

EMPIRICAL LIQUEFACTION-INDUCED LATERAL DISPLACEMENTS RELATIONSHIP USING LIDAR DATA OF THE CANTERBURY EARTHQUAKE SEQUENCE

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This paper investigates an empirical relationship of liquefaction-induced lateral displacements using the LiDAR data during the Canterbury Earthquake Sequence. This utilised the ground displacements induced by liquefaction of the two major events in the Canterbury Earthquake Sequence, 4 September 2010 event and the 22 February 2011 event. The ground displacements have been estimated using pairs of LiDAR survey by a study from GNS. The main work and analyses undertaken to derive recommendations covers in two parts,

1. Collecting the geotechnical, survey and other relevant information along Avon River required for analyses
2. Develop an empirical relationship for estimating lateral spreading in Christchurch Area and compare against the study by Zhang et al.

Most of information has been retrieved from the Canterbury Geotechnical Database in the time when this research has been undertaken. This includes Geotechnical Investigation data (CPT data), Ground Displacement, Conditional PGA and Groundwater Elevation. The river geometry data used to estimate the height of free face (H_{freeface}) have been provided by personnel in Christchurch City Council. A total of 28 locations along the Avon River have been selected for analyses. The data from both sides of the river have been collected. The general analyses procedure has followed the analyses procedure proposed by Zhang et al; lateral displacements have been normalized against LDI and plot against the ratio of distance to the height of free face.