What are other regional councils doing to improve gravel extraction management

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• Many councils have recently reviewed their gravel extraction policy and practice

• An Envirolink project has partly completed an analysis of these reviews and other regional councils practices

• Completed for Ecan, EBOP, MDC, HBRC, GDC. Yet to contact ORC, GWRC, Horizons, SDC
Cross-section surveys

- River cross-section surveys are the primary tool used to assess bed level trends and set gravel extraction limits
- Many councils are now increasing the frequency of surveys where extraction pressure is high
- Aerial photos and site inspections commonly used to supplement the information from cross-sections and provide an indication of river behaviour between the cross sections
Recent reviews

• Most councils acknowledge the river cross section survey networks were established for flood risk management and the design is not considered ideal for gravel management purposes

• Concerns are about cross-section location and spacing, and frequency of measurement

• Many councils have initiated major reviews of their
  – cross section networks
  – reporting of gravel extraction volumes
  – data analysis and interpretation, and
  – approaches to defining gravel yields
Setting sustainable gravel extraction limits
Defining gravel load

• Setting appropriate gravel extraction volumes requires information on the gravel load of rivers

• The cross-section approach adequately characterises bed level trends, but is quite limited for defining the gravel load

• Three approaches have been used to estimate gravel load
  – the morphological method based on conservation of volume
  – as a proportion of suspended sediment yield
  – calculation of load from bedload transport formulae
Monitoring needs

- key criteria to determine the appropriate monitoring regime for a river, or within a river
  - sensitivity of the reach (taking account of trends in riverbed changes shown by existing bed-level monitoring data and/or assessments of sediment supply)
  - extraction pressure
  - flood risk
  - presence of sensitive infrastructure (bridges, water intakes, pylons etc.
  - bed and bank stability
  - ecological sensitivity
Recommendations

- Effective regulation and monitoring of gravel excavation rates requires systematic collection of measurements of the trends in bed levels, gravel transport and excavation rate data over time.

- These data can be used to set and adjust extraction levels according to gravel supply.

- There is a need to better establish gravel supply rates through short-term investigations involving a combination of field measurement and modelling of gravel transport.

- In many rivers there are natural deposition zones that are suitable sites for gravel extraction.

- However, in Tasman District there is a need to assess:
  - the gravel load of rivers
  - the proportion of gravel supply that can be sustainably harvested without having significant in-stream and downstream effects.