

Appendix 12

Peer review of Assessment of Ecological Effects

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Review summary: Assessment of Ecological Effects for Northport Expansion Project

I have conducted a critical review of a draft version (September 2022) of the assessment of ecological effects (AEE) by Shane Kelly and Carina Sim-Smith for Northport Ltd. The AEE was reviewed as a standalone document, with none of the source data or ancillary reports consulted. In this letter, I summarise the key aspects of my review that pertain to the role of the AEE in supporting Northport's consent application.

The assessment covers a suitable range of ecological receptors, and the spatial scale within which effects are predicted is appropriate. Although the comprehensive characterisation of such benthic environments is always challenging, the assessment is founded upon a suitable coverage of historical and recent survey data.

Some aspects of the assessment appear subject to compounding levels of conservativeness, in part based on perceived areas of uncertainty. The part played by conservative modelling assumptions—that deposition of fine sediments from dredging plumes is strictly accumulative—is acknowledged, but consideration of effects magnitude, scale, likelihood and duration seems to largely disregard that the major activities being assessed have already occurred (at various times and scales) within the vicinity of the proposal. Hence, more of the evidence of effects (and recovery) from prior activities could have been incorporated to balance the discussion. Currently, the predictions of effects magnitude appear, in places, to be inconsistent with a broader view of the harbour system and its history. Several aspects of this conservatism are contextualised in the paragraphs below.

Because of the qualitative scale used, there is a risk that the assessed magnitude of effects (for example, as moderate or high at the Harbour scale for certain habitats) may be interpreted as more significant than is likely the case (or may have been the intention of the authors). To address this, the specific criteria by which these qualitative predictions are made should be made clear and there should be more discussion in the text as to how

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these impacts are expected to manifest, with an emphasis on conspicuous or measurable environmental change.

The level of detail for key activities of the project, as well as their historical context, is quite limited, although I understand that the detail may be addressed in other reports. The project components covered by existing consents, and the assessments that must have underpinned them, are directly relevant to the current assessment, particularly those concerning dredging. However, the overlap with the current proposal and the degree of consistency between assessments are somewhat unclear. It is possible that, in places, better use could have been made of available historical information to support the assessment and to distinguish effects associated with the proposal from those which are already consented.

Based on the information provided, and relative to the wider harbour area, the assessment appears to overstate the extent and ecological significance of some habitats and communities (such as macroalgal meadows and shell lags) within the benthic areas potentially affected. Macroalgal meadows are a biogenic habitat of recognised importance in coastal environments, but the assessment does not provide specific criteria for this designation and is unclear as to either their likely prevalence in the vicinity of the project or their wider distribution in the Harbour. Although relict shell material may be a functional component of established shellfish beds, shell lags are typically hydrodynamically mediated accumulations that are not generated *in situ*; hence, their status as biogenic habitats is questionable.

On the basis of low numbers of patchily distributed scallops observed in the proposed dredging and nearby areas, the assessment recommends that, prior to reclamation and dredging, attempts be made to collect and move them from potentially affected areas to remote beds. However, this effort seems unwarranted given that scallops are actively targeted for recreational take within the Harbour, occur in likely greater densities across large expanses of the lower Harbour outside the potentially affected zone, and are seasonally variable in occurrence. The assessment acknowledges that scallops will likely recolonise affected areas and, since there will be potential effects to only a small proportion of their local distribution, it is unlikely that the proposed activities will compromise the sustainability of Harbour populations.

Any effects outside the construction and dredging footprints will largely be associated with current-advected plumes of resuspended sediments. In relation to elevated suspended sediment concentrations or corresponding deposition by settlement, there are mitigating factors to consider:

- Tidally reversing currents mean that, even with a continuous dredging operation, these channel areas would be potentially exposed to significant plumes only 50% of the time. Hence, cited studies using micro/mesocosms to test the tolerance of key species to suspended sediments may have limited relevance.
- The lower Harbour is well flushed and already subject to some variability in turbidity and resuspension via weather and sea-state events.

Although the nature of benthic recovery is not strictly defined in the assessment, a complete return to the base condition is implied. This is appropriate for the wider area of the lower Harbour. However, for smothering impacts (from plume deposition) in these predominantly high-current channel bed habitats, a period of 5 years before effects are indiscernible seems longer than would likely be the case. Hence, the timeframes given for recovery appear very conservative and could have been better supported by evidence or observation.

When conditions such as depth and hydrodynamics are altered more or less permanently by an activity (such as within the dredging footprint), a return to the base condition may be precluded entirely. Hence it is useful to consider criteria for 'effective recovery' framed in terms of equivalence in ecological diversity or production, or as foraging habitat for high value species. As a system, Whangarei Harbour is the product of over 100 years of human impact and modification, both directly and via its catchment. The pre-human baseline is undocumented and can only be inferred. Hence, preservation of ecological function should be a primary concern.

I have provided Northport Ltd with the detailed output of my review for consideration by the authors of the assessment. This includes suggestions and recommendations for the inclusion of additional information as well as clarification of assessment process and the framing of conclusions.

Feel free to contact me if you have any questions or comments regarding this summary.

Yours sincerely

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