

Memorandum

06 March 2018

To:	Environment and Community Committee	
Cc:	Jim Quinn, Chief of Strategy Dean Kimpton, Chief Operating Officer	
Subject:	Kaipara Harbour Sedimentation Mitigation Study	
From:	Dave Allen	Manager, Natural Environment Strategy

Purpose

1. To provide key messages on the Kaipara Harbour Sedimentation Mitigation Study and alert members to the release of the final reports.

Summary

- A technical project to develop a catchment economic model for use in assessing the economic costs and environmental benefits of a range of scenarios for mitigating sediment losses to rivers and estuaries within the Kaipara Harbour catchment was completed in December 2017.
- Final project reports (a main report, two supplementary, and one summary report) produced as a result are now publically available via Knowledge Auckland (www.knowledgeauckland.org.nz).

Context/Background

2. Erosion in the Kaipara Harbour Catchment is understood to be the main pressure on the quality of water in its streams, rivers, and estuaries. A range of adverse effects are caused by elevated levels of suspended and deposited sediment.
3. Over the last several decades, a number of initiatives (regulatory and non-regulatory) have been undertaken to conserve soil on land. However, contemporary sediment accumulation rates in the Kaipara Harbour and levels of suspended sediment in contributing rivers and streams in its catchment remain elevated.
4. While there is a growing body of information on sources and levels of sediment in the Kaipara Harbour Catchment, there are still large uncertainties about the economic costs and environmental benefits of reducing sediment loads to water at the farm, sub-catchment, and ultimately harbour catchment scales. This made it difficult for the community and the councils to determine what constituted an appropriate erosion mitigation target. That is, deciding on the appropriate level of investment to reduce sediment losses to water, and conversely, retaining the value of sediment on the land itself.
5. To address this issue a study was commissioned jointly by MfE (major funder), Auckland Council and Northland Regional Council (project manager) in June 2016. It was completed in December 2017.
6. The main objective of the study was to develop a catchment economic model for use in assessing the economic costs and environmental benefits of a range of scenarios for mitigating sediment losses to rivers and estuaries within the Kaipara Harbour catchment.

Discussion

7. A baseline scenario was established for comparison with nine sediment mitigation scenarios and two land-use change scenarios, both of which involved full re-forestation of the catchment. Five of the sediment mitigation scenarios were "practice-based" (e.g., fencing all streams for stock exclusion) and four were "outcome-based" (e.g., reducing sediment load by a certain percentage).

8. The report provided the following high level conclusions:
- Sheep and beef farms face the largest total and per-hectare costs for nearly all scenarios investigated.
 - Scenarios with opportunity costs due to taking some land out of production (e.g. by riparian fencing or wetland construction) have the highest per-hectare costs.
 - Most of the practice-based scenarios require mitigation to be implemented on a much greater area of the catchment compared to the outcome-based scenarios.
 - Costs are generally less under the outcome-based scenarios because mitigation can be targeted to the land in a cost-effective way to achieve outcomes.
 - Based on our current understanding of the impacts of fine sediment on fish and invertebrate species found in New Zealand, which is rather limited, significant, catchment-wide improvements in stream and river ecosystem health will only be achieved by re-forestation of the catchment.
 - Excluding livestock from rivers and streams and stabilising large tracts of highly erodible land currently in pasture with poplars (as one option) has the potential, on balance, to yield beneficial outcomes for aquatic ecosystems in rivers in certain sub-catchments, which could be prioritised for mitigation efforts.
 - Currently, annual-average sedimentation rate, which is a high-level indicator of estuarine ecosystem health and functioning, is less than the adverse-effects threshold in all six of the depositional basins in the northern sector of the harbour that were examined.
 - Currently, annual-average sedimentation rate exceeds the adverse-effects threshold in all three of the depositional basins in the southern sector of the harbour that were examined.
 - Interventions to reduce sedimentation rates may not immediately generate positive ecological effects; the legacy of muddy sediments may impinge on the ecology for decades after management interventions are initiated.
9. The report acknowledged that there were many uncertainties and assumptions associated with the study, which were clearly articulated. The report concluded that, based on the findings of the study, careful consideration of current and future initiatives to reduce sediment losses in the catchment of Kaipara Harbour is required to deliver a strategic approach to target interventions at the location and scale that will maximise desired benefits.

Next steps

10. Sediment is a region-wide issue. This complex piece of technical work highlights the challenges in front of all people / decision makers in terms of potential changes (and costs) to land use that would seek to improve water outcomes within the Kaipara Harbour, with learnings for elsewhere.
11. The results of this study will help to inform Auckland Council's governance, planning and operational outputs, for example during Treaty Settlement negotiations, Healthy Waters operations and developing Auckland Council's actions for compliance with the National Policy Statement for Freshwater Management (NPS-FM).
12. The Natural Environment Strategy Unit (NES) is currently scoping Auckland Council's approach to managing sedimentation issues across the region for its full range of functions, with a view to identifying strategic direction opportunities that other departments can use.
13. For further information on the study, please contact:

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