

# Impact of the Kaikoura Earthquake on the Water Resources in the Flaxbourne and Waima (Ure) Catchments

## Ministry for Primary Industries (MPI) – Contract 405437

1. Following the Kaikoura Earthquakes on 14 November 2016, MPI established an earthquake recovery fund to assist local communities address the impacts of the earthquake. The Flaxbourne Settlers' Association, with the assistance of the Marlborough Research Centre (MRC), was granted \$372,250 (plus GST) to investigate both the immediate and long-term impacts of the earthquake on the water resources of the Flaxbourne and Waima (Ure) catchments.
2. The contract was signed in November 2017 and was to be completed in September 2020. The contract was extended through to 30 June 2021 because of the impact that COVID 19 had on the work programme. The contract included contributions from Marlborough District Council in terms of cash and in-kind support for the initiatives carried out.
3. The Governance Group for the project were from the Flaxbourne Settlers' Association John Hickman (Chair), Locky Taylor and Jim Rudd; Val Wadsworth (Marlborough District Council) and Gerald Hope (Marlborough Research Centre).
4. The Project Manager was John Patterson (Associate, Marlborough Research Centre) and the Technical Advisor to the project was Dr Jack McConchie (WSP).

## Initiatives and Funding

5. A summary of the initiatives and funding (excl. GST) are as follows:

Information capture - Survey and Analysis	27,443.59
LIDAR	65,542.52
Water Low flow and Lake Elterwater monitoring	78,911.76
Turbidity Monitoring	25,000.00
Gravel Analysis and Flood Hazard Modelling	65,540.00
Investigation Bore	16,145.00
Community Water Supply Increased Resilience	82,708.55
Proposed Regulatory Responses	10,000.00
	371,291.42

## Reports and Information

6. The reports produced from the project are on the Marlborough Research Centre's website ([www.mrc.org.nz](http://www.mrc.org.nz)) and are summarised as follows:
  - Post-Earthquake Information Assessment
  - LIDAR – Practical Uses (LIDAR data is held by Marlborough District Council (MDC) and can be viewed through MDC's Smart maps application)
  - Terrain Analysis
  - Community Water Supplies and Geophysical Attributes of the Aquifer
  - Needles Creek Monitoring Well
  - Flaxbourne Turbidity Monitoring
  - Flood Hazard Modelling
  - Lake Elterwater
  - Low Flow Gauging and Water Resource Implications
  - Regulatory Response

## Acknowledgements

7. These reports have been primarily produced by, or under the guidance of, Dr John (Jack) McConchie (Technical Principal - Hydrology & Geomorphology at WSP). Jack has been a significant guiding force in the monitoring, analysis and advice produced by the working group.

## Outcomes from the Project

8. The main outcomes from the project have been:
  - a. An understanding of the impacts of the earthquake on the topography in the catchments and the consequential impacts on water resources and the flood hazard.
  - b. Reinstatement and implementation of monitoring regimes to ensure that water quantity and quality assessments are provided for the catchments. Monitoring regimes to be continued under the stewardship of the Marlborough District Council and Flaxbourne Settlers' Association:
    - i. Needles Creek Monitoring Well.
    - ii. Low flow monitoring.
    - iii. Turbidity monitoring
    - iv. Lake Elterwater monitoring
    - v. Community water supply monitoring.
  - c. Created information through high resolution LIDAR which will benefit of the local community and individual landowners.
  - d. Provided greater resilience to the community water supplies through the upgrading of monitoring systems and storage.
  - e. Identified mitigation strategies, detailed in suggested regulatory responses, to meet future challenges to be faced by the community when responding to the increased flood hazard, and issues relating to water quantity and quality.

## Next Steps

9. The next step to providing ongoing catchment wide water management is to establish a community group, reporting to the Flaxbourne Settlers' Association, to address issues of water management in the catchments. The role will be to liaise with Marlborough District Council and other agencies (such as Kiwirail and Waka Kotahi NZ Transport Agency) to address wider water management responses for the area.