

Environmental effects of selected
Port rebuild & development plans

MARINE LIFE



From crabs and invertebrates making their homes in the soft-sediment of the seafloor, to fish feeding and breeding in the shelter of the rocky shores and reefs, Whakaraupō/Lyttelton Harbour supports a mix of marine life.

With a strong mahinga kai and food gathering tradition, combined with regular visits from Endangered tūpoupou/Hector's dolphins and the presence of some ecologically sensitive areas – the health of the Harbour is important for all. Because of this, Lyttelton Port of Christchurch (LPC) commissioned detailed assessments on the potential effects of the Port Lyttelton Plan (PLP) on the marine ecology of Whakaraupō/Lyttelton Harbour. Some of the key findings from these reports are summarised in this brochure.

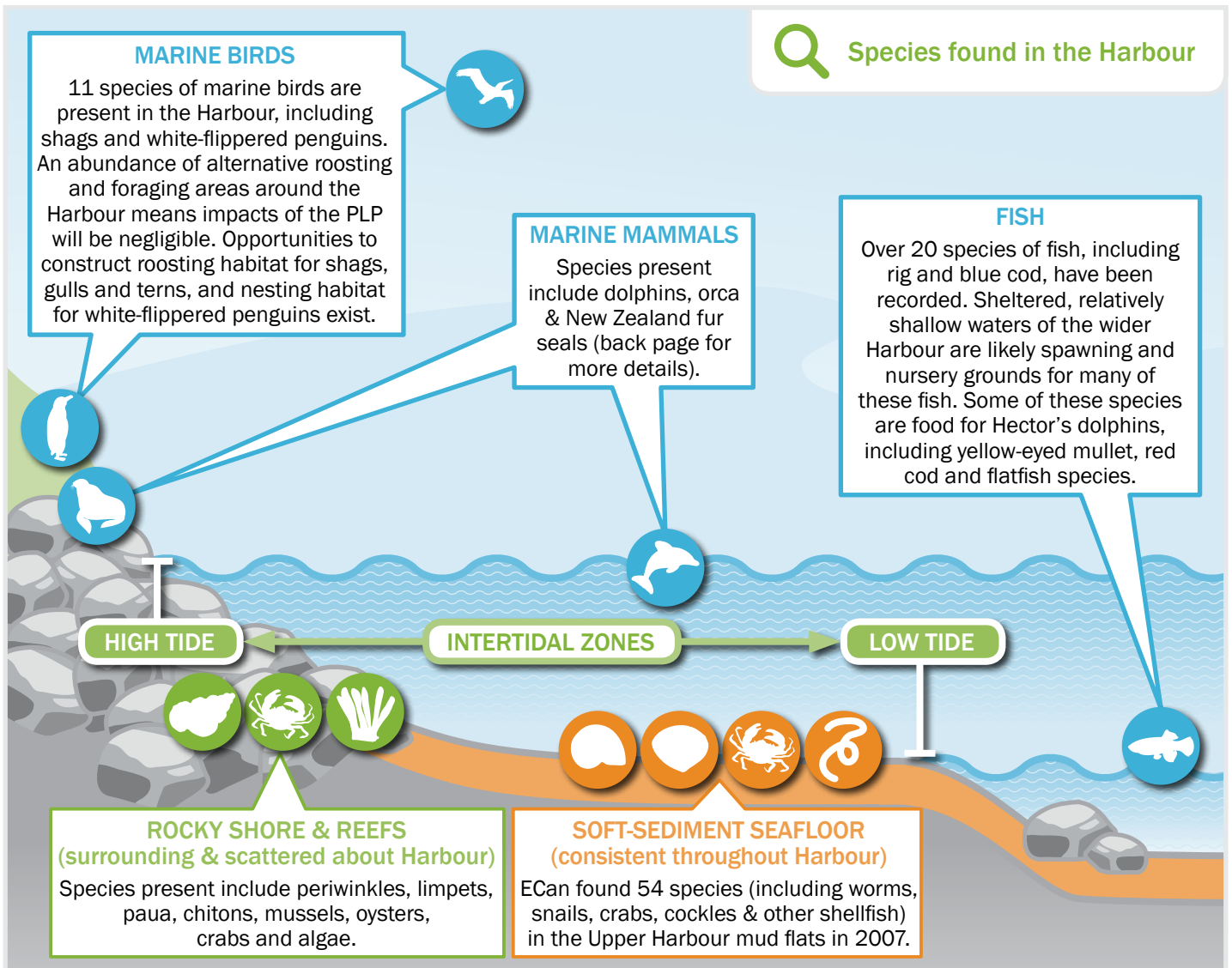




HABITATS, ECOSYSTEMS & SPECIES

The habitats and ecosystems of Whakaraupō/Lyttelton Harbour are defined by the wide-spread, muddy, soft-sediment covering the harbour floor, and intertidal zones (shore area exposed at low tide and covered at high tide) including rocky shores and reefs. Intertidal zones provide a broader range of habitats than the soft-silt harbour floor.

Most species found within the Harbour are typical of these types of environments, which are found throughout Banks Peninsula and around New Zealand.



Most New Zealand harbours contain a diverse range of habitat types, while Whakaraupō/Lyttelton Harbour is somewhat unique with its consistent, flat, muddy seafloor – generally considered sparsely populated compared to rocky shore or reefs.

The Harbour has a high natural variance of turbidity*, mostly driven

by high wind/wave events stirring up the fine sediment on the seafloor.

Species which frequent the harbour year-round, or as part of their natural range/life cycle, will be tolerant to these high levels of suspended sediment in the water.

Effects on common species

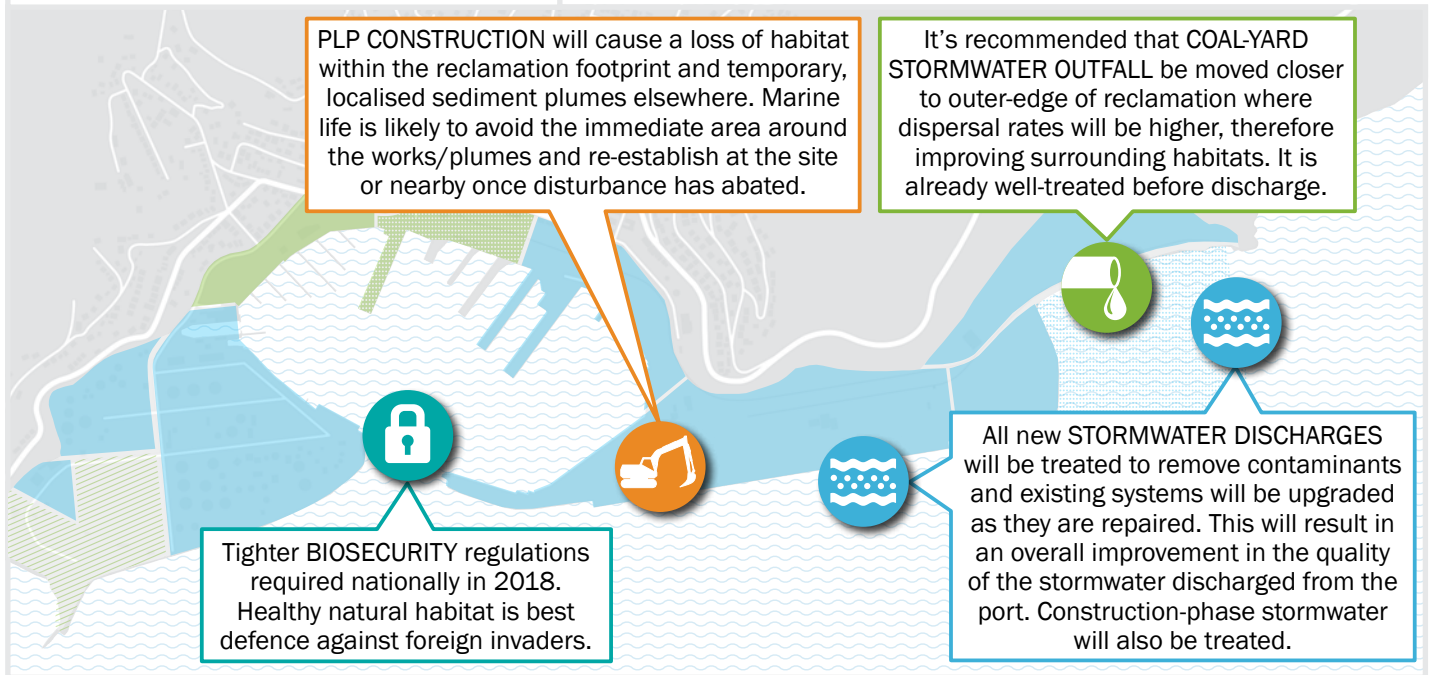
Expert reports found the overall effect of the PLP on the existing marine life in the Harbour will be minor.

More mobile species, such as fish, birds and marine mammals, are just likely to avoid areas of construction – temporarily moving to similar habitats close by and returning when disturbance has finished.

* Turbidity is a term used to measure the cloudiness of water caused by having sediment suspended in it.



Habitat impacts & mitigation



MAHINGA KAI & FOOD GATHERING

LPC and Te Hapū o Ngāti Wheke share a long term interest in the future of Whakaraupō. There is a commitment to work together and LPC is informed by a Manawhenua Advisory Committee, so we can ensure the protection of Whakaraupō and its ability to provide cultural, social and economic well-being now, and for future generations.

There are a number of ways to enhance kaimoana in Whakaraupō, including:

- mara mataitai (kaimoana gardens) reseeding new areas with important species i.e., tuaki/cockles
- supporting aquaculture
- ecological engineering – building port structures in a way that supports native biodiversity and creates kaimoana habitat.

The preparation of a Kaimoana Management Plan, in consultation

Ngāi Tahu has enduring mahinga kai/customary food gathering traditions at Whakaraupō/Lyttelton Harbour. The restoration of this historically abundant supply is naturally of great importance for the Kaitiaki Rūnanga (governing guardians) of this area, Harbour residents and LPC. Thirty-eight kaimoana/seafood species have been identified in the Harbour, including 14 species of shellfish, over 20 species of fin fish, and one species each of octopus, sea tulip and seaweed.

with Te Hapū o Ngāti Wheke and Te Rūnanga o Koukourārata, is proposed for completion prior to starting PLP reclamation.

Mātauranga Māori-based techniques, such as the Marine Cultural Health Index (MCHI), could be used to determine opportunities for kaimoana enhancement and to monitor the success of such opportunities.

Recreational fishing & food gathering

Many local people enjoy recreational fishing and seafood gathering in the Harbour. Improvements in Port stormwater design and treatment, managing construction effects, and preventing contamination will support water quality protection as the Port is repaired and developed.

Whakaraupō can be both a mahinga kai and a working port



Marine Cultural Health Index (MCHI)

A monitoring toolkit which enables establishment of restoration targets and sustainable mahinga kai harvest strategies. It incorporates a range of environmental indicators, based on local and traditional knowledge and may be used to assess and record such things as:

- current ecological state
- changes in ecosystem health over time
- effectiveness of local fishing rules and management strategies.



MARINE MAMMALS

The predominant marine mammal species found in and around Whakaraupō/Lyttelton Harbour is New Zealand’s tūpoupou/Hector’s dolphin (*Cephalorhyncus hectorii*). It is listed as Endangered and a marine mammal sanctuary exists to protect them from commercial and amateur gill net fishing. The Banks Peninsula population is the largest on the east coast of the South Island, with about 1,100 dolphins resident year round.

The Hector’s dolphin Endangered status, and the likelihood of continued population decline underscores the importance of thorough investigations into any potential impacts from the PLP.

Other marine mammals visiting the Harbour occasionally include dusky dolphins, aihe/common dolphin, terehu/bottlenose dolphins and, offering the occasional cameo appearance, maki/orca.

Banks Peninsula is now home to a small population of kekeno/New Zealand fur seal, with breeding colonies mainly on the south side of the Peninsula. They pay occasional visits into the Harbour itself when foraging, and can also be found sunbathing on rocky shores at the Harbour mouth.

Possible impacts of PLP

Marine mammals are especially vulnerable to changes in habitat, and generally have low reproduction rates – which lead to slow recovery if population growth is affected.

LPC commissioned an investigation by world-leading marine mammal researchers at University of Otago to understand the potential effects of the PLP on Hector’s dolphins, so we can implement practical methods to minimise them. These findings will be incorporated into LPC’s Marine Mammal Management Plan and the Construction Environmental Management Plan (CEMP).

The University of Otago is currently carrying out further research to assess how these dolphins respond to pile driving noise in particular.

Marine mammals could potentially be affected by underwater noise

(especially from pile driving), habitat loss (reclamation), vessel traffic or marine pollution.

Positive actions to minimise effects on marine mammals will include:

- trained marine mammal observers working on all pile driving projects
- implementing a ‘stop-work’ if marine mammals seen within 300 m of pile driving activity (this is in place now)
- using “soft start” techniques when pile driving (where machinery noise increases slowly to give marine mammals time to move away)
- upgrading stormwater systems to improve water quality
- contaminated sediments being removed and disposed of to land facilities (not to sea)
- education materials for marina berth holders (to be made available in future marina development)
- using ‘clean fill’ for reclamations.

MORE DETAIL

The content of this document has been summarised from a number of comprehensive studies commissioned by LPC. For detailed data you are encouraged to access the complete reports at www.portlytteltonplan.co.nz.

The following reports are relevant to Marine Life:

APPENDIX 15 – EFFECTS ON MARINE ECOLOGY, Cawthron Institute

APPENDIX 16 – EFFECTS ON MARINE MAMMALS, University of Otago

APPENDIX 17 – EFFECTS ON MAHINGA KAI, Tonkin & Taylor

MARINE BIRDS – Boffa Miskell Limited 2015. Lyttelton Port Recovery Plan: Marine Avifauna Assessment. Report prepared by Boffa Miskell Limited for Lyttelton Port Company.



Port Talk

If you want to have a chat with us, we are at Port Talk on the corner of Oxford and London Streets every Friday, 11am–1pm, or you can email us at communications@lpc.co.nz.



Website www.portlytteltonplan.co.nz

We have established a website that has lots of information and answers to common questions about our plans, and their effects on the local community and environment.



Other communication

Updates will be available in our quarterly newsletter in hardcopy or digital form. Pick up a hardcopy at Port Talk, or go to www.lpc.co.nz to download a pdf.