



# **Review of Management Controls for Ling 5 and 6 (LIN 5 & 6)**

MPI Discussion Paper No: 2013/25

Prepared for the Ministry for Primary Industries

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## INTRODUCTION

1 This Initial Position Paper provides the Ministry for Primary Industries (the Ministry's) initial proposals relating to catch limits and allowances for LIN 5 and LIN 6, to apply from 1 October 2013.

2 The Ministry has developed this IPP for the purpose of consultation as required under the Fisheries Act 1996 (the Act). The proposals outlined in the paper are preliminary and are provided as the basis for consultation with stakeholders.

3 In August 2013, the Ministry will provide a Final Advice Paper to the Minister for Primary Industries. The FAP will summarise the Ministry's and stakeholder's views on the proposed deemed value rate changes and make recommendations to the Minister. A copy of the FAP and the Minister's letter setting out his final decisions will be posted on the MPI website as soon as these become available.

## DEADLINE FOR SUBMISSIONS

4 The Ministry welcomes written submissions on the proposals contained in the IPP. All written submissions must be received by the Ministry no later than 5pm on **Friday, 9 August 2013**.

Written submissions should be sent directly to:

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

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

### Official Information Act 1982

5 All submissions are subject to the Official Information Act and can be released (along with the 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.

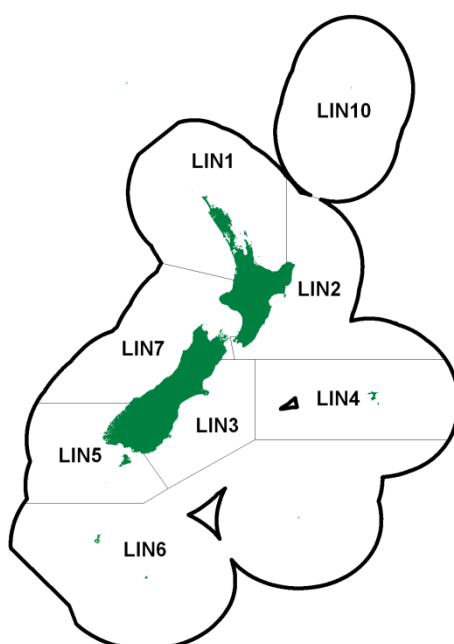


Figure 1: Quota Management Areas (QMAs) for ling

## EXECUTIVE SUMMARY

6 The Ministry for Primary Industries (MPI) is seeking tangata whenua and stakeholder information and views to inform a review of catch limits and other management measures for ling in Quota Management Areas (QMAs) 5 (LIN 5) and 6 (LIN 6), (see Figure 1).

7 The south western (LIN 5) and Sub-Antarctic (LIN 6) fisheries are considered to be the same biological stock. However, these stocks are managed separately and are considered as two stocks under the definition of ‘stock’ in section 2 of the Fisheries Act 1996 (the Act). The part of LIN 6 on the Bounty Plateau is considered to be a separate biological stock, and fishing pressure is estimated to have been low, but erratic, since 1980. Changes in the catch levels in LIN 6 are not thought to impact the Bounty Plateau fishery, and it has not been included in the stock assessment for LIN 5 and 6.

8 The catch limit is regularly caught or exceeded in LIN 5 and catch is likely to increase should the hoki TAC increase as proposed. The 2012 stock assessment for LIN 5 and 6 estimated that it is very likely that current biomass is greater than 70% of un-fished biomass ( $B_0$ ) which is well above the default target level of 40%  $B_0$ . Although estimates of current and reference biomass are uncertain,<sup>1</sup> the assessment indicates that the stocks could support an increase in the TAC.

## CONTEXT

9 The 2012 stock assessment for LIN 5 and 6 indicate that the TACs for these stocks could be increased. The stock assessment included consideration of catch histories; biomass indices and catch-at-age data from trawl surveys and the fisheries.

<sup>1</sup> Reports from the Fishery Assessment Plenary, May 2013.

10 TACs for LIN 5 and 6 are set under section 13(2) of the Act. Section 13 requires the Minister for Primary Industries (the Minister)<sup>2</sup> to set a TAC to maintain the stock at or above a level that can produce maximum sustainable yield ( $B_{MSY}$ ).

11 The 2012 stock assessment represents the best available information on the status of the LIN 5 and 6 stocks. The stock assessment for LIN 5 and 6 was updated in 2012 and estimate the stock is at 70%  $B_0$ . Although the model is very uncertain, the Deepwater Working Group concluded that it is very likely that the stock is above the management target and has likely been only lightly fished.

12 Initial consultation has indicated some interest in an increase, so MPI has investigated the likely impacts of a range of different harvest levels.

### **Biological Characteristics of ling**

13 Ling occur at depths between 25 m and 1000 m but are most widely distributed through the middle depths (200–800 m) of the New Zealand Exclusive Economic Zone (EEZ), particularly to the south of latitude 40° S. Further work has concluded that there are at least five ling biological stocks: i.e., west coast South Island, Chatham Rise, Cook Strait, Bounty Plateau, and the Southern Plateau (including the Stewart-Snares shelf and Puysegur Bank). Stock affinities of ling north of Cook Strait are unknown, but spawning is known to occur off Northland, Cape Kidnappers, and in the Bay of Plenty.

14 Ling in spawning condition have been reported in a number of localities throughout the EEZ.<sup>3</sup> Little is known about the distribution of juveniles until they are about 40 cm total length, when they begin to appear in trawl samples over most of the adult range.

15 Ling live to a maximum age of about 30 years; fewer than 0.2% of successfully aged ling have been older than 30 years. A growth study of ling from five areas (west coast South Island, Chatham Rise, Bounty Plateau, Campbell Plateau, Cook Strait) showed that females grew significantly faster and reached a greater size than males in all areas, and that growth rates were significantly different between areas. Ling grow fastest in Cook Strait and slowest on the Campbell Plateau.

16 Ling appear to be mainly bottom dwellers, feeding on crustaceans such as *Munida* and scampi and also on fish, with commercial fishing discards being a significant dietary component. However, they may at times be caught well above the bottom, for example when feeding on hoki during the hoki spawning season.

### **LIN 5 and LIN 6 Fisheries**

17 LIN 5 and LIN 6 were introduced into the QMS in 1986 with TACCs of 2500 t and 7000 t, respectively. These were increased to 3001 t for LIN 5 and 7100 t for LIN 6 through quota appeals.

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<sup>2</sup> The Minister for Primary Industries now exercises the powers and responsibilities of the Minister of Fisheries under the Fisheries Act 1996.

<sup>3</sup> Horn, 2005.

18 In 2004, the stock assessment for LIN 5 and LIN 6 (excluding the Bounty Plateau) showed that the stock was lightly fished and the TACCs were subsequently raised to 3595 t and 8,505 t respectively.

19 The TACC for LIN 5 has been near fully caught or exceeded for the last eight years. LIN 6 is regularly under caught, with some annual catches less than one-quarter of the available TACC (Figures 2 and 3). This is due largely to operators preferring the more accessible LIN 5 fishery whereas the Sub-Antarctic area is remote, exposed and a challenging environment for fishers to operate in (due to weather). Distances from ports, and the wider dispersal of the fish stock, make operating costs for LIN 6 are subsequently higher than in LIN 5.

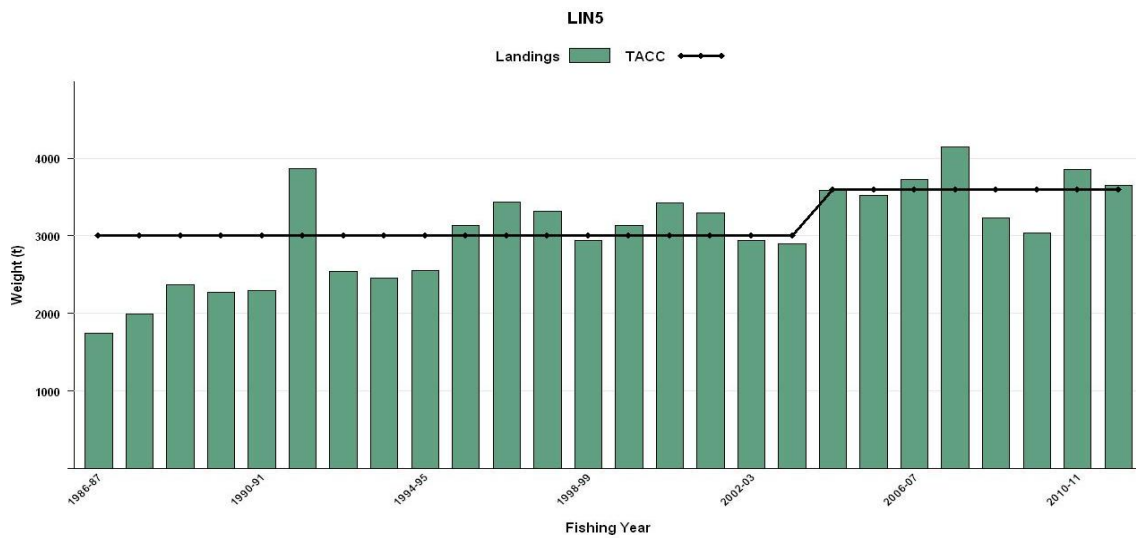


Figure 2: Reported Catch Landings and TACC (t) for LIN 5 from fishing year 1986/87 to the 2010/11 fishing year

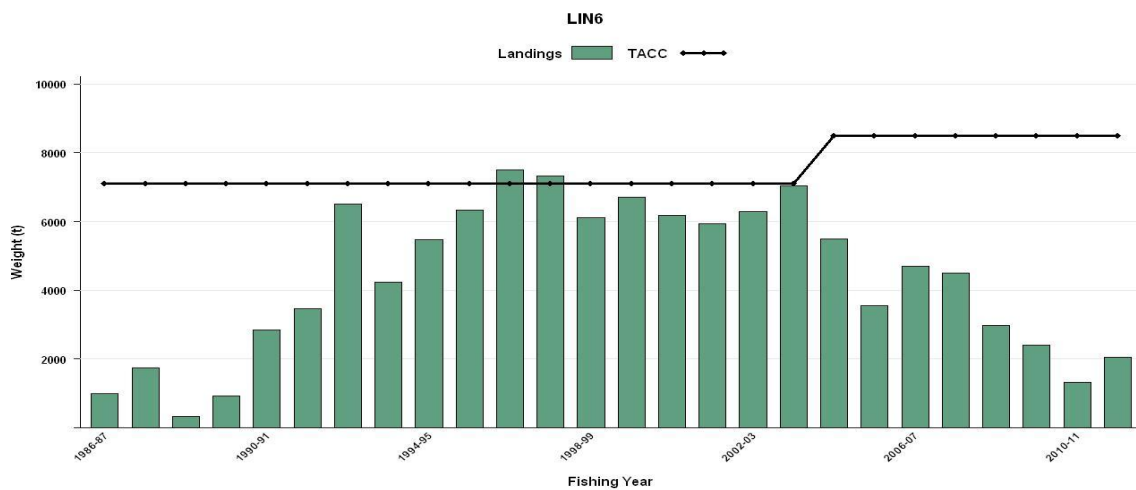


Figure 3: Reported Catch Landings and TACC (t) for LIN 6 from fishing year 1986/87 to the 2010/11 fishing year

### *Recreational Catch*

20 There have been no reliable estimates of recreational harvest of ling. In 1992-93 and 1996 some recreational catches of ling were reported in LIN 5, but not in sufficient quantities to provide any reliable estimate.

### *Māori Customary Catch*

21 There have been no customary authorisations issued by tangata tiaki for harvest of ling from either LIN 5 or 6 by customary Māori fishers.

### **Stock Assessment**

22 Ling in QMAs 5 and 6 are treated as two biological stocks for assessment purposes: Campbell Plateau and Stewart-Snares shelf (LIN 5, and LIN 6 west of 176° E), and Bounty Plateau (LIN 6 east of 176° E). The part of LIN6 on the Bounty Plateau is regarded as a separate biological stock, is relatively small, being perhaps 5% of the size of the LIN 5 and 6 stocks.

23 The Bounty Plateau ling fishery is prosecuted almost entirely by autoliners, and has only been fished only sporadically in recent years.<sup>4</sup> The most recent stock assessment for this fishery was 2006. The stock status was estimated to be 61%  $B_0$ , very likely (>90%) to be at or above the management target. Increases to catch levels in LIN 6 are thought unlikely to impact this fishery. As in previous assessments, this stock has been excluded from current analysis.

24 The 2012 stock assessment for LIN 5 and 6 estimated the combined stocks to be above the biomass that will produce the maximum sustainable yield ( $B_{MSY}$ ) and above the default management target (40%  $B_0$ ). This assessment indicates that higher TACCs and catches are likely to be sustainable for these stocks.

25 Although estimates of current and virgin stock size are very imprecise, it is most unlikely that  $B_0$  was lower than 200,000 t for this stock, and it is very likely that current biomass is greater than 70% of  $B_0$ .

26 The next stock assessment is scheduled for 2014.

### **Management Approach**

27 Ling 5 and 6 are managed through the National Fisheries Plan for Deepwater and Middle-depth Fisheries (National Deepwater Plan). The species-specific chapter of Part II of the National Deepwater Plan for ling was completed in 2012. This chapter sets default management targets and limits for ling stocks (Table 1).

**Table 1: Default reference points and associated management response used in ling fisheries**

<sup>4</sup> Catches totalled 1002 t for the fishing years between 2006/07 and 2011/12 with catches varying between 497 t in 2007/08 but only one (1) t in 2009/10 and one (1) t in 2011/12.



Reference point	Management response
Management target of 40% B <sub>0</sub>	The stock is permitted to fluctuate around this management target. TAC/TACC changes will be employed to move stock toward or above target.
Soft limit of 20% B <sub>0</sub>	A formal, time-constrained rebuilding plan will be implemented if this limit is reached.
Hard limit of 10% B <sub>0</sub>	The limit below which a fishery will be considered for closure.

28 The current management approach for all biological ling stocks is based on frequent stock assessments and leads to regular reviews of the TAC/TACCs. Stock status is determined using the best available scientific information. These TAC/TACC reviews are conducted and other management responses implemented to ensure the stocks are managed within the default biological targets and limits as set out in the Harvest Strategy Standard.

29 The evidence that the stock size has been relatively high and that exploitation has been light, suggests that a modest TACC increase is unlikely to adversely affect the stock. The scientific advice, therefore, is that a TACC increase of the order of about 10% would not cause undue risks for stock sustainability.

## PROPOSED RESPONSE

30 MPI is consulting on the following management options for setting TACs, TACCs and allowances for LIN 5 and 6 (Tables 2 and 3):

**Table 2: Proposed TACs, TACCs and allowances for LIN 5**

Option	Allowances				Other sources of fishing related mortality (t)
	TAC (t)	TACC (t)	Customary Māori (t)	Recreational (t)	
Option 1 (Status Quo)	3,633	3,595	1	1	36
Option 2	4,036	3,955	1	1	79

**Table 3: Proposed TACs, TACCs and allowances for LIN 6**

Option	Allowances				Other sources of fishing related mortality (t)
	TAC (t)	TACC (t)	Customary Māori (t)	Recreational (t)	
Option 1 (Status Quo)	8,590	8,505	0	0	85
Option 2	9,450	9,356	0	0	94

31 Section 13 of the Act requires the Minister to set TACs for the LIN 5 and 6 stocks that enable them to be maintained at or above a level that will produce the maximum sustainable yield (B<sub>MSY</sub>). Where reliable estimates are not available, s 13(2A) of the Act requires the Minister to use the best available information to set a TAC that is not inconsistent with the objective of moving the stock towards B<sub>MSY</sub>.

32 Based on the 2012 stock assessment, the option to increase the TAC is consistent with the objective of maintaining LIN 5 and 6 at or above the level that can produce the maximum sustainable yield. The rationale for increasing the catch limit in LIN 5 and 6 (when LIN 6 is under-caught), is to maintain relativity of the catch between the LIN 5 and 6 TACCs as a proportion of the biological distribution of the stock.

33 MPI accepts that an increase to LIN 6 may not be necessary given the extent of the under-catch in LIN 6. Should the Minister decide not to increase the LIN 6 TAC, future management decisions would have to be mindful of the relative increase of fishing pressure on the LIN 5 stock compared to LIN 6.

34 For both Options 1 and 2, MPI proposes to retain the current recreational and customary allowance of one tonne each in LIN 5 to account for any catch that may be taken. MPI proposes to also retain the nil recreational and customary allowance in LIN 6, as it is a remote, exposed and a challenging environment for non-commercial fishers.

### **Option 1 (Status Quo)**

35 Option 1 proposes no change to current TACs, TACCs and allowances for 2013/14. The status quo does not allow industry to obtain the benefit of the likely higher ling abundance and thereby increased revenue from higher catches.

36 With the status of the stock estimated to be able to support a higher catch, there are lost opportunities for utilisation. However, retaining the TAC would provide increased certainty that the LIN 5 and 6 stocks remain at or above  $B_{MSY}$ . Although the assessment for LIN 5 and 6 stock is uncertain, MPI considers the stock is likely to be well above  $B_{MSY}$  and a highly cautious approach, represented by retaining the status quo, is not necessary at this time.

### *Other Sources of Fishing Related Mortality*

37 Some unrecorded mortality of ling may result from fish escaping through the mesh of trawl nets and accidental loss of fish (from lost or ripped codends etc.), that subsequently die from injuries. Unreported discarding also represents a potential source of unrecorded mortality in LIN 5. Some mortality can also be expected of ling lost during the retrieval of longlines.

38 There is a general lack of hard data on this subject. There are multiple variables to take into account, each interacting with the other in a complex manner depending on the circumstances; variables such as mesh size, mesh type, speed of tow, volume of the catch, position of the net in the water column, behaviour of the fish in the net, and composition of the catch in the net all have varying roles to play. As these variables change they will influence escapement and injury of fish in the net.

39 Historically, the allowance for other sources of fishing-related mortality in LIN 5 has been set at 1% of the TACC. However, potential drivers for misreporting and non-reporting of

catches have been identified and it is considered that the TAC should include a higher allowance to address this issue.<sup>5</sup>

40 For LIN 5 only, MPI proposes increasing the allowance for other sources of fishing-related mortality to 2% of the TACC. This allowance is required to take account of ling mortality that is not reported such as ling lost due to burst nets, broken hooks, ling that are damaged by fishing activity but not caught, or fish that have been discarded at sea and not reported.

41 The key reason for the proposed difference between the allowance between LIN 5 and LIN 6 are the relative lack of available LIN 5 ACE, the relatively high price of LIN 5 ACE compared to LIN 6. These factors combine to provide incentives to discard or misreport fish.

## **Option 2**

### *Economic benefits of Option 2*

42 Increasing the LIN 5 and 6 TACCs by 10% as proposed, will have direct benefits to industry. On the basis of the export value of the most common product state exported, 360 t of ling is worth approximately \$1.33 million.<sup>6</sup> MPI does not expect much, if any, increased catch from any increase of the LIN 6 TAC. As such, additional revenue figures for this fishery have not been estimated.

43 MPI considers that the proposed increase to the LIN 5 and 6 TACCs are unlikely to affect the size and availability of ling for non-commercial fishers. Ling is not a significant target species for non-commercial fishers in the area and the target commercial fishery lies well offshore in LIN 5 and 6.

## **Other Key Considerations**

44 When making a decision concerning the TAC for a stock, the Minister must have regard to interdependence of stocks, the biological characteristics (discussed above) and any environmental conditions affecting the stock.

45 The fishing methods used in ling fishing have different environmental effects. Trawl fisheries interact with some seabirds and marine mammals, and those that fish on the bottom also interact with the seabed and the associated benthic environment.

46 Longline fisheries interact with seabirds and also with the seabed and associated benthic environment however less so than trawl gear.

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<sup>5</sup> Non-reporting is discarding catches that are not reported at all, whereas area misreporting, known colloquially as 'trucking'; occurs when fish caught in one QMA is deliberately misreported as caught in another.

<sup>6</sup> Based export figures for 2012 calendar year of \$3.69 / kg greenweight. This uses frozen fillets (TSK) to estimate the greenweight export price as this form accounted for 63.1% of export earnings and 50.3% of export volume for ling in the 2012 calendar year. Precise revenue loss is difficult to estimate and will be influenced by factors such as commodity prices, exchange rate, catching costs and export state.

47 As discussed below, there are no significant impacts of the ling fishery on protected species. An increased fishing effort marginally above the current effort in LIN 5 through a 10% TAC increase is very unlikely to result in adverse effects on the aquatic environment.

### *Seabirds*

48 Seabird captures in trawl fisheries for ling occur in two main ways. They either collide with or are struck by the moving trawl warps (usually larger seabirds) or are caught in the net when it is on the surface during deployment and retrieval (usually smaller seabirds). Regulations passed in 2005 requiring vessels to deploy bird scaring devices have been successful in reducing the number of seabird interactions and mortalities in trawl fisheries.<sup>7</sup>

49 In addition to the mandatory mitigation measures, MPI and industry work collaboratively to ensure all trawlers over 28m in length have, and follow, a Vessel Management Plan (VMP). VMPs specify the measures that must be followed onboard each vessel so as to reduce the risk of incidental seabird captures. MPI fisheries observers monitor each vessel's performance against its VMP and if a vessel is not complying with the guidelines in its VMP, the Director-General has the option of putting vessel-specific regulations to better control management practices.

50 In bottom longline fisheries, birds are mainly captured during shooting of the gear,<sup>8</sup> as seabirds try to take the bait off the hook and accidentally get hooked. The risk of capture is also present during hauling when any remaining baits are near the surface. In 2008, seabird sustainability measures for bottom longlines were put in place to minimise and mitigate seabird interactions in longline fisheries. Seabird interactions with large autoline vessels have declined substantially since 2000, particularly after the introduction of bird scaring devices in 2008 (e.g. 19 large birds in 2000/01; three large birds in 2009/10).

51 Seabird capture numbers are based on data collected by MPI observers, as historically there was no legislative requirement for fishers to report interactions with and captures of non-fish species to MPI.<sup>9</sup> As of 1 October 2008, it has been a requirement for fishers to report all interactions on the non-fish and protected species by-catch reporting form, which is adding to information about seabird interactions in New Zealand fisheries.

52 Several risk assessments have been carried out in recent years to assess the potential effect of fishing related fatalities on New Zealand seabird populations. These risk assessments include approaches that use qualitative scoring to assess the population impacts, known as level-1 assessments, and semi-quantitative or level-2 assessments. The level-2 risk assessments use both an estimate of the number of fishing-related fatalities, and a quantitative assessment of the likely impact of these fatalities on the respective seabird populations.

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<sup>7</sup> Fisheries (Commercial Fishing) Amendment Regulations 2006/027.

<sup>8</sup> The deployment and retrieval of fishing gear is most commonly referred to as "shooting and hauling".

<sup>9</sup> Reporting requirements for non-fish bycatch before 2008 included recording the event and details in the vessel's log and reporting it to a fishery officer upon return to port. However, records from this reporting stream are minimal.

53 MPI has finalised a new National Plan of Action (NPOA) for seabirds that puts in place a risk-based approach to managing fishing interactions with seabirds, targeting mitigation on those species most at risk. Preliminary results of the application of this approach have indicated that large trawlers do not pose a significant risk to any seabird species under current mitigation management regimes. The risk assessment does indicate that small inshore vessels may pose a risk to some seabird species, rather than vessels operating in LIN 5 and 6 fisheries.

#### *Marine Mammals*

54 New Zealand fur seals are occasionally captured in ling fisheries. The majority of New Zealand fur seal captures take place in trawl fisheries, with only one known incident of New Zealand fur seal capture while targeting ling reported in historical longline data.<sup>10</sup>

55 Although the New Zealand fur seal is a protected species under the Marine Mammals Protection Act 1978, the species status has been classified by the Department of Conservation as 'Not Threatened'. In addition, the New Zealand fur seal population is thought to be expanding around the coast of New Zealand over the last 20 to 30 years.

56 The ling fisheries are not known to interact with any other marine mammals, although there have been reported captures of pilot whales in the past, one in 2001/02 and two in 2002/03. All three of these occurred in the longline fishery. There have been no further reports of interactions with any cetaceans.

57 Industry has developed a Marine Mammal Operating Procedure (MMOP), which is generic across all trawlers greater than 28m in length. The MMOP describes a range of procedures that a vessel and crew should follow to reduce the risk of marine mammal captures. MPI monitors and audits vessel performance against the MMOP via the Ministry Observer Programme.

#### *Fishing interactions*

58 Ling are often taken as a bycatch in hoki target trawl fisheries. Both species are widely distributed in FMAs 5 and 6 at depths of 300-800m. Target line fisheries for ling have the main bycatch species of spiny dogfish, sea perch, sharks and skates and ribaldo. Fish by-catch include sharks and skates, (trawl fisheries), and sharks and skates (longline fisheries).

59 A significant part of the LIN 5 and 6 catch is taken by a target bottom longline fishery. In addition to hoki, bottom trawl of LIN 5 and 6 is taken to a lesser degree while targeting squid, silver warehou, and hake.

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<sup>10</sup> This was in 2002 and occurred on the Bounty Plateau area of LIN 6.

### *Interdependence of stocks*

60 There is no information to suggest that the interdependence of stocks should affect the levels of LIN 5 and 6 at this time, given that the fishery primarily targets aggregations of ling and bycatch proportions are low. In terms of their biological characteristics, ling live to about 30 years growing fastest in Cook Strait but slower in the Sub-Antarctic (Campbell Plateau). These biological characteristics are taken into account in the assessment and management of stock. No specific environmental conditions that would affect the level of the TAC for LIN 5 and 6 have been identified.

### *Benthic impacts*

61 Although ling is a mid-water species, it is often caught by bottom trawl of mid-water trawl fished on or near the bottom which can have an impact of the benthic habitat. Most ling in LIN 5 and 6 are taken by bottom trawl or longlines which contact with the seabed, but are likely to have minimal impacts on the habitat.

62 In recent years, management measures to address the effects of deepwater trawl activity have focused on 'avoiding' these effects. This has been achieved through closing areas to bottom trawling; first with seamount closures in 2001 and then with Benthic Protection Areas (BPAs). The implementation of BPAs in 2007 effectively closed over 30% of New Zealand's EEZ to bottom trawling. It also implemented a monitoring regime to ensure these closures are adhered to.

63 The trawl footprint of LIN 5 and 6 will continue to be mapped and monitored annually.

### **Other Management Measures**

64 MPI is not proposing to make any changes to the deemed values for LIN 5 and 6, or any other management measures.

## **CONCLUSION**

65 Though the 2012 stock assessment presents some uncertainty, it is the best available information for consideration. It suggests that the estimated current stock status for LIN 5 and 6 is above the biomass that will produce the maximum sustainable yield ( $B_{MSY}$ ) and above the default management target ( $40\% B_0$ ). This healthy stock status estimate indicates that a higher TAC is likely to be sustainable.

66 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 by both MPI and stakeholders before determining making a final decision.