96. Recreational NRLMG members support the use of the CRA 5 Management Procedure to guide TAC setting because:

a) It provides a much more responsive approach to management of the fishery; and

b) Recreational members consider that the recreational catch component of the management procedure reflects actual recreational catch at high stock abundance.

Position of MFish NRLMG members

97. MFish members note that the CRA 5 Management Procedure has been extensively simulation tested and is considered robust in relation to your statutory obligations. Alternatively MFish advises that maintaining the *status quo* will also meet your obligations under the Act and will not pose a risk to stock sustainability in the short term given best available information on stock status.

98. Given the current CRA 5 stock status and divided stakeholder support for a preferred management option, MFish considers there is no urgency in implementing the procedure for April 2011. Instead, MFish propose to delay the implementation of a CRA 5 Management Procedure for a year and work with the NRLMG to resolve issues raised by submitters on the inputs to the management procedure and its implementation.

NRLMG Recommendation

99. The NRLMG recommends that you:

EITHER

a) ***Agree*** to use the CRA 5 Management Procedure to guide TAC setting in CRA 5 (Option 1)

OR

b) ***Agree*** to continue to use periodic stock assessments to guide TAC setting CRA 5 (Option2)

PROPOSED REVISED MANAGEMENT PROCEDURE TO GUIDE TAC SETTING IN THE CRA 7 ROCK LOBSTER FISHERY

CRA 7 Management Options

100. The NRLMG proposes that you consider two management options for CRA 7.

101. Under **Option 1**, you would use the proposed revised CRA 7 Management Procedure to guide statutory TAC setting for CRA 7. It is proposed that you would be guided by the operation of the revised management procedure when setting the TAC for CRA 7 until the 2012-13 fishing year.

102. Under **Option 2**, you would continue to use the current CRA 7 Management Procedure to guide statutory TAC setting for CRA 7. You agreed to use the current CRA 7 Management Procedure in March 2008 to guide TAC setting in the fishery until the 2012-13 fishing year.

103. Specifications of both the current and proposed revised CRA 7 Management Procedures are described in detail in Attachment 3.

Submissions Received

104. The NRLMG received five submissions relating to the proposed management procedure options for CRA 7.

105. Te Ohu, CRAMAC 7, NZ RLIC and NZRFC support the use of the proposed revised CRA 7 Management Procedure to guide TAC setting (Option 1). No submitters expressed support for Option 2 (the current CRA 7 Management Procedure).

106. Joint submitters' option4 and NZSFC are not persuaded that applying management procedures achieves more abundant fisheries or less volatile stock levels.

NRLMG Discussion of Relevant Matters Raised in Submissions

107. The majority of submitters on the CRA 7 Management Procedure options support Option 1.

108. Te Ohu supports Option 1 because they believe the revised CRA 7 Management Procedure will lead to less volatility and a more stable TAC.

109. NZRFC supports the revised CRA 7 Management Procedure (Option 1) and agree with trying to provide a more stable TAC, but if the management procedure fails to deliver reasonable catches of legal fish for the recreational sector they would like it to be revisited.

- The NRLMG notes that because evaluations of the revised CRA 7 Management Procedure suggest the stock would be maintained well above *Bref*, it is likely that it will increase the current utilisation benefits of the fishery for all sectors over the medium to long terms.
- The NRLMG advises that they propose to review the revised CRA 7 Management Procedure in 2012.

110. CRAMAC 7 and NZRLIC support the revised CRA 7 Management Procedure. The revised management procedure is preferred by CRAMAC 7 (in comparison to the current rule, Option 2) because there is more stability in the procedure and there would be fewer changes in the TACC.

CRAMAC 7 also believes that using a rule with a plateau will improve stock abundance and re-establish a more stable industry.

- The NRLMG notes the revised CRA 7 Management Procedure is expected to meet the aspirations of CRAMAC 7.

111. Joint submitters' option4 and NZSFC are not convinced that applying management procedures achieves more abundant fisheries or less volatile stock levels.

- The NRLMG is confident the use of the revised CRA 7 Management Procedure will help to maintain the stock well above the agreed proxy for *Bmsy*, *Bref,* and will provide more stability in the TAC because of the harvesting "plateau" that is included in the revised CRA 7 Management Procedure.

112. The NRLMG has identified no reason why you should not use the results of the revised CRA 7 Management Procedure to guide statutory TAC setting decisions.

Analysis

113. An analysis of the two different management procedure options you could use to guide TAC setting in CRA 7 is set out below.

CRAMAC 7's concerns with the current CRA 7 Management Procedure

114. Normally, management procedures are reviewed after five years. However, CRAMAC 7 requested an earlier review of the current CRA 7 Management Procedure because the rule has resulted in large changes to the TAC.

115. CRAMAC 7 have now indicated they would prefer a management procedure with more stability, fewer changes and less changes in the TAC/TACC.

Comparison of the current and proposed revised CRA 7 Management Procedures

116. The NRLMG is confident that either CRA 7 Management Procedure will ensure that you set a TAC that has a high probability of achieving the statutory objective of managing the stock at or above *Bmsy*. This is because both management procedures are expected to maintain the stock well above the agreed proxy for *Bmsy*, *Bref*.

117. Both management procedures are robust from the standpoint of stock sustainability because they:

a) Were chosen from a set of management procedures that were evaluated for performance against sustainability criteria;

b) Have been tested using a model of the CRA 7 fishery based on the 2006 CRA 7 and CRA 8 multi-stock assessment model;

c) Have been tested for robustness to uncertainties, including uncertainties in recruitment, in the level of non-commercial catches and in the stock assessment results. The procedure was robust to these uncertainties and desired performance against the sustainability indicators was maintained; and

d) Are responsive to changes in abundance in the stock.

118. Because evaluations of either CRA 7 Management Procedure suggest that the stock would be maintained well above *Bref*, the management procedures would likely increase the current utilisation benefits of the fishery for all sectors over the medium to long terms. The key differences between the two procedures are:

a) The proposed revised CRA 7 Management Procedure (Option 1) is expected to provide more stability in the TAC, with fewer changes to the TAC than under the current CRA 7 Management Procedure (Option 2). This is because the proposed revised CRA 7 Management Procedure includes a harvesting "plateau" of 120 tonnes when commercial CPUE values are between 1.0 and 2.0 kg/potlift; the current management procedure has no plateau.

a) The proposed revised CRA 7 Management Procedure (Option 1) results in fewer years where stock biomass is predicted to be less than *Bref*. Under Option 1, the stock would stay above *Bref* with 85% probability, whereas under Option 2 (the current management procedure) the stock would stay above *Bref* with 80% probability.

b) The proposed revised procedure is expected to have a higher average stock abundance and commercial CPUE than the current procedure (Option 2). Under Option 1, the median average commercial CPUE is predicted to be 1.99kg/potlift, whereas under Option 2 the average CPUE was predicted to be 1.63 kg/potlift.

119. The harvest control rule in both CRA 7 Management Procedures generates a recommended TAC. Operation of the proposed revised CRA 7 Management Procedure for the 2011-12 fishing year (Option 1) results in no change to the TAC for CRA 7. However, operation of the current CRA 7 Management Procedure (Option 2) for the 2011-12 fishing year results in a TAC decrease. The impact of the TAC decrease on the fishing sector stakeholders will depend on allocation decisions. Historically, the TACC has been varied to give effect to variations to the TAC, meaning the commercial sector may be most affected by the proposed TAC decrease (this is discussed in Section Two – *Proposed TACs and allowances for CRA 4, CRA 5, CRA 7 and CRA 8).*

NRLMG Recommendation

120. The NRLMG recommends that you:

a) ***Agree*** to use the revised CRA 7 Management Procedure to guide TAC setting in CRA 7 (Option 1)

SECTION 2: SET TACS AND ALLOWANCES FOR CRA 4, CRA 5, CRA 7 & CRA 8

121. In this section, proposed TACs and allowances for CRA 4 (Wellington/Hawkes Bay), CRA 5 (Canterbury/Marlborough), CRA 7 (Otago) and CRA 8 (Southern) rock lobster fisheries for the 2011-12 fishing year, are outlined and discussed.

REASON FOR REVIEWING ROCK LOBSTER TACS AND ALLOWANCES

122. Management procedures are currently in place for CRA 3 (Gisborne), CRA 4, CRA 7 and CRA 8 rock lobster fisheries. In 2010, a new CRA 5 Management Procedure and a revised CRA 7 Management Procedure were evaluated. The management procedures are designed to move the biomass to, or maintain the biomass of each stock above, reference levels (*Bmsy* and or *Bref* (proxy for *Bmsy*)) as required under section 13 of the Act with a high degree of probability. Operation of the relevant management procedure results in a TAC that moves the stock to a level at or above *Bmsy*, or that is not inconsistent with this objective.

123. Operation of the CRA 3 Management Procedure in 2010 resulted in no proposed change to the CRA 3 TAC for the 2011-12 fishing year. The CRA 3 fishery is therefore not discussed further in this document.

124. You may, however, choose any alternative TAC and allowances based on your assessment of best available information.

CONSULTATION AND SUBMISSIONS

125. On 13 December 2010, MFish released the NRLMG's initial advice on proposals to review sustainability measures and other management controls for rock lobster fisheries for the 2011-12 fishing year. The NRLMG's initial advice was posted on the MFish website at www.fish.govt.nz and tangata whenua, fishery stakeholders and other interested parties were notified of the proposals.

126. Written submissions were requested by 2 February 2011.

127. The following organisations, groups, companies and individuals submitted on the NRLMG's initial advice paper to "*Set TACs and allowances for the CRA 4, CRA 5, CRA 7 and CRA 8*":

National Representative Organisations

- New Zealand Recreational Fishing Council (NZRFC)
- New Zealand Rock Lobster Industry Council (NZ RLIC)
- New Zealand Seafood Industry Council Ltd. (SeaFIC)
- option4 /New Zealand Sports Fishing Council (option4/NZSFC)
- Te Ohu Kaimoana Trustee (Te Ohu).

Regional Representative Organisations, Groups or Companies

- CRA 4 Rock Lobster Industry Association Incorporated (CRAMAC 4)
- CRA 5 Rock Lobster Industry Association Incorporated (CRAMAC 5)

- CRA 8 Management Committee Incorporated (CRAMAC 8)
- FMA2 Regional Forum / Zone 5 clubs of the NZ SFC (CRA 4 recreational interests)
- Kahungunu Asset Holding Company Limited (KAHC)
- Ngai Tahu Seafood, Ngai Tahu Fisheries Settlement Ltd. & Toitu Te Whenua (Ngai Tahu)
- Ngati Kahungunu Iwi Incorporated (NKII)
- Ngawi Sports Fishing Club (Ngawi SFC)
- Otago Rock Lobster Industry Association Incorporated (CRAMAC 7)
- Pukemanu Boating and Fishing Club Incorporated (Pukemanu B & FC)
- Te Kupenga Whiturauroa a Maui Customary Fisheries Forum (TKWM)
- Te Runanga O Ngati Kuia Chartitable Trust (Ngati Kuia)
- Totaranui Ltd. (a subsidiary of Te Atiawa Manawhenua Ki Te Tau Ihu Trust) (Totaranui).

Individuals

- Bill Hartley (Mr Hartley) – *CRA 5*
- Ross Divett (Mr Divett) – *MFish recreational forum representative and Christchurch police dive club representative.*
- Ted Howard (Mr Howard) – *president of the Kaikoura boating club.*

128. Full copies of the submissions are provided in Attachment 5. Each submission is described, and matters raised in the submission discussed, in the following sections as relevant.

129. The NRLMG notes that many submitters commented on or proposed other management measures that are outside the scope of the initial consultation document and this advice process. These management measures are discussed briefly in the 'Other Matters' section towards the end of this document.

TAC-SETTING FOR ROCK LOBSTER STOCKS

130. When setting or varying a TAC for CRA 4, CRA 5, CRA 7 or CRA 8 rock lobster fisheries, you are required to consider a range of matters from the Act (these are set out below).

International Obligations and Treaty of Waitangi (Section 5)

131. In setting or varying sustainability measures, you must act in a manner consistent with New Zealand's international obligations to fishing and the provisions of the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992.

132. The NRLMG considers that the proposed management options for rock lobster stocks are consistent with a wide range of international obligations that relate to fishing, including use and sustainability of fish stocks and maintaining biodiversity.

133. The NRLMG also considers that the proposed management options are consistent with the provisions of the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992. The NRLMG notes that Maori have customary, commercial and recreational fishing interests. All proposals seek to maintain or improve stock health and; therefore, improve or maintain fishing success for all sectors.

Purpose of the Act (Section 8)

134. The purpose of the Act is to provide for the utilisation of fisheries resources while ensuring sustainability.

135. Section 8 guides the exercise of your decision-making powers pursuant to the Act, including the setting or varying of TACs. The TAC options presented in this document for CRA 4, CRA 5, CRA 7 and CRA 8 provide for the utilisation of these stocks while ensuring sustainability.

Environmental Principles (Section 9)

136. When making any decision under the Act, you must take into account the following environmental principles:

a) *Associated or dependent species should be maintained above a level that ensures their long-term viability*

Rock lobster is taken by potting and hand gathering fishing methods which have a relatively low level of by-catch. The levels of incidental catch landed from commercial rock lobster potting have been analysed for the period 1989 to 2003 (Bentley, Starr *et al.* 2005). Non-lobster catch landed ranged from 2 to 11% of the estimated rock lobster catch weight per quota management area (QMA) over this period. The most frequently reported incidental species caught (comprising on average greater than 99% of the bycatch per QMA) were, in decreasing order of catch across all stocks: octopus, conger eel, blue cod, trumpeter, sea perch, red cod, butterfish and leatherjackets. The TAC options proposed for CRA 5, CRA 7 and CRA 8 are unlikely to increase incidental bycatch from commercial rock lobster potting; the TAC increase proposed for CRA 4 may increase incidental bycatch slightly.

b) *Biological diversity of the aquatic environment should be maintained*

Potting is the main method of targeting rock lobster and is usually assumed to have very little direct impact on the aquatic environment. Several Australian studies have looked at the impacts of lobster pots on the environment. These studies suggest there is little impact on seaweed and other benthic communities, including fragile corals from rock lobster potting. Consequently, the TAC options proposed are unlikely to have a demonstrable adverse effect on biological diversity. In addition, all commercial fishing is prohibited within the internal waters of Fiordland (within the CRA 8 area) in an aim to protect important species and habitats in the area.

c) *Habitats of particular significance for fisheries management should be protected*

No habitats of particular significance to fisheries management have been identified that would be affected by the TAC options proposed.

Information Principles (Section 10)

137. You must also take into account certain information principles when making decisions under the Act, including that decisions should be based on the best available information, that any uncertainty in the information available should be considered, and caution should be applied when information is uncertain, unreliable, or inadequate, but the absence of, or uncertainty in, information should not be used as a reason for postponing or failing to set a TAC.

138. The TAC options presented in this document are based on best available information and the NRLMG has endeavoured to set out the relevant uncertainty in, and inadequacy, of any

information so that the appropriate caution can be applied in assessing the proposed management options.

Sustainability Measures (Section 11)

139. When setting or varying a sustainability measure such as a TAC, you must take into account the following:

a) *Any effects of fishing on any stock and the aquatic environment*

The NRLMG considers the proposed TAC options for rock lobster stocks do not significantly affect any stock or the aquatic environment. Non-commercial methods (diving and potting) and the commercial potting method is assumed to have very little direct impact on non-target species and the aquatic environment.

b) *Any existing controls under the Act that apply to the stock or area concerned*

A range of management controls apply to CRA 4, CRA 5, CRA 7 and CRA 8 stocks including minimum legal sizes, daily bag limits for amateur fishers, method restrictions, protection of egg-bearing females, closed areas and closed seasons (in CRA 7 only). No changes are proposed to these existing controls.

c) *The natural variability of the stock*

Recruitment to rock lobster stocks is highly variable. This variability was taken into account during development of management procedures for CRA 4, CRA 5, CRA 7 and CRA 8. This was done using Bayesian methods to deal with uncertain recruitment in constructing the operating model and by projecting uncertain recruitment forward when evaluating management procedures.

d) *Any conservation or fisheries services; and any decisions not to require these services*

The NRLMG is not aware of any conservation or fisheries services – or any decisions not to require conservation or fisheries services – that would be affected by the proposed TAC options.

e) *Any relevant fisheries plan approved under section 11A*

The NRLMG is not aware of any relevant fisheries plans approved under section 11A.

140. You must also have regard to any provisions of the following that apply to the coastal marine area that he considers relevant:

a) *Any regional policy statement, regional plan, or proposed regional plan, or proposed regional plan under the Resource Management Act 1991*

There are seven regional councils (Hawkes Bay, Horizons, Greater Wellington, Environment Canterbury, Otago, Environment Southland, and West Coast) with jurisdictional boundaries covering CRA 4, CRA 5, CRA 7 and CRA 8. The NRLMG is not aware of any policy statements, regional plans or draft regional plans for these councils that are specifically relevant to TAC setting for rock lobster stocks.

b) *Any management strategy or management plan under the Conservation Act 1987*

There are seven Department of Conservation Conservancies (East Coast/Hawkes Bay, Wellington, Nelson/Marlborough, Canterbury, Otago, Southland, and West Coast) with jurisdictional boundaries covering CRA 4, CRA 5, CRA 7 and CRA 8. The NRLMG is not aware of anything in any management strategy or plan for these conservancies that are relevant to TAC setting for rock lobster stocks.

c) *Sections 7 and 8 of the Hauraki Gulf Marine Park Act 2000*

The CRA 4, CRA 5, CRA 7 or CRA 8 rock lobster fisheries do not intersect with the Hauraki Gulf Marine Park; therefore there are no relevant considerations.

Total Allowable Catch (Section 13)

141. TACs for rock lobster stocks are set under section 13 of the Act. Specifically, under section 13(2) you must set a TAC that maintains, restores or moves the stock to a level that can produce the maximum sustainable yield (ie, *Bmsy*). However, before a TAC can be set under section 13(2) you must be provided with an estimate of both current biomass and the biomass that can produce the maximum sustainable yield (ie, *Bmsy*).

142. Where current biomass or *Bmsy* estimates are not available or not reliable section 13 (2A) of the Act is used. Section 13 (2A) requires you to set a TAC 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, *Bmsy*.

143. In considering the way and rate in which a stock is moved towards or above a level that can produce the maximum sustainable yield (ie, *Bmsy*) under section 13(2)(b) or (c) or (2A), you must have regard to such social, cultural and economic factors that you consider relevant.

144. *Bmsy* and proxy sustainability reference levels for CRA 4, CRA 5, CRA 7 and CRA 8 and social, cultural and economic factors are discussed in the context of each individual stock in later sections of this document.

145. When setting a TAC under section 13 you must have regard to the interdependence of stocks. Interdependence of stocks is where there is a direct trophic (ie, a stock is likely to be directly affected by the abundance of another stock) or symbiotic relationship between stocks.

146. Rock lobsters are predators of molluscs and other invertebrates. Survey and experimental work in north-eastern New Zealand has shown that predation by rock lobsters in marine reserves is capable of influencing the demography of surf clams of the genus *Dosinia*. Predation by rock lobsters has also been implicated in contributing to trophic cascades in a number of studies in New Zealand and overseas. For example, in Leigh marine reserve rock lobsters and snapper preyed on urchins, the densities of urchins decreased and kelp beds re-established in the absence of urchin grazing. This implies that rock lobster fishing is one of a number of factors that may alter the ecosystem from one more dominated by kelp beds to one more dominated by urchin barrens. Trophic cascades are hard to demonstrate however, because controlled experiments are difficult, food webs are complex and environmental factors are changeable.

147. Predation upon rock lobsters is known from octopus, blue cod, grouper, southern dogfish, rig and seals; no evidence exists to suggest that the availability of rock lobster as prey determines the size of any of these populations.

148. Although there is uncertainty, the TAC options proposed are unlikely to have any significant effect on the interdependence of stocks.

SETTING OF NON-COMMERCIAL ALLOWANCES AND THE TACC

149. Sections 20 and 21 of the Act require you to allow for Maori customary non-commercial fishing interests, recreational fishing interests and all other sources of fishing-related mortality within the TAC when setting or varying the TACC.

150. The Act does not provide an explicit statutory mechanism to apportion available catch between sector groups either in terms of a quantitative measure or prioritisation of allocation. Accordingly, you have the discretion to make allowances for various sectors based on best available information.

151. When allowing for Maori customary interests you must take into account any relevant mātaitai reserves and any area closure or fishing method restriction or prohibition made under section 186a of the Act. When allowing for recreational interests, you must take into account any regulations made under section 311 of the Act that prohibit or restrict fishing in any area.

152. Allocation options and existing management controls, including mātaitai reserves and section 186a restrictions, are discussed individually for each rock lobster stock in subsequent sections.

REVIEW OF THE CRA 4 (WELLINGTON/HAWKES BAY) ROCK LOBSTER FISHERY

CRA 4 Stock Status

153. The 2005 CRA 4 stock assessment results indicated that stock size in 2004-05 was well above *Bmin* and the Bmsy proxy, *Bref* [2]. The median expectation was that stock size would decline slightly over the subsequent three years but would remain above *Bref.* Uncertainty around these median projections was very high. In the event, the stock declined substantially as demonstrated by analysis of CPUE information.

154. Standardised CPUE is considered to be a reliable indicator of relative stock size in CRA 4 and is the abundance indicator used in the CRA 4 Management Procedure. The history of commercial autumn-winter CPUE in CRA 4 is shown in Figure 1. CPUE increased strongly from 1993 to 1998, and then declined to 2007, increased strongly in 2009 but decreased by 3.4% in 2010.

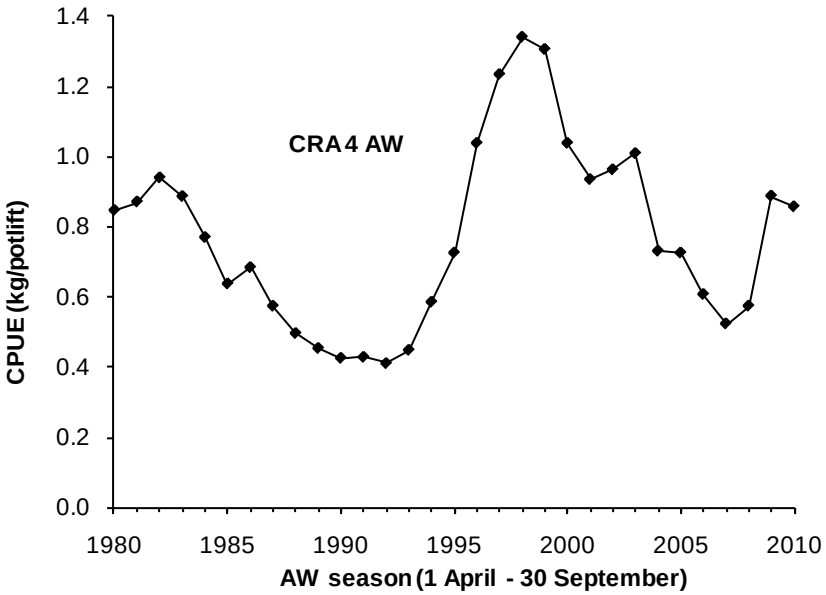

Figure 1: *The history of autumn-winter CPUE in CRA 4*

CRA 4 Management Options

155. The NRLMG proposes that you consider the options outlined in Table 2 to review the TAC and allowances for CRA 4.

Option	TAC	TACC	Customary Allowance	Recreational Allowance	Other mortality
Option 1: Be guided by the CRA 4 Management Procedure and increase the TAC and TACC	661.9 tonnes	466.9 tonnes	35 tonnes	85 tonnes	75 tonnes
Option 2: Retain the current TAC and allowances	610.625 tonnes	415.625 tonnes	35 tonnes	85 tonnes	75 tonnes

Table 2: *Proposed CRA 4 TAC and allowances options.*

[2] *Bref* is the autumn-winter (April through September) vulnerable biomass associated with the period 1979-88. 1979-88 was a period when the CRA 4 stock showed good productivity and was demonstrably safe: the stock subsequently declined to lower levels then recovered.

Submissions Received on CRA 4

156. MFish received 11 submissions relating to the proposed TAC and allowance options for CRA 4.

Support for Option 1

157. CRAMAC 4 endorses the CRA 4 Management Procedure being used to guide TAC/TACC setting decisions to April 2012 but does not have a clear mandate in regard to the recommendations to adjust the CRA 4 TAC. CRAMAC 4 conducted a ballot of the quota share owner membership and this showed that 22 quota share owners with 25% of quota shares supported Option 1.

Support for Option 2

158. Several submitters (KAHC, NKII, Pukemanu B&FC, Te Ohu, Ngawi SFC, TKWM, CRA 4 recreational interests, NZ RFC, and option4/NZSFC) support Option 2 – retain the current TAC and allowances for CRA 4. These submitters generally wanted a conservative approach to fisheries management and to ensure stock sustainability.

159. The NZ RLIC notes that CRAMAC 4 ballot results indicate an industry preference for "banking" the available TACC increase, but support for that option is conditional on you implementing procedures to ensure non-commercial removals, including illegal, are constrained to the allowances set for them. The CRAMAC 4 ballot showed that 34 quota share owners with 42% of quota shares supported Option 2.

NRLMG Discussion of Relevant Matters Raised in Submissions

TAC Setting

Option 1

160. CRAMAC 4 notes that the reasons why some quota share owners have expressed support for Option 1 are straightforward. The CRA 4 Management Procedure has been successfully used over the last four years, first to rebuild the stock and then to maintain it above reference levels with high probability.

161. Non-commercial submitters (NZRFC and option4/NZSFC) express concern that a cautious approach was taken for the 2010-11 fishing year by setting a TAC/TACC that was approximately 50 tonnes lower than the recommended increase that was specified by the CRA 4 Management Procedure, but now a TAC/TACC increase is being proposed.

- The NRLMG advises that the CRA 4 Management Procedure is an adaptive procedure which uses current data from the fishery and is responsive to variability in stock size: when the abundance indicator, CPUE, changes, the TAC will be decreased or increased to maintain abundance at the desired level.
- The NRLMG notes that although autumn-winter CPUE decreased slightly (by 0.014 kg/potlift) in the last year, the operation of the management procedure has resulted in a proposed TAC/TACC increase for 2011. The operation of the CRA 4 Management Procedure this year results in a similar TAC/TACC to that proposed last year because CPUE is at a similar level (refer Figure 2 below). The proposed TAC increase does not pose a risk to stock sustainability.

Option 2

162. Several submitters (KAHC, NKII, Pukemanu B&FC, Te Ohu, Ngawi SFC, TKWM, CRA 4 recreational interests, NZ RFC, and option4/NZSFC) support a conservative approach to stock sustainability and would like the TAC retained for the 2011-12 fishing year.

- The NRLMG notes that retaining the current TAC should result in increased abundance compared to Option 1.

163. CRAMAC 4 indicates that the quota share owners who support Option 2 have a preference to mitigate against any future recruitment variability and also seek to avoid (if possible), but at the very least to buffer, the extent of possible future TACC reductions. These quota share owners note that adherence to the management procedure will not produce a steadily increasing trajectory of stock abundance; instead, it is designed to be self-correcting: the management procedure increases harvest when stock increases and reduces the TAC when stock decreases.

164. Recreational submitters - NZRFC, Ngawi SFC and CRA 4 recreational interests – also suggest that the *status quo* should be maintained until a full stock assessment is carried out and the management procedure is reviewed.

- The NRLMG notes a CRA 4 stock assessment and a full review of the CRA 4 Management Procedure is proposed for 2011.

165. TKWM specifically note that they request no change to the CRA 4 TAC until such a time as TKWM has the ability to assess independently the state of the stock themselves.

- The NRLMG welcomes any information from TKWM on CRA 4 stock status.

Allocation of the TAC

Non-commercial Allowances

166. Joint submitters option4 and NZSFC specifically state that they do not accept the CRA 4 Management Procedure as being a valid or lawful way to apportion the TAC between interest groups.

- The NRLMG advises that the CRA 4 Management Procedure provides you with a guide as to how the TAC should be allocated. You are, however, free to adopt different allowances to allow for Maori customary non-commercial fishing interests, recreational fishing interests and all other sources of fishing-related mortality within the TAC.

167. Several submitters (NZRFC, Ngawi SFC, CRA 4 recreational interests, and CRAMAC 4) suggest there has been an increase in the availability of lobsters to non-commercial fishers in CRA 4.

- The NRLMG notes that deciding to take a more cautious approach to CRA 4 TAC setting than the TAC resulting from the operation of the CRA 4 Management Procedure in 2010 (eg, banking approximately 50 tonnes of the TACC) may have resulted in a larger stock size in the short term. As a consequence, improved utilisation benefits are being experienced by non-commercial fishers.

168. CRAMAC 4 and NZ RLIC note that there is no support amongst the CRAMAC 4 committee for the industry to make an unconditional commitment to "banking" another 50 tonnes to the fishery from April 2011 without receiving a concurrent commitment from you that action will be taken from 2011 onwards to: ensure that the customary and recreational removals do not exceed the current allowances made for them and that illegal unreported removals are actively constrained.

- The NRLMG notes that although it is uncertain, best available information suggests that existing CRA 4 customary Maori and recreational catch is within the allowances allocated for these interests. The Group note that if new information becomes available on non-commercial harvest levels that suggest allowances are being exceeded then consideration will be given to whether management action is necessary and to the extent of that action.
- The NRLMG would like accurate and reliable harvest/catch data from all sectors because such data are considered essential to stock assessments the fishery management decision-making process.
- MFish advises that the Field Operations team devotes considerable time to monitoring rock lobster fisheries in an effort to minimise illegal take.

169. The CRAMAC 4 committee believes that CRA 4 Management Procedure will be compromised unless all catches are effectively constrained to the allowances.

- The NRLMG agrees that sustainability objectives can be compromised if accurate harvest levels for all sectors are not incorporated into stock assessment models and management procedure evaluations.
- The NRLMG notes that when the Rock Lobster Fisheries Assessment Working Group (RLFAWG) evaluates new management procedures, they can look at sensitivities to uncertainties in non-commercial information and how this effects sustainability assumptions for a stock. This kind of trial helps to ensure that the best management procedure is chosen for a fishery when there are uncertainties in information.

TACC

170. NZ RLIC and CRAMAC 4 support an increase being made only by way of adjustment to the TACC if you choose to increase the TAC under Option 1. In addition, CRAMAC 4 supporters of Option 1 note that the proposed increase in TACC represents a reasonable reward to the CRA 4 industry for the sacrifices made to reduce commercial removals in three consecutive seasons, plus the 'banking' of 50 tonnes of the possible TACC for the 2010-11 season.

171. Joint submitters option4 and NZSFC specifically reject the NRLMG's rationale to allocate the full TAC increase to the TACC on the basis that the TACC was reduced in 2009 while allowances remained constant.

- The NRLMG notes that you are free to adopt a different TACC than proposed under Option1; however, they consider the proposed TAC/TACC variation guided by the operation of the CRA 4 Management Procedure to be consistent with your statutory obligations.

Analysis

172. An analysis of the management options against the full set of statutory considerations is set out from page 23. However, key considerations and impacts are discussed below.

CRA 4 TAC Setting

173. Because there are no reliable estimates of current biomass and *Bmsy*, you must set a TAC for CRA 4 under section 13(2A). Section 13(2A) requires you to set a TAC 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, *Bmsy*.

Option 1 - Increase the TAC to 661.9 tonnes as specified by the CRA 4 Management Procedure

174. The TAC increase proposed under Option 1 is specified by the CRA 4 Management Procedure that you agreed to use in March 2009 to guide TAC-setting in the fishery. This is the management procedure's last year of operation before a scheduled review in 2011.

175. A graphic representation of the CRA 4 Management Procedure is provided in Figure 2 (for further technical details on the CRA 4 Management Procedure refer to Attachment 1). The graph shows the TAC in the next year as a function of commercial autumn-winter CPUE in the current year. It also shows the CPUE values (coloured shapes) that generated the TAC proposals for the 2007-08, 2008-09, 2009-10, 2010-11 and 2011-12 fishing years. Although autumn-winter CPUE decreased slightly in the last year (from 0.871 kg/potlift to 0.857 kg/potlift) the operation of the management procedure has resulted in a proposed 51.275 tonne increase. This is because you chose to set a TAC/TACC that was approximately 50 tonnes lower for 2010-11 than the recommended increase that was specified by the management procedure.

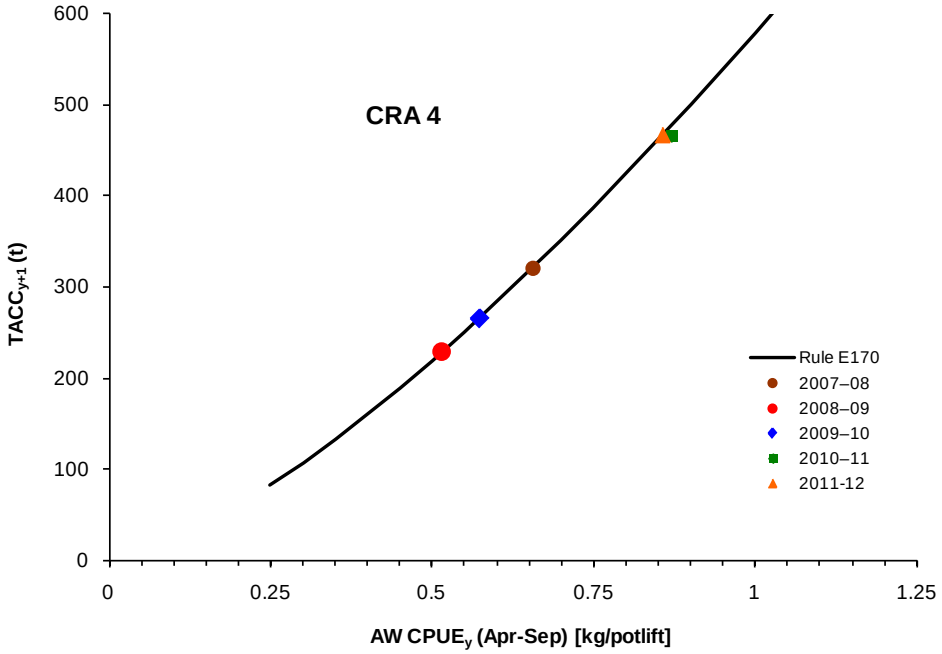

Figure 2: *Graphic representation of the CRA 4 Management Procedure.*

176. It is the NRLMG's view that the proposed TAC variation guided by the operation of the CRA 4 Management Procedure is "not inconsistent" with the objective of maintaining the stock at or above, or moving the stock to a level at or above, *Bmsy* (or the accepted proxy) in a way and rate considered appropriate for the stock. This is because ongoing application of the CRA 4 Management Procedure is expected to meet Harvest Strategy Standard (HSS) requirements, and maintain the stock above the agreed proxy, *Bref*, with higher than 50% probability and above *Bmin* with greater than 90% probability. Simulation-testing indicates that the CRA 4 Management Procedure would maintain the stock above *Bref* with 93% probability and above *Bmin* with 100% probability. The management procedure uses current fishery data and is responsive to changes in abundance.

177. The NRLMG also notes that the use of the CRA 4 Management Procedure is robust from the standpoint of stock sustainability because the procedure:

a) Was chosen from a large selection of procedures that were evaluated for performance against sustainability criteria (refer Breen *et al* (2006))

b) Has been tested using a model of the CRA 4 fishery system based on the 2005 CRA 4 stock assessment model (which was accepted by the MFish Plenary in 2005)

c) Has been tested for robustness to uncertainties in information, including uncertainties in recruitment, in the level of non-commercial catches and in the stock assessment results. The procedure was robust to these uncertainties in that desired performance against the sustainability indicators was maintained

d) Is responsive to changes in abundance in the stock.

178. Option 1 is likely to increase the current utilisation benefit of the fishery. How the benefits are accrued will depend on allocation decisions. Historically, the TACC has been varied to give effect to variations to the TAC, meaning the commercial sector may benefit the most from the proposed TAC increase through the ability to take greater yield and potentially increase their revenue. Utilisation benefits for customary Maori and recreational interests are likely to be maintained under this option because ongoing application of the CRA 4 Management Procedure is designed to maintain stock size well above reference levels.

Option 2 - Retain the current TAC of 610.625 tonnes

179. Under Option 2, the current CRA 4 TAC of 610.625 tonnes would be retained for the 2011-12 fishing year.

180. Retaining the current TAC should result in increased abundance compared to Option 1. This could result in improved fishing success for all sectors by way of increased CPUE for commercial fishers, as well as increased catch rates for non-commercial fishing.

Setting of Non-commercial Allowances and the TACC

Allowances for customary Maori, recreational interests and other mortality

181. The NRLMG recognises rock lobster is taonga to Maori and is highly sought after by amateur fishers, and therefore holds significant non-commercial cultural and social value. In general, catching success for all sectors increases with increasing abundance and decreases with decreasing abundance.

182. Current allowances and estimated catches for customary Maori, recreational interests and other sources of fishing-related mortality (eg, illegal fishing) are outlined in Table 3 below for CRA 4.

CRA 4	**Customary**	**Recreational**	**Other mortality**
Current allowances	35 tonnes	85 tonnes	75 tonnes
Catch estimates used in the 2005 CRA 4 stock assessment[3]	20 tonnes	47 tonnes	40 tonnes

Table 3: *Current CRA 4 allowances and estimated catches for non-commercial*

[3] Refer to the Mid-Year Stock Assessment Plenary report (Annex 3 of the 2010 NRLMG Annual Report).

183. Having regard to the available information and submissions from stakeholders, the NRLMG proposes that no change be made to current allowances for customary Maori, recreational interests and other mortality. Although uncertain, best available information suggests that existing CRA 4 customary Maori and recreational catch is within the allowances allocated for these interests.

184. When allowing for customary interests you must take into account any relevant mātaitai reserve or closures/restrictions under section 186A. There is one mātaitai reserve located in CRA 4, the Moremore mātaitai reserve (Napier); and one Section 186A closure at Pukerua Bay (Wellington). The NRLMG considers that the CRA 4 customary allowance adequately provides for the harvest of lobster likely to be taken from the mātaitai and section 186A closure within the QMA.

TACC

185. The NRLMG proposes allocating the full TAC increase to the commercial sector under Option 1 because in the past the commercial catch limit has been significantly reduced while allowances to other sectors remained constant. The NRLMG notes, however, that the Zone 5 Sports Fishing Council Clubs (Zone 5 encompasses the CRA 4 area) declared a voluntary bag limit reduction over several years (from 6 lobsters per person per day to 4) to support efforts to increase abundance in the fishery.

186. The NRLMG suggests that, because the proposed TACC increase from 415.625 to 466.9 tonnes does not exceed the level in place before the 2009-10 reduction (the previous TACC was 577 tonnes), it is reasonable for the commercial sector to receive the full benefit of this TACC increase up to the point of the historical catch level. Commercial members of the NRLMG also consider it reasonable for the commercial sector to receive the full TAC increase because the proposed 51.275 tonne TACC increase for 2011 represents the increase that could have been taken in 2010 but was declined by the majority of industry participants. The NRLMG notes that Zone 5 has now removed the voluntary bag limit reduction.

187. The NRLMG advises, based on average 2010 landing price information, that the proposed 51.275 tonne increase has the potential to generate approximately $2.84 million in additional earnings for the commercial sector in the 2011-12 fishing season based on current and predicted prices for CRA 4 landings.

2011 Review of the CRA 4 Management Procedure

188. A number of submitters mention the proposed review of the CRA 4 Management Procedure.

189. CRAMAC 4 endorses the intended review and update of the CRA 4 Management Procedure during 2011.

190. Te Ohu note planned discussions with local tangata whenua about the state of the CRA 4 fishery and will notify the NRLMG of relevant information before final decisions are made regarding the review of the CRA 4 Management Procedure.

- The NRLMG welcomes information from non-commercial fishers on harvest levels in CRA 4 to assist with the review of the CRA 4 Management Procedure that is scheduled to commence mid-2011.

191. Joint submitters option4 and NZSFC note that in 2010 you followed the advice in the final advice paper to increase the TAC and TACC while noting "*a mini review of the CRA 4 Management Paper will be conducted in 2010 to look at its performance indicators and to ensure your statutory obligations are being met with high probability (however, this work is dependent on sustainability measures priorities for other rock lobster stocks)*".

- The NRLMG advises that it discussed whether a mini review of the CRA 4 Management Procedure should be carried out in 2010, but agreed that, with a full review of the management procedure proposed for 2011, it was a better use of resources to cancel the mini review and apply these resources to other stock priorities.

NRLMG Recommendation

192. The NRLMG recommends that you:

EITHER

a) ***Agree*** to be guided by the CRA 4 Management Procedure *and*

i) ***Increase*** the CRA 4 TAC from 610.625 to 661.9 tonnes

and, to achieve the increase,

ii) ***Increase only*** the CRA 4 TACC from 415.625 to 466.9 tonnes.

OR

b)

iii) ***Retain*** the current CRA 4 TAC and allowances for the 2011-12 fishing year.

REVIEW OF THE CRA 5 (CANTERBURY/MARLBOROUGH) ROCK LOBSTER FISHERY

CRA 5 Stock Status

193. The 2010 CRA 5 stock assessment results indicate that the current stock is well above *Bmin* and and *Bmsy* by factors of 2 to 5 respectively. Biomass is predicted to decline over the next four years, at current levels of catch and recruitment, but will remain well above *Bmsy*.

194. Standardised CPUE is considered to be a reliable indicator of relative stock size in CRA 5 and is the abundance indicator used in the proposed CRA 5 Management Procedure. The history of offset year (ie, October through September) commercial CPUE in CRA 5 is shown in Figure 3. CPUE increased strongly from 1995-2004, decreased for two years, then increased in each of the past four years to its current historical high.

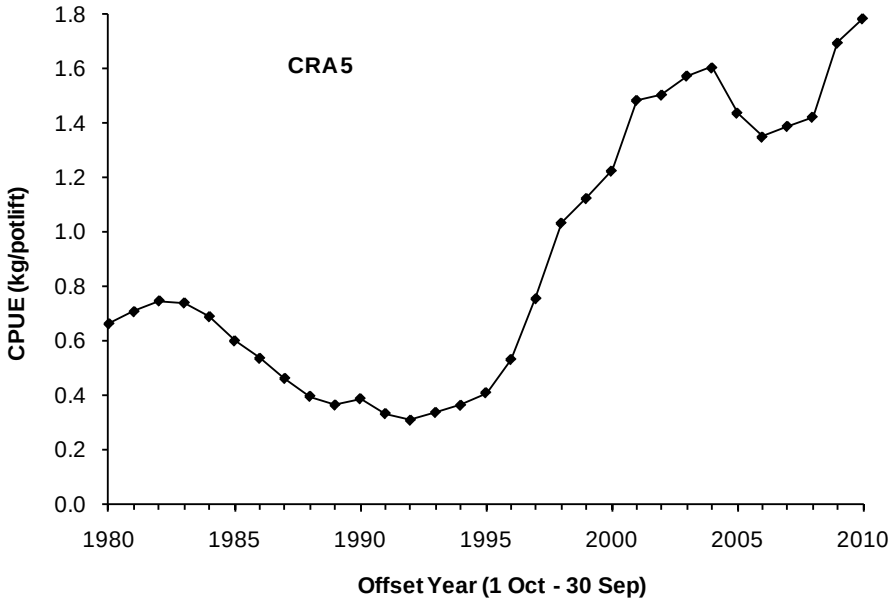

Figure 3: *The history of offset year CPUE in CRA 5*

CRA 5 Management Options

195. The NRLMG proposes that you consider the options outlined in Table 4 to review the TAC and allowances for CRA 5.

Option	TAC	TACC	Customary Allowance	Recreational Allowance	Other mortality
Option 1: Be guided by the proposed new CRA 5 Management Procedure[4], and increase the TAC and vary the allowances	522.1 tonnes	350 tonnes	10 tonnes	110.1 tonnes	52 tonnes
Option 2: Retain the current TAC and allowances	467 tonnes	350 tonnes	40 tonnes	40 tonnes	37 tonnes

Table 4: *Proposed CRA 5 TAC and allowances options.*

[4] Refer to Section 1 – "*Proposed new Management Procedures to guide TAC setting in CRA 5 and CRA 7*".

Submissions Received on CRA 5

196. MFish received 11 submissions relating to the proposed TAC and allowance options for CRA 5.

Support for Option 1 (including suggested modifications)

197. Mr Divett and Mr Hartley both support Option 1 as proposed – be guided by the proposed new CRA 5 Management Procedure, increase the TAC and vary the allowances as specified. NZRFC also supports Option 1 on the condition that the recreational allowance is increased to 110.1 tonnes.

198. Te Ohu, Totaranui and Ngati Kuia support the TAC increase proposed under Option 1, but recommend different allocation options than those proposed by the management procedure.

199. Joint submitters option4 and NZSFC agree to the TAC, TACC and allowance options proposed under Option 1 but not on the basis of applying the CRA 5 Management Procedure.

Support for Option 2

200. CRAMAC 5, NZ RLIC and Ngai Tahu support Option 2 if MFish is unwilling to implement effective measures to audit, monitor and constrain non-commercial removals to the allowances set in the TAC decision.

Other Matters

201. SeaFIC expresses concerns that the advice paper fails to consider the option of controlling recreational catch within the recreational allowance (they do not comment on any TAC-setting options).

NRLMG Discussion of Relevant Matters Raised in Submissions

Stock Status

202. Te Ohu, Totaranui and Ngati Kuia express concerns about the low stock levels in statistical area 933 (Cook Strait). Te Ohu advise that CPUE within this area since 2006 has ranged between 0.72 and 0.76 kg/potlift.

203. Te Ohu and Totaranui also suggest that iwi and the commercial sector should talk about issues (particularly around the customary take of lobster in statistical area 933 where lower CPUE is being observed) with a view to finding solutions.

- The NRLMG notes that CPUE for a statistical area can vary over time and between areas: some statistical areas within a QMA consistently have a higher CPUE than other areas. This variation can occur as a result of environmental factors, such as water temperature, food availability and habitat type, or changes to fishing behaviour.

- The NRLMG advises that statistical area 933 has consistently had a lower CPUE than the neighbouring statistical area 916 (the eastern tip of the South Island) since the early 1980s, and the commercial catches from 933 are historically lower than those reported for other statistical areas. This is likely due to environmental factors rather than fisher behaviour.

- The NRLMG agrees that fine-scale management concerns are best resolved as part of discussion among fishers at the local level.

TAC Setting

204. Recreational submitters (Mr Divett, Mr Hartley, NZRFC, and option4 /NZSFC) generally support the increase in TAC, whereas customary and commercial submitters (Te Ohu, Totaranui, Ngati Kuia, CRAMAC 5, NZ RLIC and Ngai Tahu) do not support adjustment to the TAC or support adjustment to the TAC contingent on specific allocation decisions being made for 2011-12.

205. The NRLMG notes that it members do not agree on a TAC option for CRA 5. The NRLMG advises that the option to change the TAC is driven by the proposed CRA 5 management procedure, which is not supported by all sector groups. Although noting that both TAC options meet your statutory obligations, commercial and customary NRLMG members note that there is no urgent need to amend the TAC given stakeholder views and no sustainability concerns. Recreational members support amendment to the TAC in line with the proposed CRA 5 management procedure.

Allocation of the TAC

Allowance for customary Maori

206. Te Ohu and Ngati Kuia specifically note in their submissions that the allowances for customary Maori should not be constrained in any shape or form, unless it is with the express consent of iwi.

207. Te Ohu and Ngati Kuia recommends that the customary Maori allowance is maintained at 40 tonnes instead of 10 tonnes as proposed under Option 1. This view is expressed on the basis that it was wrong for MFish to have allowed incomplete permit information to be used. Furthermore, they claim that when the South Island customary regulations were developed during the 1990s there was an understanding amongst iwi and Crown negotiators that information would not be used in the way that it was.

208. Te Ohu also advises that Mandated Iwi Organisations are planning to make a more concerted effort to ensure customary non-commercial needs are able to be met. Iwi are working with their fishing companies to find ways to harvest rock lobster from Cook Strait and other areas of CRA 5 to support customary non-commercial activities.

209. Joint submitters option4 and NZSFC suggest 10 tonnes is an arbitrary figure for the customary allowance and the customary catch could equally be 30 or 40 tonnes. These joint submitters cannot agree to any reduction in the customary allowance because of past management practices where there is little to no chance of regaining lost abundance and availability.

210. The NRLMG notes in response that:

- Customary NRLMG members consider it inappropriate to use an estimate of 10 tonnes to represent customary catch in the evaluation of the CRA 5 Management Procedure and they consider that 40 tonnes (the current customary allowance) should be used instead. Also, customary submitters do not consider that an allowance of 10 tonnes reflects current customary harvest levels.

- MFish NRLMG members note that best available information suggests that the current customary allowance of 40 tonnes is an overestimate. The proposed change would therefore be a technical adjustment to reflect better information. However, there is uncertainty in customary catch levels because customary permit information is not complete for CRA 5 (particularly harvest information from the top of the South Island). Iwi submitters have suggested that the customary allowance should remain at 40 tonnes because this reflects true catch from the fishery. This anecdotal

information should be treated with appropriate caution because there is no independent information (from customary permits) available to verify catch at this time.

- MFish members also note that the customary allowance does not represent a cap on customary fishing but rather is intended to reflect actual catch. Over estimation of the allowance can lead to over estimation of productivity in the fishery when allowances are used to calculate total removals as part of stock assessments.

- MFish members are open to developing protocols around the use of customary permit information with CRA 5 iwi.

- MFish NRLMG members advise the key, and agreed, purpose of collecting permitting information under the Fisheries (South Island Customary Fishing) Regulations 1999 was to help inform the setting or varying of sustainability measures (via stock assessments) or developing management controls. Adjustment of a TAC always requires reconsideration of allowances.

Allowance for Recreational Interests

211. Submitters - Mr Hartley and the NZRFC - suggest that recreational catch in CRA 5 has increased with increasing abundance of rock lobster in the fishery and that the proposed allowance of 110.1 tonnes better reflects the present recreational catch. The NZRFC note the recreational sector felt the pain in this fishery and few fishers had a good experience for many years, but thankfully those days are over and they are looking forward to the management procedure providing stability and a speedy response to declining abundance.

212. In addition, the NZRFC states in their submission that if the increased recreational allowance of 110.1 tonnes is not introduced, they will withdraw their support for the introduction of the CRA 5 Management Procedure. However, the NZRFC also assert that if the CRA 5 Management Procedure is used to guide TAC setting, they do not support the method of generating a proposed recreational allowance from the harvest control rule if it is going be interpreted as a fixed proportional share of the fishery.

213. NZ RLIC note that recreational effort, including charter fishing, has increased in CRA 5 because no effort was made to monitor, audit and then constrain recreational removals to the current allowance. NZ RLIC does not support the model's assumption of recreational catch being translated to an explicit allowance.

214. CRAMAC 5 considers it inappropriate to ignore the amateur responsibility to "share the burden" if CPUE falls below the management procedure threshold that will invoke TACC cuts.

215. SeaFIC also suggests for the commercial sector that there is little benefit in exercising restraint in managing the commercial share of the fishery when the resulting increase in stock abundance is allocated only to the unconstrained non-commercial sector. SeaFIC's concern is that the government's failure to manage recreational fishing is now so pervasive and significant that it is undermining the success of the QMS and potentially affecting the actions and behaviours of commercial participants. SeaFIC submits that it would be unfortunate if the government's failure to effectively manage recreational fishing resulted in commercial users declining to invest and support the implementation of enhanced management approaches such as management procedures.

216. The NRLMG notes in response that:

- Information on recreational removals is highly uncertain.
- The current 40 tonne allowance is based on historical estimates of recreational catch and has not been altered since 1999.
- The current allowance for recreational interests does allow for recreational fishing but probably not in full given anecdotal information.
- It is likely that the level of recreational catch is related to abundance; however, there are no quantitative estimates of this relationship.
- Because RLFAWG accepted recreational survey information is only available up to 1996, updated estimates of recreational catch come from model assumptions which are highly uncertain.
- Despite this uncertainty, recreational NRLMG members consider that the recreational allowance generated from the harvest control rule in the proposed CRA 5 Management Procedure reflects the best assumption of recreational catch and should be used when considering allocation within the TAC for 2011-12. Customary and commercial members of the NRLMG do not support the recreational allowance generated from the harvest control rule and consider better information on recreational catch should be obtained.
- MFish NRLMG members advise in response to comments made on constraining recreational removals that as Minister you may act to further constrain recreational catch by reducing bag limits or other mechanisms. To date, the NRLMG has not proposed or discussed such proposals and, at this time, there is little in the way of quality information to support the setting of such measures.

Allowance for Other Sources of Fishing-Related Mortality

217. Ngai Tahu, CRAMAC 5 and NZ RLIC do not support an increase in the other mortality allowance. Ngai Tahu is offended that an increase is proposed for this allowance whilst a significant decrease in customary allowance is proposed. CRAMAC 5 and NZ RLIC view the increase as being at the direct expense of the commercial sector.

- MFish NRLMG members note rationale for adjustment to allowances between customary and illegal removals is different. The proposed change to the other sources of fishing-related mortality is based on available estimates of illegal catches, as provided by MFish suggesting that illegal take has likely increased. However as with all information on illegal removals the estimates are not able to be verified and are subject to high levels of uncertainty.

TACC

218. CRAMAC 5 note that they have been very conservative in the manner in which they utilise/manage the fishery and have forgone the opportunity to increase the TACC twice in the past decade. CRAMAC 5 has strived in the past 14 years to increase the abundance of rock lobster to provide a better fishing success and to add value to the quota and catching rights that they own.

- The NRLMG applauds CRAMAC 5 for their responsible and conservative approach to management of the CRA 5 fishery and notes that this benefits the fishing success of all sectors.

Analysis

219. An analysis of the management options against the full set of statutory considerations is set out from page 23. However, key considerations and impacts are discussed below.

TAC Setting

220. Best available information suggests that the current CRA 5 stock is well above *Bmsy*. Accordingly, you may set or vary the TAC for CRA 5 to maintain the stock at or above *Bmsy* (section 13(2)(a)).

Option 1 - Increase the TAC to 522.1 tonnes as specified by the CRA 5 Management Procedure

221. Under Option 1, the CRA 5 TAC would be set at 522.1 tonnes. The proposed increase in TAC is specified by the proposed CRA 5 Management Procedure and is intended to reflect new RLFAWG assumptions of current non-commercial catch. The proposal will not result in changes to existing fishing practices because no variations to the management controls that would influence actual harvest are being proposed at this time.

222. The NRLMG considers that the proposed TAC variation, guided by the operation of the proposed new CRA 5 Management Procedure, enables the stock to be maintained at a level at or above *Bmsy*. Ongoing application of the CRA 5 Management Procedure is expected to meet HSS requirements, and maintain the stock above *Bmsy*, with greater than 50% probability and above *Bmin* with greater than 90% probability. Simulation testing indicates that ongoing application of the CRA 5 Management Procedure would maintain the stock above *Bmsy* and *Bmin* with greater than 95% probability.

223. The NRLMG also notes use of the CRA 5 Management Procedure is robust from the standpoint of stock sustainability because the procedure:

a) Was chosen from a set of management procedures that were evaluated for performance against sustainability criteria;

b) Has been tested using a model of the CRA 5 fishery based on the 2010 CRA 5 stock assessment model, which was accepted by the MFish Plenary in 2010;

c) Has been tested for robustness to uncertainties, including uncertainties in recruitment, in the level of non-commercial catches and in the stock assessment results. The management procedure was robust to these uncertainties and desired performance against the sustainability indicators was maintained; and

d) Is responsive to changes in abundance in the stock.

Option 2 - Retain the current TAC of 467 tonnes

224. Under Option 2, the current CRA 5 TAC of 467 tonnes would be retained. The NRLMG advises that maintaining the *status quo* will ensure stock sustainability given best available information on CRA 5 stock status.

225. Based on the RLFAWG's best assumptions of non-commercial catch, the NRLMG notes that total removals from the fishery may exceed the TAC of 467 tonnes. Current information suggests that the customary allowance may be overestimated while there may be some underestimate of the recreational and other sources of fishing-related mortality allowances (there may be a 55 tonne difference between the current TAC and combined allowances). Given uncertainty in information on all the allowances it is unclear by how much or whether the TAC would in fact be exceeded this year. The proposal would not result in changes to existing fishing practices because no variations to the management controls that would influence actual harvest are being proposed at this time.

Setting of Non-commercial Allowances and the TACC

226. The NRLMG recognises rock lobster is taonga to Maori and is highly sought after by amateur fishers, and therefore holds significant non-commercial cultural and social value. In general, catching success for all sectors increases with increasing abundance and decreases with decreasing abundance.

227. Current allowances and estimated catches for customary Maori, recreational interests and other sources of fishing-related mortality (eg, illegal fishing) are outlined in Table 5 below for CRA 5.

CRA 5	Customary	Recreational	Other mortality
Current allowances	40 tonnes	40 tonnes	37 tonnes
Catch estimates made by the RLFAWG[5]	10 tonnes	110.1 tonnes	52 tonnes

Table 5: *Current CRA 5 allowances and estimated catches for non-commercial*

Allowance for Customary Maori

228. Under Option 1, it is proposed that the current CRA 5 allowance for customary Maori would decrease from 40 to 10 tonnes. The allowance represents the results of the RLFAWG's current customary harvest assumptions rather than a cap on the amount that can be harvested by customary fishers.

229. The RLFAWG agreed to use an estimate of 10 tonnes to represent customary catch for the 2010 CRA 5 stock assessment (a constant value of 10 tonnes is also used in the operation of the proposed CRA 5 Management Procedure). In determining an appropriate customary catch estimate for CRA 5, MFish provided available information on customary catches from two sources: the South Island Customary Regulations 1999 and Regulation 27A of the Fisheries (Amateur Fishing) Regulations 1986. When these data were summarised (using a mean weight of 0.499 kg/lobster) the estimated catch from customary sources was about 1 tonne in any fishing year, which is much smaller than the 10 tonne estimate used in the stock assessment. However, information on the quantity of lobster harvested under customary fishing permits or authorisations is currently incomplete; therefore 1 tonne is likely to be an underestimate of customary catch.

230. When allowing for customary interests you must take into account any relevant mātaitai reserve or closures/restrictions under section 186A. There are four mātaitai reserves located in CRA 5

[5] Refer to the Mid-Year Stock Assessment Plenary report (Annex 3 of the 2010 NRLMG Annual Report).

along the east coast of the South Island: the Wairewa/Lake Forsyth, Rapaki, Te Kaio and Koukourarata mātaitai reserves.

231. Option 2 would retain the existing customary allowance for CRA 5.

Allowance for Recreational Interests

232. Under Option 1, it is proposed that the current CRA 5 allowance for recreational interests would increase from 40 to 110.1 tonnes.

233. The proposed 110.1 tonne recreational allowance was generated from the harvest control rule in the proposed CRA 5 Management Procedure. The RLFAWG used an agreed multiplier on the previous year offset-year commercial CPUE to calculate the recreational component. The proposed allowance reflects the result of the RLFAWG's discussions on the relationship between recreational catch and abundance; recreational catch changes linearly in response to changes in abundance and that abundance is reflected in CPUE.

234. The RLFAWG considers the 110.1 tonne estimate to be the best available assumption of recreational catch because it is likely that recreational catch varies with abundance; however, there is considerable uncertainty around this estimate because there are no quantitative estimates of this relationship.

235. Under Option 2 no change is proposed to the recreational allowance.

Allowance for Other Sources of Fishing-Related Mortality

236. Under Option 1, it is proposed that the current allowance for other sources of fishing-related mortality (eg, illegal fishing) would increase from 37 to 52 tonnes.

237. The RLFAWG agreed to use an estimate of 52 tonnes to represent other mortality for the 2010 CRA 5 stock assessment (a constant value of 52 tonnes is also used in the operation of the proposed CRA 5 Management Procedure). In determining an appropriate estimate for other mortality, the RLFAWG used available estimates for illegal catches from 1990 to 2003. There is little confidence in the estimates of illegal catch because the estimates cannot be verified, but anecdotal evidence from MFish compliance experts indicates a possible upward trend in illegal extractions in the CRA 5 area.

238. Under Option 2 no change is proposed to the allowance for other sources of fishing-related mortality.

TACC

239. The NRLMG proposes no change to the CRA 5 TACC for the next fishing year under either option.

MFish Conclusion

240. MFish NRLMG members consider that:

a) Given the lack of overall agreement among submitters or NRLMG members;

b) There are no sustainability or utilisation concerns; and

c) Neither option would alter any sectors current ability to harvest as no additional controls are proposed on catch;

there is no need to adjust the TAC and therefore allowances for the 2011-12 fishing year.

241. You are, however, free to adjust the CRA 5 TAC and allowances. The only new information on which to base adjustments is from the management procedure, which is not at this time supported by all NRLMG members. No change is proposed to the TACC for CRA 5 under either option.

242. Estimates of non-commercial removals (customary, recreational and illegal take) used to inform the management procedure indicate that the existing TAC may be being exceeded. In particular, MFish NRLMG members consider there is considerable uncertainty around estimates of customary, recreational and other sources of fishing-related mortality.

243. An assessment of CRA 5 recreational catch was carried out by the RLFAWG in 2010 and estimates in the management procedure evaluations were based on the assumption that recreational catch changes linearly in response to changes in abundance and that abundance is reflected in CPUE. While MFish members of the NRLMG agree that using a management approach which incorporates an estimate of recreational catch that varies as abundance changes is likely to better represent actual removals than a static estimate, there remains considerable uncertainty in the estimates produced. Key uncertainties are as follows:

a) The estimate does not include any ceiling on recreational catch that may be expected based on the size of the local population that has or desires access to the fishery and reduced marginal benefits from harvesting additional lobster as abundance increases.

b) Although it is intuitive to expect recreational catch to fluctuate based on abundance, MFish cannot define this relationship accurately enough to be confident about the existing level of catch and/or whether the existing allowance is being exceeded.

c) Information used to set the current recreational allowance of 40 tonnes in 1999 was uncertain (the figure was derived from the 1996 recreational national telephone and diary survey) and this information formed the basis of work undertaken by the RLFAWG.

244. On balance MFish consider the only point that can be made with any confidence about recreational catch is that it is likely to have increased as abundance has increased; however, the rate of increase and current catch levels are unknown.

245. With respect to the customary allowance, MFish members note best available information suggests that the current allowance of 40 tonnes is an overestimate; however, there is some uncertainty in this information. Iwi submitters suggest the allowance of 40 tonnes should be retained (instead of 10 tonnes as specified by the management procedure) because this reflects current harvest levels, but this information is anecdotal and highly uncertain.

246. The proposed change to the other sources of fishing-related mortality from 37 to 52 tonnes (as specified by the management procedure) is based on available estimates of illegal catches. However as with all information on illegal removals the estimates are not able to be verified and are subject to high levels of uncertainty.

247. MFish NRLMG members note that although concern has been expressed about increased recreational catches, at no point in the NRLMG advice development process were changes to recreational management tools (ie, bag limits) proposed by any sector.

NRLMG Recommendation

248. The NRLMG recommends that you:

EITHER

a) ***Agree*** to be guided by the CRA 5 Management Procedure *and*

i) ***Increase*** the CRA 5 TAC from 467 to 522.1 tonnes

and, to achieve the increase,

ii) ***Decrease*** the CRA 5 customary allowance to 10 tonnes,

iii) ***Increase*** the CRA 5 recreational allowance to 110.1 tonnes,

iv) ***Increase*** the CRA 5 allowance for other sources of fishing-related mortality to 52 tonnes and

v) ***Retain*** the TACC of 350 tonnes.

OR

b)

vi) ***Retain*** the current CRA 5 TAC and allowances for the 2011-12 fishing year.

REVIEW OF THE CRA 7 (OTAGO) ROCK LOBSTER FISHERY

CRA 7 Stock Status

249. The 2006 stock assessment results indicated stock size in 2005-06 was well above *Bmin*[6] and was approximately 1.7 times the *Bmsy* proxy, *Bref*[7].

250. Standardised commercial CPUE is considered to be a reliable indicator of relative stock size in CRA 7 and is the abundance indicator used in the CRA 7 Management Procedure (in both the agreed and proposed procedures). The history of offset year (October through September) CPUE in CRA 7 is shown in Figure 4. Except for one year, CPUE increased continuously and strongly between 1998 and 2008; it declined by 56% in 2009 and increased by 9% in 2010.

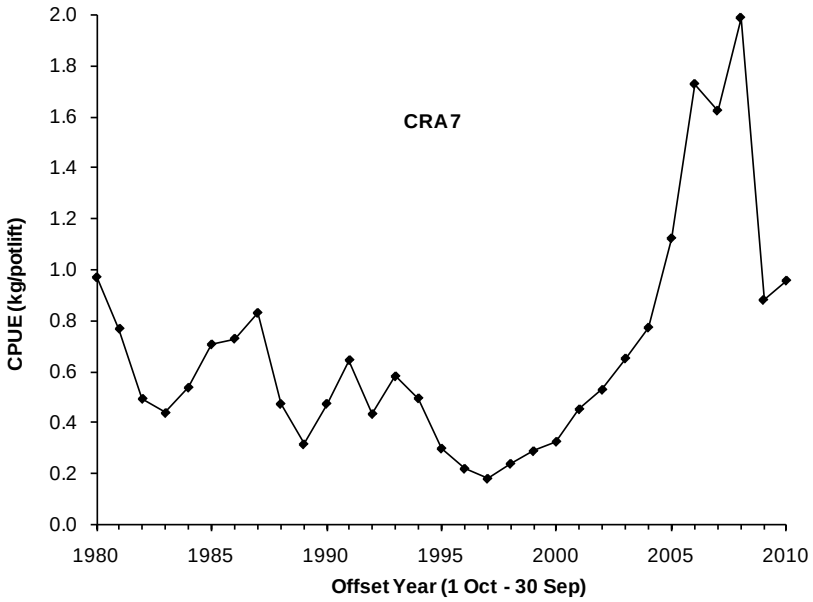

Figure 4: *The history of offset year CPUE in CRA 7*

251. In 2008, *Bmsy* was subsequently identified for CRA 7[8]. The 2008 analysis provided a method of estimating the average biomass at which yield was maximised (ie, *Bmsy*). On this basis *Bref* appeared to be larger than *Bmsy* and is therefore a more conservative reference level. However, because the abundance indicator, commercial CPUE, has declined considerably since the last stock assessment in 2006 the NRLMG is unable to accurately determine where current biomass is in relation to the *Bmsy* estimate without undertaking further analysis. The NRLMG notes a full CRA 7 stock assessment is proposed for 2012 and that this will determine where the stock is in relation to *Bmsy.*

CRA 7 Management Options

252. The NRLMG proposes you consider the options outlined in Table 6 to review the TAC and allowances for CRA 7.

[6] *Bmin* for CRA 7 is considered to be one half of *Bref*.

[7] *Bref* is the pre-season autumn-winter vulnerable biomass associated with the period 1979-81. 1979-81 was a period when the CRA 7 stock showed good productivity and was demonstrably safe.

[8] Refer CRA 7 and CRA 8 Supplementary Advice for April 2008 Sustainability Measures: http://www.fish.govt.nz/en-nz/Consultations/Archive/2008/Rock+Lobster+7+and+8/default.htm

Option	TAC	TACC	Customary Allowance	Recreational Allowance	Other mortality
Option 1: Be guided by the proposed revised CRA 7 Management Procedure[9] and retain the TAC	104.5 tonnes	84.5 tonnes	10 tonnes	5 tonnes	5 tonnes
Option 2: Be guided by the current CRA 7 Management Procedure and reduce the TAC and TACC	95.7 tonnes	75.7 tonnes	10 tonnes	5 tonnes	5 tonnes
Option 3: Retain the current TAC and allowances	104.5 tonnes	84.5 tonnes	10 tonnes	5 tonnes	5 tonnes

Table 6: *Proposed CRA 7 TAC and allowances options.*

Submissions Received on CRA 7

253. MFish received five submissions relating to the proposed TAC and allowance options for CRA 7.

254. CRAMAC 7, NZ RLIC, Te Ohu and NZRFC support Option 1 – be guided by the proposed revised CRA 7 Management Procedure and retain the TAC.

255. Joint submitters option4 and NZSFC support Option 3 – retain the current TAC and allowances.

256. No submitters indicated support for Option 2.

NRLMG Discussion of Relevant Matters Raised in Submissions

TAC Setting

257. Te Ohu, NZ RFC, CRAMAC 7 and NZ RLIC express support for Option 1 because the proposed revised CRA 7 Management Procedure is likely to provide a more stable TAC.

258. The NZRFC specifically note in their submission that they are troubled that the revised CRA 7 Management Procedure will hold the TAC above the level that the current management procedure generated for the coming year.

- The NRLMG notes this observation is correct; however, in comparison to the current CRA 7 Management Procedure the revised CRA 7 Management Procedure is likely to provide more stability in the TAC, result in fewer years where stock biomass is predicted to be less than *Bref*, and it is expected to have a higher average stock abundance and commercial CPUE.

259. Joint submitters option4 and NZSFC suggest you retain the TAC and allowances in CRA 7 based on your statutory obligations pursuant to section 21 of the Act (Option 3). Also, the joint submitters are not convinced that applying management procedures achieves more abundant fisheries or less volatile stock levels.

- The NRLMG notes the proposed revised CRA 7 Management Procedure (Option 1) is expected to provide more stability in the TAC, with fewer changes to the TAC than

[9] Refer to Section 1 – "*Proposed new Management Procedures to guide TAC setting in CRA 5 and CRA 7*".

under the current CRA 7 Management Procedure (Option 2). The NRLMG also advises the management procedure approach provides greater certainty of achieving management outcomes for the stock over the conventional approach of periodic stock assessments followed by decision-making; this benefits all sectors and those involved in fisheries management decision-making. Ongoing application of the CRA 7 Management Procedure is expected to maintain the stock above the *Bmsy* proxy, *Bref*.

Allocation of the TAC

260. The NZRFC note if the proposed revised CRA 7 Management Procedure (Option 1) fails to deliver reasonable catches of legal fish for the recreational sector, they want the management procedure revisited again. The NZRFC also submits that there are some areas not fished commercially, but these are remote and difficult to access, with rough weather and large seas being the norm. Commercial members of the NRLMG dispute this; they contend that access to and seas conditions in the so-called "buffer zone" are similar to elsewhere in CRA 7. These members also note the recreational sector has exclusive access to all CRA 7 fishing grounds from November 20th to May 31st of any year.

- The NRLMG notes, as discussed above, the utilisation benefits for recreational interests are likely to be improved overtime or at least maintained under Option 1 because ongoing application of the revised CRA 7 Management Procedure is expected to maintain the stock above *Bref*. It is also proposed that the revised CRA 7 Management Procedure would be reviewed in 2012.

261. The NZ RLIC agrees it is reasonable that the sectors bearing the direct costs of catch reductions when TACs are reduced should receive the benefit when a TAC is increased in response to increased stock abundance.

262. CRAMAC 7 advises that the revised CRA 7 Management Procedure will help to ensure that available ACE reflects the status of the fishery. The number of fishers targeting rock lobster increased significantly with the increase in ACE available from the two successive TACC increases in 2008 and 2009. This led to increased competition for available catch, competition to secure ACE in expectation of catches and a large number of additional lobster pots being deployed into what is essentially a small fishery geographically, and with a limited (almost six month) commercial season[10].

- The NRLMG notes that the CRA 7 TACC has been under-caught over the last two fishing years and that the revised CRA 7 Management Procedure is expected to provide more stability in the TAC and TACC, with fewer changes to the TAC and TACC than under the current CRA 7 Management Procedure.

263. The NRLMG has identified no reason why you should not use the results of the revised CRA 7 Management Procedure to guide statutory TAC setting decisions.

Analysis

264. An analysis of the management options against the full set of statutory considerations is set out from page 23. However, key considerations and impacts are discussed below.

[10] The CRA 7 fishery is closed to commercial fishing from 20th November in any year to 31st May in the next year.

TAC Setting

265. Because there are no reliable estimates of current biomass and *Bmsy*, you must set a TAC for CRA 7 under section 13(2A). Section 13(2A) requires you to set a TAC 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, *Bmsy*.

266. The NRLMG notes in general use of either CRA 7 Management Procedure is robust from the standpoint of stock sustainability because the procedures:

a) Were chosen from a set of management procedures that were evaluated for performance against sustainability criteria;

b) Have been tested using a model of the CRA 7 fishery based on the 2006 CRA 7 and CRA 7 multi-stock assessment model;

c) Have been tested for robustness to uncertainties, including uncertainties in recruitment, in the level of non-commercial catches and in the stock assessment results. The procedure was robust to these uncertainties and desired performance against the sustainability indicators was maintained; and

d) Are responsive to changes in abundance in the stock.

Option 1 - Retain the current TAC of 104.5 tonnes as specified by the proposed revised CRA 7 Management Procedure

267. Under Option 1, the current CRA 7 TAC of 104.5 tonnes would be retained for the 2011-12 fishing year. The proposed retention in TAC is specified by the proposed revised CRA 7 Management Procedure (refer Section One).

268. A graphic representation of the proposed revised CRA 7 Management Procedure is provided in Figure 5 (for further technical details on this procedure refer to Attachment 3). Operation of the proposed management procedure initially suggests a TAC increase from 104.5 to 114.8 tonnes based on the most recent offset year standardised CPUE of 0.957 kg/potlift. However, the rule does not allow an increase if the TAC was adjusted the previous year. Because the CRA 7 TAC was reduced from 209 to 104.5 tonnes for the 2010-11 fishing year, no change is proposed to the CRA 7 TAC for the 2011-12 fishing year.

269. The NRLMG considers the proposed TAC variation, guided by the operation of the revised CRA 7 Management Procedure is "not inconsistent" with the objective of maintaining the stock at or above, or moving the stock to a level at or above *Bmsy* (or the accepted proxy) in a way and rate considered appropriate for the stock. This is because ongoing application of the CRA 7 Management Procedure is expected to meet HSS requirements, and maintain the stock above the agreed proxy, *Bref*, with higher than 50% probability and above *Bmin* with greater than 90% probability. Simulation testing indicates that the revised CRA 7 Management Procedure would maintain the stock above *Bref* with 85% probability and above *Bmin* with 98% probability. The management procedure also uses current fishery data and is responsive to changes in abundance.

270. The NRLMG considers that the revised CRA 7 Management Procedure will result in improved biomass levels over the medium and long terms. The proposed revised CRA 7 Management Procedure is expected to provide more stability in the TAC, with fewer changes in the TAC than under the current rule (Option 2). The proposed management procedure is also expected to have a higher average CPUE than Option 2, and, because of increased abundance, the

management procedure results in fewer years where stock biomass is predicted to be less than the agreed proxy, *Bref*.

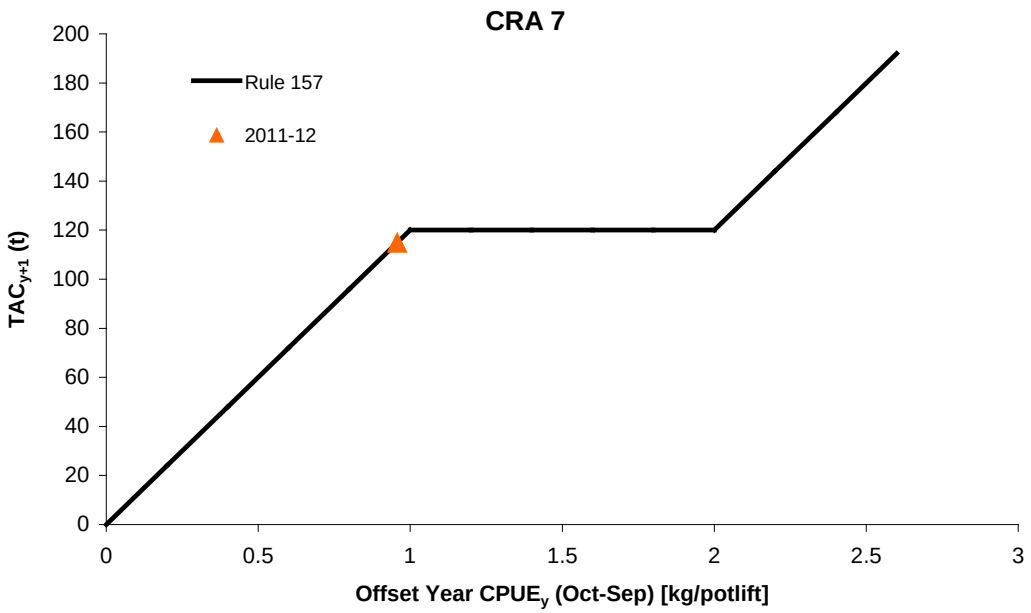

Figure 5: *Graphic representation of the proposed 2010 CRA 7 Management Procedure.*

Option 2 - Reduce the TAC to 95.7 tonnes as specified by the current CRA 7 Management Procedure

271. Under Option 2, the CRA 7 TAC would be set at 95.7 tonnes. The proposed decrease in TAC is specified by the current CRA 7 Management Procedure that a previous Minister of Fisheries agreed to use in March 2008 to guide TAC setting in the fishery.

272. A graphic representation of the CRA 7 Management Procedure is provided in Figure 6 (for further technical details on the current CRA 7 Management Procedure refer to Attachment 3). The graph shows the TAC in the next year as a function of offset-year CPUE in the current year. It also shows the CPUE values (coloured shapes) that generated the TAC proposals for the 2008-09, 2009-10, 2010-11 and 2011-12 fishing years. Although offset year CPUE increased in the last year from 0.803 kg/potlift to 0.957 kg/potlift, the current CRA 7 Management Procedure resulted in a proposed 8.8 tonne reduction to the TAC. This is because for the previous fishing year (2010-11) the TAC decrease was limited by the 50% maximum change threshold of the management procedure.

273. The NRLMG considers the proposed TAC variation, guided by the operation of the revised CRA 7 Management Procedure is "not inconsistent" with the objective of maintaining the stock at or above, or moving the stock to a level at or above *Bmsy* (or the accepted proxy) in a way and rate considered appropriate for the stock. This is because ongoing application of the CRA 7 Management Procedure is expected to meet HSS requirements, and maintain the stock above the agreed proxy, *Bref*, with higher than 50% probability and above *Bmin* with greater than 90% probability. Simulation testing indicates the current CRA 7 Management Procedure would maintain the stock above *Bref* with 80% probability and above *Bmin* with 99% probability. The management procedure also uses current fishery data and is responsive to changes in abundance.

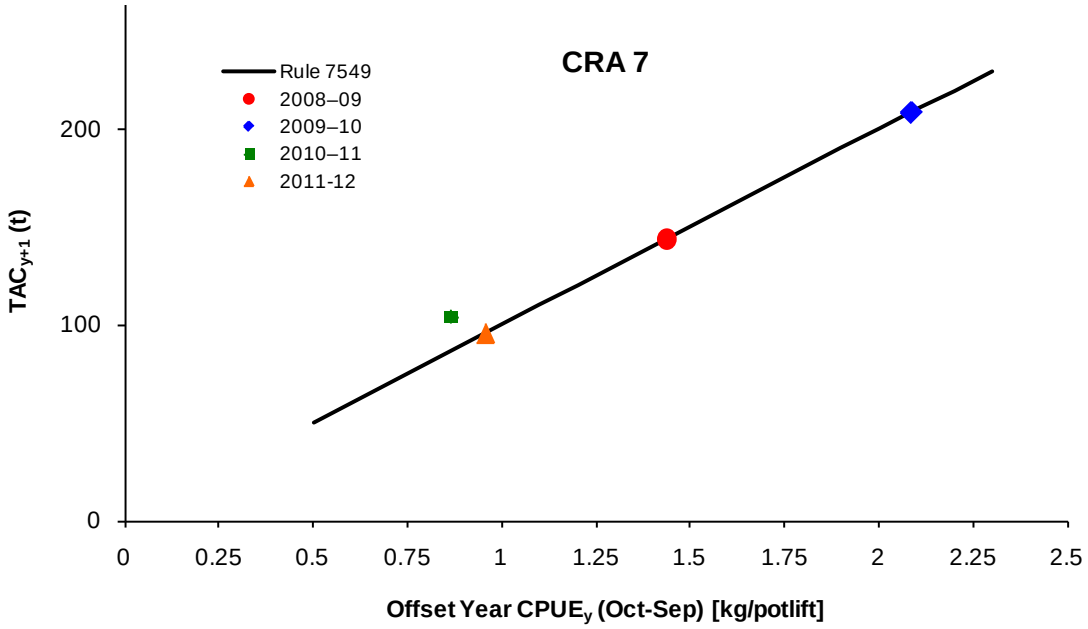

Figure 6: *Graphic representation of the "current" CRA 7 Management Procedure.*

Option 3 - Retain the current TAC of 104.5 tonnes

274. Under Option 3, the current CRA 7 TAC of 104.5 tonnes would be retained for the 2011-12 fishing year. In comparison to Option 1, the proposed retention of the current CRA 7 TAC is not guided by any management procedure.

275. The NRLMG considers that this is a suitable option only if the management procedures described in Options 1 and 2 are not suitable.

Setting of Non-commercial Allowances and the TACC

Allowances for customary Maori, recreational interests and other mortality

276. The NRLMG recognises rock lobster is taonga to Maori and is highly sought after by amateur fishers, and therefore holds significant non-commercial cultural and social value. In general, catching success for all sectors increases with increasing abundance and decreases with decreasing abundance.

277. Current allowances and estimated catches for customary Maori, recreational interests and other sources of fishing-related mortality (eg, illegal fishing) are outlined in Table 7 below for CRA 7.

CRA 7	Customary	Recreational	Other mortality
Current allowances	10 tonnes	5 tonnes	5 tonnes
Catch estimates used in the 2006 CRA 7 stock assessment[11]	1 tonne	4.51 tonnes	1 tonne

Table 7: *Current CRA 7 allowances and estimated catches for non-commercial*

[11] Refer to the Mid-Year Stock Assessment Plenary report (Annex 3 of the 2010 NRLMG Annual Report).

278. Having regard to the available information and submissions from stakeholders, the NRLMG recommends that no change is made to current allowances for customary Maori, recreational interests and other mortality. Although uncertain, best available information suggests existing CRA 7 customary Maori and recreational allowances are sufficient to cover recreational and customary catch. However, utilisation benefits for customary Maori and recreational interests are likely to be improved or at least maintained under Options 1 and 2. This is because the ongoing application of either CRA 7 Management Procedure is expected to maintain the CRA 7 stock well above the reference level; therefore good fishing success for all sectors is likely to be provided for in the future.

279. When allowing for customary interests you must take into account any relevant mātaitai reserve or closures/restrictions under section 186A. There are two mātaitai reserves located in CRA 7, the Puna wai-Toriki (Otago) and Moeraki mātaitai reserves. The NRLMG considers the CRA 7 customary allowance adequately provides for the harvest of lobster likely to be taken from the mātaitai within the QMA.

TACC

280. No change to the TACC is proposed under Option 1. The NRLMG recommends that you reduce only the CRA 7 TACC under Option 2. Reducing only the TACC provides greatest certainty that stock size will increase because information on catch and catch rates in customary Maori and recreational fisheries is uncertain and catch from the commercial sector can be more directly controlled.

281. It is likely that Option 1 will benefit the commercial sector the most because it would enable them to stabilise and potentially increase their utilisation benefit; whereas under Option 2 the commercial sector would be most affected by the proposed TAC decrease because landings would likely be constrained by the lower TACC.

282. The NRLMG advises, based on average 2010 landing price information, that the 8.8 tonne TACC decrease proposed under Option 2 has the potential to reduce the earnings for the commercial sector by approximately $487,000 in the 2011-12 fishing season based on current and predicted prices for CRA 7 landings.

NRLMG Recommendation

283. The NRLMG recommends that you be guided by the revised CRA 7 Management Procedure and agree to:

a) ***Retain*** the current CRA 7 TAC and allowances for the 2011-12 fishing year.

REVIEW OF THE CRA 8 (SOUTHERN) ROCK LOBSTER FISHERY

CRA 8 Stock Status

284. The 2006 stock assessment results indicated that stock size in 2005-06 was well above *Bmin*[12] and was approximately twice the *Bmsy* proxy, *Bref*[13].

285. Standardised CPUE is considered to be a reliable indicator of relative stock size in CRA 8 and is the abundance indicator used in the CRA 8 Management Procedure. The history of offset year (October through September) commercial CPUE in CRA 8 is shown in Figure 7. CPUE increased in every year between 1999 and 2009, sometimes strongly, but decreased by 16% in 2010.

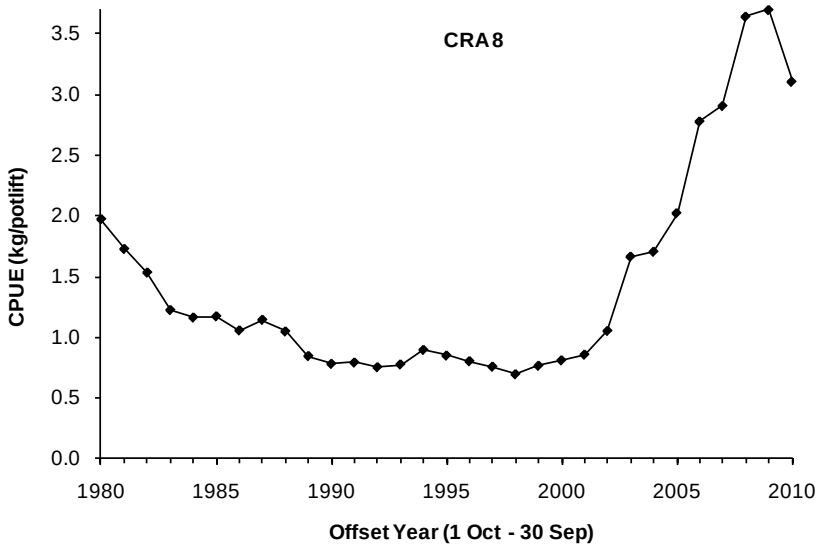

Figure 7: *The history of offset year CPUE in CRA 8*

286. In 2008, *Bmsy* was subsequently identified for CRA 8[14]. The 2008 analysis provided a method of estimating the average biomass at which yield was maximised (ie, *Bmsy*). On this basis *Bmsy* appeared to be slightly larger than *Bref* (at 1.14 times *Bref*) and *Bmsy* is therefore a more conservative reference level. The NRLMG notes because the abundance indicator, commercial CPUE, has increased since the last stock assessment in 2006 this suggests current biomass is still likely to be above *Bmsy*. However, a full CRA 8 stock assessment is proposed for 2012 and this will determine where the stock is in relation to *Bmsy.*

CRA 8 Management Options

287. The NRLMG proposes you consider the options outlined in Table 8 to review the TAC and allowances for CRA 8.

[12] *Bmin* for CRA 8 is considered to be one half *Bref.*

[13] *Bref* is the vulnerable stock size associated with the period 1979-80 to 1981-82. This was a period when the CRA 8 stock showed good productivity and was demonstrably safe: the stock subsequently declined to lower levels and then recovered.

[14] Refer CRA 7 and CRA 8 Supplementary Advice for April 2008 Sustainability Measures: http://www.fish.govt.nz/en-nz/Consultations/Archive/2008/Rock+Lobster+7+and+8/default.htm

Option	TAC	TACC	Customary Allowance	Recreational Allowance	Other mortality
Option 1: Be guided by the CRA 8 Management Procedure and reduce the TAC and TACC	1053 tonnes	962 tonnes	30 tonnes	33 tonnes	28 tonnes
Option 2: Retain the current TAC and allowances	1110 tonnes	1019 tonnes	30 tonnes	33 tonnes	28 tonnes

Table 8: *Proposed CRA 5 TAC and allowances options.*

Submissions Received on CRA 8

288. MFish received five submissions relating to the proposed TAC and allowance options for CRA 8.

289. CRAMAC 8, NZ RLIC, Te Ohu and NZRFC support Option 1 – be guided by the CRA 8 Management Procedure and reduce the CRA 8 TAC.

290. Joint submitters option4 and NZSFC agree the best option is to reduce the TAC for CRA 8, but their position is based on their understanding of your statutory obligations both to manage fisheries sustainably to enable people to provide for their well-beings, and to have particular regard to Kaitiakitanga (guardianship of the resource).

291. No submitters indicated support for Option 2.

NRLMG Discussion of Relevant Matters Raised in Submissions

TAC Setting

292. CRAMAC 8 and NZ RLIC note in their submissions the proposal to reduce the TAC is not brought about by any risk to the sustainability of the CRA 8 fishery. It is the result of the desires of the CRA 8 industry during the development of the management procedure to maintain abundance well above statutory reference levels to provide for certainty in business planning and the opportunity to maximise financial returns. The NRLMG agrees with these intentions.

293. The NZRFC also agree that there is definitely no sustainability concern in this fishery from their point of view and they applaud the responsible approach that has been taken by the CRA 8 industry.

294. Joint submitters option4 and NZSFC agree the better option is to reduce the TAC for CRA 8 to the level specified by the CRA 8 Management Procedure but not be guided by the management procedure when making that decision. They expect you to act cautiously and reduce the TAC because they are concerned that maintaining the current TAC could result in the stock size declining further.

- The NRLMG advises the management procedure approach provides greater certainty of achieving management outcomes for the stock over the conventional approach of periodic stock assessments followed by decision-making. This benefits all sectors and those involved in fisheries management decision-making. Ongoing application of the CRA 8 Management Procedure is expected to maintain the stock above the *Bmsy* proxy, *Bref*.

Allocation of the TAC

Recreational Allowance

295. The NZRFC notes that recreational access and the fishing experience is very good in this fishery and attribute this to significant areas of sheltered waters in CRA 8 having being set aside at the time the Guardians of Fiordland were set up. As part of the overall management regime that was introduced by the Fiordland Guardians in 2005, the NRLMG notes all commercial fishing was prohibited within the internal waters of Fiordland (within the CRA 8 area) in an aim to protect important species and habitats in the area. Recreational fishers also agreed to a series of management measures in the inner parts of Fiords at this time, including reduced bag limits, method restrictions and accumulation limits.

296. The NZRFC do not consider there would be any advantage in recreational catch reporting given the healthy state of the non-commercial areas in CRA 8. This view is not shared by customary and commercial members to the NRLMG who expect to see accurate and reliable harvest/catch data from all sectors (customary, recreational and commercial) and reliable illegal catch estimates because such data are considered essential to stock assessments and to the fishery management decision-making process.

TACC

297. CRAMAC 8, NZ RLIC and Te Ohu all support the proposed TACC decrease from 1019 to 962 tonnes.

298. Joint submitters option4 and NZSFC agree with the NRLMG that CRA 8 catch by the commercial sector can be more directly controlled than non-commercial take (which forms a small component of the TAC).

Analysis

299. An analysis of the management options against the full set of statutory considerations is set out from page 23. However, key considerations and impacts are discussed below.

TAC Setting

300. Best available information suggests the current CRA 8 stock is above *Bmsy* (and the agreed proxy, *Bref*). As such, you may set or vary the TAC for CRA 8 so as to maintain the stock at or above *Bmsy* (section 13(2)(a)).

Option 1 - Reduce the TAC to 1053 tonnes as specified by the CRA 8 Management Procedure

301. The TAC decrease proposed under Option 1 is specified by the CRA 8 Management Procedure that a previous Minister of Fisheries agreed to use in March 2008 to guide TAC setting in the fishery until the 2012-13 fishing year. The NRLMG notes that the proposed decrease in TAC is due to the conservative nature of the management procedure and is not due to sustainability concerns.

302. A graphic representation of the CRA 8 Management Procedure is provided in Figure 8 (for further technical details on the CRA 8 Management Procedure refer to Attachment 4). The graph shows the TAC in the next year as a function of offset-year CPUE in the current year. It also shows the CPUE values (coloured shapes) that generated the TAC proposals for the 2008-09, 2009-10, 2010-11 and 2011-12 fishing years. Offset year CPUE decreased in the last year

(from 3.781 kg/potlift to 3.107 kg/potlift). This decrease, through the operation of the management procedure, has resulted in the proposed 57 tonne reduction to the TAC.

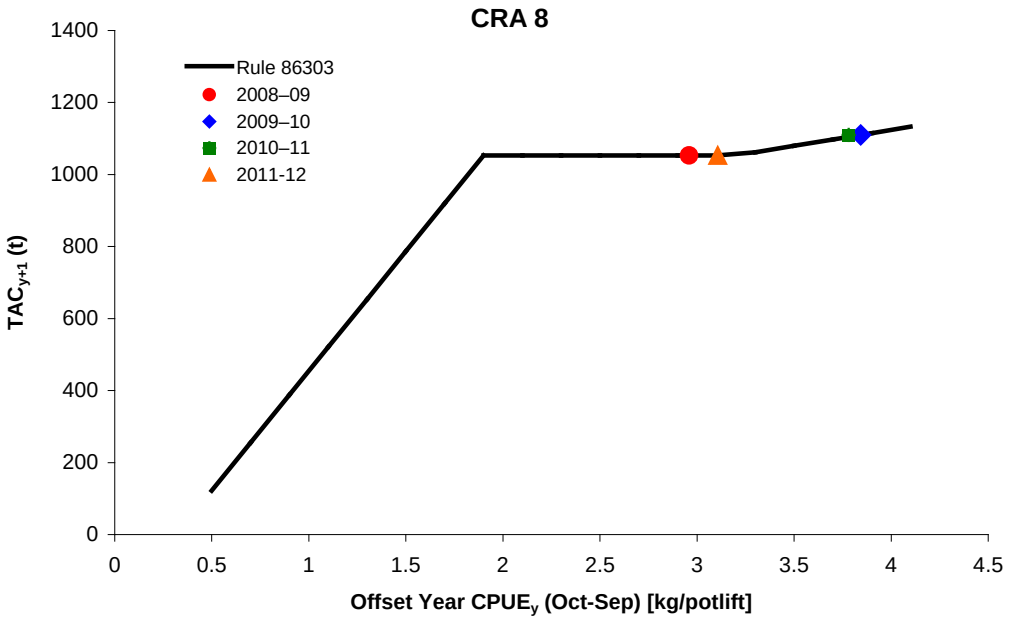

Figure 8: *Graphic representation of the CRA 8 Management Procedure.*

303. It is the NRLMG's view that the proposed TAC variation, guided by the operation of the CRA 8 Management Procedure, will enable the stock to be maintained above *Bmsy*. This is because ongoing application of the CRA 8 Management Procedure is expected to meet HSS requirements, and maintain the stock above the agreed proxy, *Bref,* with higher than 50% probability and above *Bmin* with greater than 90% probability. Simulation testing indicates the CRA 8 Management Procedure would maintain the stock above *Bref* with 99% probability and above *Bmin* with 99% probability. The management procedure also uses current fishery data and is responsive to changes in abundance.

304. The NRLMG also notes the use of the CRA 8 Management Procedure is robust from the standpoint of stock sustainability because the management procedure:

a) Was chosen from a large selection of management procedures that were evaluated for performance against sustainability criteria (refer Breen *et al* (2008)

b) Has been tested using a model of the CRA 8 fishery based on the 2006 CRA 7 and CRA 8 multi-stock assessment model

c) Has been tested for robustness to uncertainties, including uncertainties in recruitment and stock assessment assumptions. In the worst management procedure sensitivity trial for CRA 8, the stock remained above *Bref* with 87% probability and above *Bmin* 100% of the time.

d) Features a "plateau", which delivers catch stability by holding the TAC constant over a range of CPUE values. The management procedure is conservative: the TAC does not increase as CPUE rises in the range of the plateau, increases slowly when CPUE rises above a threshold and decreases quickly when CPUE falls below a threshold.

305. The NRLMG has identified no reason why you should not use the results of the CRA 8 Management Procedure to guide statutory TAC setting

Option 2 - Retain the current TAC of 1110 tonnes

306. Under Option 2, the current CRA 8 TAC of 1110 tonnes would be retained for the 2011-12 fishing year. The NRLMG advises that maintaining the current TAC could result in stock abundance declining further but not to dangerous levels. Reduced stock abundance may affect utilisation benefits by reducing non-commercial and commercial fishing success.

Setting of Non-commercial Allowances and the TACC

Allowances for customary Maori, recreational interests and other mortality

307. The NRLMG recognises rock lobster is taonga to Maori and is highly sought after by amateur fishers, and therefore holds significant non-commercial cultural and social value. In general, catching success for all sectors increases with increasing abundance and decreases with decreasing abundance.

308. Current allowances and estimated catches for customary Maori, recreational interests and other sources of fishing-related mortality (eg, illegal fishing) are outlined in Table 9 below for CRA 8.

CRA 8	Customary	Recreational	Other mortality
Current allowances	30 tonnes	33 tonnes	28 tonnes
Catch estimates used in the 2006 CRA 8 stock assessment[15]	2 tonnes	20.1 tonnes	18 tonnes

Table 9: *Current CRA 8 allowances and estimated catches for non-commercial*

309. Having regard to the available information and submissions from stakeholders, the NRLMG proposes that no change is made to current allowances for customary Maori, recreational interests and other mortality. Although uncertain, best available information suggests existing CRA 8 customary Maori and recreational allowances are not being caught at this time. However, utilisation benefits for customary Maori and recreational interests are likely to be maintained under either option because the current CRA 8 stock size is well above the reference level and consequently there is a high availability of lobsters.

310. When allowing for customary interests you must take into account any relevant mātaitai reserve or closures and restrictions under section 186A. There are six mātaitai reserves located in CRA 8: the Tumu Toka (Waikawa Harbour), Oreti (Oreti Beach), Te Whaka Te Wera (Paterson Inlet, Stewart Island), Pikomamaku (Womens Island), Horomamae (Owen Island, Stewart Island), and Kaihuka (Kaihuka Island, Stewart Island) mātaitai reserves. The NRLMG considers the CRA 8 customary allowance adequately provides for the harvest of lobster likely to be taken from the mātaitai's within the QMA.

TACC

311. The NRLMG recommends that you reduce only the CRA 8 TACC under Option 1. Reducing only the TACC provides greatest certainty that stock size will increase because information on catch and catch rates in customary Maori and recreational fisheries is uncertain and catch from the commercial sector can be more directly controlled. The NRLMG notes CRAMAC 8 has also agreed in the past to receive both increases and decreases in commercial catch.

[15] Refer to the Mid-Year Stock Assessment Plenary report (Annex 3 of the 2010 NRLMG Annual Report).

312. The NRLMG advises, based on average 2010 landing price information, that the proposed 57 TACC decrease proposed under Option 1 has the potential to reduce the earnings for the commercial sector by approximately $3.16 million in the 2011-12 fishing season based on current and predicted prices for CRA 8 landings. The proposed TACC decrease also has the potential to affect export returns for processors and exporters of rock lobster which will compound the overall financial impact.

NRLMG Recommendation

313. The NRLMG recommends that you be guided by the CRA 8 Management Procedure and agree to:

i) ***Decrease*** the CRA 8 TAC from 1110 to 1053 tonnes;

And, to achieve the decrease,

ii) ***Decrease*** only the CRA 8 TACC from 1019 to 962 tonnes.

OTHER MATTERS

314. In addition to commenting on the proposed sustainability measures for CRA 4, CRA 5, CRA 7 and CRA 8, many submitters commented on or proposed other management measures that are outside the scope of this advice process. These management measures are discussed below.

Finer scale fisheries management

315. Recreational submitters – NZRFC and CRA 4 recreational interests - recommend the CRA 4 area be split up into at least two or three zones because conditions and stocks differ within the area. The NRLMG notes that variations in rock lobster abundance within a QMA can occur as a result of environmental factors, such as water temperature, food availability and habitat type, or changes to fishing behaviour.

316. The focus of management options proposed in this document is to ensure sustainability and provide for utilisation at the QMA level consistent with QMS; the Act requires you to set a TAC at the QMA level. However, it is possible to alter QMAs under the Act. Sections 25, 25A and 25B set out the necessary processes and matters that must be considered before you can recommend altering QMAs.

317. Commercial members of the NRLMG advise that alteration of the CRA 4 QMA is not a priority for industry; their priority is to ensure a distribution of ACE across the fleet in every season that is consistent with the expected productivity of each statistical area.

Illegal removals

318. NZRFC, Ngai Tahu, NZ RLIC, CRAMAC 4, and CRAMAC 5 make reference to the level of illegal removals in specific rock lobster fisheries.

319. The NRLMG advises that significant efforts must be made to reduce and minimise incentives for illegal activity in rock lobster fisheries.

320. MFish advises that they recently requested tenders for a research project on the development of a reliable, robust and defensible methodology to estimate illegal take in selected New Zealand fisheries. The CRA 3 (Gisborne) rock lobster fishery is proposed as a case study for applying the methodology.

The minimum legal size for female rock lobster

321. TKWM recommend that the minimum legal size for female rock lobster should be increased from 60 to 62 mm tail width within the CRA 4 fishery to allow further reproduction and potentially increase stocks.

322. The NRLMG notes that increasing the female MLS by 2mm may allow further reproduction but the increase is unlikely to have a significant effect on future stock abundance. There is no evidence to suggest breeding success is or has been limited in the CRA 4 fishery.

Information on customary and recreational harvest

323. Te Ohu, Ngati Kuia, TKWM, NZ RLIC, Ngai Tahu, CRAMAC 4, CRAMAC 5, and CRAMAC 8 comment on the inadequacies of non-commercial harvest information in rock lobster fisheries.

324. The NRLMG agrees that accurate and reliable harvest/catch data from all sectors (customary, recreational and commercial) are essential to stock assessments and to the fishery management decision-making process.

325. Information on customary non-commercial harvest is currently incomplete but should improve with wider application of the Fisheries (Kaimoana Customary Fishing) Regulations 1988 and the Fisheries (South Island Customary Fishing) Regulations 1999, and as tangata whenua recognise the importance of customary fishing information to sustainable management of fisheries. Te Ohu notes that over the next few months they will be working with CRA 4 and CRA 5 iwi to establish a number of customary databases that can be used to manage their customary non-commercial catch information. Iwi will own the databases and determine how the information is to be used in relation to relevant fisheries management processes. MFish NRLMG members are open to developing protocols around the use of customary permit information with iwi.

326. Information on recreational harvest of rock lobster is incomplete and generally highly uncertain. There are a number of research initiatives underway to improve information on recreational harvest, including some with direct relevance to rock lobster fisheries. MFish notes that a large-scale multi-species survey of recreational fisheries harvest will commence in 2011. The diary component of the survey will include reporting of rock lobster harvest by stock. It is expected that information from this survey will be available to inform management decisions from 2013.

327. MFish also notes an onsite survey of rock lobster fisheries in CRA 2 in 2010-11 and 2011-12. That survey approach might be able to be applied to other CRA stocks (eg, CRA 4 and CRA 5) in future subject to prioritisation decisions and sufficient research funding being (made) available. MFish continues to search for cost-effective and statistically robust methods for estimating fishstock harvest in fisheries where participation is relatively low at a national scale, the volume of catch may be relatively high in the context of the fishery and the value of the catch is high (eg, most rock lobster fisheries).

328. MFish also advise that amateur charter vessel catch reporting is required for rock lobster in specific areas. This information could also be used to inform management decisions. From November 2010, catch information from amateur charter vessels was required for rock lobster within the FMA 7 area (which covers part of the CRA 5 management area). Catch information will also be required from charter vessels within FMAs 2, 3 and 5 and in FMA 8 between Titahi Bay and the Manawatu River for rock lobster from October 2012.

Tangata whenua input into rock lobster management

329. Te Ohu and Ngati Kuia make reference to greater involvement by tangata whenua in rock lobster fisheries management.

330. The NRLMG acknowledges that a high level of involvement by all sectors in fisheries management decisions is desirable. A customary member of the NRLMG, a Te Ohu representative, advises that over the next few months he will work with CRA 4 and CRA 5 iwi to improve processes for collecting customary harvest information. This member also proposes to discuss the views of CRA 4 iwi on the status of the fishery and feed this information back to the NRLMG for consideration in the review of the CRA 4 Management Procedure.

331. The NRLMG notes stakeholder organisations and groups also have opportunities to engage with MFish, who also participate in NRLMG processes, about rock lobster issues via iwi and recreational forums and other stakeholder meetings (including fishery assessment working group meetings)

NRLMG customary fishing representation

332. TKWM express concern that the NRLMG do not appear to have customary fishing representation because the appointments have been made through Te Ohu, whom TKWM believe do not represent customary non-commercial fishing interests.

333. The NRLMG notes that customary NRLMG members from Te Ohu do represent customary fishing interests and that Te Ohu are developing strategies to improve this representation. However, the NRLMG's role, membership and function is currently being reviewed to ensure that the current performance of the group is improved. It is proposed that you will make decisions on key recommendations later in 2011.

Management of commercial fisheries

334. NZ RLIC suggests that you should defer to CRAMACs and the NZ RLIC for advice, informed by voluntary and statutory management procedures, about all TACC changes and commercial aspects of the rock lobster fisheries. NZ RLIC proposes that you devolve management of commercial fisheries to the CRAMAC/NZRLIC consortium in recognition of the NZ RLIC record as a reliable research services provider and in line with the principles of vision 2030. You should then direct MFish staff to concentrate their efforts on consistent and accurate data collection and management of non-commercial fishing where and when necessary.

335. MFish advises that the NRLMG is currently your primary source of advice on New Zealand's rock lobster fisheries and commercial interests on the Group are currently represented by NZ RLIC. However, the NRLMG's role, membership and function is currently under review and you will be asked to make decisions on key recommendations to improve the current performance of the Group later this year.

VMS on commercial rock lobster vessels

336. The submission from the NZRFC suggests that commercial vessels operating in inshore fisheries be fitted with a vessel monitoring system (VMS). The NZRFC did not provide a specific reason for the suggestion

337. Because the suggested proposal appears to relate to all inshore fisheries (not just rock lobster), the NRLMG suggests that the NZRFC discusses the matter further with MFish and SeaFIC.

Biomass target level

338. Joint submitters option 4 and the NZSFC suggest that rock lobster fisheries in New Zealand should be managed at a more cautious target of 35% of original biomass.

339. The NRLMG advises that their management goal is for all rock lobster fisheries to "*be managed and be maintained at or above the assessed and agreed biological reference points, using a comprehensive approach that recognises a range of commercial, customary non-commercial, amateur, and environmental concerns and values*". The NRLMG notes; however, there is a strong desire to manage some New Zealand rock lobster fisheries well above statutory reference levels.

Management procedure principles

340. Joint submitters option 4 and the NZSFC recommend that a set of principles is discussed jointly, developed and applied to management procedures. Application of agreed principles will help avoid future conflict and engender more confidence in the process and the QMS. These joint submitters suggest including the following principle: "the ability to devise plans to ensure future generations enjoy the same or better quality of rights while preventing fish conserved for recreational use being given to the commercial sector".

341. The NRLMG's management goal is outlined in the sub-section above. The NRLMG note they are happy to discuss management principles in relation to this goal.

SECTION 3: REVIEW OF DEEMED VALUE RATES FOR ALL SPINY AND PACKHORSE ROCK LOBSTER STOCKS

342. In this section, proposed deemed value rates for all spiny and packhorse rock lobster stocks are outlined and discussed.

Introduction

343. Under section 75(1) of the Act you are required to set interim and annual deemed value rates for each stock managed under the Quota Management System (QMS). You may choose to set, under section 75(4) of the Act, differential deemed value rates for different levels of catch in excess of ACE for a specific stock. Under section 75(7) of the Act you may vary deemed value rates, to take effect at the start of the next fishing year, following your decisions.

344. The purpose of the deemed value framework is to provide an incentive for fishers to acquire sufficient annual catch entitlement (ACE) to balance against catch, for stocks managed under the QMS. The catch balancing regime is a key fisheries management tool, contributing to both sustainability and utilisation objectives. Under section 75(2)(a) of the Act you are required to take into account the need to provide such incentive when setting deemed value rates.

Deemed Value Options

345. Table 10 summaries the proposed changes to deemed value rates for all spiny and packhorse rock lobster stocks.

Option	Annual deemed value rate	Interim deemed value rate	Differential deemed value rates
Option 1: Maintain current rock lobster deemed values rates (status quo)	$100 per kg	$75 per kg	Standard
Option 2: Change the current rock lobster deemed value rates (NRLMG preferred option)	Increase to $110 per kg	Increase to $99 per kg (increased to 90% of annual rate)	Standard

Table 10: *Proposed changes to deemed value rates for CRA 1 – 9 (inclusive) and PHC 1 rock lobster stocks*

Consultation and Submissions

346. Section 75A of the Act requires you to consult with tangata whenua and stakeholders who have an interest in the stock prior to setting deemed value rates. The Ministry of Fisheries (MFish) consulted on your behalf with tangata whenua and stakeholders on the NRLMG's initial advice to review the deemed value rates for spiny and packhorse rock lobster between 13 December 2010 and 3 February 2011. MFish received three submissions relating to the proposed deemed value rate changes from:

a) New Zealand Recreational Fishing Council (NZRFC)

b) New Zealand Rock Lobster Industry Council (NZ RLIC)

c) Te Ohu Kaimoana (Te Ohu)

347. Full copies of the submissions are provided in Attachment 5.

348. All submitters support the NRLMG's recommendation to increase the deemed value rates for rock lobster stocks as outlined in this section (Option 2). The NZRFC notes that high level deemed value rates assist in getting good compliance. NZ RLIC agrees explicitly that proposed new deemed value rates should apply to all CRA and PHC 1 stocks.

Analysis

Inclusion in the review of deemed value rates

349. The Deemed Value Review Group[16] identified all spiny (CRA 1 – 9) and packhorse (PHC 1) rock lobster stocks for a review of their deemed value rates because the landed and ACE prices have increased. This is a criterion that can trigger a review of deemed value rates under the Ministry of Fisheries 2007 Deemed Value Standard (the Standard).

Annual deemed value rates

High value single species fisheries[17]

350. The Standard specifies a set of principles for setting deemed value rates. One of these principles relates to high value single species fisheries, like rock lobster.

351. In these fisheries, the nature of the harvest activity (highly specific fishing method) means that any breach of the TACC is likely to be deliberate. Furthermore, rock lobster is a highly valuable species to both commercial and non-commercial fishers. Thus, it is necessary to provide a very strong incentive to catch only the amount for which fishers have ACE.

352. In such circumstances the Standard proposes setting the annual deemed value rate at approximately twice the average landed price. This approach takes account of the need to provide an incentive for fishers to balance catch with ACE when setting deemed value rates, as fishers would suffer a large loss on any catches in excess of ACE. By setting the deemed value rate at twice the landed price, it is unlikely that even if prices increase during a fishing year that any incentive would arise to land catch in excess of ACE.

353. The annual deemed value rates for CRA 1 – 9 and PHC 1 were considered by the Minister of Fisheries in April 2008 and were increased to the current $100 per kg to set the annual deemed value rates at twice the average landed price.

354. NRLMG commercial members advise that the average landed price from 1 October 2009 to 30 September 2010 was $55.40 per kg for all CRA and PHC stocks and across all market grades. Similarly, MFish landed price surveys in the last year report landed prices for CRA stocks have increased from $38.53 to $56.61 and PHC 1 landed prices have increased from $27.12 to $48 between 2008-09 and 2010-11.

355. The proposed deemed value rates in this section are based on an average landed price of $55 per kg. Average price is an indicator of market value and the economic benefits that commercial stakeholders receive from the stock, which are factors you may have regard to when setting deemed value rates, as prescribed in section 75(2)(b). The NRLMG considers it important to

[16] The Deemed Value Review Group is made up of Ministry of Fisheries and Seafood Industry Council staff members.

[17] Although spiny red and packhorse rock lobster are two different species, they are treated as a single species fishery for the purpose of deemed value rate setting.

continue the strategy of setting the annual deemed value rate at twice the landed price. It therefore proposes to increase the annual deemed value rates to $110 per kg.

Avoiding incentives to misreport

356. When two adjacent Quota Management Areas (QMAs) for the same species have substantially different deemed value rates, there may be an incentive to misreport origin and attribute the catch to the area where the lower deemed value rates prevail. This creates a risk when vessels fish across more than one QMA on one trip.

357. Accordingly, and following a request from the Seafood Industry Council in 2008, the recent approach when setting deemed value rates for rock lobster stocks has been to have the same deemed value rates across all CRA and PHC 1 stocks. This is because prices paid for rock lobster are on average the same across QMAs. As a consequence, setting the same deemed value rates across rock lobster QMAs eliminates any incentive to misreport catch to take advantage of lower deemed value rates in adjacent QMAs.

Interim deemed value rates

358. Interim deemed value rates are charged to individual fishers for every kilogram of fish landed in excess of ACE. If the fisher sources enough ACE to cover his or her catch during the fishing year, the interim deemed value rates paid are reimbursed. If the fisher did not source enough ACE by the end of the fishing year, the difference between the interim and annual deemed value rates is charged for all catch in excess of ACE.

359. You are required to set interim deemed values that are less than the annual deemed value for the relevant stock. However, there is a risk that setting interim deemed value rates too low will delay the balancing of catch until the end of the fishing year. This may lead to a race for ACE and insufficient ACE to cover all catch at the end of the fishing year, potentially leading to the TACC being exceeded. Prior to the Standard, interim deemed value rates were generally set at 50% of the annual rate. The Standard states that the interim deemed value rates should remain at 50% of the annual rates for most stocks, recognising that higher interim deemed value rates for some stocks may be appropriate.

360. Following previous requests from commercial stakeholders, rock lobster interim deemed value rates are currently set at 75% of the annual deemed value rate to encourage fishers to balance their catch with ACE regularly instead of paying interim deemed value rates. However, given the desire to ensure commercial fishers secure sufficient ACE prior to commencing fishing the NRLMG proposes that interim deemed value rates be increased to 90% of the annual rate. This proposal is also consistent with the approach signalled in the MFish draft 2011 Deemed Value Standard.[18]

Differential deemed value rates

361. Differential deemed value rates are used as an additional deterrent to not catch fish in excess of ACE by increasing the deemed value rate for an individual as he or she takes more and more catch in excess of the ACE he or she holds, as provided under section 75(4) of the Act. Differential deemed value rates are charged at the end of the fishing year if the fisher harvested well in excess of his or her ACE holdings (e.g. more than 20% in excess of ACE).

[18] In the draft 2011 Deemed Value Standard, the Ministry of Fisheries proposes that interim deemed value rates be set at 90% of the annual deemed value rate. Except for the interim deemed value rate recommendation, the draft 2011 Standard is not used as the basis for this review of rock lobster deemed value rates.

362. Differential deemed value rates can also build in buffers that manage risk of future uncertainty in economic variables such as landed price, export price and foreign exchange rates.

363. Currently all rock lobster stocks have 'standard differentials'. This refers to the most frequently used differential deemed value rate schedule. Those standard differentials increase the deemed value rate by 20% over the annual rate when catch is more than 20% in excess of ACE, by 40% when catch is more than 40% in excess of ACE, by 60% when catch is more than 60% in excess of ACE, by 80% when catch is more than 80% in excess of ACE, and by 100% when catch is more than 100% in excess of ACE holdings.

364. The NRLMG proposes to continue setting standard differentials for rock lobster stocks. The differential deemed value rates for all CRA and PHC 1 stocks would be adjusted to match the approved annual deemed value rate, in accordance with the standard schedule.

NRLMG Recommendation

365. The NRLMG recommends that you agree to change the deemed value rates for all spiny and packhorse rock lobster stocks for the 2011-12 fishing year as follows:

a) increase the annual deemed value rate from $100.00 per kg to $110.00 per kg;

b) increase the interim deemed value rate from 75% to 90% of the proposed annual deemed value rate, thus from $75.00 per kg to $99.00 per kg; and

c) adjust the differential deemed value rates as outlined in Table 11 below:

Current differential rates		**Proposed differential rates**	
Catch in excess of ACE holdings	**Current deemed value rate**	**Catch in excess of ACE holdings**	**Proposed deemed value rate**
0-20 %	$ 100.00 per kg	**0-20 %**	$ 110.00 per kg
> 20 %	$ 120.00 per kg	**> 20 %**	$ 132.00 per kg
> 40 %	$ 140.00 per kg	**> 40 %**	$ 154.00 per kg
> 60 %	$ 160.00 per kg	**> 60 %**	$ 176.00 per kg
> 80 %	$ 180.00 per kg	**> 80 %**	$ 198.00 per kg
> 100 %	$ 200.00 per kg	**> 100 %**	$ 220.00 per kg

Table 11: *Recommended differential deemed value rates for CRA 1 – 9 and PHC 1 rock lobster stocks*

ATTACHMENT 1: SPECIFICATIONS OF THE CRA 4 MANAGEMENT PROCEDURE

This CRA 4 Management Procedure (rule E170) is based on the work of (Breen & Kim 2006b) and is specified as follows:

1)

$$TACC_{y+1} = 500\left(\frac{I_y}{0.9}\right)^{1.4}$$

where $TACC_{y+1}$ is the TACC (in tonnes) in year y+1 and I_y is standardised CPUE from the most recent autumn-winter season. The rule is shown in *Figure A*.

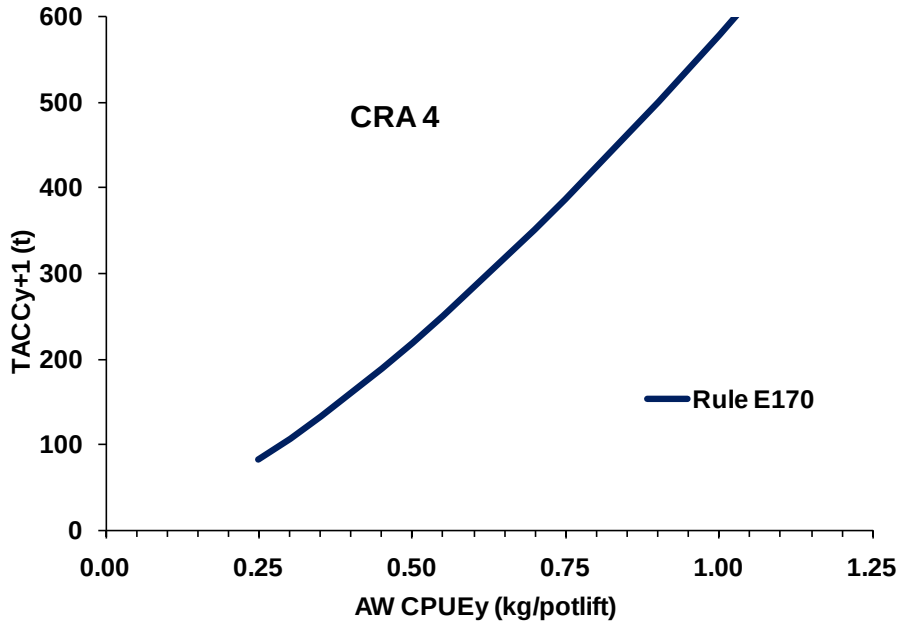

***Figure A*:** The CRA 4 management procedure, showing TAC in year y+1 as a function of AW CPUE in year y.

2) The output variable is TACC (tonnes) and that standardised CPUE (kg/pot) is to be used as the input variable;

3) The management procedure is to be evaluated every year (there is no "latent year"[19]);

4) If the procedure results in a TAC that changes by less than 5%, no change will be made; and

5) If the procedure results in a TAC that changes by more than 75%, the TAC will be changed by 75%.

[19] The original MPEs described by Breen & Kim (2006b) used an asymmetric latent year, in which a decrease could be made, but not an increase, in a year following a change. The latent year was dropped before a rule was adopted, at the request of NZ RLIC Ltd., after examination of the performance of the rule without a latent year.

The history of the CRA 4 Management Procedure is shown in *Table A* below.

Year	Applied to fishing year	AW CPUE (kg/potlift)	Rule result: TACC (tonnes)	Operational limit (tonnes)	TACC (tonnes)
2006	2007-08	0.656	321.1	339	577
2007	2008-09	0.515	228.9	240	577
2008	2009-10	0.573	265.9	266	266
2009	2010-11	0.871	465.5		415.6
2010	2011-12 (proposed)	0.857	466.9	*To be determined*	*To be determined*

Table A: History of the CRA 4 Management Procedure, showing proposed limits to the commercial fishery. The "operational limit" shows the level of voluntary shelving achieved for the 2007-08 and 2008-09 fishing years. "Rule result" is the result of the management procedure after operation of all its components including thresholds.

In late 2006, the rule delivered a specified catch limit of 321 tonnes. Not all quota owners shelved the requisite ACE, resulting in an operational limit of 339 tonnes, a 41% reduction from the TACC.

In late 2007, the rule delivered a specified catch limit of 228.9 tonnes. Not all quota owners shelved the requisite ACE, resulting in an operational limit of 245 tonnes, a 57% reduction from the TACC.

In late 2008, the rule delivered a specified catch limit of 265.9 tonnes. The Minister formally accepted the rule to guide statutory TAC setting in CRA 4 from the 2009-10 fishing year. This resulted in an operational limit of 266 tonnes, a 55 % reduction from the TACC.

In late 2009, the rule delivered a specified catch limit of 477.59 tonnes. This would represent an increase of 79.5%. However, the maximum change allowed under the rule is +/- 75%, thus the proposed TACC for 2010-11 was 465.5 tonnes. A number of stakeholders, including industry participants, were against an increase of this size. The majority of CRA 4 industry participants were in favour of banking some of the recommended increase to buffer against future recruitment variability. The Minister set the TACC at 415 tonnes and not 465.5 tonnes as first proposed.

In late 2010, the rule delivered a specified catch limit of 446.9 tonnes, a 12% increase in the TACC.

The NRLMG recommends that a review of the current and proposed CRA 4 management procedure should take place in 2011. This is because management procedures should not remain in place for longer than about five years without a review, because in five years the operating model used to evaluate management procedures will be obsolete and fishery performance should be re-evaluated.

ATTACHMENT 2: SPECIFICATIONS OF THE CRA 5 MANAGEMENT PROCEDURE

A proposed new management procedure was developed for CRA 5 in 2010. The proposed management procedure was based on a 2010 stock assessment and incorporates elements of the voluntary ACE-shelving rule that the CRA 5 industry has used since 2009.

The proposed CRA 5 management procedure specifies that:

a) The output variable is TAC (tonnes) and that standardised CPUE (kg/pot) is to be used as the input variable;

b) Standardised CPUE is to be based on the offset year from 1 October;

c) CPUE is to be standardised according to the recent usage described in annual Fishery Assessment Reports (FARs), using a data extract obtained in November to ensure that sufficient data from the most recent AW season have been entered;

d) The proposed new management procedure delivers a TAC result that consists of three separate components: a component for TACC, a component for recreational catch and a component for non-size-limited catches (customary and illegal).

e) The TACC component is based on the offset-year CPUE in the preceding year. The form of the TACC component, as a function of this CPUE, is shown in *Figure B*. Below a CPUE of 0.3 kg/potlift, the TACC is zero; between a CPUE of 0.3 and 1.2 kg/potlift, TACC increases linearly with CPUE to a plateau of 350 t, which extends to a CPUE of 2.4 kg/potlift. As CPUE increases above 2.4 kg/potlift, TACC increases in steps; which have a width of 0.5 kg/potlift and a height of 5% of the preceding TACC.

d) The TACC component of the proposed rule is specified as follows:

$$
\begin{aligned}
TACC_{y+1} &= 0 && \text{for } I_y \le 0.3 \\
TACC_{y+1} &= 388.89\left(I_y - 0.3\right) && \text{for } 0.3 < I_y \le 1.2 \\
TACC_{y+1} &= 350 && \text{for } 1.2 < I_y \le 2.4 \\
TACC_{y+1} &= 350\left(1.05^{\text{int}\left(\left(I_y - 2.4\right)/0.5\right)+1}\right) && \text{for } I_y > 2.4
\end{aligned}
$$

where $TACC_{y+1}$ is the TACC (in tonnes) in year *y*+1 and I_y is offset-year CPUE (in kg/potlift) in year *y*. The TACC component of the rule has no latent year and no thresholds for minimum and maximum change.

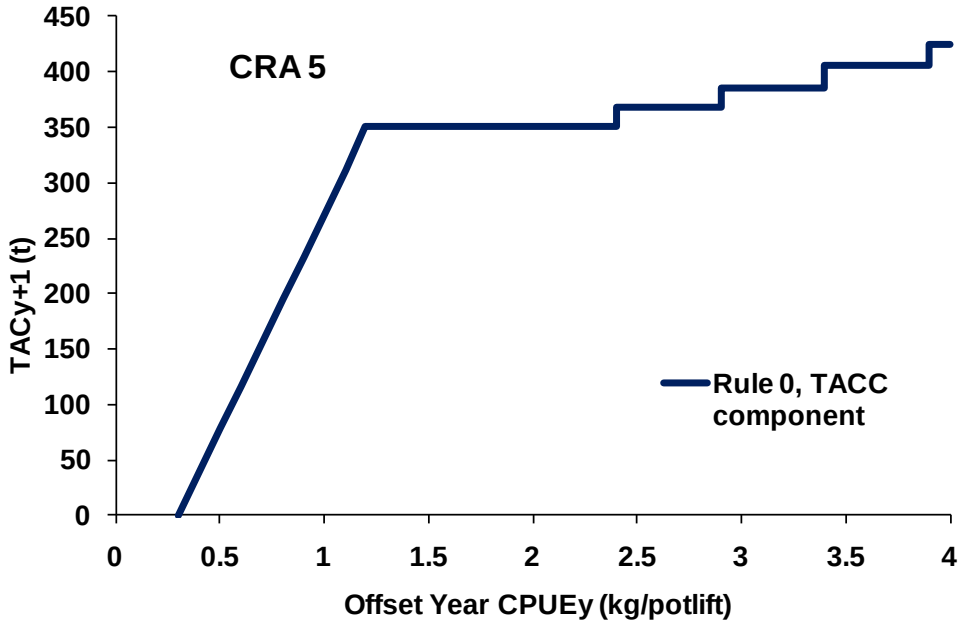

Figure B: The proposed TACC harvest control rule, a component of the proposed CRA 5 management procedure, showing TAC in year y+1 as a function of offset year CPUE in year y.

f) The recreational catch component of the proposed new management procedure is a multiplier on the previous year offset-year CPUE, reflecting a belief that recreational catch changes linearly in response to changes in abundance and that abundance is reflected in CPUE. These beliefs were incorporated into both the stock assessment and the management procedure evaluations. The recreational component of the proposed rule, $C_{y+1}^{recreational}$ in tonnes, is specified as follows:

$$C_{y+1}^{recreational} = 61.6 I_y$$

The other component of the proposed rule in tonnes is:

$$C_{y+1}^{customary+illegal} = 62$$

g) The management procedure is to be evaluated every year (no "latent year");

h) There is no limit to the amount by which a TAC may change.

ATTACHMENT 3: SPECIFICATIONS OF THE CRA 7 MANAGEMENT PROCEDURES

The current and proposed CRA 7 management procedure specifies that:

a) The output variable is TAC (tonnes) and that standardised CPUE (kg/pot) is to be used as the input variable,

b) Standardised CPUE is to be based on the offset year from 1 October;

c) CPUE is to be standardised according to the recent usage described in annual Fishery Assessment Reports (FARs), using a data extract obtained in November to ensure that sufficient data from the most recent AW season have been entered.

The Current CRA 7 Management Procedure

The current management procedure for CRA 7 (rule 7549) was accepted by the Minister for the 2008-09 fishing year.

In addition to the specifications listed above for both procedures, the current CRA 7 management procedure also specifies that:

a) The TAC is to be set at 100 times the standardised CPUE (*Figure C*);

b) The management procedure is to be evaluated every year (no "latent year");

c) If the procedure results in a TAC that changes by less than 5%, no change will be made; and

d) If the procedure results in a TAC that changes by more than 50%, the TAC will be changed by 50%.

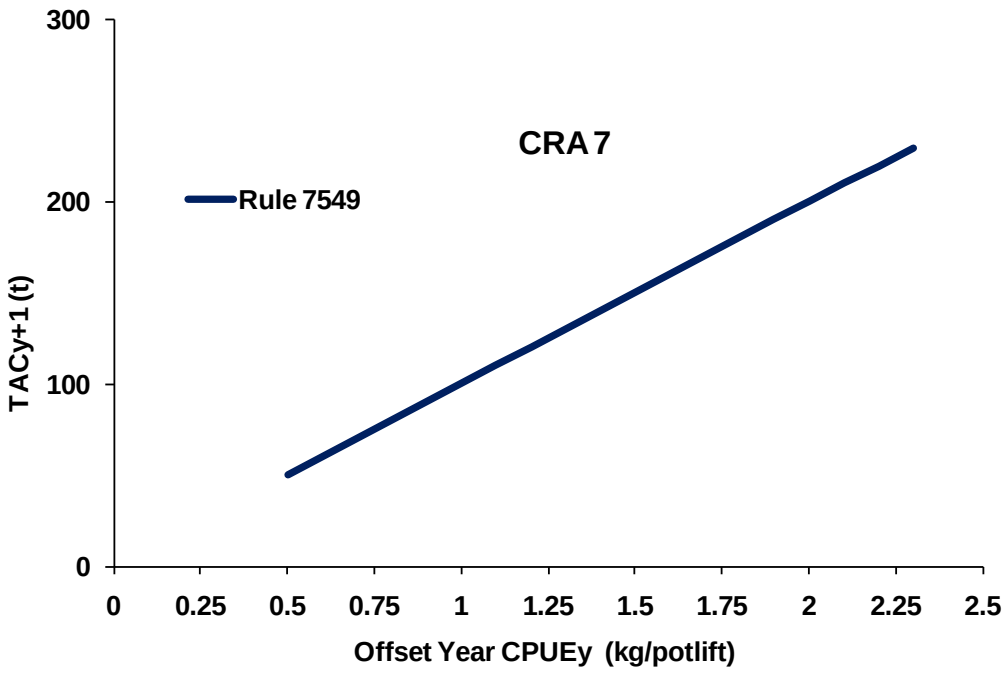

Figure C: The CRA 7 management procedure, showing TAC in year y+1 as a function of offset year CPUE in year y.

The history of the current CRA 7 Management Procedure is shown in *Table B* below.

Year	Applied to fishing year	AW CPUE (kg/potlift)	Rule result: TACC (tonnes)	TACC (tonnes)	TAC (tonnes)
2007	2008-09	1.439	143.9	123.9	143.9
2008	2009-10	2.090	209.0	189.0	209.0
2009	2010-11	0.803	104.5	84.5	104.5
2010	2011-12	0.957	95.7	*To be determined*	*To be determined*

Table B: History of the current CRA 7 Management Procedure, showing proposed limits to the commercial fishery. The "Rule result" is the result of the management procedure after operation of all its components including minimum and maximum change thresholds.

The Proposed CRA 7 Management Procedure

In 2010, the CRA 7 rock lobster fisheries commercial stakeholder organisation requested exploration of a revised management procedure to replace the apparent volatility of the CRA 7 TACC.

The proposed management procedure is shown in *Figure D*. It has a plateau of 120 t TAC between CPUE values of 1.0 and 2.0 kg/potlift, and increases linearly with increasing CPUE at the same slope above and below these values. It is expected that the TACC will be determined by subtracting the non-commercial allowances, which are currently 20 t.

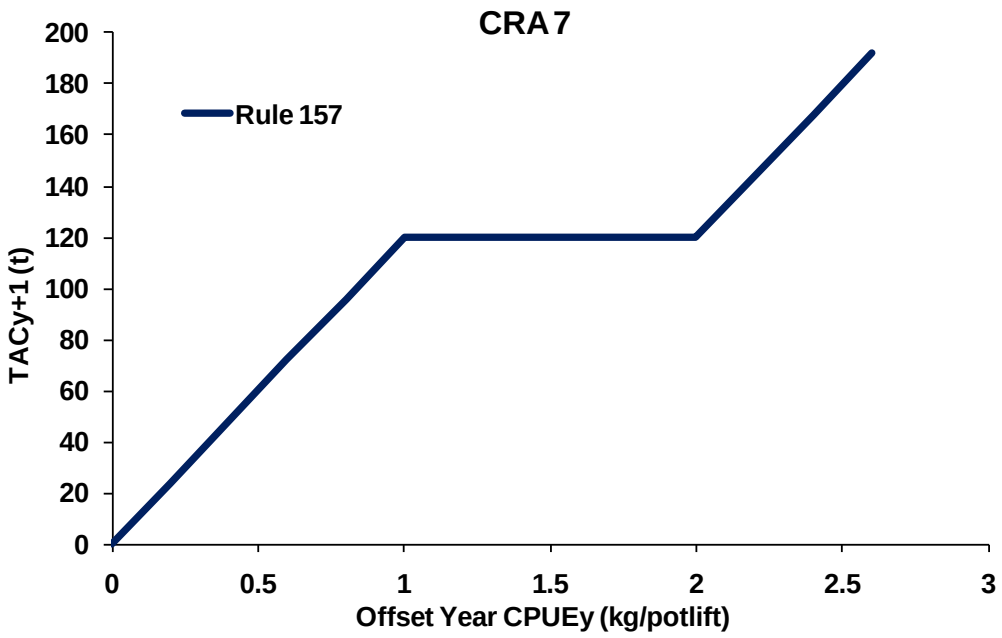

Figure D: The proposed new CRA 7 management procedure, showing TAC in year *y*+1 as a function of offset year CPUE in year *y*.

The rule is specified by:

1)

$$TAC'_{y+1} = 120 I_y \qquad \text{for } I_y < 1.0$$
$$TAC'_{y+1} = 120 \qquad \text{for } 1.0 \le I_y < 2.0$$
$$TAC'_{y+1} = 120\left(1 + \left(I_y - 2.0\right)\right) \qquad \text{for } I_y \ge 2.0$$

where TAC'_{y+1} is the rule's specified TAC for the next fishing year, before the operation of minimum and maximum change thresholds, and I_y is standardised CPUE from the most recent offset year.

2) The TAC can decrease in any year, but cannot increase if a change (either an increase or a decrease) was made to the TAC in the previous year (asymmetric latent year).

3) If the TAC change would be less than 10%, no change is made.

4) If the TAC change would be greater than 50%, the TAC is changed by 50% only.

The NRLMG recommends that a review of the current and proposed CRA 7 management procedures should take place in 2012. This is because management procedures should not remain in place for longer than about five years without a review, because in five years the operating model used to evaluate management procedures will be obsolete and fishery performance should be re-evaluated.

ATTACHMENT 4: SPECIFICATIONS OF THE CRA 8 MANAGEMENT PROCEDURE

The current management procedure for CRA 8 (rule 86303) was accepted by the Minister in 2008, and he used it to set catch limits for the 2008-09 fishing year.

The CRA 8 management procedure specifies that:

a) The output variable is TAC (tonnes) and that standardised CPUE (kg/pot) is to be used as the input variable;

b) Standardised CPUE is to be based on the offset year from 1 October;

c) CPUE is to be standardised according to the recent usage described in annual Fishery Assessment Reports (FARs), using a data extract obtained in November to ensure that sufficient data from the most recent AW season have been entered;

d) The relation between CPUE, indicated by I_y, and the rule's specified TAC before the operation of the minimum change threshold, indicated by TAC'_{y+1}, is given in *Figure E* and in the equations below:

$$TAC'_{y+1} = \begin{cases} \max\left(0, \left(1053 - 1.2\left(1.9 - I_y\right)\frac{1053}{1.9}\right)\right), & \text{for } I_y < 1.9, \\ 1053, & \text{for } 1.9 \le I_y \le 3.2, \\ 1053 + 0.16\left(I_y - 3.2\right)\frac{1053}{1.9}, & \text{for } I_y > 3.2. \end{cases}$$

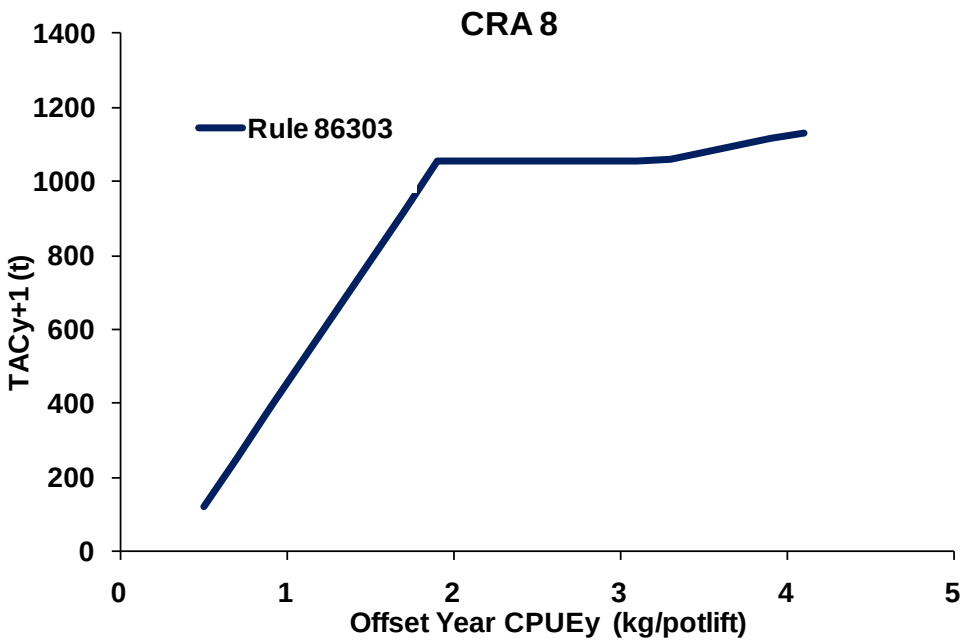

Figure E: The CRA 8 management procedure, showing TAC in year *y*+1 as a function of offset year CPUE in year *y*.

e) The management procedure is to be evaluated every year (no "latent year");

f) If the procedure results in a TAC which changes by less than 5%, no change will be made;

g) There is no limit to the amount by which a TAC may change.

The history of the current CRA 8 Management Procedure is shown in Table C below.

Year	Applied to fishing year	AW CPUE (kg/potlift)	Rule result: TACC (tonnes)	TACC (tonnes)	TAC (tonnes)
2007	2008-09	2.960	1053	966	1053
2008	2009-10	3.844	1110	1019	1110
2009	2010-11	3.781	1110	1019	1110
2010	2011-12 (proposed)	3.107	1053	*To be determined*	*To be determined*

Table C: History of the current CRA 8 Management Procedure, showing proposed limits to the commercial fishery. The "Rule result" is the result of the management procedure after operation of all its components including minimum and maximum change thresholds.

The NRLMG recommends that a review of the management procedure should take place in 2012. This is because management procedures should not remain in place for longer than about five years without a review, because in five years the operating model used to evaluate management procedures will be obsolete and fishery performance should be re-evaluated. Such a review was written into the 2002 NSS Management Procedure (Bentley et al. 2003).

ATTACHMENT 5: SUBMISSIONS RECEIVED