

**BEFORE THE ENVIRONMENTAL PROTECTION AGENCY  
COASTAL RESOURCES LIMITED MARINE CONSENT APPLICATION**

**IN THE MATTER** of the Exclusive Economic Zone and Continental Shelf  
(Environmental Effects) Act 2012

**AND**

**IN THE MATTER** of a decision-making committee appointed to consider a  
marine consent application made by Coastal Resources  
Limited to Dispose of Dredged Material at the Northern  
Disposal Site.

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SUBMISSION OF SUPPLEMENTARY EVIDENCE OF AUCKLAND CONSERVATION BOARD  
Dated: 4 December 2018

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**1. Concerns of the Auckland Conservation Board in relation to CRL application**

In its submissions on the CRL application the Auckland Conservation Board has raised concerns about the potential effects of the transiting tug and barge combination used for transporting dredge spoil to the dump site. The transit routes traverse an area of the marine environment with high natural biodiversity which is regarded as outstanding and consequently has been protected through its own legislation, the Hauraki Gulf Marine Park Act 2000. The park is well known internationally for its extremely high marine mammal diversity with 33 species of marine mammals (nearly a third of the world's marine mammal species) that visit annually and at least six species of cetaceans are resident (Hauraki Gulf Forum, 2011, Hauraki Gulf Forum, 2014).

Of particular concern to the Auckland Conservation Board was the potential impacts of underwater sound emissions from the transit of vessels on the unique marine mammal populations in this area. There are extensive studies showing the impacts of vessel movements and noise on the behaviour and biology of marine mammals both in New Zealand and overseas.

In operating under its existing dumping approval the vessel has undertaken 545 trips to the dump site as at 1 October 2018 with a round trip taking between 15 – 25 hours, contributing an estimated accumulation of over 10,000 hours of underwater sound pollution injected into the Hauraki Gulf Marine Park and beyond as a result of this activity. The approval of the current EPA application will see the quantity of underwater sound emissions into the marine environment escalate significantly as a result of an even greater number of vessel movements.

**2. What Sound Emissions**

It is application and subsequent evidence CRL has not provided any data on the acoustic output of the combinations of vessels that they allow to exercise the existing dumping permit. In the absence of any data from the vessels used by CRL an examination of published output of underwater sound from tugs towing barges indicated a likely range of between 160 – 191.5 dB re 1  $\mu$ Pa @ 1m, with

sound output dominated by low frequencies which tend to travel greater distances underwater (see evidence of Dr Childerhouse). Modelling work presented to the DMC in the hearing by Prof. Jeffs indicated that underwater sound in the mid-range of these levels (i.e., 178 dB re 1  $\mu$ Pa @ 1m) in the Hauraki Gulf would be heard by a dolphin 990 m away in the inner Gulf, 2800 m away in the mid Gulf, and 3600 m away in the outer Gulf.

Dr Childerhouse and Prof. Jeffs in their joint witness statement identified the acoustic threshold guidelines of the National Oceanic and Atmospheric Administration (NOAA) in the USA as the only established acoustic threshold guidelines for marine mammals. These guidelines recommend 120 dB<sub>rms</sub> of underwater noise as the threshold for eliciting behavioral disruption in marine mammals. This sound level is based on data from bowhead whales in the Arctic Ocean, which is not equivalent to the range of marine mammal species and environmental conditions found in the Hauraki Gulf.

Regardless, in the absence of any other information provided by the applicant it is possible to model the areas of likely impact of vessel noise on the behaviour of marine mammals caused by a tug and barge on route to and from the dump site by adopting the NOAA acoustic threshold guideline. Doing so could provide a basis for formulating a consent condition to provide some protection of marine mammals from acoustic behavioural disturbance from the transits of vessels to and from the dump site, through areas of high marine mammal abundance and diversity.

Assuming the NOAA thresholds are applicable to the Hauraki Gulf requiring a source level of 120 dB<sub>rms</sub> from the vessels would have no behavioural impact on marine mammals. However, few operational vessels can achieve this comparatively low level of sound output for a working vessel.

Vessels with sound output higher than this threshold can be expected to produce an increasing large zone of acoustic behavioural disturbance of marine mammals, i.e., the distance the sound travels from the vessel before dropping below the acoustic threshold of 120 dB<sub>rms</sub> (see figure below).

The modelling shows a vessel with a source level of less than 170 dB<sub>rms</sub> creates a narrow zone of acoustic behavioural disturbance of marine mammals (see figure below).

This level of sound output is commonly achievable among commercial vessels (Veirs et al. 2016). While the uncertainty around the validity of the NOAA guidelines for the Hauraki Gulf remain, a requirement for a vessel-barge combination to have a source level of less than 170 dB<sub>rms</sub> whilst fully laden and travelling at transit speed would be a pragmatic condition on an approval, which would have the potential to reduce risk of impact to marine mammals in the Hauraki Gulf from this activity.

120dB contours for various tug source levels in Hauraki Gulf, transiting from Hobsonville to disposal site.

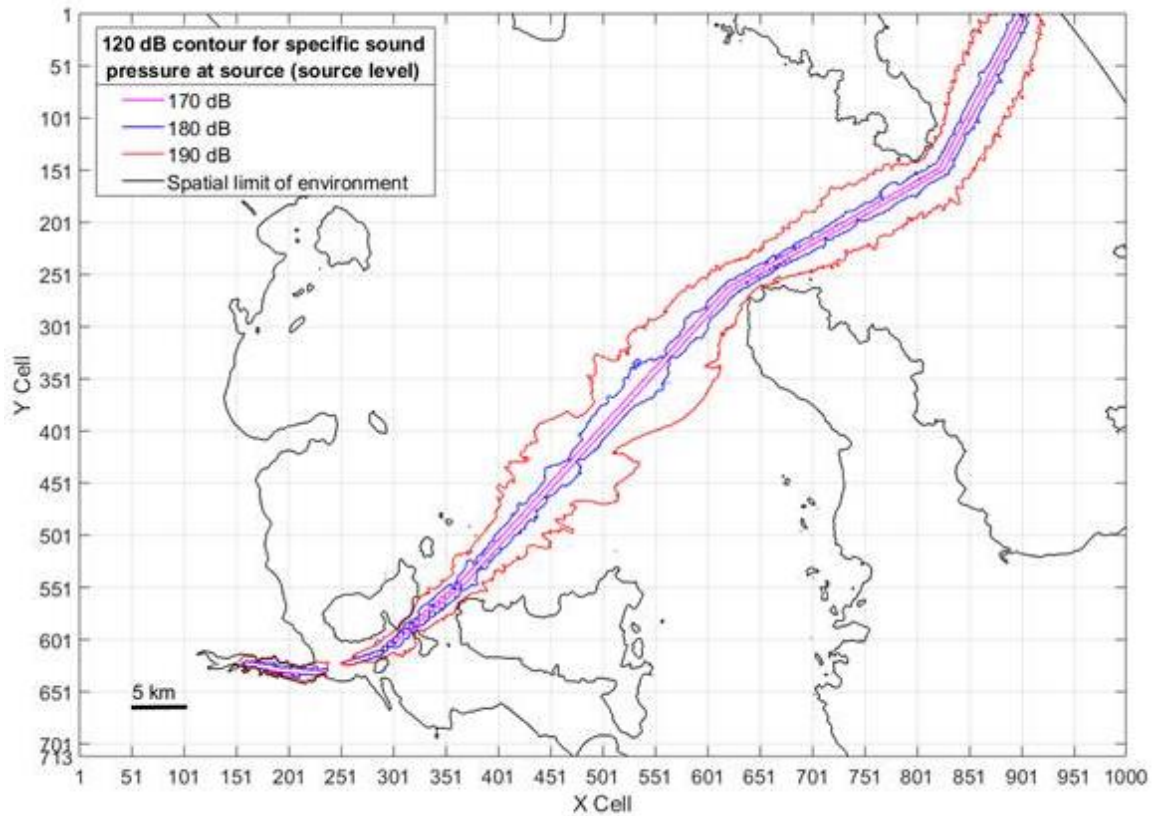


Figure: Modelled 120 dB re 1  $\mu$ Pa contours for the adjusted source levels for a tug and barge transiting the Hauraki Gulf at 6 knots. The pink coloured line corresponds to a source level of 170 dB re 1  $\mu$ Pa, while the blue and red lines represent the 180 dB re 1  $\mu$ Pa @ 1m and 190 dB re 1  $\mu$ Pa @ 1m source levels, respectively.

Thank you for the opportunity to provide this further submission on this application.

## References

Veirs, S., Veirs, V., Wood, J.D. 2016. Ship noise extends to frequencies used for echolocation by endangered killer whales. *PeerJ* 4:e1657