

SUMMARY STATEMENT OF SHANE KELLY

1. My name is Shane Kelly. My qualifications and experience as a planning expert are set out in my evidence in chief.
2. The marine ecological values of Whangārei Harbour, and particularly Marsden Bay and its surrounds, were assessed through a desktop review and analysis of available information and data, plus additional data gathering from intertidal and subtidal habitats. The marine ecological effects of the proposed activities were assessed at system and footprint scales. Relevant effects primarily relate to:
 - around 11.7 ha of additional reclamation on the eastern side of the existing and consented Northport facilities.
 - capital and associated maintenance dredging to enlarge the existing swing basin and deepen it by around two metres, and to enable construction of the new wharf.
3. Issues of secondary ecological concern include:
 - marine ecological effects associated with the creation of a 0.54 ha bird roost on the western side of the port.
 - effects on the reef communities that have developed on existing revetment structures.
 - the potential effects of additional stormwater runoff from Northport's wharf facilities.
4. Overall, Whangārei Harbour supports diverse and ecologically important marine communities. Northport sits within the outer harbour and entrance zone (OHEZ): a physically complex zone subject to strong currents with around 610 ha above chart datum and 1,970 ha below chart datum. It contains a mix of physical habitats and extensive areas of biogenic habitat (including extensive shell gravel beds, seaweed meadows, seagrass beds, sponges, horse mussels, scallops, and significant beds of other shellfish). This is reflected in a high diversity of ecological taxa in that zone. The OHEZ is considered to be a discrete and ecologically significant system, against which the scale of effects from the proposed activities are considered (in addition to the harbour scale).
5. Key factors considered in the assessments of effects were the:
 - values of the habitats, communities and biota likely to be affected;

- extent, abundance and/or occurrence of features within the relevant ecological systems;
- scale of effect relative to the size of the relevant ecological system; and
- potential for recovery.

Effects on intertidal habitats and macrofaunal communities

6. Port reclamation will directly eliminate 6.6 ha, or 1.08%, of intertidal habitat, within the OHEZ. The construction of the proposed bird roost on the western side of the port (for the purposes of achieving positive ecological effects with respect to avifauna) will cover a further 0.54 ha of intertidal habitat (0.09% of intertidal habitat in the OHEZ), with natural processes shifting the position and extent of that feature over time. No at risk or threatened species of benthic macrofauna are known to occur in the proposed development, or surrounding area of Marsden Bay.
7. While intertidal habitats within the proposed reclamation and bird roost appear healthy and contribute to the broader diversity and ecological values of the harbour, the sites themselves do not contain unique or special ecological qualities. That, together with their small scale relative to the overall amount of intertidal habitat within Whangārei Harbour and the OHEZ, suggests that the effects of the construction of the reclamation and bird roost on the extent of sandy intertidal habitat and the diversity of benthic macrofauna will be moderate at those scales.

Effects on subtidal macrofauna

8. Around 5.1 ha of habitat below chart datum (CD) will be lost beneath the proposed reclamation. Sampling indicates that sediments in that area contain a diverse infaunal community, with similar assemblages of taxa to that found on the western side of Northport. Few large epibiota were observed in video footage taken within the proposed reclamation area, and all are likely to be common. While subtidal habitats within the proposed reclamation footprint appear healthy and contribute to the broader diversity and ecological values of the harbour, the site itself does not contain unique or special ecological qualities. The loss of a small proportion (0.28%) of natural subtidal habitat in the OHEZ is unlikely to reduce overall biodiversity values or compromise ecological functions and processes within the zone. That, together with the small scale of reclamation relative to the overall amount of subtidal habitat within the harbour, suggests that the effects of reclamation will be moderate at both scales. However, ecological effects within the reclamation footprint itself will be more significant.

9. The proposed dredging will: remove the diverse benthic community in undredged areas; recontour and remove substrates from the consented, but yet to be, dredged area; remove biota and substrates that have reformed since previous dredging events; and lead to the alteration of current velocities. Most of those effects are already provided for under the current capital and maintenance dredging consent. Additional effects of the proposed dredging footprint include deepening the existing dredged basin by around 2m. If the characteristics of the seabed substrates at the proposed dredging depth are similar to those existing at the currently consented depth, a similar community of benthic macroinvertebrates is expected to reform once dredging is complete. However, macrofaunal diversity would likely be lower if areas of dense shell were permanently lost.
10. Modelling predicts that sediment plumes generated during dredging will also affect the surrounding habitat. Subtidal areas predominantly to the west of the port are predicted to be periodically subjected to elevated suspended sediment concentrations. Those effects would be compounded by the impacts of sediment deposition that smothers seabed communities and habitats (particularly shell gravel). The methods used for dredging are predicted to have major influence on sediment mobilisation, dispersal and deposition. Effects were conservatively assessed to potentially vary from High at the OHEZ and harbour scales if a trailing suction hopper dredger (TSHD) is used, to Moderate at those scales for cutter suction dredger (CSD) and backhoe dredger (BHD) operations. Risks will be reduced through turbidity monitoring and management processes proposed through conditions of consent. Based on the high ecological values observed in and around previously dredged areas, and assuming that shell gravel habitat re-establishes, ecological recovery is expected to occur over a period of around five years.

Effects on kai moana shellfish

11. The key shellfish likely to be affected by the proposed activities are cockles (tuangi), pipi, and possibly scallops (tipa). Cockles are a ubiquitous feature of intertidal sites throughout much of the harbour, whereas the distributions of pipi and scallops are patchier.
12. Sampling results indicated that densities of cockles in the proposed reclamation and bird roost sites were comparable to other sites in Marsden Bay, but very few cockles of harvestable size were obtained anywhere in the bay. The ubiquity of cockles, together with the small scale of the proposed reclamation and bird roost sites relative to the broad scale of habitat containing them in Whangārei Harbour suggests that the effects of those activities will be low at the harbour and OHEZ scales. Subtidal dredging has little potential to affect cockles.

13. In terms of pipi, available information suggests that:

- the occurrence of small pipi in the proposed reclamation and bird roost areas is likely to be augmented by eddies created by the existing Northport structures;
- the effects of the proposed reclamation will possibly be offset by a similar eddy that is expected to form and “entrap” pipi recruits on its eastern side;
- pipi do not reach harvestable sizes in the areas impacted by the proposed activities;
- the contribution of pipi from affected areas to broader spawning or harvestable stocks is likely to be minimal.

14. Pipi were not obtained in samples collected from the proposed dredging area. The effects of dredging and the dredging plume on pipi are therefore considered to be negligible. Overall, the effects of reclamation and dredging on pipi are considered to be low at the harbour and OHEZ scales.

15. No live scallops were observed in the reclamation area, but empty scallop shells were apparent around an octopus den, and low numbers of patchily distributed scallops were observed in the proposed dredging and nearby areas. Scallops will be permanently lost from the reclamation area. Scallops in the dredging area will either be displaced or killed during dredging, but recolonisation could occur once dredging ceases.

Effects on seagrass and macroalgae

16. Seagrass is listed as an “At Risk: Declining” species under the New Zealand Threat Classification System (NZTCS) due to the overall seagrass population being very large, but subject to low to high ongoing or predicted decline. The NZTCS includes the following qualifier for its classification of seagrass:

- it is a non-endemic species that is secure overseas; and
- the seagrass population experiences extreme fluctuations (de Lange et al., 2017).

17. Patches of intertidal seagrass within the proposed reclamation area will be permanently lost. The area covered by those patches is small (around 0.33 ha in 2021) compared to the current extent of seagrass beds within Whangārei Harbour (estimated to be around 6 km² in 2016). Therefore, effects on seagrass are expected to be low on harbour and OHEZ scales, equating to a less than minor effect.

18. Outer parts of Whangārei Harbour contain macroalgae meadows, with diverse, but low biomass, species assemblages that grow on subtidal shell and sediments. Surveys carried out over the past 30+ years, indicate that subtidal macroalgae meadows are a widespread and persistent feature in the harbour. Four "At Risk" macroalgae have been recorded in the outer harbour, with two of those species potentially present in areas affected by dredging. The latter two species are not endemic to New Zealand and the potential level of adverse effects on them are considered to be low, equating to a less than minor effect.
19. The effects of dredging on macroalgae will be similar to those previously discussed in relation to seabed communities and habitats. However, decreases in light levels caused by channel deepening may also alter the composition of the macroalgae community within that area.

Effects on reef habitat and biota

20. Reclamation will eliminate around 155 m of existing rock revetment and create around 483 m of rock revetment. All biota that cannot, or does not, move from the existing revetment structure will be smothered during reclamation. In the medium term (5–10 years), those effects will be offset by the colonisation of a new revetment by a similar reef assemblage. Consequently, the effect of reclamation on reef habitat and biota is assessed as positive in the medium to long term.

Effects on fish

21. Effects on fish are likely to be negligible because of the mobility of fish, relatively small scale of habitat permanently lost, and the likely recovery of habitats of importance to fish in other areas affected.

Effects on stormwater discharges

22. Assuming that past monitoring results are representative of existing discharge quality, and that a similar discharge quality will be maintained, the addition of the proposed reclamation area is not expected to cause any additional adverse ecological effects from stormwater discharges.

Cumulative effects

23. I have considered the potential for cumulative effects arising from this Project, together with Northport's existing consents and consents held by Channel Infrastructure.
24. Levels of effects for the proposed Northport activities alone, and in combination with Channel Infrastructure activities, were ranked from Moderate to High depending on the dredging

methods used. However, the combined effects of the proposed Northport and Channel Infrastructure activities are not expected to increase the level of effect beyond High. I also note that, with my input, Northport's proposed conditions prohibit the commencement of capital dredging for Northport's proposed expansion project during or within six months of a capital dredging event (over a prescribed volume) authorised by Channel Infrastructure's Crude Shipping Project resource consents. This will assist with managing potential cumulative marine ecology effects between the two projects.

CONDITIONS

25. Northport have proposed what I consider to be a very comprehensive set of marine ecological assurance monitoring conditions, and I have prepared an associated Ecological Assurance Monitoring Plan in accordance with those conditions.
26. Overall, I consider the proposed marine ecological monitoring conditions to be consistent with best practice.

EXPERT CONFERENCING

27. A number of matters are highlighted in expert evidence provided in support of submissions and in the s42A Officers' report. However, conferencing among the marine ecological experts revealed a large degree of agreement, with the only outstanding matters of disagreement being.
 - Drs Lohrer and Bulmer disagreed with Mr Sneddon and I, regarding the adequacy of the assessment of cumulative effects.
 - A difference in opinion about the appropriate scale to use for assessing intertidal effects, but the consequences of that difference were considered to be relatively small.
 - Mr West had concerns about the bird roost.
 - Dr Lohrer and Mr West sought changes to some conditions. These were agreed through discussions that continued after conferencing that resulted in an amendment to proposed condition 170 (related to seagrass monitoring) and new conditions 173 and 174 (requiring measures to be taken if the final round of ecological monitoring shows that seabed recovery is slower than expected, or is not occurring).

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Coast and Catchment

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