

Data Supply Metadata s1

Project	5 September 2010 Earthquake	10.130
Sub Area	Christchurch City	
Client	Canterbury Regional Council	
Client Contact	Maurice Wills	

Summary of Data	<p>This dataset is the first of a series that NZ Aerial Mapping (NZAM) is producing in response to the recent earthquake in Canterbury. It has been produced from LiDAR and aerial imagery collected over an area of approximately 75 sq km over Christchurch City. This data supply includes the following products:</p> <ul style="list-style-type: none">• Project extent data• Orthophotos <p>Please refer to the report section <i>Product Generation and Data Supply</i> for details on these products. More products including ground classified LiDAR point clouds are still in production.</p>
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Data Acquisition	<p>The project area over Christchurch is included in the ESRI shape file "100905_AOI" that accompanies the dataset. A map showing this area of interest is included in Appendix A.</p> <p>LiDAR and digital imagery was collected on 5 September 2010, using NZ Aerial Mapping's Optech ALTM 3100EA LiDAR system and Trimble AIC medium format digital camera. The sky was overcast with a base of cloud at approx 6,000 ft and the winds were brisk.</p> <p>The data was collected flying 1,300 metres above the ground, and using a LiDAR field of view of 38 degrees. The system PRF was set at 70kHz. The GeoSystems iBase Christchurch was used for the collection of GPS receiver station data during the aerial data acquisition.</p>
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**Data
Processing**

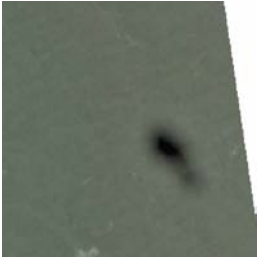
The LiDAR sensor positioning and orientation (POS) was determined using the collected GPS/IMU datasets and Applanix POSpac software. This work was all undertaken in NZGD2000 coordinate system, and made use of the data collected at the geodetic reference mark for the DGPS processing. Given the magnitude of the earthquake it is likely that the location of the iBase reference mark has changed. However, as no information is available on this yet it had to be assumed that the mark coordinate had not changed.

The POS data was combined with the LiDAR range files and used to generate LiDAR point clouds in New Zealand Transverse Mercator (NZTM) map projection but NZGD2000 ellipsoidal heights. This process was completed using Optech DASHMap LiDAR processing software. This initial point cloud data was classified into ground, first and, intermediate returns using automated routines tailored to the project landcover and terrain. The ground classified points were turned into a DTM for use in orthophoto production. Further work is required to create a point cloud for DTM modelling.

The Trimble camera images were developed into 8 bit per channel uncompressed TIFF format images. The LiDAR POS data was transformed for use with the camera, and this data was used with the automated classified ground LiDAR point cloud data to produce orthophotos with a ground sample distance of 0.25m. The orthophotos were produced fully automatically using auto mosaic line placement and colour balancing. This set of orthophotos has had to be produced without the use of surveyed ground control. They contain residual errors and are not suitable for precise measurement. They have been provided as a data source for the emergency response efforts. Users should note that the orthophotos contain image mismatches at mosaic seamlines, such as shown in the example below. These should not be mistaken for earth displacements.



Product Generation & Data Supply	<p>The supplied products are all in terms of New Zealand Transverse Mercator (NZTM) map projection. The products are in NZTopo50 1:1,000 tiles. The ESRI shape file "100905_tiles" that accompanies the dataset contains this tile layout.</p> <p>The folder <i>Orthophotos</i> contains the 0.25m GSD orthophotos produced using the Trimble AIC camera imagery. The orthophotos have been supplied in both TIFF/ESRI TFW and ECW file formats. The TIFF images are in the folder <i>TIFF</i> and the ECW images are in the folder <i>ECW</i>. The target compression when creating the ECW files was 2.</p> <p>If you have requirements for the data in other file formats, map projections please contact NZAM.</p>
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Quality Exceptions	<p>The quality of this imagery is lower than would normally be expected. The photography was acquired in light and air conditions that were not ideal, and this reflects in the orthophoto products.</p> <p>The imagery also contains an artefact that is repeated on each frame. The image below shows this artefact in an image over the sea.</p>  <p>It is our standard operating procedure to check and clean the camera lens each day. The source of this contamination is still being investigated.</p>
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Supplier	NZ Aerial Mapping Ltd
Address	208 Warren Street PO Box 6 Hastings 4158 New Zealand
Phone	64-6-873 7550
Supplier Contact	David Napier (david.napier@nzam.com)

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Author	Tim Farrier

Appendix A: Project Area and data tile layouts

Areas of interest shown as purple outline.

Christchurch
City 100905

