Report No.	19-74
Information Only - No Decision Required	

HAZARD INFORMATION UPDATE PROJECT

1. PURPOSE

1.1. To provide members with an update on the progress with the implementation of the Hazard Information Update Project (2015-2022).

2. EXECUTIVE SUMMARY

2.1. As part of the 2015-2025 Long Term Plan Council approved a $1.48m seven year project to improve and update its hazard information database. This report provides background on the reason for and scope of the project, an overview of progress to date and elaborates on the seismic information component of the project.

3. RECOMMENDATION

It is recommended that Council:

a. receives the information contained in Report No. 19-74.

4. FINANCIAL IMPACT

4.1. This project has already been budgeted for through the 2015-2025 Long Term Plan.

5. COMMUNITY ENGAGEMENT

5.1. This is a public item therefore Council may deem this sufficient to inform the public.

6. SIGNIFICANT BUSINESS RISK IMPACT

6.1. There is no significant business risk associated with this item.

7. BACKGROUND

7.1. The One Plan, and in particular section 9 Natural Hazards establishes an overall framework for natural hazard management under the **Resource Management Act (RMA).** It also sets out the division of responsibilities between the Regional Council and Territorial Authorities for hazard management under the RMA within the Manawatu-Whanganui region.

7.2. Most of the Regional Councils operational work on natural hazard management is carried out under the Soil Conservation and River Controls Act 1941, which provides for the establishment of river and drainage schemes. Emergency response, community readiness, recovery planning and research into natural hazards risks, is carried out under the **Civil Defence Emergency Management (CDEM)** Act 2002.

7.3. These emergency management roles are implemented through the Manawatu-Whanganui CDEM Group Plan rather than through the One Plan, however given that the Regional Council (under legislation – CDEM Act) is the administering authority for the CDEM Group

there are strong linkages to the work of both the **Regional Council (Horizons)** and the CDEM Group.

7.4. Policy 9-1 of the One Plan sets out the responsibilities for natural hazard management and provides clarity between the roles of both the Regional Council and the Territorial Authorities within the region. In particular 9-1 (b) (iii) identifies that *"the Regional Council must be responsible for taking the lead role in collecting, analysing and storing regional natural hazard information and communicating this information to Territorial Authorities"*. The communication of this information is a key role of Horizons District Advice department.

7.5. To assist in establishing the need for specific hazard information the CDEM Group commissioned Brendan Morris Consulting in 2014 to review the hazard information held by all councils and CDEM partner agencies across the region.

7.6. The aim of the report was to confirm the information's currency and relativeness, to identify gaps, and to recommend priority areas for updating Horizons hazard information database. This was primarily done by way of qualitative interviews of CDEM stakeholders and organisations with an interest in hazard information.

7.7. The Morris report identified that updating the old 'indicative' flood layer held by Horizons was considered by most as a priority, as was providing updated seismic information. Whilst these two outputs were rated high, to achieve this it was identified that firstly the Council would need to update its underlying digital elevation model. To achieve this base information Horizons needed to acquire further **Light Detection and Ranging (LiDAR)** imagery.

7.8. The Morris report was used as a good conduit to work with the councils across the region to also help identify their preferred priority areas for flood plain mapping information aligned to their projected growth areas known at that time. The Regional Council also identified priority areas for flood plain mapping to support their own internal work programmes.

7.9. Horizons had already acquired some LiDAR information to establish its initial flood planning mapping / work programme following the 2004 flood event however the extent of LiDAR held (1,000 km^2) was insufficient to allow the update of the 'indicative' flood layer and to support further seismic hazard research.

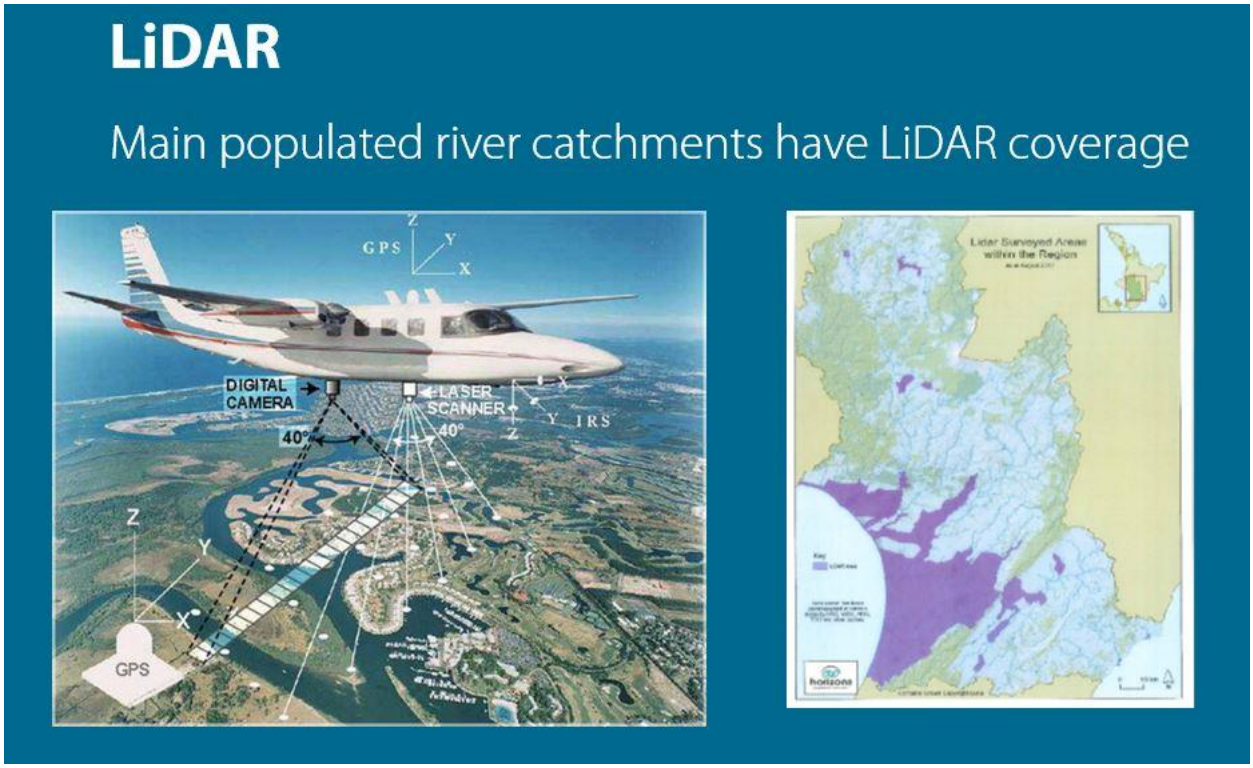
8. OUTPUTS

8.1. To support the other outputs of the project an additional 1,500 km^2 of LiDAR was acquired in year one of the project. The acquisition of the LiDAR at around $230k was a significant portion of the overall project budget however without this the other key outputs such as flood modelling would not have been able to progress.

8.2. The LiDAR information on its own has been of significant value to not only Horizons for its own planning purposes, but also to the other councils in the region due to its usefulness in supporting general land development planning. The list below shows the base project plan over the seven year window.

Year One 2015-2016

- Acquisition of LiDAR imagery
- Transfer all existing flood forecasting models to new software
- Develop Ohura / Mangaroa flood forecasting model
- Flood mapping Makotuku / Makara catchment
- Flood mapping Tutaenui catchment
- Scope process to update 'indicative' flood layer based upon LiDAR information



Method of acquiring LiDAR and current regional extent (some LiDAR sourced by individual councils)

Year Two 2016-2017

- Flood mapping Makowai / Piakatutu catchment;
- Scope process for update of seismic information based upon LiDAR information;
- Flood mapping all streams around Palmerston North;
- Work on the update of the 'indicative' flood layer – through years two to five;
- Flood mapping Feilding West;
- Update flood mapping Mangawhero / Ohakune.

Year Three 2017-2018

- Seismic information – Horowhenua & Palmerston North areas. This is further discussed below;
- Flood mapping Mangaone & Tributaries including upstream of Bunnythorpe;
- Flood mapping East of Levin;
- Continuation of the update of the 'indicative' flood layer.

Year Four 2018-2019

- Seismic information – Rangitikei and Manawatu areas;
- Flood mapping – Oroua (Almadale-Feilding);
- Flood mapping – Upper Manawatu / Awapikopiko;
- Continuation of the update of the 'indicative' flood layer.

Year Five 2019-2020

- Flood mapping – Turakina / Markirikiri;
- Ohakune flood debris risk;
- Seismic information Ruapehu and Whanganui areas;
- Continuation of the update of the 'indicative' flood layer.

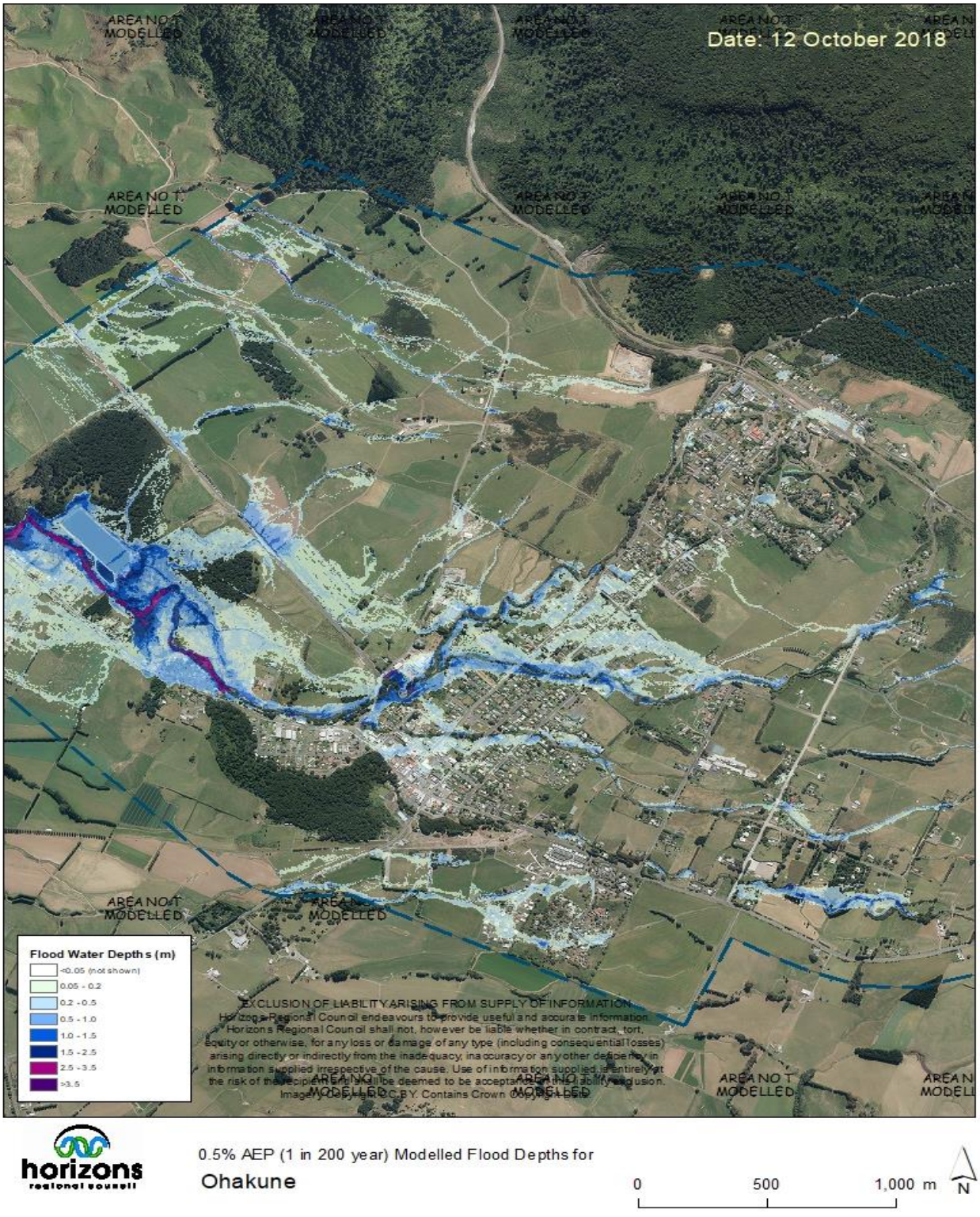
Year Six 2020-2021

- Flood mapping – Woodville;
- Flood mapping – Matarawa;

- Flood mapping – Upper Awarua;
- Seismic information – Tararua.

Year Seven 20121-2022

- Flood mapping – Porewa;
- Flood mapping – Wainui;
- Flood mapping – Ohura Township.



Use of LiDAR to support flood mapping

9. SEISMIC COMPONENT

9.1. As part of a separate 2015 project the CDEM Group updated the regional scale liquefaction information held by Horizons database to inform the review of its Lifelines Vulnerabilities Report. During this process it was noted that to source more detailed liquefaction information for the entire region at a finer than regional scale would be cost prohibitive under the Hazard Information Update project budget.

9.2. As a number of councils had already sourced/started to source detailed liquefaction to inform their growth areas it was considered that this mechanism was the best way forward given the budget constraints of the project. Given this the project control group proceeded with establishing what other useful seismic information could be sourced within current resourcing that could be used at an individual council level. In discussion with the **Institute of Geological and Nuclear Sciences Ltd (GNS)** it was established that the production of Active Fault Mapping and Fault Avoidance Zones would be of a prime use to councils for land development planning purposes.

9.3. Active Fault Guidelines have been published by the **Ministry for the Environment (MfE)** to provide the criteria for establishing Fault (rupture) Avoidance Zones. These guidelines take into account fault complexity (well defined, distributed, uncertain), fault activity (frequency of rupture) and the proposed building type (single story timber framed house, cinemas, hospitals etc.).

9.4. As a result a 4 phase seismic work programme was agreed with GNS to establish Active Fault Mapping and Fault Avoidance Zones for the region aligned to the project plan identified in serial 8 above.

9.5. Given the high level of growth underway at the time the Horowhenua and Palmerston North Districts were set as Phase 1, followed by the Rangitikei and Manawatu as Phase 2, Whanganui and Ruapehu as Phase 3 and the Tararua District as Phase 4. On advice from GNS **t**he Tararua District was considered last due to the complex nature of the active faults in the district. GNS considered the Tararua to be the 'hardest'.

9.6. GNS was initially engaged in 2016 to begin the Phase 1 work during the 2017-2018 period however due to their required involvement in the Kaikoura earthquake events the delivery of that work was delayed. The bulk of this work has now been completed with the final report being reviewed by the respective councils before it is formally adopted.

9.7. Phase 2 is also currently underway by GNS for the Rangitikei and Manawatu Districts with completion scheduled for late September 2019. Phases 3 and 4 are still in the early planning stages.

9.8. A power point presentation will be provided to members to provide an overview of the Phase 1 seismic work to date including the methodology used, the MfE guidelines and the communication of the information moving forward.

10. SIGNIFICANCE

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

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ANNEXES

There are no attachments for this report.