

Monitoring Fact Sheet

SEAGRASS

Background

Port Otago Ltd need to modify the shipping channel to accommodate the next generation of container ships. The modification involves dredging the approaches to Port Chalmers and berth area and deepening of the channel.

A few areas would also require widening. The material will be disposed of at the existing inshore dredge disposal sites but most will be disposed of at a site about 6.5 km to the north-east of Taiaroa Head.

Seagrass beds

Seagrass beds (locally being *Zostera* species), are highly valued in our harbours and estuaries as they provide a valuable and important cultural resource, a complex habitat for benthic invertebrates and larval recruitment, enhance nutrient cycling and stabilise sediments. They also provide an important refuge and nursery for fish. Seagrass communities, and their associated fauna, in New Zealand are threatened by habitat fragmentation and loss, and sedimentation from natural and anthropogenic causes.

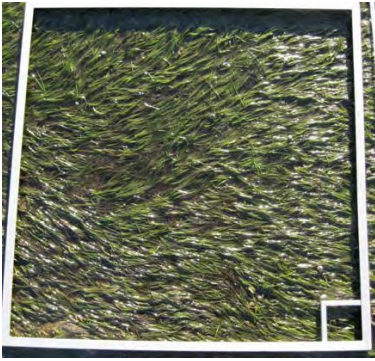


What is the issue?

Increased levels of suspended sediments as a result of dredging can reduce light reaching seagrass beds. Increased sedimentation can smother beds resulting in reduced growth and production.

Seagrasses are relatively sensitive to suspended sediment with over 75 mg/l having a "moderate" impact if over only a short duration. At least 15% of surface light is required to protect beds.

Predictions are that most of tidal flats in the lower Harbour will be largely unaffected by the dredging operation except close to the channel where concentrations could be up to 100-200 mg/l. Higher concentrations could occur in patches adjacent to dredging but would only be for brief periods during actual dredging (less than 10% of the time). In areas like Harwood, where some of the largest seagrass beds occur, increased suspended sediment concentrations should be undetectable for most of the time and there would only be very short periods when concentrations were above 20 mg/l.



What's been done?

Baseline seasonal surveys over one year of the seagrass beds off Harwood and of turbidity levels at a site nearby. The seasonal surveys have shown that there are changes in length of seagrass blades, biomass, percent cover and shoot density over a year which is related to seasonal growth.

Turbidity sensors have also been deployed on the sand flats opposite Acheron, the Aramoana ecological area, Wellers Rock/Omate Beach and a control site in the upper Harbour. These have been deployed to detect changes in areas with other ecological values but they will also provide additional information on levels experienced by seagrass beds in these areas.

A turbidity limit of 25 NTU has been set based on experimental results and levels that start to impact on growth and survival of seagrass beds.

A Technical Group and Manawhenua Consultative Group have been set up to facilitate communication, provide input to monitoring review reports and identify ways to avoid, remedy or mitigate adverse effects on the environment and cultural values if they were to occur.

What is Port Otago doing about it?

Port Otago have developed an Environmental Management Plan (EMP) which includes:

Surveying seagrass beds (at the locations shown in the side panel) before, during and after dredging to detect changes in the aquatic communities outside natural fluctuations, which could be attributed to the dredging project. (Aerial photo's below from the pre-dredge survey work done at Harwood). These surveys are being repeated on a quarterly (seasonal) basis for the first year of dredging works.

An adaptive management plan has been developed around the Harwood monitoring site. A two stage approach will be used whereby if levels reach 12 NTU averaged over 6 hours then the consent authority must be notified and further investigations carried out to assess if the dredging is the cause of the high levels. If the levels exceed 17 NTU and dredging is found to be the cause, then management actions such as changing the operations around tidal stage, is likely to be required.



Further information can be found at www.nextgenerationportotago.nz