

Report No.	19-89
Information Only - No Decision Required	

MANAWATU & OROUA GRAVEL RESOURCE STUDIES (PRD 04 09 & PRD 05 14)

1. PURPOSE

- 1.1. The purpose of this report is to inform the Committee about the findings of an updated assessment of the gravel resource in the lower reach (downstream of the Gorge) of the Manawatū River.

2. EXECUTIVE SUMMARY

- 2.1. The study concludes that the gravel resource in the lower Manawatū River has aggraded by approximately 890,000 cubic metres since it was last surveyed in 2011, which equates to around 148,000 cubic metres per annum. These findings demonstrate the positive effects that the management of gravel extraction under a global consent is having.
- 2.2. While the study has concluded that the river bed has aggraded over much of the reach, it also notes that in the upper part of the reach between Ashhurst Bridge and Karere Road the river was in heavily degraded state in 2011. The resource is currently in a recovery phase and has not yet returned to pre-2011 levels and as such, a continuation of the current management regime is a prudent response.
- 2.3. The study has also found that in the reach of the river between Hamilton's Line and the Oroua confluence there is the potential to increase the volumes of gravel that are extracted under the global consent.
- 2.4. As well as examining the gravel resource of the lower Manawatū, this study also looked at the silt phase of the river between Opiki and the Tasman Sea. It was found that sedimentation has been occurring, at a rate of approximately 22,500 cubic metres per annum, between Opiki and the Moutoa Floodgates. The comparison of cross section profiles shows that this deposition has occurred on the berms, whilst the river channel has both narrowed and deepened.
- 2.5. An analysis of cross sectional changes downstream of the Moutoa Floodgates has revealed that there has been an overall loss of material from the river corridor in this reach. Observations of the cross sectional survey have shown that, like the upstream reach, the river channel has narrowed and deepened over time, offsetting berm deposition rates.
- 2.6. This narrowing and deepening of the river channel, along with the sedimentation of the berms, may well pose management challenges into the future. Conclusions drawn from this work forms part of the wider sedimentation initiative currently underway.

3. RECOMMENDATION

That the Committee recommends that Council:

- a. receives the information contained in Report No. 19-89.

4. FINANCIAL IMPACT

- 4.1. There are no financial impacts associated with this report or its recommendations.

5. COMMUNITY ENGAGEMENT

- 5.1. The findings of this report will be communicated to gravel extractors and other key stakeholders.

6. SIGNIFICANT BUSINESS RISK IMPACT

- 6.1. There are no significant business risks associated with this item.

7. BACKGROUND

- 7.1. As part of the fluvial programme the gravel resource of the lower reach of the Manawatū River was last surveyed and studied in 2011. This study builds upon those findings with information gathered by cross sectional survey carried out in the summer of 2017-18.
- 7.2. Those cross section lines have been surveyed at various times by Horizons Regional Council and its predecessors. These surveys have been undertaken for a variety of reasons including the design of flood protection and other infrastructure, as well as to inform the management of the river and its gravel resource.
- 7.3. Historically, the gravel reach of the river has seen a higher frequency of surveys as the extraction of gravel has necessitated the need to understand how this activity has altered the physical characteristics of the river. Over recent years the surveying of this reach has formed part of the fluvial programme and has been funded through the levies associated with gravel extraction consents.
- 7.4. Note that while the gravel reach of the river has been surveyed as part of the fluvial programme, the silt phase has not been surveyed with the same frequency.
- 7.5. Horizons' Infrastructure Strategy as outlined in the current **Long-term Plan (LTP)** identifies "sedimentation effects on levels of service" as a significant issue – the potential impact on flood protection levels of service. Given the importance of the issue and the currency of the data the 2017-18 survey included the reach through the silt phase to the mouth of the river, with that work funded by the **Lower Manawatū Scheme (LMS)**.

8. REPORT PRECIS

- 8.1. The study examined the gravel resource and the silt phase of the lower reach of the Manawatū River based on an analysis of river cross section information and gravel extraction records. It covers the 100 kilometre reach of the river between the Ashhurst Bridge and the mouth of the river at Foxton.
- 8.2. Data comparison found that between 2011 and 2018 overall the gravel resource of the river has aggraded by approximately 890,000 cubic metres. This equates to approximately 148,000 cubic metres per annum.
- 8.3. The study looked at how recent trends compare with those observed in 2011 and found that while the reach of the river between the Ashhurst Bridge and Karere Road has aggraded over the study period it was doing so from a low base i.e. heavily degraded state. This would suggest that the current management regime is having the desired effect, allowing the gravel resource to recover. As such, the recommendation is to continue the current management regime in this reach of the river.
- 8.4. Currently all of the gravel extraction from the lower reach of the Manawatū River is managed under a global consent held by Horizons Regional Council's River Management group. The volumes available for extraction under this consent align with the average annual allocable volumes outlined in the One Plan.

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- 8.5. The study has found that the volumes of gravel available for extraction under the global consent appear to be adequate, achieving the balance between allowing the resource to replenish while retaining an ability to extract for management purposes should circumstance dictate that to be necessary.
- 8.6. The study also concludes that there is potential to increase extraction volumes below Hamilton's Line. Clearly, the context for such extraction would be to achieve a river management benefit e.g. localised extraction to reduce the size of a gravel beach and in turn reduce river erosion of the adjacent bank.
- 8.7. The study recommends that gravel extraction continues to be managed under the global consent held by Horizons Regional Council's River Management group to maximise the benefits of extraction. It has found that the consent allows adequate volumes of gravel to be extracted for River Management purposes. Since the volumes of gravel able to be extracted under the global consent align with the long-term allocable volumes of the One Plan, there is no evidence to suggest that these allocable volumes are not appropriate.
- 8.8. The study recommends that this section of the Manawatū River is resurveyed again in 2022-23 as is currently identified in the fluvial programme.
- 8.9. The study looked at cross sectional changes in the silt phase of the river and found that generally the channel appears to be narrowing and deepening. This is something that the LMS needs to be mindful of as these morphological changes may have management impacts.
- 8.10. Before the 2017-18 survey, the last surveys of the silt phase of the river were carried out in the 1990s. To be able to understand how the river is changing over time, it is recommended that the silt phase of the river be surveyed at the same regularity as the gravel reach, a task that will be captured by the LMS Operations and Maintenance Manual currently in production.
- 8.11. Additionally, it is noted that with the costs associated with **Light Detection and Ranging (LiDAR)** surveys decreasing with time, this technology could be used more in the future to provide a more detailed analysis of changes in the morphology of the river.
- 8.12. The full report is available on request.

9. SIGNIFICANCE

- 9.1. This is not a significant decision according to the Council's Policy on Significance and Engagement.

Ella Whale

GRADUATE RIVER MANAGEMENT ANALYST

Jon Bell

MANAGER INVESTIGATIONS & DESIGN

ANNEXES

There are no attachments for this report.