



Interim Set Net Measures to manage the risk of Maui's dolphin Mortality

MAF Discussion Paper No: 2012/03

ISBN 978-0-478-38808-4 (online)
ISSN 2230-2816 (online)

14 March 2011



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Contents	Page
Purpose	1
Background	2
Current protection from fishing-related threats	2
New information available	3
Maui's dolphin mortality in commercial set net	3
Maui's dolphin abundance estimate	3
Review of Maui's dolphin threat management	3
Need for interim measures	4
Options	5
Economic impact of option	6
Implementation	6
Timeframe for Implementation	7
Conclusion	8
Appendices	9
Appendix 1: WCNI Fishing Prohibitions and Marine Mammal Sanctuary to Protect Maui's Dolphins	9
Appendix 2: Proposed interim set net closure	11
References	12

Purpose

The Ministry of Agriculture and Forestry (MAF) is seeking submissions on a proposed interim set net fishing closure (recreational and commercial) from Pariokariwa Point (north Taranaki) to Hawera to manage fishing-related threats to Maui's dolphins. The interim measure would not be permanent; it will remain in place while review of the Maui's portion of the Hector's and Maui's Dolphin Threat Management Plan (TMP) is undertaken and decisions as a result of this review are made.

Submissions should be received before **4pm on Wednesday 11 April 2012** and can be sent to Kara McKelvey, Ministry of Agriculture and Forestry, PO Box 1020, Wellington 6140 or to kara.mckelvey@maf.govt.nz.

The scope of this paper is limited solely to consideration of interim measures to protect Maui's dolphins from the affects of set net fishing in the Taranaki area while review of the TMP is undertaken. A wider review of other threats and measures will be undertaken as part of the review of the TMP.

The Department of Conservation (DOC) is also consulting on a proposal to extend the West Coast North Island Marine Mammal Sanctuary (MMS) to Hawera and out to 12 nautical miles, with restrictions on seismic surveys throughout the sanctuary. Should you wish to also make a submission on this please see the DOC website at www.doc.govt.nz

Background

Maui's dolphins are protected species listed under the Marine Mammals Protection Act 1978. They are endemic to New Zealand and one of the world's rarest dolphins. Maui's dolphins are classified as 'nationally critical' and 'critically endangered' by the DOC and the International Union for the Conservation of Nature (IUCN).

Maui's dolphins are susceptible to human-induced threats. Human threats include fishing, boat strike, mining, construction, coastal development, pollution, marine tourism, marine farming and climate change. Fishing is however, the greatest cause of human-induced mortality for Maui's dolphins, where cause of death is known. Fishing-related threats include entanglement in set nets, trawl nets, drift nets and crayfish pot lines.

The following biological characteristics of Maui's dolphins make them susceptible to the effects of human-induced mortality, including fishing-related mortality. Maui's dolphins:

- become sexually mature at a relatively late age (about 7-9 years);
- are relatively short lived (about 20 years);
- have a low reproduction rate (a female has a single calf every 2-3 years);
- favour shallow waters less than 100 m deep and have a localised inshore distribution (i.e. an overlap with many human coastal activities);
- have a small population (and consequently may have few breeding females).

The environmental principles in the Fisheries Act 1996 require the Minister for Primary Industries (the Minister) to maintain associated or dependant species at a level that ensures their long-term viability.

CURRENT PROTECTION FROM FISHING-RELATED THREATS

The Hector's and Maui's dolphin Threat Management Plan (TMP) was jointly developed by MAF and DOC and consulted upon in 2007. Measures to protect Maui's dolphins were put in place through the TMP in 2008.

Set net, trawl and drift net fishing closures (under the Fisheries Act) are in place to protect Maui's dolphins from fishing-related threats on the west coast of the North Island (WCNI). See Appendix One for maps of these restrictions.

The current set net ban extends from Maunganui Bluff (north of Auckland) south to Pariokariwa Point (north Taranaki) offshore to 7 nautical miles (nm). The boundary of this area was based on scientific research establishing this to be the known range for Maui's dolphins. The TMP noted that while there had been occasional, unsubstantiated public sightings of Maui's dolphins south of the currently closed area, there had been no recent scientific research sightings in this area. These sightings were considered to represent isolated and infrequent occurrences. The then Minister of Fisheries decided that Taranaki is unlikely to be part of the Maui's dolphin current range.

New information available

MAUI'S DOLPHIN MORTALITY IN COMMERCIAL SET NET

A dolphin mortality, considered by MAF likely to be a Maui's, occurred in a commercial set net off Cape Egmont, in Taranaki on 02/01/12 (hereafter referred to as the January mortality). See Appendix Two for the location of this incident (indicated by a red diamond).

The mortality was reported by the fisher to be a Hector's dolphin. It is, however, not possible to visually distinguish between Hector's and Maui's dolphins. MAF considered that the dolphin was likely to be a Maui's dolphin, based on the information reported by the fisher, in regard to the location of the incident, as well as MAF's knowledge of Maui's and their distribution. However, the sub-species identification remains uncertain and MAF's assessment is strongly disputed by industry.

This mortality occurred outside of the current set net fishing closure and the MMS.

MAUI'S DOLPHIN ABUNDANCE ESTIMATE

New research¹ estimating the population abundance of Maui's dolphins has been released by DOC. This research estimates the population abundance of Maui's dolphins to be 55 (with 95% confidence intervals (c.i) that the population is between 48 and 69), which is lower than the 2005 estimate (111 individuals with 95% c.i of 48 – 252).

DOC is also commissioning an updated Potential Biological Removal (PBR) estimate based on the new population abundance from independent researchers. The PBR analysis estimates the maximum number of dolphins, not including natural mortalities, which may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population (OSP) size with high probability.

A preliminary assessment from MAF suggests that the new PBR will mean the population can sustain 1 human-induced mortality every 10 to 23 years without impacting on the ability of the population to rebuild to its optimum sustainable population size.²

Review of Maui's dolphin threat management

MAF and DOC consider that, in light of the above information, a review of Maui's dolphin threat management is necessary. Both agencies consider that the most appropriate mechanism to undertake this is through a staged review of the TMP. MAF and DOC expect the review to be completed by November 2012 with recommendations provided to Ministers.

¹ Hamner, R.M.; Oremus, M.; Stanley, M.; Brown, P.; Constantine, R.; Baker, C.S. 2012: Estimating the abundance and effective population size of Maui's dolphins using microsatellite genotypes in 2010–11, with retrospective matching to 2001–07. Department of Conservation, Auckland. 44 p

² This preliminary assessment of PBR (Wade 1998) assumes the following input values: a minimum abundance estimate of 48 (the lower 20th percentile (log-normal) of the estimate from Hamner et al. 2012), a recovery factor of 0.1 (Taylor et al. 2003), and a maximum net productivity rate of either 0.018 (Slooten and Lad 1991) or 0.04 (Wade 1998). These maximum net productivity rate values do not include Allee effects, which are probable given current population size. Allee effects would reduce maximum population growth rate and hence reduce the number of human-induced mortalities the population could sustain.

A review would be undertaken for Maui's dolphins first, given the new information, followed by a review for Hector's dolphins.

The scope of the Maui's portion of the review will include a risk assessment of all impacts on Maui's dolphins (human-induced and non human-induced) and provide Ministers with advice on various mitigation measures for human-induced threats, research priorities and monitoring.

Need for interim measures

Where there is overlap between fishing activity and dolphin distribution there is a risk of mortality. The likelihood of a further mortality from set net fishing in the area south of the current fishing restrictions is considered by MAF to be very low because:

- The area south of the closure is not within the Maui's dolphin's known core range, as established by scientific research.
- The TMP noted that Maui's dolphin sightings in this area represent isolated and infrequent dolphin occurrences south of their range. There have, however, been unverified public sightings in this area as well as the January set net mortality since the TMP was finalised.
- There are existing measures in place to protect against fishing-related mortality in areas where Maui's dolphins are most abundant.
- There is relatively low fishing effort occurring in the area south of the set net closure.

The consequence of an additional fishing mortality to the Maui's dolphin population is considered by MAF to be high because:

- The Maui's population is at a very low level (latest estimate of 55 individuals) and each or any additional mortality (including natural mortality) increases the chance that the population will not be able to recover.³
- Given the new population estimate a preliminary assessment against the PBR analysis suggests that the population can sustain only 1 human-induced mortality every 10 to 23 years without impacting on the ability of the population to rebuild to its OSP.
- Since 2002, a total of 12 Maui's dolphin mortalities have been recorded in the DOC, incident database. Three of these mortalities were from interactions with set nets (two considered to be from a recreational set net near or in the Manukau Harbour and one being the January commercial mortality).
- Although there is uncertainty around historical abundance estimates, information suggests that the Maui's dolphin population has declined from higher levels of abundance.⁴
- The loss of one or two breeding females diminishes the resilience of the population and its ability to respond to any further impact.⁵

The following factors should also be taken into account:

- Although it cannot be confirmed, MAF considers the January mortality to be a Maui's dolphin (see discussion above).

³ It is uncertain whether the population is below at or above the point where it may not be able to rebuild.

⁴ Pilcher and Baker (2000) and Pilcher (2000).

⁵ The January dolphin mortality was reported by the fisher to be a female and another female Maui's dolphin was discovered dead (cause of death unknown) on the beach in Manukau Harbour in October 2011.

- A small population size means that Maui's dolphins may go extinct even in the absence of human-induced mortality, through stochastic events (e.g. disease or catastrophic weather) or depensation effects.

Options

Maui's dolphin presence in the Taranaki area, south of the current set net closure, is uncertain. Before considering options for area closure the Minister must decide whether or not he considers measures are necessary to protect Maui's dolphins from set nets.

In determining the area for which an interim set net closure would apply there are a range of options in regard to the offshore and alongshore extent of the area. For example MAF has given consideration to the most appropriate southern boundary of the closure and the how far offshore the closure would extend (i.e. 2nm, 4nm or 7nm). Subject to final advice from MAF and stakeholder submissions the Minister could choose to implement any option within this spectrum.

There are a number of uncertainties relating to the southern and offshore distribution of Maui's dolphins. MAF has considered these uncertainties and proposes the following as the option which best manages the risk to Maui's dolphins:

- Recreational and commercial set net ban from Pariokariwa Point to Hawera offshore to 4 nm.

Appendix Two provides a map of current area closed to set net fishing and the proposed area of the interim closure.

An offshore boundary of the set net ban to 4nm is considered to significantly reduce the risk of further set net fisheries-related mortality south of the current closure because:

- The Taranaki area is not considered to be part of the Maui's dolphin core range. Dolphins are considered to be rare and infrequent visitors to the area. Scientific information indicates that Maui's dolphins are most prevalent between 0-4nm from shore. The January mortality is the first reported mortality of a dolphin (Hector's or Maui's) in a commercial set net in this area. Given that dolphins are less frequently found in this area than in their core range, MAF consider that a set net ban out to 4nm will reduce the risk to a manageable level.

The southern boundary of these measures to Hawera is consistent with new research on Maui's dolphin home ranges, which are larger than previously believed.⁶ Research found the maximum distance between two sightings of the same individual was 80 km, and several moved in the order of 30-40 km.⁷ Hawera is approximately 79km from where the January dolphin mortality occurred.

⁶ Hamner, R.M.; Oremus, M.; Stanley, M.; Brown, P.; Constantine, R.; Baker, C.S. 2012: Estimating the abundance and effective population size of Maui's dolphins using microsatellite genotypes in 2010–11, with retrospective matching to 2001–07. Department of Conservation, Auckland. 44 p

⁷ Ibid.

ECONOMIC IMPACT OF OPTION

The primary cost associated with these measures is the economic impact on the fishing industry and the wider economy.

Based on fisher reporting data the table below estimates the expected economic impacts of the proposed option.⁸

Annual Impact	Proposed option
Direct harvesting income lost	\$49,667
Processing income lost	\$91,387
Indirect income lost	\$111,254
Induced income lost	\$81,454
Quota value	\$0.00
Total	\$333,763

These estimates should, however, be treated as indicative because they do not fully account for the following economic impacts:

- The future impacts on the economy (i.e. the value of quota) if the option was to become permanent or left in place for a period exceeding 12 months.
- The ability of fishers to shift their effort outside of the ban noting that the current set net closure has already resulted in a significant area loss.

There are estimated to be at least six operators out of New Plymouth that will be directly affected by the closure. These operators may not be able to continue fishing outside of the proposed closure (further offshore or south) in a way that provides the same economic return and/or ensures the safety of the crew or vessel. This means that the interim closure may shut them out of the fishery.

The value of recreational set net fishing is unable to be quantified. However it is likely that the proposed measure will have a significant impact on recreational set net fishers in the region and that these fishers are unlikely to set net further offshore or travel further to undertake this activity. Recreational set net fishing is a culturally important activity for a number of New Zealanders that rely on it for food and leisure.

Implementation

The proposed interim set net closure will be implemented under the Fisheries Act 1996 (the Act). Tools that can be utilised under the Act to implement the proposed closure are:

- Emergency measures under section 16
- Sustainability measures under section 11
- Avoid, remedy or mitigate the effect of fishing related mortality on any protected species under section 15.

⁸ Information to inform this analysis is based on fisher catch reporting data where it is provided by start position with the same methodology applied to it that was used in the development of the TMP. Vessels under six metres in length only report their position by statistical area. Statistical areas are significantly larger than the areas under analysis. It is estimated that these vessels, less than 6m, account for 5.5% of the total catch and 8.9% of total number events occurring in these statistical areas. An additional 9% has been added to the estimates to account for this uncertainty.

MAF has a preference for section 11. Section 11 of the Act allows the Minister to set or vary any sustainability measure for one or more stocks or areas after taking into account the affects of fishing on the environment, existing controls under the Act and the natural variability of the stock concerned.

Section 11 sustainability measures can be put in place by either regulation or Gazette notice. The latter results in a shorter timeframe and is preferred by MAF.

TIMEFRAME FOR IMPLEMENTATION

MAF considers that a responsive implementation period is necessary should the Minister consider the interim set net closure necessary. MAF considers that a set net closure could be implemented by mid-May 2012.

Following on from consultation MAF intend to prepare and provide final advice (including analysis of submissions) to the Minister for decision.

Conclusion

New information has become available on Maui's dolphins which require review of their threat management. While the review is being undertaken there is risk of further Maui's dolphin mortalities occurring. MAF is proposing to manage the threat of fishing-related mortality from recreational and commercial set nets in the interim while this review is being undertaken.

The measure being proposed by MAF is to ban the use of set nets by recreational and commercial fishers from Pariokariwa Point to Hawera and out to 4 nautical miles. This is in addition to the current set net closure on the west coast of the North Island.

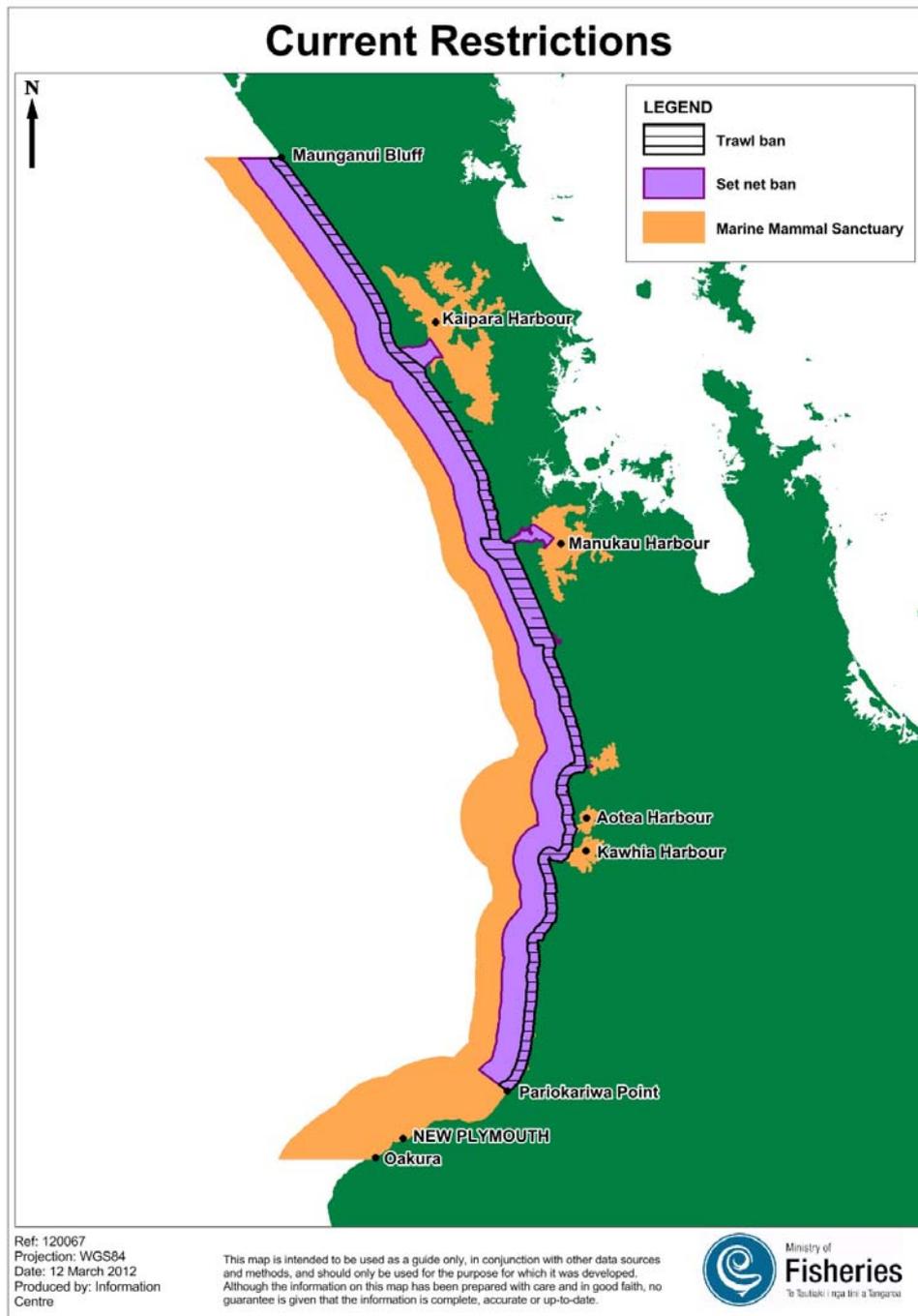
MAF is seeking submissions on this proposed measure and/or any alternative options, as well as any other detail discussed in this paper. Submissions should be received by **4pm on 11 April 2012**. Please address your submissions to Kara McKelvey, Ministry of Agriculture and Forestry, PO Box 1020, Wellington 6140 or to kara.mckelvey@maf.govt.nz.

Should you wish to also make a submission on the DOC proposal to extend the West Coast North Island Marine Mammal Sanctuary to Hawera and out to 12 nautical miles with restrictions on seismic surveys, please see the DOC website at www.doc.govt.nz.

Appendices

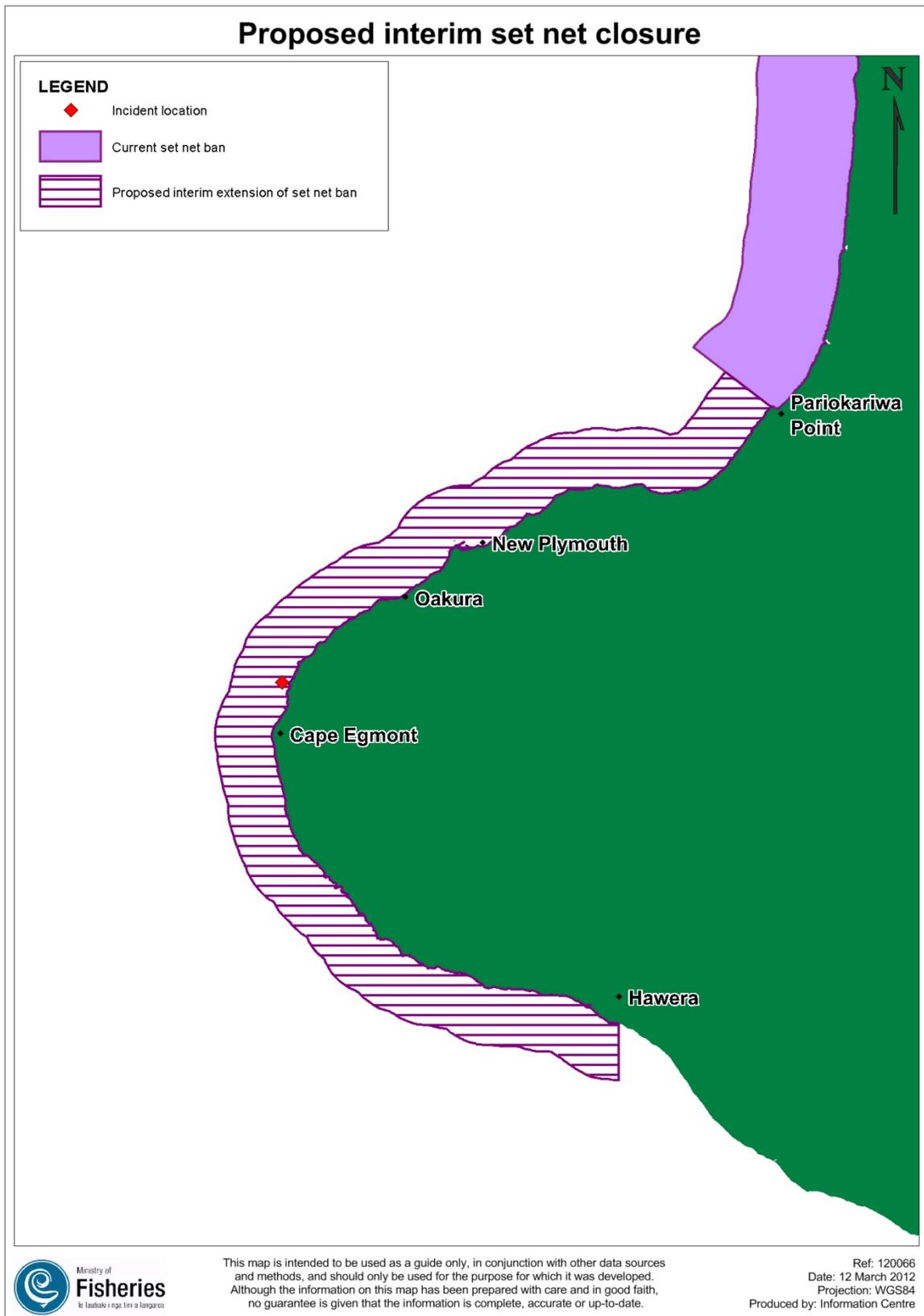
APPENDIX 1: WCNI FISHING PROHIBITIONS AND MMS TO PROTECT MAUI'S DOLPHINS

The map below shows the WCNI trawl and set net bans and the DOC Marine Mammal Sanctuary. Drift netting is also prohibited in any part of the Waikato River.⁹



⁹ A drift net is a net that acts by enmeshing, entrapping, or entangling any fish or marine life, and acts by drifting in the water, or on the surface of the water, and is not attached to a vessel or any point of land or the sea bed.

APPENDIX 2: PROPOSED INTERIM SET NET CLOSURE



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