

BEFORE COMMISSIONERS APPOINTED BY THE CANTERBURY
REGIONAL COUNCIL

UNDER the Resource Management Act 1991

IN THE MATTER applications for resource consents by Lyttelton Port
Company for capital and maintenance dredging

TABLED AT HEARING

Application: Lyttelton Port Co.

channel deepening

Date: 5 May 2017

**SUMMARY OF EVIDENCE OF ISLAY MARSDEN FOR TE HAPŪ O NGĀTI
WHEKE, TE RŪNANGA O KOUKOURĀRATA, NGĀI TAHU SEAFOOD, AND
TE RŪNANGA O NGĀI TAHU**

5 May 2017

NATURAL RESOURCES LAW LIMITED

Solicitor: M R Christensen
(mark@naturalresourceslaw.co.nz)

PO Box 6643
Upper Riccarton
CHRISTCHURCH 8442

Tel 0274 878611

SUMMARY OF EVIDENCE

1. My name is Islay Marsden. I am a Prof of Marine Biology at the University of Canterbury with 42 years' experience, numerous publications, contract research and >60 student theses. My research speciality understanding is on the effects of disturbances on benthic organisms with a focus on mahinga kai.
2. This proposal will result in the deposition of large quantity of sediment in areas offshore of Banks Peninsula. Little is known about how this sediment will disperse and its potential to recover is not known. If the sediment does not disperse readily then measures may need to be taken to encourage dispersal and the recovery of the normal benthic communities.
3. In the case of poor weather conditions the proposal allows for dredge material to be deposited at the maintenance dredge site. This site is closer to nearby intertidal areas and may be adversely affected by capital dredging but also the ongoing maintenance dredging.
4. Benthic communities are likely to be impacted by dredging activities. The effects of the dredging activity are unlikely to be detected without good baseline information from the impacted area and undisturbed (control) sites outside of the impacted area. The current surveys have been done with little replication and taxonomic resolution.
5. Some of the baseline information is quite sparse for example there is little information on the epifauna those organisms which occur in or on the surface sediment. This includes some large shrimps, scallops, horse mussels. Such organisms are patchily distributed and in my view there needs to be further research on quantifying the presence of these epifaunal species within the Harbour prior to the dredging commencing.
6. As a consequence of capital dredging work there will irregular and ongoing sediment inputs into the harbours of Banks Peninsula. While many fish can move, sessile infaunal shellfish move very little. Although they can survive short periods of exposure they are likely to be adversely affected by irregular and ongoing impacts.
7. When bivalves such as mussels detect sediment they close up and reduce filtration. Cockles select particular components of the

suspended material separating out phytoplankton. This means they obtain less food value from the water and this can reduce their growth. In addition the sediment can reduce phytoplankton abundance and again reduce its nutritional value.

8. Sediment deposition on infaunal shellfish beds can result in smothering and changed composition can alter the attractiveness of the sediment for recruitment. Increased sediment can clog the gills of coastal bivalves, gastropods and crustaceans. Juvenile shellfish such as pāua select habitats free of sediment where they can graze on their preferred algal food.
9. Within Lyttelton and Port Levy there are significantly important cockle and pipi beds. I am currently involved with the restoration of cockle beds in Whakaraupō/Lyttelton Harbour. Pipi beds at Rapaki are particularly important but the effects of increased sedimentation on their population is unknown. There have been mortalities recorded in the past and the shellfish beds appear vulnerable to disturbances.
10. Monitoring of environmental conditions. Bivalves are locally abundant on intertidal rocky shores and present in aquaculture. They are used worldwide as indicators of coastal health. By measuring their condition, growth and recruitment they provide good assessment of estuarine health. My suggestion is that cockles, mussels and pipi are selected as indicator species to follow the normal environmental cycles in control area as well as sites potentially impacted by the capital dredging works.
11. When undertaking monitoring it is useful to use sites where there have been good data collected prior to disturbances. It is also necessary to have detailed knowledge of environmental conditions including sediment content, turbidity and chlorophyll *a* salinity etc. These are necessary to be able to specifically determine the effects of the sediment from other natural variations.

DATE 5 May 2017

Islay Marsden

