



# Review of Management Controls for the South Island Longfin and Shortfin Eel Fisheries (LFE 11- 16 & SFE 11-16) in 2016

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# 1 Submission Information

The Ministry for Primary Industries (MPI) welcomes written submissions on any or all of the proposals contained in the Discussion Document. All written submissions must be received by MPI no later than 5pm on Monday 11 July 2016.

Written submissions should be sent directly to:

Inshore Fisheries Management  
Ministry for Primary Industries  
P O Box 2526  
Wellington 6011

or emailed to [FMSubmissions@mpi.govt.nz](mailto:FMSubmissions@mpi.govt.nz)

## 1.1 OFFICIAL INFORMATION ACT 1982

All submissions are subject to the Official Information Act and can be released (along with personal details of the submitter) under the Act. If you have specific reasons for wanting to have your submission or personal details withheld, please set out your reasons in the submission. MPI will consider those reasons when making any assessment for the release of submissions if requested under the Official Information Act.

## South Island eels SFE 11-16 and LFE 11-16

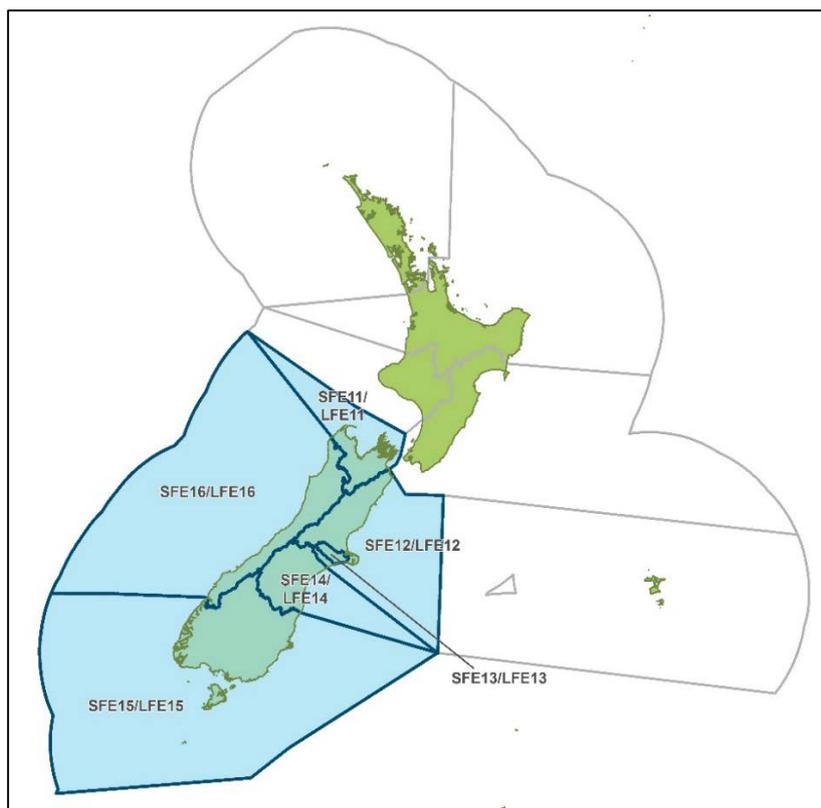


Figure 1: Quota management areas (QMAs) for the South Island eel fishery (SFE 11-16 and LFE 11-16).

## 2 Executive Summary

The Ministry for Primary Industries (MPI) is seeking information and views from tangata whenua and stakeholders to inform a review of catch limits for South Island eels (the shortfin eel *Anguilla australis* and the longfin eel *A. dieffenbachia*) in quota management areas (QMAs) 11-16 (SFE 11-16 and LFE 11-16; Figure 1).

Following a report by the Parliamentary Commissioner for the Environment on longfin eels, and a subsequent independent scientific review by a panel of international experts, the Minister has decided to progress a package of management measures to increase the population and improve the long-term sustainability of longfin eels. These management measures include:

1. A review of catch limits for North and South Island longfin eels to ensure that they will support/promote an increase in longfin eel abundance.
2. A review to consider the separation of South Island longfin and shortfin stocks to support improved management of each species.

Regarding Part 2 of the above package the Minister recently decided to separate the South Island eel stocks into shortfin and longfin stocks. MPI is required to set the catch limits for the six new shortfin and six new longfin stocks (*e.g.*, Part 1 of the above package) and has developed a range of total allowable catch (TAC), total allowable commercial catch (TACC) and allowance options for these stocks.

The review is informed by a new scientific stock assessment for South Island eel stocks which was completed in 2015. This assessment was based on estimates of the relative abundance of longfin and shortfin eels in the fished areas of each QMA. The assessments produced abundance targets and sustainability limits for those stocks with reliable indices of relative abundance (SFE 13, 15 and 16, LFE 15 and 16). Stock status is uncertain for some smaller stocks as there was insufficient catch and effort data to produce reliable trends of relative abundance.

Given the differing levels of certainty in stock status, different approaches are proposed to review the catch limits, depending on the data available. For most shortfin stocks a preferred approach may be to maintain future catch at around current levels.

All TAC options for longfin stocks support the objective of improving the abundance of longfin eels as they all reduce the eel catch available to be taken currently by a greater or lesser degree. There are a range of options for how this might be done; some are more risk averse given uncertainty in terms of current abundance and trends. Given the biology of the species, and uncertainty in information MPI has been cautious in developing the catch limit options outlined in this paper. The TAC options range from 114 tonnes to close to zero for some QMAs depending on the levels of information available on current biomass and science assessed impacts of proposed harvesting levels.

MPI considers that reducing catch of longfin eels is an appropriate response for most longfin stocks and should, all other factors being equal, result in an increase in eel abundance over time. It takes into account the biology of this species and the Minister's directive to set catch limits to support/ promote an increase in longfin eel abundance. Overall, MPI's TAC options could reduce the total longfin eel catch available to be taken in the South Island from 538.67 tonnes to less than 172 tonnes<sup>1</sup>.

Under all options, MPI has retained the current proportional allowances for commercial, recreational and customary catch that were used when the fishery entered the QMS. Recreational allowances will be set at 2% of the TAC (with a minimum of 1 tonne), customary will be set at 20% of the TAC and commercial will be set at 78% of the TAC.

MPI notes that fishing is unlikely to be the only driver of eel abundance in the South Island. New information estimates that only 27% of suitable eel habitat is commercially fished in the South Island<sup>2</sup>. Environmental changes, habitat modification and mortality from mechanical clearance of drainage channels, hydro-electric turbines and flood control pumping are also likely to affect the abundance of eels.

All TACs, TACCs and allowances would be implemented for the 1 October 2016 fishing year, except for SFE and LFE 13 where the next fishing year commences on 1 February 2017.

MPI invites stakeholder and public submissions on these proposals. Feedback provided on the proposals will be reported to the Minister for Primary Industries.

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<sup>1</sup> The sum of the current TAC for combined eel stocks in the South Island is 538.67 tonnes. The sum of the TACs for longfin eel proposed in this paper is 172 tonnes.

<sup>2</sup> Beentjes, M.P.; Sykes, J.; Crow, S. (2016). *GIS mapping of the longfin eel commercial fishery throughout New Zealand, and estimates of longfin habitat and proportion fished*. Draft New Zealand Fisheries Assessment Report held by Ministry for Primary Industries, Wellington.

## 3 Purpose

### 3.1 NEED FOR ACTION

The management of the South Island eel fishery will change from 1 October 2016 so that TACs, TACCs and allowances now need to be set for shortfin and longfin stocks separately. In addition, the current TACs, TACCs, allowances and other management settings for the combined stocks were developed in the late 1990s, and there is a concern to ensure the level of harvest of longfin eels, in particular, is managed at a level that ensures sustainability and allows longfin population to rebuild.

Table 1: Current TACs, TACCs, and customary non-commercial and recreational allowances (t) for South Island eel stocks. Note as eels are a selective target fishery there is no allowance for other sources of fishing-related mortality.

	ANG 11 Nelson/ Marlborough	ANG 12 North Canterbury	ANG 13 Te Waihora Lake Ellesmere	ANG 14 South Canterbury	ANG 15 Otago/ Southland	ANG 16 West Coast
TAC	51.29	54.8	156.32	45	150.85	80.41
TACC	40	42.74	121.93	35.1	117.66	62.72
<b>Māori Customary Allowance</b>	10.258	10.96	31.26	9	30.17	16.082
<b>Recreational Allowance</b>	1.0258	1.096	3.13	0.9	3.017	1.608

In 2013, the Parliamentary Commissioner for the Environment released a report outlining the status of longfin eel populations in New Zealand.<sup>3</sup> In this report, the Commissioner made the following recommendations aimed at improving the abundance of longfin eels in New Zealand:

1. That the Minister for Primary Industries suspends the commercial catch of longfin eels until longfin eel stocks are shown to have recovered; and
2. That the Minister directs his officials to establish a fully-independent expert peer review panel to assess the full range of information available on the status of the longfin eel population.

Subsequently, an independent scientific review of the information available on the status of eels was carried out by a panel of international experts in November 2013.<sup>4</sup> The independent panel concluded that while there was a trend of decline from the early 1990s to the late 2000s, there has been a relatively stable, and in some cases increasing, abundance in recent years.

Based on the panel's report, and after consideration of the relevant scientific evidence, the Minister decided that the information available was not sufficient to support a complete closure of the longfin eel fishery.

As an alternative, the Minister decided to progress a package of management measures to ensure an increase in the number of longfin eels and their long-term sustainability. These management measures include:

<sup>3</sup> On a pathway to extinction? An investigation into the status and management of the longfin eel, April 2013

<sup>4</sup> [www.mpi.govt.nz/Portals/0/Documents/fish/Eel-Review-Report-25-11-2013.pdf](http://www.mpi.govt.nz/Portals/0/Documents/fish/Eel-Review-Report-25-11-2013.pdf)

1. A review of catch limits for North and South Island longfin eels to ensure that they will support/promote an increase in longfin eel abundance.
2. A review to consider the separation of South Island longfin and shortfin stocks to support improved management of each species.
3. The introduction of abundance target levels to support assessment of the status of the longfin eel population and rate of rebuild.<sup>5</sup>
4. Improved information from the commercial longfin eel fishery to better inform stock assessment.<sup>6</sup>

This chapter describes options to address Part 1 of this package (South Island only). In relation to Part 2, the Minister recently decided to separate South Island eel stocks. MPI has developed a range of TAC, TACC and allowance options for the six new longfin and six new shortfin stocks for the purposes of consultation.

## 3.2 MANAGEMENT APPROACH

The Draft National Fisheries Plan for Freshwater sets out the following objectives for eels:

- Use objective:
  - o Secure social, economic and cultural benefits from each stock.
- Environment (stock sustainability) objectives:
  - o Maintain adequate spawning biomass to provide for high levels of recruitment; and
  - o Protect, maintain and enhance eel habitats.

# 4 Background Information

## 4.1 BIOLOGICAL CHARACTERISTICS OF FRESHWATER EELS

New Zealand has two main species of eel<sup>7</sup>, the native shortfin eel *Anguilla australis* (also found in South Australia, Tasmania and New Caledonia) and the endemic longfin eel *A. dieffenbachii*.

New Zealand freshwater eels are regarded as temperate species and have a unique life history. They live predominantly in freshwater and undertake a spawning migration to an oceanic spawning ground. They spawn once and then die. The majority of the life cycle is spent in freshwater or estuarine/coastal habitat. Spawning of New Zealand species is presumed to take place in the Southwest Pacific. Offspring undertake a long oceanic migration back to

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<sup>5</sup> Part 3 of the package for South Island eel stocks has already been completed. MPI completed a new stock assessment for South Island eel stocks in 2015. North Island eel stocks are scheduled for review in 2016-17. From the 2015 stock assessment, an abundance target and sustainability limits have been set for those South Island eel stocks where there is sufficient data to do so. These targets are used to guide the options described in this paper as longfin and shortfin eel abundance is able to be compared with these levels.

<sup>6</sup> In relation to Part 4 of the package, MPI has reviewed using a more comprehensive and integrated information base to inform the stock assessment process for longfin eels. This included improved commercial catch reporting and additional data provided by universities, the Department of Conservation and local councils to assist in monitoring eel abundance. Not all of this information was able to be utilised as part of the current stock assessment, but it still being collected and may be used in the future. MPI is also undertaking research looking at the percentage of available habitat that is commercially fished. The results of this work have been considered in the development of the options presented in this paper.

<sup>7</sup> A third species of freshwater eel, the Australasian longfin (*Anguilla reinhardtii*) was identified in the North Island 1996. When caught it is included as part of the shortfin catch as this species has productivity characteristics closer to shortfins than longfins, and because the catch is not sufficient to justify its own separate stocks

freshwater where they grow to maturity before migrating back to the oceanic spawning grounds.

The habitat of both species overlap, however, shortfins prefer lowland lakes and slow moving soft bottom rivers and streams and are predominant in coastal areas. Longfins prefer fast flowing stony rivers and are dominant in high country lakes.

Growth of eels is highly variable and dependent on food availability, water temperature and eel density. Eels, particularly longfins, are generally long-lived. The maximum recorded age is 106 years for longfins and 60 years for shortfins. Longfin eels take approximately 5 years longer to reach the minimum legal size (220 g). South Island shortfin eels take, on average, 13 years to reach the minimum legal size, compared with 18 years for longfins.

Migration appears to be dependent on attaining a certain length/weight combination and condition. The range in recorded age at migration for shortfin males is 5–22 years and 9–41 years for females. For longfin eels the range in recorded age at migration is 11–34 years for males, and 27–61 years for females.

These different biological characteristics mean longfin eels are potentially more vulnerable to fishing pressure than shortfin eel.

## 4.2 COMMERCIAL FISHERY

Virtually all commercially caught eels (98%) are taken with fyke nets. Eel catches are greatly influenced by water temperature, flood events (increased catches) and drought conditions (reduced catches). Catches decline in winter months (May to September), particularly in the South Island, where fishing ceases. Most catch is exported to markets in Asia and Europe, with in excess of 30 full time positions involved in catching and processing.

The South Island eel fishery was introduced into the QMS on 1 October 2000 with shortfin and longfin species combined into six stocks (codes ANG 11 to ANG 16). The Chatham and North Island eel fisheries were introduced into the QMS on 1 October 2003 and 1 October 2004 respectively using separate quota management areas for shortfin and longfin eels. The fishing year for all stocks extends from 1 October to 30 September except for ANG 13 (Te Waihora/Lake Ellesmere), which has a fishing year from 1 February to 31 January (since 2002). Currently, there are minimum and maximum commercial size limits for both longfins and shortfins (220 g and 4 kg, respectively) throughout New Zealand. Quota owners from both islands formally agreed in 1995–96 not to land migratory female longfin eels. Since about 2006 there has been a voluntary code of practise to return all longfin eels caught in Te Waihora/Ellesmere; catches of these longfins are recorded on Eel Catch Effort Returns (ECERs), but not on the Eel Catch Landing Returns (ECLRs).

Commercial catch data is available from 1965 and comes from different sources. Catch data prior to 1988 is for calendar years, whereas those since 1988 is for fishing years (Figure 2).

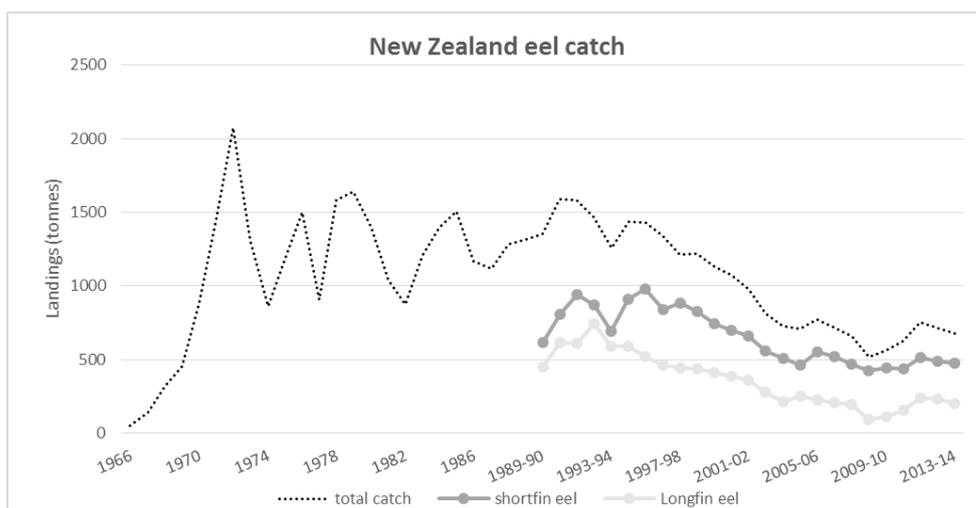


Figure 2: Total eel landings from 1965 to 2012–13, as well as separate shortfin and longfin landings from 1989–90 to 2012–13.

Commercial catch landings for South Island stocks have been reported separately for longfin and shortfin eels since QMS entry (Figure 3). Based on the average port price this catch equates to an approximate landed annual value to fishers of \$501,317.00 for longfin and \$647,184.00 for shortfin in the South Island.

Caution is needed when interpreting the above values because:

- anecdotal evidence suggest that eel fishers receive different prices for longfin and shortfin eels, however, the reported value is an average value covering both species;
- not all Licenced Fish Receivers provide information for the port price survey. MPI has not received sufficient results during the last three years to allow an update of the port pricing for eels; and
- the port price value is what the fisher receives, not what the eels are worth on the open market.

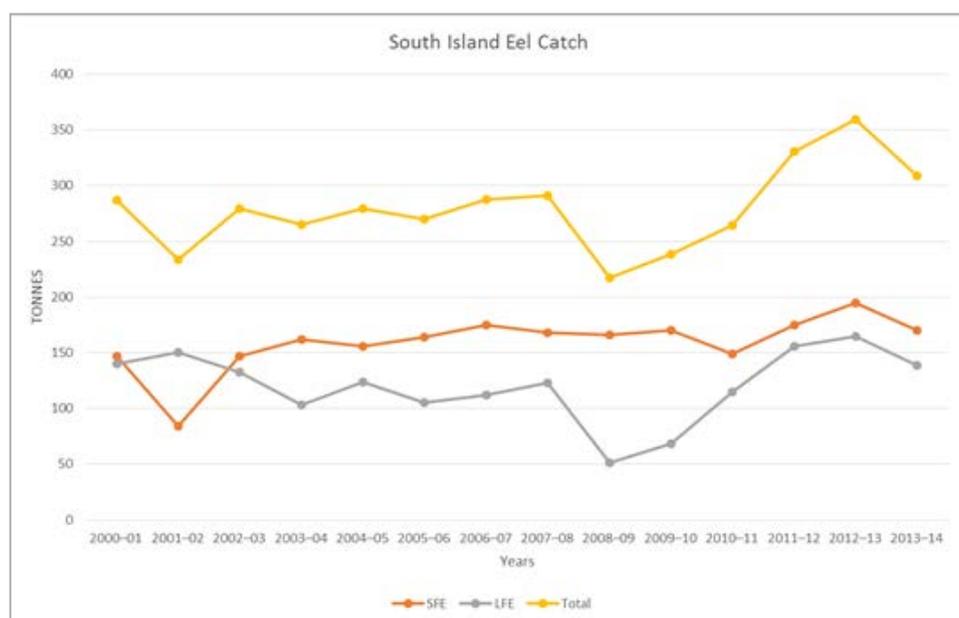


Figure 3: Total commercial landings (t) for South Island eel stocks (based on ECLR data).<sup>8</sup>

<sup>8</sup> Appendix 1 – Eel catch per QMA

The species proportion of the landings varies by QMA. From analyses of landings to eel processing factories and estimated catch from ECLRs, longfin are the dominant species in most areas of the South Island, except for discrete locations such as lakes Te Waihora / Ellesmere, Brunner, and the Waipori Lakes, where significant quantities of shortfin are landed.

Graphs showing catch landings by shortfin and by longfin species and TACCs since 2000–01 are presented for each QMA in the analysis of options sections of this report. Tables of this data are set out in the *Fisheries Assessment Plenary*.<sup>9</sup>

### 4.3 RECREATIONAL FISHERY

In October 1994, a recreational individual daily bag limit of six eels was introduced throughout New Zealand. There is no quantitative information on the recreational harvest of freshwater eels, but it is considered to be low and likely to be less than the existing recreational allowance (refer Table 1). The recreational fishery for eels includes any eels taken by people fishing under the amateur fishing regulations<sup>10</sup> and includes any harvest by Māori not taken under customary provisions.

When the South Island eel fishery was introduced into the QMS, an allowance was made for recreational harvest of 2% of the TAC for each QMA, currently equating to 11 tonnes (Table 1). Based on available information, current recreational harvest is within this allowance.

### 4.4 MĀORI CUSTOMARY FISHERY

Eels (tuna) are considered taonga (treasured) by Māori and are traditionally an important food source. Māori developed effective methods of harvesting, and hold a good understanding of the habits and life history of eels. Māori retain strong traditional ties to eels and their harvest.

In the South Island, a number of areas have been set aside as non-commercial areas for customary (and recreational) fisheries. Additionally, there are seven mātaihai reserves covering freshwater where commercial fishing is prohibited, five of which are solely freshwater and two are freshwater and saltwater, that have been established to provide for customary use.

Customary non-commercial fishers prefer eels of a large size, *i.e.*, over 750 mm and 1 kg. There is no complete assessment of the current or past customary non-commercial take for the South Island. However, there is information on customary non-commercial catches from authorisations issued under customary fisheries regulations. These regulations are in force across most of the South Island (not ANG 11). The data collected over the last 17 years shows the majority of customary catch is from ANG 12 (North Canterbury) and ANG 13 (Te Waihora/Lake Ellesmere). The records also suggest that eel customary permit fulfilment (comparison of quantity authorised to that able to be caught under that authorisation) is of particular concern for ANG 12 and ANG 14.

When the South Island eel fishery was introduced into the QMS, an allowance was made for customary non-commercial harvest. It was set at 20% of the TAC for each QMA, currently

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<sup>9</sup> Fisheries Assessment Plenary, May 2015, Stock Assessments and Stocks Status Volume 1: Introductory Sections to Hoki. <http://fs.fish.govt.nz/Page.aspx?pk=61&tk=212>

equating to 107 tonnes (Table 1). Based on available information, current customary harvest is within this allowance.

#### 4.5 OTHER SOURCES OF EEL MORTALITY

Although there is no quantitative information on the level of fishing-related mortality associated with the eel fishery (*i.e.*, how many eels die while in the fyke nets), it is not considered to be significant given that the fishing methods used are passive and catch eels in a live state.

Eels are subject to significant sources of mortality from non-fishing activities, although this has not been quantified. Non-fishing mortality occurs through the mechanical clearance of drainage channels, and damage by hydro-electric turbines and flood control pumping.

In addition, eel populations are likely to have been significantly reduced since European settlement from the 1840's by wetland drainage, and on-going habitat modification brought about by dams, irrigation, channelization of rivers and stream and the reduction in the littoral (stream edge) habitat.

New information estimates that only 27% of suitable eel habitat is commercially fished in the South Island<sup>11</sup>. Overall, MPI notes that fishing is unlikely to be the only driver of eel abundance in some parts of the South Island. Therefore, limiting catch of eels, on its own, may not result in a significant increase in eel abundance.

#### 4.6 PREVIOUS REVIEW

Due to the recent separation of South Island eel stocks this is the first time that catch limits have been set for LFE and SFE across South Island QMAs. However, prior to the stock separation catch limits for the combined ANG stocks were set in 2000. These have not been reviewed since.

#### 4.7 NEW INFORMATION

MPI undertook a new stock assessment for South Island eel stocks in 2015 (North Island eel stocks are scheduled for review in 2016). These assessments were based on the relative abundance of longfin and shortfin eels in the fished areas of each QMA.

The South Island assessments produced a relative abundance target (ANG 13 only) and sustainability limits for stocks (ANG 15, 16) with reliable indices of relative abundance. Stock status is particularly uncertain for stocks supporting small catches (ANG 11, 12, 14) as there was insufficient catch and effort data to produce reliable trends of relative abundance.

Given the differing levels of certainty in stock status, different approaches are proposed to review the catch limits, depending on the data available.

For ANG 13, 15, and 16 there is sufficient data to determine stock status through the standardised catch per unit effort (CPUE) time series. From these series, species specific

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<sup>11</sup> Beentjes, M.P.; Sykes, J.; Crow, S. (2016). *GIS mapping of the longfin eel commercial fishery throughout New Zealand, and estimates of longfin habitat and proportion fished*. Draft New Zealand Fisheries Assessment Report held by Ministry for Primary Industries, Wellington.

hard<sup>12</sup> and soft<sup>13</sup> limits were determined and agreed to by the Eel Plenary for these three QMAs. For ANG 13, information was adequate to also determine a target<sup>14</sup>.

Generally, fish stocks should fluctuate near the target. If the stock falls below the soft limit a time constrained rebuild plan should be implemented to increase the stock back towards the target level. If the stock falls below the hard limit it should be considered for closure to allow the stock to rebuild. If a stock is significantly above the target level it may be considered for a TAC increase. As a default approach for many stocks the soft limit is twice the hard limit and the target is twice the soft limit<sup>15</sup>.

For stocks close to or below the soft limit that are not showing signs of improvement, action should be taken to increase the rate of rebuild.

In the case of ANG 16, the CPUE time series suggests both longfin and shortfin abundance is above the soft limit and increasing.

For ANG 11, 12 and 14, there is insufficient data to determine stock status. Therefore, a comparison between the actual catch and the TACC was undertaken. Where the actual catch is below the TACC, the difference (headroom) is considered to represent an elevated risk that, if fully caught, the current TAC may not be sustainable.

The assessment information is discussed in more detail later in this paper as part of informing the specific management options for each stock.

## 5 Legal Considerations

### 5.1 SETTING MANAGEMENT MEASURES

#### 5.1.1 Section 14 – Alternative total allowable catch for stock specified in Schedule 3

LFE and SFE stocks will be listed on Schedule 3 of the Act from October this year, allowing the TAC to be set under section 14. Under section 14, if the Minister is satisfied in respect of a Schedule 3 stock that the purpose of the Act would be better achieved by setting a TAC otherwise than in accordance with section 13(2), the Minister may set a TAC for that stock that he considers appropriate to achieve the purpose of the Act. The purpose of the Act is to provide for the utilisation of fisheries resources while ensuring sustainability.<sup>16</sup>

When setting a TAC the Minister must take into account the sustainability measures specified in section 11, the environmental principles (section 9) and the information principles (section 10). Any decision must be consistent with international obligations and the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992.

#### 5.1.2 Section 20 - Setting and variation of total allowable commercial catch

Under section 20 of the Act, the Minister sets a TACC in respect of the QMA relating to a stock. That TACC applies in each fishing year unless varied under section 20 or until an alteration of the QMA for that stock takes effect in accordance with sections 25 and 26.

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<sup>12</sup> Hard limit: A biomass limit below which fisheries should be considered for closure.

<sup>13</sup> Soft limit: A biomass limit below which the requirement for a formal time-constrained rebuilding plan is triggered.

<sup>14</sup> Target: A biomass level that management actions are designed to achieve with at least at least 50% probability.

<sup>15</sup> Ministry of Fisheries, 2008, Harvest Strategy Standard for New Zealand Fisheries

<sup>16</sup> Section 8 of the Fisheries Act 1996.

### 5.1.3 Section 21 - Setting of non-commercial allowances and the TACC

When setting a TACC for a stock under section 20 of the Act, section 21 requires the Minister to have regard to the TAC for that stock and allow for Māori customary non-commercial fishing interests, recreational interests, and all other sources of fishing-related mortality to that stock.

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, the Minister has discretion to make allowances for various sectors based on best available information.

## 5.2 FURTHER CONSIDERATIONS

Section 12(1)(b) of the Act requires that the Minister provide for the input and participation of tangata whenua and have particular regard to kaitiakitanga before setting or varying a TAC. MPI has provided an opportunity for tangata whenua to provide input into this process through Te Waka a Māui me ona Toka and Ngāi Tahu Mahinga Kai Hī Ika Kōmiti.

Sections 9(a) and (b) also require the Minister to take into account that associated or dependent species be maintained at or above a level that ensures their long-term viability, and that the biological diversity of the aquatic environment should be maintained. There are few associated or dependent species relating to the take of eels. Eels are a targeted species using passive (live capture) fishing techniques.

## 6 Proposed Response

MPI has developed a range of TAC, TACC and allowance options for the six new shortfin and six new longfin stocks. All options for longfin stocks support the objective of improving the status of the longfin eels as they all reduce the eel catch available to be taken by a greater or lesser degree. Overall, MPI's options could see the longfin eel catch potentially available to be taken across the South Island reduced from 538.67 tonnes to 172 tonnes.<sup>17</sup>

### 6.1 OPTIONS FOR SHORTFIN AND LONGFIN EELS

#### 6.1.1 Shortfin stocks (SFE 11-16)

For most shortfin stocks TACs and TACCs are proposed that maintain future catch at around the same level as catches since the fishery entered the QMS in 2000 (TACC capped at the highest catch). This option most closely approximates the 'status quo' under the new separated management regime. It is the most likely of the options to maintain stock biomass trends at current trajectories, which MPI considers to be an appropriate approach for shortfin stocks where abundance is either stable or increasing (SFE 15, 16), and for shortfin stocks where the status is unknown (SFE 11, 12, 14). For these latter stocks this approach takes into account that these stocks appear to be lightly exploited with only a limited amount of suitable eel habitat fished, that fishing has been underway for some time and we have not seen any adverse impact, and that shortfin eels are less biologically vulnerable than longfin eels.

MPI notes that, in practise, catches may be lower than expected under this option because some quota holders may neither fish nor sell their ACE in a given fishing year. This occurs

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<sup>17</sup> The sum of the current TACs for combined eel stocks in the South Island is 538.67 tonnes. The sum of the TACs for longfin eel stocks proposed in this paper is 172 tonnes.

under the current combined management regime, and if it continues to occur under the new separated management regime the amount of available ACE will be lower than the TAC. MPI invites information and views from the eel industry on this issue and on how the ACE market will operate under the new management regime for South Island eels.

A different option is put forward for consideration for SFE 13, where a TAC increase could be considered because this stock is well above the target level.

### 6.1.2 Longfin stocks (LFE 11-16)

For longfin stocks MPI's approach is to set catch limits to support an increase in abundance. There are a range of options for how this might be done; some are more risk averse given uncertainty in terms of current abundance and trends. MPI considers that reducing catch of longfin eels is an appropriate response for most longfin stocks and should, all other factors being equal, result in an increase in eel abundance over time. It takes into account the biology of this species and the Minister's directive to set catch limits to support/ promote an increase in longfin eel abundance.

Given the biology of the species, and uncertainty in information MPI has been cautious in developing the catch limit options outlined in this paper. The TAC options range from 114 tonnes to close to zero depending on the levels of information available on current biomass and science assessed impacts of proposed harvesting levels.

For some longfin stocks (LFE 15 and 16) MPI is proposing TAC and TACC options that cap catch at the level of the long term average. This level of harvest is supported by information on biomass. If applied retrospectively this approach would have reduced the catch of longfin eels taken since QMS entry eels by up to 50%. In practise, future catches under this option will fluctuate around a new, lower, long term average that is between the historic average and 50% of the historic average.

For other longfin stocks (LFE 11, 12 and 14), MPI has included TAC and TACC options that are close to zero, which takes into account the limited information on these stocks poses a potential sustainability concern, and the concerns of tangata whenua. For LFE 13 the only option presented is a TAC close to zero as this is a shortfin-only fishery. These are discussed in more detail in each stock section below.

Additional options are also proposed for LFE 15 and 16 based on information that longfin stocks in these QMAs are abundant and increasing.

Given that the actual level of future catch for longfin stocks will depend on how the ACE market responds to the new TACCs and on future demand for longfin eels<sup>18</sup>, MPI will continue to monitor all longfin stocks and readjust TACs (downwards or upwards) in the future if appropriate.

The economic impact of a reduced commercial catch of longfin eels will vary with eel prices. In the North Island port prices are reported separately for longfin and shortfin eels and show a difference in value. Between 1997/98 and 2015/16 the average port price for longfin eels ranged between \$3.00 and \$5.08, while shortfin ranged between \$3.00 and \$6.40. In the South

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<sup>18</sup> Most commercial eel catch is exported, and catch fluctuates year to year depending on world eel prices. As a result this approach is likely to result in an overall significant decrease in catch, which would likely fluctuate around a new, lower, long term average. Some commercial fishers catch all their ACE and some do not (either because they do not have access to eel fishing grounds, fishing costs are high, or because of other reasons). ACE does not trade freely within this fishery, and fishers may be unwilling or unable to purchase additional ACE to cover their reduced ACE.

Island, between 2000/01 and 20015/16 the average port price<sup>19</sup> for eels was \$4.17 (ranging from \$3.50 - \$5.86).

## 6.2 PROPOSED OPTIONS FOR EACH STOCK

### 6.2.1 SFE 11 (Top of the South Island)

Proposed options for SFE 11 TACs, TACCS and allowances are given in Table 2.

Table 2: Proposed TACs, TACCs and allowances for SFE 11 (all values in tonnes)

	TAC	Customary (20% TAC)	Recreational (2% TAC)	TACC
Option 1 – Average catch	12.3	2.3	1	9
Option 2 – Highest catch	24.87	4.87	1	19

There is insufficient data to determine the stock trend or status of SFE 11 in relation to targets or limits. The TAC for the ANG 11 stock (both species combined) has never been caught (average catch since QMS entry has been 44% of the TACC) (Figure 4).

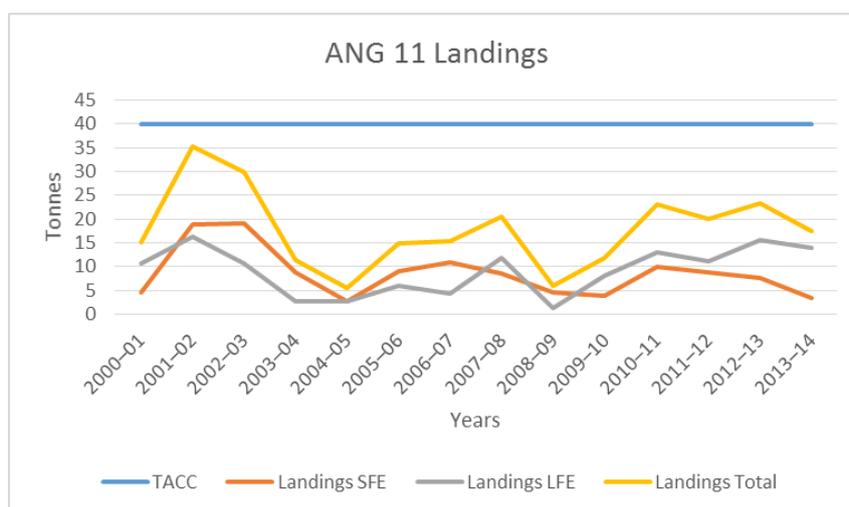


Figure 5: Commercial catch landings vs TACC for ANG 11 between 2000/01 and 2013/14

Option 1 proposes the TAC and TACC be set based on the average annual commercial catch for shortfin eels reported since the fishery entered the QMS in 2000 (8.62 t) rounded to the nearest whole tonne. Basing the TAC and TACC on the average annual commercial catch would significantly reduce the total shortfin eel catch available to be taken commercially (the ACE) and reduce the long term catch of shortfin eels, as catch would be significantly constrained in all years when it would have otherwise have been above the long term average. MPI considers this approach unnecessarily constrains utilisation of the shortfin resource in this QMA given that that fishing of these stocks has been underway for some time and we have not seen any adverse impact, that only a limited amount (21%<sup>20</sup>) of suitable eel habitat is fished, and that shortfin eels are less biologically vulnerable than longfin eels.

<sup>19</sup> Port price means the surveyed average price paid by licensed fish receivers to independent fishers for fish landed to those licensed fish receivers. Note, in the South Island port price is not separated by species.

<sup>20</sup> Beentjes, M.P.; Sykes, J.; Crow, S. (2016). *GIS mapping of the longfin eel commercial fishery throughout New Zealand, and estimates of longfin habitat and proportion fished*. Draft New Zealand Fisheries Assessment Report held by Ministry for Primary Industries, Wellington.

Option 2 proposes the TAC and TACC be set based on the highest annual commercial catch for shortfin eels reported in this QMA since the fishery entered the QMS in 2000 (19.2 tonnes) and rounded to the nearest whole tonne. This option is supported by tangata whenua for this area, who have stated they hold no sustainability concerns for shortfin species in this area and are able to collect eels sufficient for their customary purposes. MPI considers this approach takes into account the factors described under Option 1, but allows greater utilisation for a stock where there are no sustainability concerns.

This assessment is based on limited information and further stakeholder feedback on these options is requested.

## 6.2.2 LFE 11 (Top of the South Island)

Proposed options for LFE 11 TACs, TACCS and allowances are given in Table 3.

**Table 3: Proposed TACs, TACCs and allowances for LFE 11 (all values in tonnes)**

	TAC	Customary (20% TAC)	Recreational (2% TAC)	TACC
Option 1 – Nominal catch	3	1	1	1
Option 2 – Average catch	12.31	2.31	1	9
Option 3 – Highest catch	21.1	4.10	1	16

There is insufficient data to determine the stock trend or status of LFE 11 in relation to targets or limits. The TAC for the ANG 11 stock (both species combined) has never been caught (average catch since QMS entry has been 44% of the TACC).

Option 1 proposes the TAC and TACC be set close to zero (nominal). It would protect all longfin spawning biomass in this QMA and may result in some increase in abundance. This option, however, allows no commercial utilisation of the LFE 11 stock and may require additional measures such as a recreational daily bag limit close to zero and a rahui on customary catch to constrain recreational and customary catch within the low allowances (which are proportional to the TAC). Although this option would promote the fastest increase in abundance of the stock, it does not allow for use. MPI consider that best available information supports the ability to harvest this stock, albeit at low levels, and still ensure an increase in eel numbers.

Option 2 proposes the TAC and TACC be set based on the average annual commercial catch for longfin eels reported since the fishery entered the QMS in 2000 (9.2 t) and rounded to the nearest whole tonne. Basing the TAC and TACC on the average annual commercial catch would significantly reduce the total longfin eel catch available to be taken commercially (the ACE) and reduce the long term catch of longfin eels, as catch would be significantly constrained in all years when it would have otherwise have been above the long term average. MPI considers this approach takes into account that there is limited information on this stock and the requirement to be more cautious under these circumstances, that longfin eels are more biologically vulnerable than shortfin eels, and that catches higher than the average catch since QMS entry may not support the Minister’s directive to set catch limits that support/ promote an increase in longfin eel abundance.

Option 3 proposes the TAC and TACC be set based on the highest annual commercial catch for longfin eels reported since the fishery entered the QMS in 2000 (16.4 t) and rounded to the nearest whole tonne. This option is supported by tangata whenua for this area, who have stated they hold no sustainability concerns for either longfin or shortfin species in this area

and are able to collect eels sufficient for their customary purposes. MPI considers this approach, however, does not address the factors discussed under Option 2.

The assessment for this stock is based on limited information and the wide range of options presented reflect the uncertainty regarding its status. The options present a continuum between a TAC of close to zero and a TAC of 21 tonnes that MPI considers reflects a reasonable range for the stock given best available information on the species, the fishery and legal obligations. The Minister could therefore choose any option within the range depending on the balance between sustainability and utilisation that he considers most appropriate. As noted, MPI consider on balance that some level of utilisation to this stock is appropriate given best available information on current biomass. However, MPI remains open to the level of utilisation to be provided and seeks stakeholder feedback on the specific options presented along with the general range.

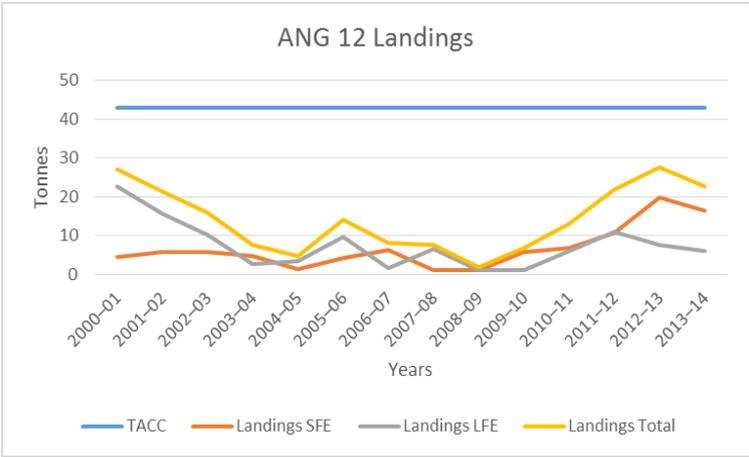
**6.2.3 SFE 12 (North Canterbury to Blenheim)**

Proposed options for SFE 12 TACs, TACCS and allowances are given in Table 4.

**Table 4: Proposed TACs, TACCS and allowances for SFE 12 (all values in tonnes)**

	TAC	Customary (20% TAC)	Recreational (2% TAC)	TACC
Option 1 – Average Catch	9.79	1.79	1	7
Option 2 – Highest Catch	26.1	5.1	1	20

There is insufficient data to determine the stock trend or status of SFE 12 in relation to targets or limits. The TAC for the ANG 12 stock (both species combined) has never been caught (average catch since QMS entry has been 35% of the TACC) (Figure 5).



**Figure 5: Commercial catch landings vs TACC for ANG 12 between 2000/01 and 2013/14**

Option 1 proposes the TAC and TACC be set based on the average annual commercial catch for shortfin eels reported since the fishery entered the QMS in 2000 (6.78 t) and rounded to the nearest whole tonne. Basing the TAC and TACC on the average annual commercial catch would significantly reduce the total shortfin eel catch available to be taken commercially (the ACE) and reduce the long term catch of shortfin eels, as catch would be significantly constrained in all years when it would have otherwise have been above the long term average. MPI considers this approach may unnecessarily constrain utilisation of the shortfin resource in this QMA given that that fishing of these stocks has been underway for some time and we

have not seen any adverse impact, that only a limited amount (50%<sup>21</sup>) of suitable eel habitat is fished, and that shortfin eels are less biologically vulnerable than longfin eels.

Option proposes the TAC and TACC be set based on the highest annual commercial catch for shortfin eels reported since the fishery entered the QMS in 2000 (19.9 t) and rounded to the nearest whole tonne. MPI considers this approach takes into account the factors described under Option 1, but allows greater utilisation for a stock where there are no sustainability concerns.

This assessment is based on limited information and further stakeholder feedback on these options is requested.

#### 6.2.4 LFE 12 (North Canterbury to Blenheim)

Proposed options for LFE 12 TACs, TACCS and allowances are given in Table 5.

There is insufficient data to determine the stock trend or status of LFE 12 in relation to targets or limits. The TAC for the ANG 12 stock (both species combined) has never been caught (average catch since QMS entry has been 35% of the TACC). Tangata whenua are concerned about the sustainability of longfin eels in this QMA and state they are unable to collect longfin eels for customary purposes. This is supported by customary permit records which suggest that customary permit fulfilment (comparison of quantity authorised to that able to be caught under that authorisation) for eels is low in QMA 12.

**Table 5: Proposed TACs, TACCs and allowances for LFE 12 (all values in tonnes)**

	TAC	Customary (20% TAC)	Recreational (2% TAC)	TACC
Option 1 – Nominal catch	3	1	1	1
Option 2 – Average catch	11.05	2.05	1	8
Option 3 – Highest catch	29.49	5.8	1	23

Option 1 proposes the TAC and TACC be set close to zero (nominal) and addresses the concerns of tangata whenua regarding this stock. It would protect all longfin spawning biomass in this QMA and may result in some increase in abundance. This option, however, allows no commercial utilisation of the LFE 12 stock and may require additional measures such as a recreational daily bag limit close to zero and a rahui on customary catch to constrain recreational and customary catch within the low allowances (which are proportional to the TAC). It may also not address the localised abundance issues that are of concern to tangata whenua which may be related to other factors. Although this option would promote the fastest increase in abundance of the stock, it does not allow for use. MPI consider that best available information supports the ability to harvest this stock, albeit at low levels, and still ensure an increase in eel numbers.

Option 2 proposes the TAC and TACC be set based on the average annual commercial catch for longfin eels reported since the fishery entered the QMS in 2000 (7.51 t) and rounded to the nearest whole tonne. Basing the TAC and TACC on the average annual commercial catch would significantly reduce the total longfin eel catch available to be taken commercially (the ACE) and reduce the long term catch of longfin eels, as catch would be significantly constrained in all years when it would have otherwise have been above the long term average.

<sup>21</sup> Beentjes, M.P.; Sykes, J.; Crow, S. (2016). *GIS mapping of the longfin eel commercial fishery throughout New Zealand, and estimates of longfin habitat and proportion fished*. Draft New Zealand Fisheries Assessment Report held by Ministry for Primary Industries, Wellington.

MPI considers this approach meets the purpose of the Act it addresses the risk that catches higher than the average catch since QMS entry may not support an increase in longfin eel abundance, but also allows for utilisation of the stock and takes into account that only a limited amount (50%<sup>22</sup>) of suitable eel habitat in this QMA is fished.

Option 3 proposes the TAC and TACC be set based on the highest annual commercial catch for longfin eels reported since the fishery entered the QMS in 2000 (22.6 t) and rounded to the nearest whole tonne. MPI considers this approach does not take into account that there is limited information on this stock and the requirement to be more cautious under these circumstances, that longfin eels are more biologically vulnerable than shortfin eels, and that catches higher than the average catch since QMS entry may not support the Minister’s directive to set catch limits that support/ promote an increase in longfin eel abundance.

The assessment for this stock is based on limited information and the wide range of options presented reflect the uncertainty regarding its status. The options present a continuum between a TAC of close to zero and a TAC of 29 tonnes that MPI considers reflects a reasonable range for the stock given best available information on the species, the fishery and legal obligations. The Minister could therefore choose any option within the range depending on the balance between sustainability and utilisation that he considers most appropriate. As noted, MPI consider on balance that some level of utilisation to this stock is appropriate given best available information on current biomass. However, MPI remains open to the level of utilisation to be provided and seeks stakeholder feedback on the specific options presented along with the general range.

#### 6.2.5 SFE 13 (Lake Te Waihora / Lake Ellesmere)

Proposed options for SFE 13 TACs, TACCS and allowances are given in Table 6.

The stock assessment for ANG 13 (a shortfin-only fishery) suggests the stock is significantly above the  $B_{MSY}$  target level and catches greater than the current TAC (which is fully caught) could be considered (Figure 6).

**Table 6: Proposed TACs, TACCs and allowances for SFE 13 (all values in tonnes)**

	TAC	Customary (20% TAC)	Recreational (2% TAC)	TACC
Option 1 – Current	156.32	31.26	3.13	121.93
Option 2 – +10% increase	171.94	34.38	3.44	134.12

<sup>22</sup> Beentjes, M.P.; Sykes, J.; Crow, S. (2016). *GIS mapping of the longfin eel commercial fishery throughout New Zealand, and estimates of longfin habitat and proportion fished*. Draft New Zealand Fisheries Assessment Report held by Ministry for Primary Industries, Wellington.

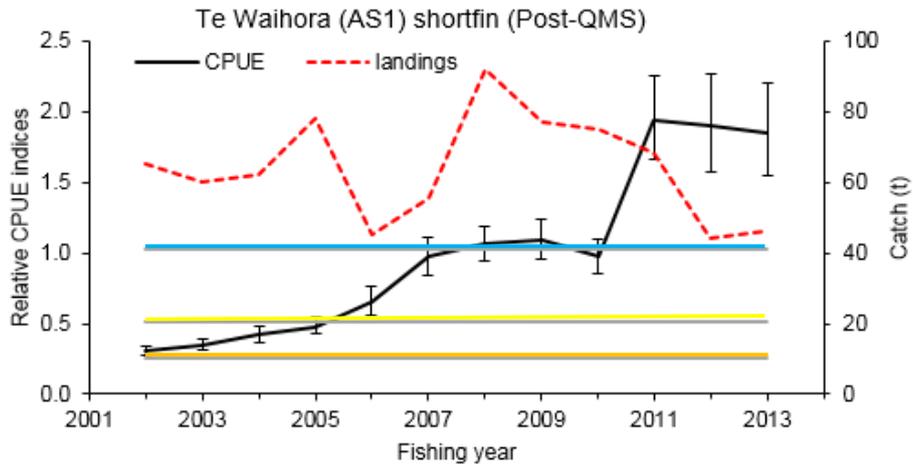


Figure 6: Te Waihora shortfin (ANG 13) CPUE analysis and landings since 2002. Blue line indicates the target; yellow line indicates the soft limit; orange line indicates the hard limit.

Option 1 proposes the TAC, TACC allowances are set at the same levels as they currently. Tangata whenua for this area consider the stock is not yet at a level that an increase should be considered (refer Option 2). Furthermore, some quota holders have indicated they do not support an increase at this time.

Option 2 proposes a TAC increase of 10% (approximately 12 t) higher than the current ANG 13 TAC. This represents a modest increase that would be monitored and adjusted again in the future depending on the results of future assessments of this stock. Customary and recreational allowances would be set at 20% and 2% of the new TAC, respectively. The remaining volume would provide an increase to the current ANG 13 TACC of approximately 9.052 t.

Further stakeholder feedback on these options is requested.

### 6.2.6 LFE 13 (Lake Te Waihora / Lake Ellesmere)

The proposed option for LFE 13 TACs, TACCS and allowances is given in Table 7.

Table 7: Proposed TAC, TACC and allowances for LFE 13 (all values in tonnes)

	TAC	Customary (20% TAC)	Recreational (2% TAC)	TACC
Option 1 – Nominal	3	1	1	1

ANG 13 is a shortfin-only fishery. A nominal TAC that provides for a TACC, customary and recreational allowance of 1 tonne each is proposed to account for any potential harvest of longfin in this area.

Further stakeholder feedback is requested.

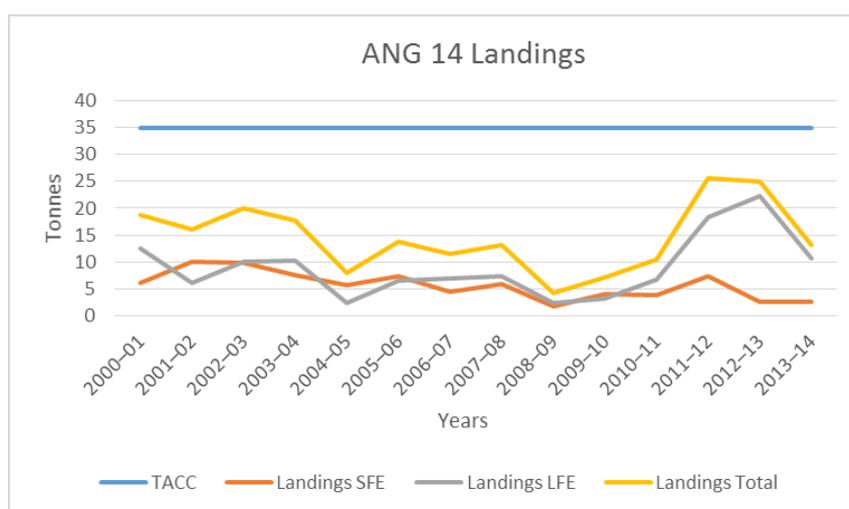
## 6.2.7 SFE 14 (South Canterbury)

The proposed options for SFE 14 TACs, TACCS and allowances are given in Table 8.

**Table 8: Proposed TACs, TACCS and allowances for SFE 14 (all values in tonnes)**

	TAC	Customary (20% TAC)	Recreational (2% TAC)	TACC
Option 1 – Average catch	8.53	1.53	1	6
Option 2 – Highest catch	13.57	2.57	1	10

There is insufficient data to determine the stock trend or status of SFE 14 in relation to targets or limits. The TAC for the ANG 14 stock (both species combined) has never been caught (average commercial catch since QMS entry has been 42% of the TACC; Figure 7).



**Figure 7: Commercial catch landings vs TACC for ANG 14 between 2000/01 and 2013/14**

Option 1 proposes the TAC and TACC be set based on the average annual commercial catch for shortfin eels reported since the fishery entered the QMS in 2000 (5.62 t) and rounded to the nearest whole tonne. Basing the TAC and TACC on the average annual commercial catch would significantly reduce the total shortfin eel catch available to be taken commercially (the ACE) and reduce the long term catch of shortfin eels, as catch would be significantly constrained in all years when it would have otherwise have been above the long term average. MPI considers this approach unnecessarily constrains utilisation of the shortfin resource in this QMA given that that fishing of these stocks has been underway for some time and we have not seen any adverse impact, that only a limited amount (45%<sup>23</sup>) of suitable eel habitat is fished, and that shortfin eels are less biologically vulnerable than longfin eels.

Option 2 proposes the TAC and TACC be set based on the highest annual commercial catch for shortfin eels reported since the fishery entered the QMS in 2000 (10.1 t) and rounded to the nearest whole tonne (Figure 7). This approach would cap future commercial catch even where future prices and eel demand increase. Setting a TAC and TACC higher than this presents an elevated risk that the TAC and TACC, if fully caught, would not be sustainable. MPI considers this approach better meets the purpose of the Act taking into account the factors described under Option 1, as it allows greater utilisation for a stock where there are no sustainability concerns.

<sup>23</sup> Beentjes, M.P.; Sykes, J.; Crow, S. (2016). *GIS mapping of the longfin eel commercial fishery throughout New Zealand, and estimates of longfin habitat and proportion fished*. Draft New Zealand Fisheries Assessment Report held by Ministry for Primary Industries, Wellington.

This assessment is based on limited information and further stakeholder feedback on these options is requested.

### 6.2.8 LFE 14 (South Canterbury)

The proposed options for LFE 14 TACs, TACCS and allowances are given in Table 9.

**Table 9: Proposed TACs, TACCs and allowances for LFE 14 (all values in tonnes)**

	TAC	Customary (20% TAC)	Recreational (2% TAC)	TACC
Option 1 – Nominal	3	1	1	1
Option 2 – Average catch	13.3	2.3	1	9
Option 3 – Highest catch	28.6	5.6	1	22

There is insufficient data to determine the stock trend or status of LFE 14 in relation to targets or limits. The TAC for the ANG 14 stock (both species combined) has never been caught (average commercial catch since QMS entry has been 42%). Tangata whenua are concerned about the sustainability of longfin eels in this QMA and state they are unable to collect longfin eels for customary purposes. This is supported by customary permit records which suggest that customary permit fulfilment (comparison of quantity authorised to that able to be caught under that authorisation) for eels is low in QMA 14.

Option 1 proposes the TACC be set close to zero (nominal) and addresses the concerns of tangata whenua regarding this stocks. It would protect all longfin spawning biomass in this QMA and may result in some increase in abundance. This option, however, allows no commercial utilisation of the LFE 14 stock and may require additional measures such as a daily bag limit close to zero and a rahui on customary catch to constrain recreational and customary catch within the low allowances (which are proportional to the TAC). It may also not address the localised abundance issues that are of concern to tangata whenua which may be related to other factors. Although this option would promote the fastest increase in abundance of the stock, it does not allow for use. MPI consider that best available information supports the ability to harvest this stock, albeit at low levels, and still ensure an increase in eel numbers.

Option 2 proposes the TAC and TACC be set based on the average annual commercial catch for longfin eels reported since the fishery entered the QMS in 2000 (8.96 t) and rounded to the nearest whole tonne. Basing the TAC and TACC on the average annual commercial catch would significantly reduce the total longfin eel catch available to be taken commercially (the ACE) and reduce the long term catch of longfin eels, as catch would be significantly constrained in all years when it would have otherwise have been above the long term average. MPI considers this approach addresses the risk that catches higher than the average catch since QMS entry may not support an increase in longfin eel abundance, but also allows for utilisation of the stock and takes into account that only a limited amount (45%<sup>24</sup>) of suitable eel habitat in this QMA is fished

Option 3 proposes the TAC and TACC be set based on the highest annual commercial catch for longfin eels reported since the fishery entered the QMS in 2000 (22.3 t) and rounded to the nearest whole tonne. MPI considers this approach does not take into account that there is limited information on this stock and the requirement to be more cautious under these circumstances, that longfin eels are more biologically vulnerable than shortfin eels, and that

<sup>24</sup> Beentjes, M.P.; Sykes, J.; Crow, S. (2016). *GIS mapping of the longfin eel commercial fishery throughout New Zealand, and estimates of longfin habitat and proportion fished*. Draft New Zealand Fisheries Assessment Report held by Ministry for Primary Industries, Wellington.

catches higher than the average catch since QMS entry may not support the Minister’s directive to set catch limits that support/ promote an increase in longfin eel abundance.

The assessment for this stock is based on limited information and the wide range of options presented reflect the uncertainty regarding its status. The options present a continuum between a TAC of close to zero and a TAC of 29 tonnes that MPI considers reflects a reasonable range for the stock given best available information on the species, the fishery and legal obligations. The Minister could therefore choose any option within the range depending on the balance between sustainability and utilisation that he considers most appropriate. As noted, MPI consider on balance that some level of utilisation to this stock is appropriate given best available information on current biomass. However, MPI remains open to the level of utilisation to be provided and seeks stakeholder feedback on the specific options presented along with the general range.

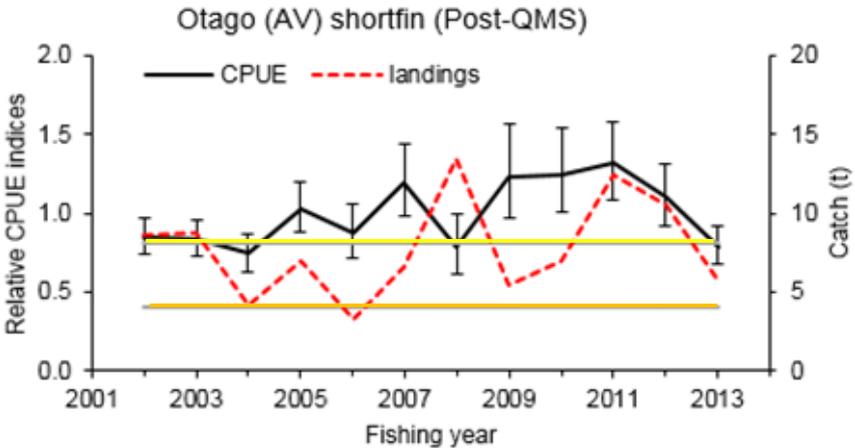
6.2.9 SFE 15 (Southland/ Otago)

The proposed options for SFE 15 TACs, TACCS and allowances are given in Table 10.

Table 10: Proposed TACs, TACCS and allowances for SFE 15 (all values in tonnes)

	TAC	Customary (20% TAC)	Recreational (2% TAC)	TACC
Option 1 – Average catch	21.1	4.1	1	16
Option 2 – Highest catch	37.42	7.42	1	29

The stock assessment suggests that the abundance of shortfin eels in the Otago part of ANG 15 is close to the soft limit at which MPI has a policy that action should be taken to improve stock status. The time series shows no consistent sign that shortfin eels in this area are moving towards a higher abundance (Figure 8). On the other hand, abundance of shortfins in the larger Southland part of ANG 15 is well above the soft limit and is stable or increasing. Overall the SFE 15 stock is likely to be above the soft limit and stable.



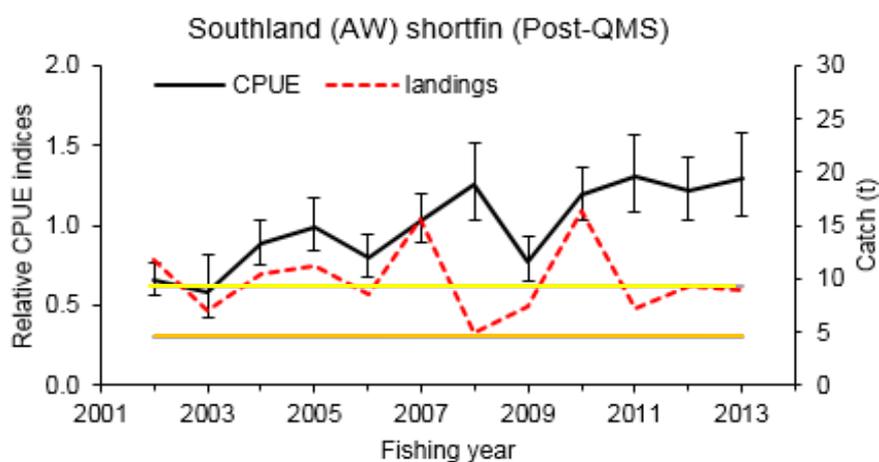


Figure 8: Otago and Southland shortfin (ANG 15) CPUE analysis and landings since 2002. Yellow lines indicate the soft limit; orange lines indicate the hard limit.

Option 1 proposes the TAC and TACC be set based on the average annual commercial catch for shortfin eels reported since the fishery entered the QMS in 2000 (16.38 t) and rounded to the nearest whole tonne. Setting the TAC and TACC at the level of average catch would significantly reduce the shortfin eel catch available to be taken commercially (the ACE) and reduce the long term catch of shortfin eels, as catch would be significantly constrained in all years when it would have otherwise have been above the long term average. This may help support an increase in abundance of shortfin in the Otago part of this QMA.

Option 2 proposes the TAC and TACC be set based on the highest annual commercial catch for shortfin eels reported since the fishery entered the QMS in 2000 (29.10 t) and rounded to the nearest whole tonne. MPI notes that overall the shortfin stock is likely to be above the soft limit, suggesting a higher level of utilisation than that proposed under Option 1 is appropriate. MPI also notes that that only a limited amount (37%<sup>25</sup>) of suitable eel habitat in this QMA is fished.

Further stakeholder feedback on these options is requested.

#### 6.2.10 LFE 15 (Southland/ Otago)

The proposed options for LFE 15 TACs, TACCS and allowances are given in Table 11.

Table 11: Proposed TACs, TACCs and allowances for LFE 15 (all values in tonnes)

	TAC	Customary (20% TAC)	Recreational (2% TAC)	TACC
Option 1 – ½ Average catch	44.23	8.84	0.89	35
Option 2 – Average catch	88.45	17.68	1.77	69
Option 3 – Highest catch	114.1	22.82	2.28	89

The stock assessment suggests that longfin eels in the Otago part of ANG 15 are close to the soft limit at which MPI has a policy that action should be taken to improve stock status. The abundance of longfin eels in this area is showing no consistent signs of moving upwards (Figure 9). The abundance of longfin eels in the Southland area is above the soft limit and appears stable. Overall the abundance of longfin eels in ANG 15 appears to be close to the soft limit and stable.

<sup>25</sup> Beentjes, M.P.; Sykes, J.; Crow, S. (2016). *GIS mapping of the longfin eel commercial fishery throughout New Zealand, and estimates of longfin habitat and proportion fished*. Draft New Zealand Fisheries Assessment Report held by Ministry for Primary Industries, Wellington.

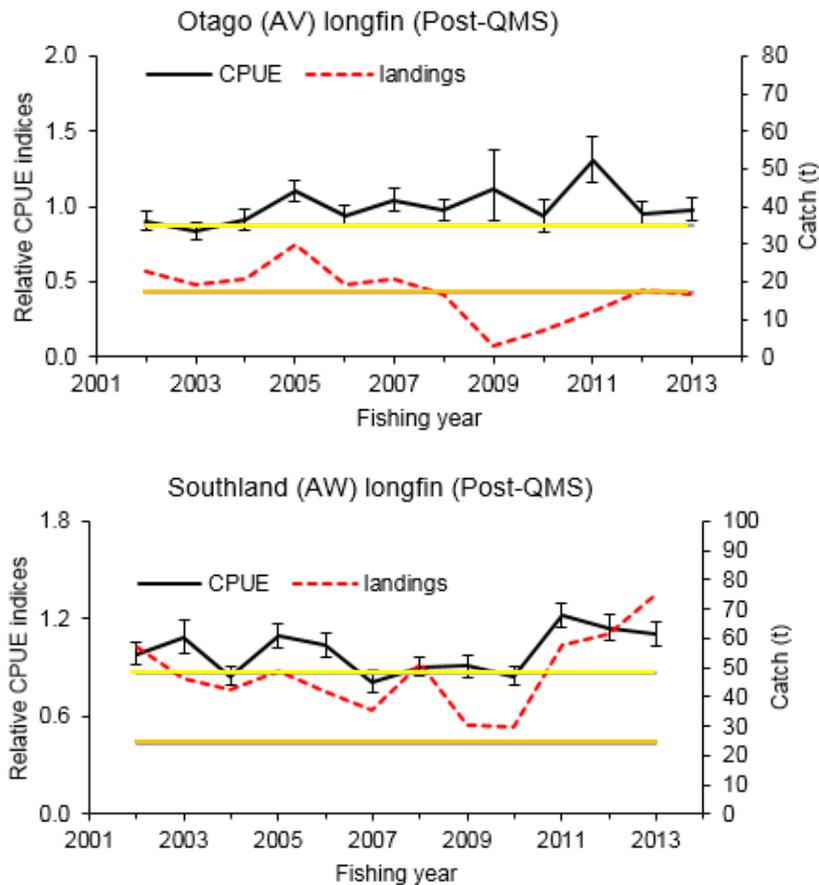


Figure 9: Otago and Southland longfin (ANG 15) CPUE analysis and landings since 2002. Yellow lines indicate the soft limit; orange lines indicate the hard limit.

Option 1 proposes the TAC and TACC be set based on half the average annual commercial catch for longfin eels reported since the fishery entered the QMS in 2000 (68.57 t). This option would promote the fastest increase in abundance of this stock, and would result in a significant reduction in utilisation.

Option 2 proposes the TAC and TACC be set based on the average annual commercial catch for longfin eels reported since the fishery entered the QMS in 2000 (68.57 t) and rounded to the nearest whole tonne. Basing the TAC and TACC on the average annual commercial catch would significantly reduce the total longfin eel catch available to be taken commercially (the ACE) and is likely to reduce the long term catch of longfin eels, as catch would be significantly constrained in all years when it would have otherwise have been above the long term average. MPI considers this approach addresses the need to take action given the risk that the stock could be close to the soft limit, that longfin eels are more biologically vulnerable than shortfin eels, and that catches higher than the average catch since QMS entry may not support the Minister’s directive to set catch limits that support/ promote an increase in longfin eel abundance (noting the stock is likely to be stable at best).

Option 3 proposes the TAC and TACC be set based on the highest annual commercial catch for shortfin eels reported since the fishery entered the QMS in 2000 (88.6 t) and rounded to the nearest whole tonne. This option takes into account that, while some parts of the stock may be close to the soft limit, overall the longfin eel stock may be above this limit. It does not however address that longfin eels are more biologically vulnerable than shortfin eels, and that

catches higher than the average catch since QMS entry may not support the Minister’s directive to set catch limits that support/ promote an increase in longfin eel abundance.

Further stakeholder information and feedback on these options is requested. It is important to note that the Minister has broad discretion in exercising his powers of decision-making regarding the setting of TACs, allowances and TACCs and may, if supported by information received during consultation, determine that alternative options to those presented are appropriate.

**6.2.11 SFE 16 (Westland)**

The proposed options for SFE 16 TACs, TACCs and allowances are given in Table 12.

**Table 12: Proposed TACs, TACCs and allowances for SFE 16 (all values in tonnes)**

	TAC	Customary (20% TAC)	Recreational (2% TAC)	TACC
Option 1 – Average catch	19.85	3.85	1	15
Option 2 – Highest catch	38.69	7.69	1	30

The stock assessment suggests relative abundance of shortfin eels in ANG 16 is above the soft limit, with an increasing trend (Figure 10).

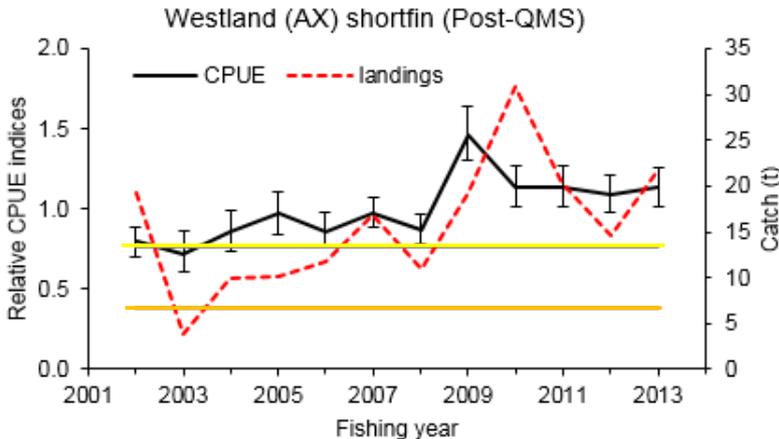


Figure 10: Westland shortfin (ANG 16) CPUE analysis and landings since 2002. Yellow lines indicate the soft limit; orange lines indicate the hard limit.

Option 1 proposes the TAC and TACC be set based on the average annual commercial catch for shortfin eels reported since the fishery entered the QMS in 2000 (15.38 t) and rounded to the nearest whole tonne. Setting the TAC and TACC at the level of average catch would significantly reduce the shortfin eel catch available to be taken commercially (the ACE) and reduce the long term catch of shortfin eels, as catch would be significantly constrained in all years when it would have otherwise have been above the long term average. Based on the stock assessment a reduction in catch is not required. MPI considers this approach unnecessarily constrains utilisation of the shortfin resource in this QMA.

Option 2 proposes the TAC and TACC for SFE 16 be set based on the highest average annual commercial catch for shortfin eels reported since the fishery entered the QMS in 2000 (30.3 t) and rounded to the nearest whole tonne. Monitoring shows abundance of shortfin eels has increased in this QMA and MPI notes that only a limited amount (30%<sup>26</sup>) of suitable eel

<sup>26</sup> Beentjes, M.P.; Sykes, J.; Crow, S. (2016). *GIS mapping of the longfin eel commercial fishery throughout New Zealand, and estimates of longfin habitat and proportion fished*. Draft New Zealand Fisheries Assessment Report held by Ministry for Primary Industries, Wellington.

habitat is fished in this QMA. Where ongoing monitoring shows a continued increase in abundance, MPI considers an increase in the TAC could be considered in the future.

Further stakeholder feedback on these options is requested.

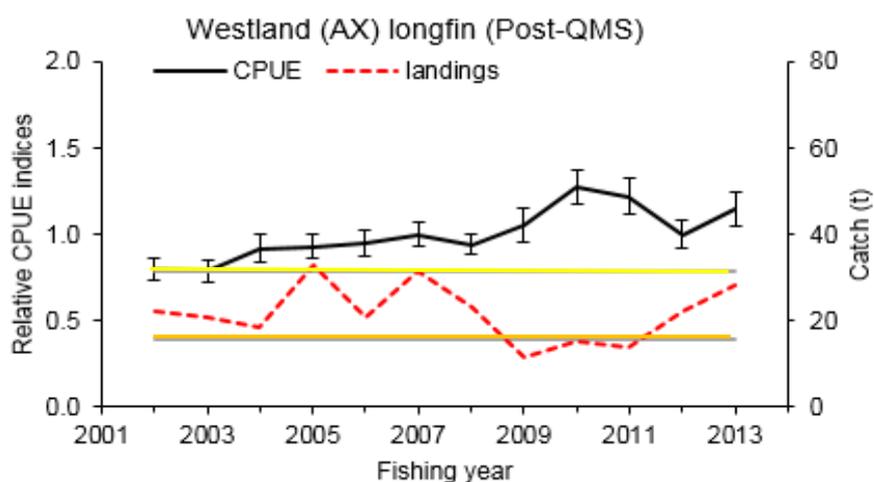
### 6.2.12 LFE 16 (Westland)

The proposed options for LFE 16 TACs, TACCS and allowances are given in Table 13.

**Table 13: Proposed TACs, TACCs and allowances for LFE 16 (all values in tonnes)**

	TAC	Customary (20% TAC)	Recreational (2% TAC)	TACC
Option 1 – Average catch	32.41	6.41	1	25
Option 2 – Highest catch	43.72	8.72	1	34

The stock assessment suggests the relative abundance of longfins in ANG 16 is above the soft limit, and has increased since 2008 (Figure 11).



**Figure 11: Westland longfin (ANG 16) CPUE analysis and landings since 2002. Yellow lines indicate the soft limit; orange lines indicate the hard limit.**

Option 1 proposes the TAC and TACC be set based on the average annual commercial catch for longfin eels reported since the fishery entered the QMS in 2000 (24.88 t) and rounded to the nearest whole tonne. Setting the TAC and TACC at the level of average catch would significantly reduce the longfin eel catch available to be taken commercially (the ACE) and reduce the long term catch of longfin eels, as catch would be significantly constrained in all years when it would have otherwise have been above the long term average. Based on the stock assessment a reduction in catch is not required. MPI considers this approach unnecessarily constrains utilisation of the longfin resource in this QMA.

Option 2 proposes the TAC and TACC be set based on the highest annual commercial catch for longfin eels reported since the fishery entered the QMS in 2000 (34.4 t) and rounded to the nearest whole tonne. Monitoring shows abundance of longfin eels has increased in this QMA, and MPI notes that that only a limited amount (30%<sup>27</sup>) of suitable eel habitat is fished in this QMA. Overall MPI considers this option allows for greater utilisation of the stock while addressing the risk that catches higher than the highest catch since QMS entry may not continue to support an increase in longfin eel abundance.

<sup>27</sup> Beentjes, M.P.; Sykes, J.; Crow, S. (2016). *GIS mapping of the longfin eel commercial fishery throughout New Zealand, and estimates of longfin habitat and proportion fished*. Draft New Zealand Fisheries Assessment Report held by Ministry for Primary Industries, Wellington.

Further stakeholder information and feedback on these options is requested. It is important to note that the Minister has broad discretion in exercising his powers of decision-making regarding the setting of TACs, allowances and TACCs and may, if supported by information received during consultation, determine that alternative options to those presented are appropriate.

### **6.3 PRELIMINARY CONSULTATION**

Prior to the release of this consultation paper, MPI undertook preliminary consultation on management options with the South Island Eel Industry Association, and provided for the input and participation of tangata whenua through Te Waka a Māui me ona Toka and Ngāi Tahu Mahinga Kai Hī Ika Kōmiti. MPI has met with these forums several times over the past year to discuss gain their input and expertise on the important tuna fishery.

South Island Iwi support lower TACs and TACCs for the South Island eel stocks, and have requested nominal options (close to zero) for several stocks. The options and analysis presented in this paper reflect this input.

The eel industry has expressed concern that separate management of the stocks, in combination with the options described in this paper may jeopardise the industry. They note that overall the new regime will significantly limit flexibility to fish for each species according to seasonal and annual variations in abundance. Furthermore, due to the characteristics of eel quota ownership (much of the quota is held and not fished for various reasons), basing the TACCs on average catch will result in a significant reduction in catch.

## **7 Other Matters**

### **7.1 MONITORING AND FUTURE REVIEWS**

South Island eel stocks will continue to be monitored through MPI's annual review and planning process and a further stock assessment is likely to be undertaken in 2018. Depending on the results of that assessment the TACs for the new longfin and shortfin stocks will be reviewed again at that time to ensure they continue to support the objectives for the fishery.

### **7.2 TIMING**

The proposed amendments to TACs and TACCs would be effective on and from the first day of the next fishing year, being 1 October 2016 for all stocks, except SFE and LFE 13 where the fishing year commences on 1 February 2017.

### **7.3 DEEMED VALUES**

Deemed values are an economic tool that incentivises commercial fishers not to catch in excess of their individual annual catch entitlements. A discussion of the deemed value rates for South Island eel stocks is included in the accompanying consultation document "Review of Deemed Value Rates for Selected Stocks".

## 8 Conclusion

The catch limit options proposed in this paper for the new South Island shortfin and longfin eel stocks achieve the purpose of the Fisheries Act and, for longfin stocks, support the objective of improving the abundance of longfin eels. All longfin eel options reduce the catch available to be taken by a greater or lesser degree. Many of the proposed options would significantly reduce the total longfin eel catch available to be taken commercially in the South Island. Overall, MPI's options (given TACs will be set separately for longfin and shortfin eels) could see the longfin eel catch potentially available to be taken across the South Island reduced from 538.67 to less than 172 tonnes.

All changes to the catch limits will be implemented for the 1 October 2016 fishing year, except for SFE 13 and LFE 13, where the next fishing year commence on 1 February 2017.

MPI is seeking information and views from tangata whenua and stakeholders on the proposed options, and on any other information to support the development of final advice to the Minister on catch limits and other management settings for South Island eel stocks.

It is important to note that the Minister has broad discretion in exercising his powers of decision-making. He will make his own independent assessment of the information presented to him before making a final decision on setting TACs, allowances and TACCs.