REVIEW OF SUSTAINABILITY MEASURES FOR 2018/19

SUBMITTER DETAILS

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1 Introduction

1.1 This is a submission on the review of sustainability measures for 2018/19 as set in the Fisheries New Zealand (**Fisheries NZ**) Discussion Paper No: 2018/05 (**Discussion Paper**). The submission applies to:

a. Closure of Kaipara Harbour scallop fishery.

b. Flatfish (FLA 1).

c. John Dory (JDO 1).

d. Tarakihi (TAR 1, 2, 3, 7).

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 study included 60 interviews with people directly involved with fisheries management in New Zealand and was recently published under the title: “Voices from the Sea: Managing New Zealand's Fisheries”.

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. Applies an incorrect interpretation of terms underpinning the environmental principles in s9 FA to which the Minister must have regard.

2.2 EDS seeks:

Closure of Kaipara Harbour scallop fishery

a. The Kaipara Harbour be closed to the taking of scallops as proposed in Option 2.

b. Fisheries NZ urgently prepare, and the Minister consider for approval, a fisheries plan for the Kaipara Harbour under s11A FA which (amongst other matters) identifies habitat of particular significance for fisheries management within the harbour including for scallops and flatfish stocks.

Flatfish (FLA 1)

c. Options 1 and 2 as proposed in the Discussion Paper be removed as options for consideration by the Minister as they would not meet the requirement in s13(2A) to set a Total Allowable Catch (**TAC**) "*that is not inconsistent with the objective of … moving the stock towards or above, a level which can produce the MSY [maximum sustainable yield* (**MSY**)."

d. A 25% reduction in the TAC be implemented accompanied by close monitoring and a review within 24 months to determine whether further reductions are required to rebuild the stock in a timely manner.

e. A separate harvest limit or Quota Management Area (**QMA**) be set for flatfish stocks within the Kaipara Harbour.

f. The regulatory framework governing fishing practices be urgently reviewed and strengthened to ensure that nets are not left unattended and the capture of juvenile fish is avoided.

g. Enforcement effort within the Kaipara Harbour be increased sufficiently to ensure that all fishers are complying with the regulations.

h. A fisheries plan for the Kaipara Harbour be prepared as indicated in subsection (b) above.

i. A management target be set for the stock and timeline for recovery in accordance with the Harvest Strategy Standard for New Zealand Fisheries 2008 (**HSS**).

j. Adequate research be commissioned so that the key contributors to the decline of the stock can be identified and management measures to address them put in place.

John Dory (JDO 1)

k. Options 1 and 2 as proposed in the Discussion Paper be removed as options for consideration by the Minister as they would not meet the requirement in s13(2A) to set a TAC "*that is not inconsistent with the objective of … moving the stock towards or above, a level which can produce the MSY*."

l. A 20% reduction in the TAC be implemented accompanied by close monitoring and a review within 24 months to determine whether further reductions are required to rebuild the stock in a timely manner.

m. A separate QMA be created for each biological stock in JDO 1.

n. A regular annual trawl survey of the North Island coastal fisheries be commenced during the 2018/19 fishing year to provide robust and (fishery) independent information to inform better fisheries management decisions into the future.

o. Areas which currently and/or historically contained biogenic habitats within JDO 1 be closed to trawling and other bottom-contact fishing methods to protect remaining habitats and enable those already impacted to recover.

Tarakihi (TAR 1, 2, 3, 7)

p. EDS supports a management target of 40% of virgin biomass and a rebuild period of 10 years.

q. The harvest reduction should be achieved through a TAC reduction and not through voluntary shelving of Annual Catch Entitlements (**ACE**).

r. The economic evaluation needs to include the economic benefits from a rebuilt stock.

s. The minimum legal size needs to be increased to ensure that juvenile fish cannot be legally harvested.

t. Fishing gear that catches juvenile fish should not be permitted in the fishery.

u. Because tarakihi is primarily found in association with habitats particularly vulnerable to physical damage from fishing equipment (such as hard reef structures and biogenic habitat), targeting tarakihi with bottom trawl equipment should be prohibited.

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. The purpose under s8 FA is "*to provide for the utilisation of fisheries resources while ensuring sustainability*". The definition of "*ensuring sustainability*" includes in s8(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 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.

Environmental principles:

3.5 Section 9 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 our submission 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.[1] In the absence of a statutory definition and jurisprudential guidance maintain should be given its plain, ordinary meaning.[2] The online Oxford English Dictionary[3] 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[4] 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

[1] 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.
[2] s5 Interpretation Act.
[3] http://www.oed.com/view/Entry/112562#eid38643862
[4] 3rd edition, pg 560.

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.

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[5] 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.[6]

3.13 The Discussion Paper indicates that these habitats should be protected and adverse effects on them avoided, remedied or mitigated. EDS emphasises that 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 or very inadequate information on the adverse effects of fishing activity on biological diversity and habitat of particular significance to fisheries management. It is therefore not possible to assess whether the sustainability measures proposed are adequate to achieve protection.

Information principles

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:*
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> *(b) decision makers should consider any uncertainty in the information available in any case:*
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> *(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 discussed further below). For this reason, EDS considers that 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.

Sustainability measures

[5] 3rd edition, pg 737.
[6] [2015] NZEnvC 219 at [63].

3.17 Section 11 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 Total Allowable Commercial Catch (**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 focuses on setting the TAC and TACC. No assessment has been provided on the utility of deploying a wider range of tools.

3.19 Section 11 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 RMA (s11(2)(a)).

c. The Minister shall have regard to ss7 and 8 of the Hauraki Gulf Marine Park Act 2000 (s11(2)(c)).

3.20 The Discussion Paper contains no information on the second of these matters and the other two are only given cursory mention.

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 a relevant factor.[7]

4 Closure of Kaipara Harbour scallop fishery

[7] 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.

4.1 The Discussion Paper reports that a 2017 scientific survey found that the scallop abundance in the Kaipara Harbour is very low, the distribution of scallops is increasingly limited, there is low juvenile abundance, and sampled scallops were in poor condition. This indicates a stock that is under extreme stress and which needs to be carefully managed if it is not to collapse entirely. EDS therefore supports the proposal under Option 2 to close the Harbour to the taking of scallops until the stock has rebuilt to healthy levels.

4.2 The Discussion Paper also reports that scientific surveys have indicated that increased amounts of sedimentation have likely degraded suitable habitats for scallops within the Kaipara Harbour and thus have reduced recruitment. This means that excluding the harvest of scallops within the Harbour will alone likely be insufficient to ensure sustainability. It will also likely be insufficient to apply the environmental principle that "*habitat of particular significance for fisheries management should be protected*" under s9(c). As a result, the Minister is obliged to consider additional measures in order to meet the purpose of the FA under s8.

4.3 Sedimentation is managed under the RMA. A direct linkage has been provided between the RMA and the FA through the requirement that regional councils and territorial authorities have regard to management plans prepared under other Acts when preparing regional policy statements, regional plans and district plans under the RMA.[8] The FA makes provision for such management plans under s11A where the Minister is empowered to approve fisheries plans. The preparation of a fisheries plan for the Kaipara Harbour, which identifies habitat of significance for scallops which needs to be protected from sedimentation (as well as addressing measures required to ensure the sustainability of the FLA 1 stock in the Kaipara Harbour referred to below), would therefore be an additional measure that the Minister could take to encourage better management of sedimentation under the RMA thereby helping ensure sustainability of the stock. EDS submits that Fisheries NZ should prepare a fisheries plan for the Kaipara Harbour without delay and present it to the Minister for approval.

5 Flatfish FLA 1

5.1 The Discussion Paper highlights the long-term decline of the FLA 1 stock indicating that the spawning stock biomass has been significantly reduced. The standardised CPUE has been in decline for the Kaipara Harbour, Manukau Harbour, and Hauraki Gulf for many years (apart from a very recent rebound in the Hauraki Gulf). This indicates that current management settings are not ensuring the sustainability of the stock and that the stock is currently well below a biomass that would support its MSY. As noted in the Discussion Paper, anecdotal information from the local community indicates that current catches of flatfish in FLA 1 are not sustainable. This is supported by EDS's research and a report received from one fisher that he can now fish all day and only catch three or four fish, when previously a catch of five or six dozen was the norm.[9]

[8] See sections 61(2)(a)(i), 66(2)(c)(i) and 74(2)(b)(i).
[9] See Peart R, 2018, *Voices from the Sea: Managing New Zealand's Fisheries*, Environmental Defence Society, Auckland, page 48.

5.2 The Discussion Paper proposes three options for management settings. Option 1 is to retain the status quo for the TAC which would enable the harvest to increase significantly. Option 2 is to reduce the TAC to reflect the average commercial catch over the past 5 years. This option does not reduce harvest levels in practice, although it would prevent future increases. A decision to retain the status quo for the TAC, or to only reduce the TAC to a level that does not actually reduce harvest pressure, would not meet the requirement under s13(2A) to set a TAC "*that is not inconsistent with the objective of … moving the stock towards or above, a level which can produce the MSY*." Options 1 and 2 are therefore not legally available to the Minister.

5.3 Option 3 proposes to reduce the catch level to 10% below the most recent 5-year average catch. The Discussion Paper does not include any rationale for the selection of the 10% figure apart from indicating that it is more risk-adverse than Option 2 (no reduction in current harvest levels). Given the ongoing decline in the stock (as evidenced by long-standing falling CPUE data), and likely reduction in carrying capacity of the Harbours affecting recruitment, the proposition that a 10% reduction in harvest would be sufficient to rebuild the stock to or above MSY after such a long decline is simply not credible. This doubt is reflected in the statement in the Discussion Paper that Option 3 "*<u>may</u> in turn help rebuild flatfish abundance in FLA 1 (<u>emphasis</u> added)*" which does not provide the Minister with the certainty he needs to meet the requirements of s31(2A) FA. It also does not sufficiently recognise the importance of flatfish species to customary fishers as evidenced in the Discussion Paper. EDS submits that for the Minister to meet the statutory requirements, a larger reduction in the TAC is required. It proposes a 25% reduction in TAC, accompanied by close monitoring and review within 24 months to determine whether further reductions are needed to rebuild the stock in a timely manner.

5.4 An adjustment to the TAC on its own is unlikely to be sufficient to ensure sustainability of the FLA 1 stock and the Minister will need to consider a package of management measures given the complexity of the issues involved. EDS has undertaken research into the FLA 1 stock in the Kaipara Harbour as part of the project reported in the publication "Voices from the Sea". This identified the following contributors to the depleted fishery within the Harbour:

a. The localised nature of the flatfish stocks in the Kaipara Harbour makes them susceptible to localised depletion.

b. The inclusion of the Kaipara Harbour flatfish stocks within a very large QMA spanning the entire top of the North Island (and which does not align with biological stocks), coupled with the setting of a very high TACC, means there is no effective control over harvest intensity within the harbour or in parts of the harbour. This has exacerbated localised depletion through enabling fishing effort to shift between harbours.

c. Lack of sufficient research to identify a scientifically robust management target for the stock to ensure it is at or above MSY.

d. The ease of entry into the fishery (which in practice is open entry) due to low capital costs (with small trailer boats able to be used within the sheltered harbour) and easy availability of cheap ACE due to the over-supply caused by the high TACC.

e. Lax fisheries regulations (coupled with an insufficient enforcement effort) resulting in poor fishing practices which can include long soakage times, leaving nets unattended, use of dirty nets, use of small mesh sizes, and overlong nets. This in turn has resulted in wastage, high juvenile mortalities, and the harvest of poor quality fish.

f. Habitat degradation within the Kaipara Harbour due to sedimentation and eutrification.

5.5 A reduction in the TAC needs to be accompanied by the following measures in order to address the matters identified above:

a. Establishing effective localised spatial management of harvest effort. This could be achieved through setting a maximum commercial harvest quantity for FLA 1 within the Kaipara Harbour and separately in the Manukau Harbour where the stock is also heavily depleted (with the balance of the TACC able to be harvested elsewhere within FLA 1 such as the Firth of Thames) or establishing a separate QMA for flatfish stocks for each Harbour.

b. Establishing a more robust regulatory framework for the FLA 1 fishery including requiring nets to be attended, reducing the soakage time, and ensuring the net mesh size is large enough to avoid capture of juvenile fish.

c. Increasing enforcement effort to ensure that all fishers are complying with the regulations.

d. Spatially identifying habitat of importance to the FLA 1 stock and measures required to effectively protect it.

e. Setting a management target for the stock and timeline for recovery.

f. Commissioning sufficient research to identify contributors to the decline of the stock and to inform the development of management measures to address these.

g. Developing and approving a fisheries plan for the Kaipara Harbour.

6. John dory (JDO 1)

6.1 The Discussion Paper notes that JDO 1 contains 3 biological stocks, with the decline in the fishery most marked in the east coast fisheries. Only 50% of the TACC has been harvested on average over the past 5 years. No estimate of stock biomass or biomass that will produce MSY has been provided. The Discussion Paper also indicates that all component stocks are below the target biomass level and have only been rebuilding slowly. In addition it states that it is likely that recruitment has been low during the preceding period but does not posit potential reasons for this. This indicates a cautious approach is appropriate and harvest reductions required to rebuild the fishery.

6.2 The Discussion Paper identifies 3 options for management measures. Option 1 is to maintain the status quo which allows for harvest levels to double from the current (due to only 50% of the TACC currently being harvested). This option is not available to the Minister as it would not meet the requirement under s13(2A) to set a TAC "*that is not inconsistent with the objective of … moving the stock towards or above, a level which can produce the MSY*."

6.3 Option 2 is to reduce the TAC to reflect current harvest levels. This would not result in any reduction in harvest levels but would preclude an increase in current havest. Given the poor state of the stock and uncertainty about recruitment which has been low in recent years, and the continued decline of catch levels under current harvest levels, this is very unlikely to result in moving the stock towards or above a level which can produce MSY, so is also not available to the Minister under s13(2).

6.4 Option 3 is to reduce the TACC so that harvest levels are 90% of current levels, so in effect this is a 10% reduction in harvest pressure/current take. The Discussion Paper does not provide any rationale for the selection of 10% as opposed to other options such as 20% or 30%, or any indication of what effect such a reduction would have on the stock rebuild and over what time period. EDS submits that for the Minister to meet the statutory requirements a larger reduction in the TAC is required. EDS proposes a 20% reduction in TAC, accompanied by close monitoring and review within 24 months to determine whether further reductions are needed in following years to rebuild the stock in a timely manner.

6.5 The presence of 3 biological stocks within JDO 1 indicates that the QMA is not aligned with biological stocks. This means that setting a TAC for the entire QMA is unlikely to ensure sustainability of each of the 3 biological stocks. As a result, management boundaries need to be adjusted. This could be achieved through setting maximum harvest levels for each biological stock area (ie spatial management within the QMA) within the overarching TACC, or through splitting JDO 1 into 3 separate QMAs.

6.6 The estimates of stock status are based on CPUE indices. Such indices are known to be problematic as they are not independent of the fishing industry and can be affected by reporting errors, varying catchability of fish, and changes in fisher behaviour. They are also historic and provide no information about likely future trends (including, most importantly, recruitment levels) on which to base management decisions for the future.

6.7 Long term time series that can be provided by regular scientific trawl surveys can provide a wealth of information to help inform fisheries management. Such surveys were undertaken intermittently along North Island coasts during the late 1980s and 1990s but were discontinued in 2000 (18 years ago). A regular (annual) trawl survey of the North Island west and east coast inshore fisheries needs to be undertaken without delay (and during the 2018/19 fishing year) in order to help provide the scientific basis for future fisheries management. This will provide scientific data not only relevant for JDO 1 but for the numerous other inshore species that currently lack robust scientific data on which to make good management decisions.

6.8 The JDO 1 stock is primarily harvested through bottom trawl and the Minister therefore needs to consider the impact of this fishing method on:

a. Biological diversity of the aquatic environment.

b. Habitat of particular significance for fisheries management.

6.9 The Discussion Paper does not provide the Minister with the best available information on which to consider these matters as required under s10(a) FA. It states at [649]: "*There is no information to indicate there will be impacts upon the matters noted in section 9 of the Act*." EDS considers this statement to be false and misleading. There is also a failure to provide information on the impacts of fishing activity on the aquatic environment in terms of the Hauraki Gulf Marine Park Act 2000.

6.10 There is a wealth of information on this topic which the Minister needs to consider in order to meet his statutory obligations. The information is summarised in the publication "Ministry for Primary Industries (2017). Aquatic Environment and Biodiversity Annual Review 2017. Compiled by the Fisheries Management Science Team, Ministry for Primary Industries, Wellington, New Zealand" (**AEBAR**) and this has a chapter on benthic impacts of fishing activity. Reference also needs to be made to the scientific reports referred to in this summary. Relevant information summarised in this chapter includes:

a. National and international research findings on the impacts of trawling on benthic species and communities.

b. Mapping of the current and historical inshore trawl footprint in New Zealand including trawl location and frequency.

c. An assessment of the overlap between the trawl footprint and different benthic habitat classes and assessment of the percentage of some classes which have been impacted (with 60% of benthic areas 100m and shallower impacted by trawl).

6.11 In addition, there has been useful research into the linkage between fisheries species and biogenic habitats which is summarised in "Morrison, M.A.; Jones, E.; Consalvey, M.; Berkenbusch, K. (2014). Linking marine fisheries species to biogenic habitats in New Zealand: a review and synthesis of knowledge. New Zealand Aquatic Environment and Biodiversity Report No. 130". This confirms that seagrass, shellfish beds, sponge gardens, bryozoan reefs, and similar biogenic features which are susceptible to the impacts of trawling, support juvenile fish from many commercially harvested species and therefore are habitat of particular significance for fisheries management.

6.12 In order to fulfil the obligation under the FA to ensure sustainability which includes "*maintaining the potential of fisheries resources to meet the reasonably foreseeable needs of future generations*" and "*avoiding, remedying, or mitigating any adverse effects of fishing on the aquatic environment*" under s8(2)(b), Fisheries NZ needs to urgently identify areas of benthic habitat of importance to fisheries and protect them from the impacts of fishing activity, including by excluding bottom disturbing fishing methods from being undertaken within the areas. The Minister should issue a direction requiring this work to be undertaken as a matter of priority in order to inform future decision-making under the FA.

7. Tarakihi (TAR 1, 2, 3 7)

7.1 The Discussion Paper indicates that the Tarakihi fishery has been in long-term decline and is now at a very low ebb at around 17% of virgin biomass. It is clear that a rebuilding strategy is necessary. Fisheries NZ have set out a number of options for future management. Southern Inshore Fisheries has proposed an alternative set of management options which include different management targets, tools and measures.

7.2 Due to tarakihi being a long-lived, slow growing and therefore a low productive species, Fisheries NZ has proposed a management target of 40% of virgin biomass. This is in accordance with the Harvest Strategy Standard for New Zealand Fisheries (2008) (**HSS**) and international best practice. EDS supports a management target of 40% of virgin biomass.

7.3 The management options set out in the Discussion Paper include rebuild times of 10 or 20 years. A rebuild time of 10 years is in accordance with the HSS and is supported by EDS. EDS would more strongly support Option 1 as generating a rebuild more quickly than the other options but acknowledges that Option 2 may also generate a similar rebuild over a 10-year time period.

7.4 Southern Inshore Fisheries proposes to achieve a harvest reduction through a voluntary shelving of ACE rather than through a reduction in the TACC. The voluntary shelving of ACE does not provide other stakeholders or members of the public with any certainty of future harvest levels (and therefore rebuild of the stock) as it is at the discretion of individual quota holders, and can be changed by them at any time, without recourse to the Minister. There is no way to enforce such voluntary measures. Such voluntary measures are also not specifically provided for as sustainability measures in the FA. They lack public credibility. EDS supports a reduction in TACC to achieve a harvest reduction not a voluntary approach.

7.5 The Discussion Paper contains an economic evaluation which seeks to quantify the loss of revenue for the different rebuild options. This evaluation only provides partial information and so is misleading; the Minister should not rely on it. Such an evaluation needs to also include the economic benefits which will be derived from a rebuild and subsequent increase in TACC and quantify the differences in revenues from a rebuild within 10 years versus a rebuild over 20 years to give a total economic impact assessment over the proposed management period.

7.6 The Discussion Paper indicates that tarakihi are long lived with a maximum age of 40 years or more and the first 8 years is a period of rapid growth. Tarakihi reach sexual maturity at around 6 years but the maximum legal size for harvest is reached at 3 to 4 years of age. This means that many tarakihi are caught as immature fish, before they reach spawning age, and before they have reached the end of their rapid growth phase where the rate of increase in biomass is high. The Southern Inshore Fisheries proposal states that "*A review of the MLS is proposed to determine why it is not currently in line with size at first maturity. There appears to be a disconnect between the two and the historical rationale for this is not clear.*" The Minister should increase the minimum legal size to the size when fish are mature and are able to spawn before being harvested.

7.7 The Discussion Paper describes the interlinkage between the stocks, with juveniles moving progressively northwards from the Canterbury Bight to East Northland with the result that

larger fish are caught further north. The Discussion Paper also states that a high proportion of the bottom trawl catch in TAR 3 is composed of immature fish. To the extent that any trawling is permitted in the future to target tarakihi (see below), the Minister needs to increase the minimum mesh size for trawl nets and require the use of escapement technology such as grids, to ensure that only mature fish are harvested.

7.8 The Discussion Paper fails to address the Minister's environmental obligations under ss8 and 9 FA. It therefore has not provided the Minister with the best available information in order for him to discharge his duties under the FA. In terms of environmental impacts the Discussion Paper states: "*The proposals are not expected to significantly change the environmental impacts and interactions of the TAR 1, 2, 3, or 7 fishery (s 9 of the Act). The proposals will reduce fishing effort on tarakihi, which may result in an overall reduction in trawl effort in some areas of the target bottom trawl fishery. Therefore, additional impacts on bycatch species, protected species and the benthic environment are unlikely*." This misrepresents the legal position (as described below). It also misrepresents the science. The statement seems to be based on an assumption that trawling the same footprint (or a reduced footprint) in future years will not create any additional environmental impacts to that which have already been caused by the fishing activity. But this is not the case because the impacts of trawling are cumulative over time, and the longer time period over which an area has been trawled, the greater the ecosystem damage and reduced likelihood of recovery.

7.9 In any event, the requirements of s8 or s9 FA are not automatically met if proposals do not change the current environmental impacts. Under s8 the Minister is required to identify whether there are any adverse effects of fishing on the aquatic environment and if there are, he is required to avoid, remedy and mitigate them. In order to take into account the matters under s9 the Minister needs to establish if there are any impacts on biological diversity or habitat of particular significance for fisheries fron the fishing activity, and if there are, he needs to consider how to maintain the former and protect the later.

7.9 The Discussion Paper also fails to address the interaction between tarakihi recruitment and survival and habitat. Research commissioned by government has concluded that juvenile tarakihi are found in close association with biogenic habitats including bryozoan beds.[10] During the mid 1970s such tarakihi juvenile nursery beds were identified off the south-western coast of the North Island, in Tasman Bay, and along the entire eastern coast of the South Island. They were described as "*dense and varied invertebrate benthic epifauna dominated by sponges and small corals*."[11] Fishers report that tarakihi are primarily found on hard structures and foul ground, so it is in these areas that harvesters deploy their trawl gear when targeting tarakihi.

[10] Morrison, M.A.; Jones, E.; Consalvey, M.; Berkenbusch, K. (2014). Linking marine fisheries species to biogenic habitats in New Zealand: a review and synthesis of knowledge. *New Zealand Aquatic Environment and Biodiversity Report* No. 130, 119

[11] C. M. Vooren (1975) Nursery grounds of Tarakihi (*Teleostei: Cheilodactylidae*) around New Zealand, *New Zealand Journal of Marine and Freshwater Research*, 9:2, 121-158;

7.10 There is strong scientific evidence that using bottom trawl gear on hard reef structures and biogenic communities is particularly damaging to those habitats. AEBAR summarises the international scientific findings of the benthic impacts of trawling including that:[12]

> *the effects on habitats of mobile bottom fishing gears were that they can:*
>
> - *Damage or reduce structural biota (all reviews, strong evidence or support).*
> - *Damage or reduce habitat complexity (all reviews, variable evidence or support).*
> - *Reduce or remove major habitat features such as boulders (some reviews, strong evidence or support).*
> - *Alter seafloor structure (some reviews, conflicting evidence for benefits or harm).*
>
> *Other emergent conclusions on habitat effects included:*
>
> - *There is a gradient of effects, with greatest effects on hard, complex bottoms and least effect on sandy bottoms (all reviews, strong support, with qualifications).*
> - *There is a gradient of effects, with greatest effects on low energy environments and least (often negligible) effect on high-energy environments (all reviews, strong support).*
> - *Trawls and mobile dredges are the most damaging of the gears considered (three of the reviews considered other gears; all drew this conclusion, often with qualifications).*

7.11 AEBAR concludes at page 369 that "*The international literature is, therefore, clear that bottom(demersal) trawling and shellfish dredging are likely to have largely predictable and sometimes substantial effects on benthic community structure and function*."

7.12 In the New Zealand context, there has been a wealth of research summarised in the AEBAR. Of particular relevance to tarakihi is the scientific assessment undertaken of the impacts of trawling on bryozoan communities in the Tasman Bay area (noting that the Tasman bryozoan beds were identified by Vooren (1975) as important tarakihi nursery grounds). Separation Point was first trawled after 1972, and this activity raised concerns about damage to the bryozoan beds and reduction of juvenile fish habitat, which could reduce recruitment into the fishery. In 1980 an area extending 156 km^2 around the Point was closed to power-fishing methods in order to protect the habitat, comprising just 0.4 per cent of the seabed of Tasman Bay. 30 years later areas within and outside the exclusion zone were examined by scientists. The researchers found that "*grab samples of the sediment from inside the closure area are very coarse, full of shell, and poorly sorted; in contrast, the samples from adjacent fished areas comprise almost entirely soft muds, nearly devoid of shell material and surface-dwelling organisms*". This was likely due to the ploughing effect of repeated disturbance whereby over time, a coarse shelly seabed is turned into a soft fine mud substrate. Overall, the seabed in the trawled areas had reduced size structure, biomass, and productivity. This has almost certainly impacted on the productivity of associated

[12] Page 368

fisheries including tarakihi through loss of food sources and juvenile habitat.[13] A more recent study of the impacts of trawling and scallop dredging on Tasman and Golden Bays concluded that the abundance of species which grow above the seabed, such as horse mussels, bryozoans and sponges, was reduced by up to 50% in areas fished on average just 2 to 3 times a year.[14]

7.13 Apart from the small protected area in Tasman Bay at Separation Point, important tarakihi habitats have not been protected from trawling impacts and continue to be trawled today. Such benthic habitats are particularly susceptible to damage and destruction by repeated trawling over time which produces cumulative and chronic impacts. It would seem extremely likely that the loss of these habitats due to chronic trawling damage has significantly reduced recruitment into the fishery. The Minister needs to prohibit the use of bottom-trawl for targeting tarakihi. In addition, Fisheries NZ as a matter of urgency, needs to identify important habitats for the tarakihi stock and protect them from other destructive fishing activities.

7.14 The Paper by Southern Inshore Fisheries notes the lack of good science in this fishery and the need to obtain better data. The proposal to undertake additional research is supported. However the need for further science should not be used as an excuse to delay action to the reduce the TACC. The fishery has been in decline for well over 20 years and decisive action should not be delayed further. If new information indicates that a different management approach is warranted then the management settings can be adjusted at that time.

8. Conclusion

8.1 EDS supports taking management action in the fisheries described above. Such management action is long overdue. The delay means that harvest reductions and other measures required to rebuild the stocks will need to be more stringent than would have been the case if action was taken earlier. EDS encourages Fisheries NZ to take a more active management approach to inshore stocks in the future.

8.2 EDS continues to be disappointed at the failure of Fisheries NZ to include the best available information on the environmental effects of fishing activity and encourages it to rectify this omission in future discussion papers.

[13] Handley S J, T J Willis, R G Cole, A Bradley, D J Cairney, S N Brown and M E Carter, 2014, 'The importance of benchmarking habitat structure and composition for understanding the extent of fishing impacts in soft sediment ecosystems', *Journal of Sea Research,* 86, 58–68

[14] Tuck I D, J E Hewitt, S J Handley and C J Lundquist, 2017, 'Assessing the effects of fishing on soft sediment habitat, fauna and process', *New Zealand Aquatic Environment and Biodiversity Report No. 178*