

## REVIEW OF SUSTAINABILITY MEASURES – CRA2 QUOTA MANAGEMENT AREA

### SUBMITTER DETAILS

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### 1 Introduction

- 1.1 This is a submission on the review of sustainability measures applied to the CRA2 Quota Management Area as set in the Ministry for Primary Industries' Discussion Paper No: 2018/02 (**Discussion Paper**).
- 1.2 EDS is a not-for-profit, non-government, national environmental organisation. It was established in 1971 with the objective of bringing together the disciplines of law, science, and planning in order to promote better environmental outcomes in resource management. It has recently undertaken an in-depth study into the operation of the fisheries management system, with a focus on inshore stocks. The Hauraki Gulf (within the CRA2 Quota Management Area) was one of the case study areas. The study included 60 in-depth interviews with people directly involved with fisheries management in New Zealand. It is shortly to be published under the title: "*Voices from the Sea: Experiencing New Zealand's Fisheries Management System*".

### 2 Summary of Submission

- 2.1 EDS considers that a decision by the Minister based on the Discussion Paper's advice would be unlawful because it:
- a. Fails to include information necessary to fulfil the Minister's statutory obligations under the Fisheries Act 1996 (**FA**) meaning a decision on the basis of the Discussion Paper would fail to take into account relevant considerations.
  - b. Relies on dated and irrelevant information.
  - c. Applies an incorrect interpretation of terms underpinning the environmental principles in s9 FA to which the Minister must have regard.
  - d. Fails to consider mandatory relevant considerations including the Hauraki Gulf Marine Park Act 2000 (**HGMPA**) and relevant regional policy statement and plan provisions.
  - e. Relies solely on an approach to analysing stock status (largely relying on Catch Per Unit Effort (**CPUE**)) which ignores factors critical to estimating the sustainability of

future harvest regimes, which is not best practice, and which does not include any vessel-independent data.

- f. Does not ensure the CRA2 fishery stock is set at a level that will ensure the stock can be restored to or above the level that can produce the maximum sustainable yield.

## 2.2 EDS seeks that:

- a. It is given an opportunity to meet with Ministry officials to discuss this submission.
- b. Due to insufficient, unreliable, and inadequate information the CRA2 fishery be closed until:
  - i. The information threshold is reached for reaching a lawful decision on the Total Allowable Catch (**TAC**), Total Allowable Commercial Catch (**TAAC**), and on management procedures; and
  - j. In conjunction with/as part of information sourcing, a multi-stakeholder process (including the environmental sector and marine ecologists) is convened to formulate an appropriate target size, rebuild timeframe, and other appropriate management measures to address the full range of matters under the FA for the CRA2 fishery.
- g. A finer spatial management approach is applied to the CRA 2 fishery and a wider range of management tools deployed.

## 3 Compliance with the FA

- 3.1 When considering setting sustainability measures for a fish stock the Minister's decision-making power is subject to specific and directive statutory requirements under the FA.

### ***Purpose: s8 FA***

- 3.2 The Minister's decision must be consistent with achieving the FA's purpose s8 FA: "*to provide for the utilisation of fisheries resources while ensuring sustainability*". The definition of "*ensuring sustainability*" includes in ss8(2)(b) "*avoiding, remedying and mitigating any adverse effects of fishing on the aquatic environment*". The "*aquatic environment*" is defined in s2 as "*the natural and biological resources comprising any aquatic ecosystem*" and to include "*all aquatic life*". The term "*aquatic life*" captures "*any species of plant or animal life that, at any stage of its life history, must inhabit water, whether living or dead; and includes seabirds (whether or not in the aquatic environment)*".
- 3.3 As a result, the Minister's decision must be consistent with avoiding, remedying, and mitigating any adverse effects of fishing on all marine species of plant and animal life as well as on the marine ecosystems which they comprise.
- 3.4 The Discussion Paper sets out proposals to alter the TAC and TACC but contains no information on the adverse effects of harvesting crayfish on other marine species or on

marine ecosystems. EDS considers that a decision made by the Minister based on this advice would be unlawful. We return to this issue in Section 4 of this submission.

***Environmental principles: s9 FA***

3.5 s9 FA sets out the environmental principles which the Minister must “*take into account*” when making a decision on the setting of sustainability measures. The two most relevant to the CRA2 stock are:

- a. “*biological diversity of the aquatic environment should be maintained*” (s9(b)).
- b. “*habitat of particular significance for fisheries management should be protected*” (s9(c)).

s9(b) FA

3.6 “*Biological diversity*” is defined in s2 FA as meaning “*the variability among living organisms, including diversity within species, between species, and of ecosystems*”.

3.7 The word “*maintained*” is not defined by the FA. The approach taken by the Discussion Paper to defining maintenance/assessing whether s9(b) has been achieved is “*an assessment of the risk that fishing might cause a catastrophic decline in species abundance or cause biodiversity to be reduced to an unacceptable level*” (emphasis added). There appears to be no case law supporting this definition or providing direction as to the correct definition to apply.<sup>1</sup> In the absence of a statutory definition and jurisprudential guidance maintain should be given its plain, ordinary meaning.<sup>2</sup> The online Oxford English Dictionary<sup>3</sup> defines maintain as follows:

*“To sustain (life) by nourishment.*

*To keep up, preserve, cause to continue in being (a state of things, a condition, an activity, etc.); to keep vigorous, effective, or unimpaired; to guard from loss or deterioration.”*

3.8 The Compact Oxford Dictionary<sup>4</sup> defines maintain as follows:

*“To keep something in the same state or at the same level.”*

3.9 Allowing decline/reduction in biodiversity, catastrophic or otherwise, is not consistent with guarding from loss or keeping biodiversity in the same state or at the same level. EDS considers the definition applied by the Discussion Paper is unlawful.

s9(c) FA

3.10 s9(c) states that “*habitat of particular significance for fisheries management should be protected*”. None of the terms in this subsection are defined by the FA.

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<sup>1</sup> There is similarly a lack of guidance around the definition of maintain under the Resource Management Act 1991 which requires regional and district councils to maintain biodiversity. The common meaning appears to have been applied.

<sup>2</sup> s5 Interpretation Act.

<sup>3</sup> <http://www.oed.com/view/Entry/112562#eid38643862>

<sup>4</sup> 3<sup>rd</sup> edition, pg 560.

- 3.11 EDS agrees with MPI's conclusion that such habitat includes waters and substrates necessary for marine species to spawn, breed, feed or grow to maturity, that is, to undertake all their life stages.
- 3.12 As with the word maintain there appears to be no case law defining the word protect for the purposes of s9(c) FA. Protect is defined by the Compact Oxford Dictionary<sup>5</sup> as "*keep safe from harm or injury*". The Courts have confirmed the same definition applies in the context of the requirement to protect significant areas of indigenous vegetation and significant habitats of indigenous fauna under the RMA.<sup>6</sup>
- 3.13 The Discussion Paper suggests that the meaning of protect is the avoidance, remediation, or mitigation of adverse effects. EDS submits this is incorrect and application of this approach would be unlawful. The direction in s9 is outcome focused. Simply avoiding, remedying, or mitigating adverse effects generally is not sufficient – the actions undertaken must be adequate to achieve protection.
- 3.14 The Discussion Paper contains no information on the adverse effects of harvesting crayfish on biological diversity or habitat of particular significance to fisheries management. It is therefore not possible to assess whether the sustainability measures proposed are adequate to achieve protection. This issue is discussed in Section 4 of this submission.

***Information principles: s10 FA***

- 3.15 When making a decision under the FA, the Minister must take into account the information principles in s10:

*"(a) decisions should be based on the best available information:*

*(b) decision makers should consider any uncertainty in the information available in any case:*

*(c) decision makers should be cautious when information is uncertain, unreliable, or inadequate:*

*(d) the absence of, or any uncertainty in, any information should not be used as a reason for postponing or failing to take any measure to achieve the purpose of this Act."*

- 3.16 The Discussion Paper contains only partial information, with significant gaps in the provision of information on important matters that the Minister is legally required to take into account (as indicated above and discussed further below). For this reason, EDS considers the Discussion Paper has not provided the best available information. There is also considerable uncertainty in the information provided (as discussed below) requiring the Minister to be cautious when reaching a decision.

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<sup>5</sup> 3<sup>rd</sup> edition, pg 737.

<sup>6</sup> [2015] NZEnvC 219 at [63].

***Sustainability measures: s11 FA***

- 3.17 s11 FA sets out the sustainability measures the Minister may set or vary in order to meet the purposes of the FA. The scope of sustainability measures available to the Minister is wide and includes (but is not limited to):
- a. Setting the TAC and TACC.
  - b. Restricting the size, sex, or biological state of the species harvested.
  - c. Restricting the areas from which any species may be harvested.
  - d. Restricting the fishing methods that can be used to harvest any stock or which are deployed in any area.
  - e. Restricting the fishing seasons that apply to any stock, any area, any fishing method, or any fishing vessel.
  - f. Other methods not specifically described which are aimed at managing the effects of fishing on any stock or on the marine environment.
- 3.18 The Discussion Paper only considers two of these tools, setting the TAC and TACC. No information has been provided on the utility of deploying other tools available.
- 3.19 s11 FA also prescribes matters that the Minister must “*take into account*” and matters the Minister must “*have regard to*” before setting or varying a sustainability measure. These include:
- a. The Minister must take into account any effects of fishing on the aquatic environment (s11(1)(a)).
  - b. The Minister shall have regard to any regional policy statement, regional plan or proposed regional plan under the Resource Management Act 1991 (s11(2)(a)).
  - c. The Minister shall have regard to ss7 and 8 of the HGMPA (s11(2)(c)).
- 3.20 The Discussion Paper contains no information on the first two of these matters and the third matter is only given cursory mention in paragraph 107.
- 3.21 As a result, EDS submits:
- a. The Discussion Paper’s recommendations have not been put forward on basis of the best available information.

- b. A decision by the Minister of basis of the Discussion Paper would fail to take into account relevant factors.<sup>7</sup>

### **Consultation requirements**

- 3.22 Before “*doing anything*” under s11(1) (i.e before setting or varying a sustainability measure) the Minister shall “*consult with such persons or organisations that the Minister considers are representative of those classes of persons having an interest in the stock or the effects of fishing on the aquatic environment on the areas concerned, including Maori, environmental, commercial, and recreational interests*” (s12(1)(a)).
- 3.23 Section 6.3 of the Discussion Paper states that MPI carried out pre-engagement including “*wide public engagement*” but then only refers to responses from customary, recreational, and commercial harvest sectors. There is no evidence of engagement with conservation/environmental or scientific interests. Unsurprisingly, the “*common themes*” identified through pre-engagement do not include any that are relevant to the impacts of fishing on the aquatic environment. The section then refers to the results of the pre-engagement having “*been taken into account*” when developing the options in the Discussion Paper.
- 3.24 The Minister is also required to consult with environmental interests (including EDS) and with representatives of “*those classes of persons having and interest in ... the effects of fishing on the aquatic environment*” which would include scientists who undertake research in this area such as marine ecologists, amongst others. It appears these classes of persons have not been consulted as part of the pre-consultation process. As a result EDS considers the pre-engagement process is improper and deficient. EDS accepts that the current submission process constitutes consultation and provides all interests an opportunity to submit on the Discussion Paper’s analysis and recommendations. However the deficiencies and bias in the pre-engagement process have coloured the options put forward in the Discussion Paper and have therefore compromised the ability of those interests not engaged with to have a genuine and fair role in the process.<sup>8</sup> EDS is concerned this will inhibit the Minister’s ability to approach written submissions with an open mind, and to start afresh in considering a different range of options.<sup>9</sup>

## **4 Information basis for the Minister’s decision**

- 4.1 As set out above the Minister is required to take the information principles in s10 FA into account when making a decision on the sustainability measures applying to the CRA2 fishery. EDS considers that the Discussion Paper does not present the best available information and should be approached with caution.

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<sup>7</sup> There is a failure to take into account a relevant factor where a matter is acknowledged to be relevant but the decision maker obtains no information on it: *Tamaki Reserve Protection Inc v Minister of Conservation* HC Auckland CP6000/97, 12 March 1999.

<sup>8</sup> *Daganayasi v Minister of Immigration* [1980] 2 NZLR 130 (CA) at 141 per Cooke J.

<sup>9</sup> See: *Wellington International Airport Limited & Ors v Air New Zealand Ltd & Ors* HC Wellington CP403/91, 6 January 1992, McGechan. Referenced in CPLA context in *Kyeburn Downs Ltd & Ors v Commissioner of Crown Lands* CIV-2008-412-000197 (HC).

4.2 The scientific information referred to in the Discussion Paper as forming the basis for the Minister's decision is:

- a. The results of the 2017 CRA2 stock assessment.
- b. An estimate of the quantity of the Māori customary and recreational harvests.

4.3 No scientific information is presented in the Discussion Paper on which the Minister can adequately consider the environmental impacts of harvest activity in the CRA2 fishery as required under ss8 and 11 FA. Further information is contained in the November 2017 Fisheries Assessment Plenary Report (**Assessment Report**) which is discussed below.

#### ***Assessment Report***

4.4 The model used by the Assessment Report is largely dependent on data gathered on commercial harvesting vessels and relies heavily on CPUE. No vessel-independent data gathering has been carried out. The CPUE data is problematic due to the varying catchability of animals at different life stages and changes in vessel and fisher behaviour. It also provides no information on settlement and recruitment, and therefore the likely numbers of new juveniles coming through into legally harvestable animals. Such information is important and necessary to estimate the sustainability of future harvest regimes. Notably pureulus collectors are used to estimate settlement in CRA 3, 4, 5, 7 and 8 but not in CRA 2. It should be.

4.5 Because rock lobster larvae float in oceanic waters for up to two years before settling on reef systems, settlement can be affected by oceanic currents and other conditions which affect their attraction to reef systems and can be episodic. The current low stocks appear to be at least partly explained by recent poor settlement. The stock assessment contains no information on recent settlement levels or inquiry into the causes of likely poor settlement. and therefore is unable to adequately project likely stock levels going forward. The Discussion Paper indicates that if current low settlement conditions continue, the rebuild timeframes would extend considerably, from a 50% probability at being at the intermediate target in nine years under the assumptions made, to an 8.5% probability of being above the intermediate target in 20 years if average estimated recruitment from 2010 to 2014 is used. The Discussion Paper provides no comparable estimates for rebuild times to achieve a 50% probability of reaching the intermediate target in the event that there are poor recruitment levels in the future. It contains no information about rebuild times to achieve a greater certainty of reaching the intermediate target (a 50% probability meaning that it is equally likely the target will not be met). It also contains no information on the likelihood of current poor recruitment levels continuing into the future and therefore an assessment of the robustness of the estimates.

4.6 EDS submits that:

- a. Due to the lack of fishery-independent data, the known difficulties with CPUE data, and the lack of robust information on settlement (and recent pattern of low

settlement), that a highly precautionary approach needs to be taken when setting the TAC and TACC so that harvest levels are at the lower end of the scale.

- b. The Minister has not been provided with sufficient information, or the best available information, to make a fully informed decision about the likely impacts on future stock size of different TAC and TACC settings.
- c. The Minister should require an improved programme of data collection to be undertaken in CRA2 Fishery, including the collection of industry independent data, and settlement data (such as with a pureulus collector), to inform future decision-making.

### ***Impacts of harvesting on the aquatic environment***

- 4.7 Inconsistent with ss8 and 9 FA the Discussion Paper does not address the impacts of harvesting in the CRA2 fishery on the aquatic environment.
- 4.8 The Assessment Report contains a short section on this broader topic, which indicates that it has not been updated since 2012, with the exception of a reference to a 2013 article. It appears that the impacts of harvesting on the aquatic environment have not been revisited for this decision-making process.
- 4.9 The Assessment Report purports to be a summary of environmental and ecosystem considerations from the perspective of the rock lobster fisheries, with reference to a more detailed summary from an issue-by-issue perspective contained in the Aquatic Environment and Biodiversity Annual Review (**ABER**). It is presented as a general overview of the topic. No information on potential management responses, or material and/or conclusions that are specific to CRA2 is included to enable the Minister to draw conclusions in respect of that specific fishery. The environmental factors and pressures on each fishery are different therefore demanding a focused analysis of environmental and ecosystem considerations.
- 4.10 In terms of the impacts of rock lobster harvesting on reef kelp communities the Assessment Report refers to only five published articles and one unpublished article. Only two of these six articles are referenced in ABER (Babcock et al 1999 and Schiel 2013). There are no full references in the Assessment Report for Schiel (1990), Schiel (2013) and Breen (unpublished) so an assumption has to be made as to what these address. Three of the published articles date to the 1990s and one does not relate to New Zealand (Edgar and Barrett, 1999). Two of the articles referred to (Schiel & 2001 and Schiel 1990) relate to southern New Zealand so are not relevant to CRA2. The unpublished report is not peer reviewed and has been prepared under commission by the rock lobster industry by a scientist with no relevant research experience in New Zealand so should not be referred to in a scientific summary. Only two of the articles presented have some relevance to the CRA 2 fishery (Babcock et al 1999 and Schiel 2013). Commentary on each article is set out below:
  - a. Schiel, D. R. (1990), This article relates to research in southern New Zealand and so is not directly relevant.

- b. Babcock, R.C.; Kelly, S.; Shears, N.T.; Walker, J.W.; Willis, T.J. (1999). Changes in community structure in temperate marine reserves. *Marine Ecology Progress Series* 189: 125-134. This article is now 18 years old.
- c. Edgar, G.J.; Barrett, N.S. (1999). Effects of the declaration of marine reserves on Tasmanian reef fishes, invertebrates and plants. *Journal of Experimental Marine Biology and Ecology* 242: 107-144. This article does not relate to research in New Zealand and so is not directly relevant.
- d. Schiel, D.R, Hickford, M.J.H. (2001). Biological structure of nearshore rocky subtidal habitat in southern New Zealand. *Science for Conservation* 182:5-54. This article relates to research in southern New Zealand.
- e. Schiel, D.R., 2013, The other 93%: trophic cascades, stressors and managing coastlines in non-marine protected areas. *New Zealand Journal of Marine and Freshwater Research* 47: 374–391.
- f. Breen (unpublished), A short review of lobsters, sea urchin grazing and kelp bed stability. This is an unpublished report which has not been peer reviewed, directly commissioned by the commercial rock lobster industry, and undertaken by a scientist with no track record of research on this topic in New Zealand waters. It should not be referred to in a Fisheries Assessment Report.

4.11 There is a wealth of more up-to-date, peer-reviewed published literature of relevance to the CRA2 fishery which has not been referred to, and which provides a more reliable and nuanced picture of the issue and indications of appropriate management responses. For example:

- a. Babcock R C, 2013, 'Leigh Marine Laboratory contributions to marine conservation', *New Zealand Journal of Marine and Freshwater Research* 47(3), 360-373, which noted the evidence on the increase in kelp cover within the Leigh marine reserve due to increase in abundance and size of spiny lobster and snapper sea urchin predators and at page 365 concludes that evidence from tethering experiments undertaken in the Leigh marine reserve "indicated that large lobsters were the main predators of large urchins whereas both snapper and lobster fed on smaller urchins."
- b. MacDiarmid A B, D Freeman and S Kelly, 2013, 'Rock lobster biology and ecology: Contributions to understanding through the Leigh Marine Laboratory 1962-201', *New Zealand Journal of Marine and Freshwater Research*, 47(3), 313-333, which summarises the research findings that the abundance of sublegal juveniles increased in marine reserves indicating that they provide enhanced settlement, post-settlement survival, or migration of juvenile lobsters into reserves (and therefore strongly implies that their ongoing loss may have contributed to poor settlement in the fishery in recent years). It provides some indication that kelp forests are important for rock lobster settlement and are therefore habitats of particular significant for fisheries management that need to be protected.

- c. Shears N T, R C Babcock and A K Salmon, 2008, 'Context-dependent effects of fishing: Variation in trophic cascades across environmental gradients', *Ecological Applications*, 18(8) which indicates that kina barrens are more likely to occur on moderately exposed coastal locations at depths of around four to six metres, suggesting that spatial protection of these areas from rock lobster harvesting, whilst allowing harvesting in deeper, more exposed, and more sheltered environments, could help mitigate the trophic ecosystem effects of the fishery.
- 4.12 The Assessment Report notes that *"Predation by rock lobsters has been suggested as contributing to trophic cascades in a number of studies in New Zealand"* but only quotes one relevant article published in 1999. It then goes on to refer to studies that indicate trophic cascades are rare in southern waters and then concludes with the findings of an unpublished, industry-sourced literature review that *"suggests that the evidence for lobster-driven trophic cascades in New Zealand is very thin."*
- 4.13 The ABER reaches different conclusions on this matter. At page 431 it states *"It is likely that the reduction in the abundance of sea urchin predators on some rocky reef systems in north-eastern New Zealand due to fishing has contributed to an ecosystem-level effect in these areas, but this effect is unlikely to be widespread in New Zealand coastal areas (Schiel 2013)."* This indicates that such an impact is more likely than not to occur in places on the north-eastern coast, including the CRA2 fishery, and that the reference to evidence on this point being 'very thin' is inaccurate and misleading.
- 4.14 EDS submits that the Assessment Report on which the Discussion Paper's recommendations rely does not itself rely on the best available information. The information relied on is dated, biased, and misleading. It contradicts the material referred to in the ABER. It does not provide an accurate summary of the material available on trophic cascade impacts relevant to the CRA2 fishery.
- 4.15 In addition to the above deficiencies, the Discussion Paper and Assessment Report contain no assessment of the impact of the CRA2 fishery on maintaining the biological diversity of the aquatic environment as required under s9(b) FA, or on the protection of habitats of particular significance to fisheries management under s9(c) FA. It is estimated that in some places along the north-east coast of New Zealand kina barrens may have now affected well over 50% of former kelp habitats. This is a significant change to marine ecosystems and has resulted in an equally significant reduction of biodiversity and degradation of habitats of importance to fisheries. Kelp reef systems are highly productive, highly biodiverse and provide important habitat and food for juvenile rock lobster and other juvenile fish species. As indicated above, there is also good evidence that rock lobster harvesting has contributed to this extensive biodiversity and habitat loss.
- 4.16 EDS submits that:
- a. The Discussion Paper and Assessment Report do not provide an adequate basis on which the Minister can legally meet the requirements under ss8, 10, and 11 FA.

- b. MPI should seek immediate assistance from an independent marine ecologist with research experience within the CRA2 fishery to compile the best available information on these topics, and to provide advice on potential management responses, so it can be submitted to the Minister with the Discussion Paper and Assessment Report.
- c. Areas where kina barrens have developed, or have the potential to develop, should be mapped as a matter of urgency and rock lobster harvesting should be prohibited in these areas, at least as an interim measure.

#### ***Regional policy statements and plans***

- 4.17 Under s11(2)(a) FA the Minister must to have regard to regional policy statements and plans under the RMA. The Discussion Paper contains no information on this matter. The relevant instrument is the Auckland Unitary Plan, which includes specific and directive provisions relating to protecting marine biodiversity for example in Sections B7, B8 (specifically B8.5), D9, E11, E15.
- 4.18 EDS submits that as a result, a decision made on basis of the Discussion Paper would fail to take into account a mandatory, relevant consideration.<sup>10</sup>

#### ***The Hauraki Gulf Marine Park Act 2000***

- 4.19 The Discussion Paper contains a cursory reference to the HGMPA. It does not refer to the matters in ss 7 and 8 HGMPA specifically the “*protection*”, and where appropriate the “*enhancement*” of the life-supporting capacity of the Hauraki Gulf (which includes maintaining its ecosystems) and its natural resources (including kaimoana). It does not evaluate whether the proposed management actions are sufficient to achieve such protection and enhancement. It also fails to evaluate whether some options would better meet the objectives of the HGMPA than others to help the Minister make an informed choice on this matter.
- 4.10 The High Court has previously found<sup>11</sup> that, in considering a decision of the Minister of Fisheries to allocate the TAC of kahawai, the HGMPA placed an obligation on the Minister to “*pay particular regard to the social, economic, recreational and cultural well-being of the people of the Hauraki Gulf*” and in particular to “*maintain and enhance its physical resources in the form of kahawai stock*”. The High Court found that the Minister had erred in not paying sufficient regard to this issue and was directed to review his decision.
- 4.11 EDS submits that the provisions of the HGMPA indicate that more conservative options are to be preferred over less conservative measures, in particular closure of the fishery until adequate information is sourced and assessment of all relevant matters is undertaken.

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<sup>10</sup> There is a failure to take into account a relevant factor where a matter is acknowledged to be relevant but the decision maker obtains no information on it: *Tamaki Reserve Protection Inc v Minister of Conservation* HC Auckland CP6000/97, 12 March 1999.

<sup>11</sup> *NZ Recreational Fishing Council v Minister of Fisheries* (NZCA 163/07, 11 June 2008).

## **5 Current and future management settings**

- 5.1 The current management approach has demonstrably failed in terms of the sustainability of the fish stock itself. Total biomass levels are now at the lowest size ever assessed and are only a third of their estimated size in the late 1990s. This indicates a serious fault in management of this stock, which has allowed serious depletion to occur, and which needs to be rectified. It indicates that a different management approach is now required. Options for how this could be achieved are set out below.<sup>12</sup>

### ***Establishing a target stock size***

- 5.2 The 'previously agreed' reference level/target for the CRA2 fishery was based on the stock level in 1979-1981. The Rock Lobster Assessment Working Group has expressed concerns about the adequacy of this reference point and EDS concurs. That year was in no way a stable or typical year in terms of stock size, and the target does not appear to be based on any robust assessment of the sustainable stock size in terms of maximum sustainable yield, productivity, environmental impacts, or utilisation by the various harvesting groups. It therefore does not appear to be based on any of the criteria in the FA. The suggested intermediate target is a doubling of the current rock lobster abundance which would place it at just 42% of the previous reference level/target (the current level being just 21%) and only half of the size of that the stock was just four years ago (of 79% of the reference level). It also does not appear to be based on a robust application of the criteria in the FA.
- 5.3 EDS considers that a target of rebuilding the stock to half the size it was four years ago, over a four to nine year period (or a much longer period – potentially over 20 years in Option 1 – if recruitment stays low) is unambitious and inappropriate in a fishery of such significance to user groups and marine ecosystems, and that it is inconsistent with the requirements of the FA. EDS considers the intermediate target should be at the minimum necessary to rebuild the stock to the level it was four years ago, over the next four years. Given the paucity of information, this will require the temporary closure of the fishery as a first step.
- 5.4 EDS submits that a multi-stakeholder process (including the environmental sector and marine ecologists along with harvesters) should be convened to formulate an appropriate target size for the CRA2 fishery to replace the intermediate target, and a rebuild timeframe, and as a basis for a new stock assessment in 2019.

### ***Establishing the TAC and TACC***

- 5.5 From the material provided on the impacts of various TAC and TACC settings on the rebuild times for the stock it is clear that the level of recruitment has a large impact on the timeframes. Although information has not been provided on what assumptions have been made about recruitment for the modelling of the impacts of management options, the text

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<sup>12</sup> Although part of the High Court's decision was overturned on appeal to the Court of Appeal the Minister was still found to have erred because he did not pay particular regard to the provisions of HGMPA when setting the total allowable commercial catch.

indicates that if recent recruitment levels are used (from 2010 to 2014) rebuild times are likely to more than double.

- 5.6 There is also evidence that the model used, which is largely based on CPUE data, may have considerably over-estimated the current stock size (or at least not have given an indication of the very low stock levels in the western Hauraki Gulf) given recent scientific data gathered from the monitoring undertaken inside and outside the marine reserves at Leigh and Tawharanui which suggests that stock levels in the vicinity are less than 5% of virgin biomass, coupled with the ongoing collapse of rock lobster stocks within the reserves. We note that this recent and relevant research is not mentioned in the Discussion Paper.
- 5.7 EDS submits that, given the matters raised above about uncertainty and lack of adequate information on a number of matters, the only option is closure of the fishery until a fuller stock assessment can be carried out in two years' time based on a broader suite of relevant information, and a more informed decision as to the appropriate TAC and TACC settings can be made.
- 5.8 EDS is concerned the Discussion Paper's options will result in a continued decline in crayfish stocks in the CRA2 fishery. This is inconsistent with s13(2)(b) FA.

#### ***The management procedure***

- 5.9 A management procedure was put in place in 2014 for the CRA2 fishery. This has proved grossly inadequate given the procedure rule did not indicate that a reduction in TACC was required when evidently a large reduction is needed.
- 5.10 EDS submits that the use of this management procedure should be immediately discontinued due to its patently inadequate performance. Closure of the fishery would secure this outcome. To meet international best practice, any future management procedure needs to be developed in wide consultation with all stakeholders, including environmental interests and marine ecologists, in order to develop appropriate objectives and performance metrics for the fishery that meet stakeholder expectations and address all the required matters to be considered under the FA.<sup>13</sup>

#### ***Serial spatial depletion***

- 5.11 The CPUE of CRA2 is now at 0.253 crayfish per pot lift, which means that four pots have to be lifted to harvest one legally-sized crayfish. This is by far the lowest CPUE when compared to the other CRA stocks, and far below CRA 8 where the CPUE is 3.858, being 15 times greater. In terms of the four statistical areas within the QMA for CRA2, the lowest CPUE is located in the area along the eastern side of the Coromandel Peninsula. The greatest drop

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<sup>13</sup> Holland D S, 2010, *Management strategy evaluation and management procedures: Tools for rebuilding and sustaining fisheries*, OECD, Paris, at 13

off in CPUE has occurred in the what were the more productive areas in the Bay of Plenty and northern coast of East Cape, presumably due to more effort going into these areas, but the CPUE is now at levels similar to that in the western Hauraki Gulf. As indicated above, data from monitoring inside and outside marine reserves show very low stock levels in the western side the Hauraki Gulf. This indicates the need for finer spatial management in the fishery to avoid the serial depletion that has occurred from north to south of the fishery and to help address the extreme localised depletion which has occurred in many areas.

- 5.12 EDS submits that finer spatial management is required for the CRA2 fishery in order to manage localised and serial depletion. This could initially focus on setting differential harvest limits for each of the four statistical areas within the QMA.

***Timing of next stock review***

- 5.13 The 2013 estimated stock size of 79% of the reference level (or target stock size) has plummeted to 21% in 2017, which is below the soft limit. This suggests that more active management is required for this stock to maintain healthy abundance and to avoid such population crashes as have occurred over the past four years.

- 5.14 EDS submits that:

- a. The Minister should close the CRA2 fishery and require a fuller stock assessment be undertaken in two years' time (2019) after obtaining additional information and addressing the matters raised above.
- b. A wider range of management tools should be considered, included finer spatial management and protection to ensure healthy stocks and reef habitats and that a range of options for such management should be developed for consideration at the next stock assessment.