

## Metadata

### Wellington City Council

### WELLINGTON CITY 2020 LiDAR SURVEY

**AERIAL SURVEYS PROJECT Nº: FPFA1273**

### *Summary*

#### *Project*

An Airborne Laser Scanner survey was conducted over the Wellington Airport and surrounds area totalling approximately 177 km<sup>2</sup>. Wellington Airport is located in the Wellington Region of the North Island.

#### *Data*

The data was processed into various digital map data products. The products included for this dispatch contain:

- Raw Point Cloud
- Classified Point Cloud
- ClassifiedPointCloud\_2019\_Corrected
- Gridded DEM
- DEM\_2019\_Corrected
- Gridded DSM
- DSM\_2019\_Corrected
- Intensity Image
- Contours
- Breaklines
- Tile Layout

### *Project Report*

**Safety:** No safety Incidents were reported during the project.

**Acquisition:** Airborne Laser Scanner (ALS) data was acquired from a fixed wing aircraft on:  
20, 22, 31 March, 26 April, 20 May 2019, 8, 14 March 2020

**Ground Support:** GPS base station data was provided by Global Surveys Ltd and LINZ base stations. The ground check points acquired by Beca Ltd.

**Data Processing:** Reduction of the ALS data proceeded without any significant problems. Laser strikes were classified into ground and non-ground points using auto algorithms across the project area.

**Data Presentation:** The data provided on this volume has been supplied in accordance with a specification agreed with Wellington City Council.

#### **Project Contacts:**

Wellington CC Team Leader Enterprise Data Management: Michael Brownie (Ph (09) 801 3517)  
Aerial Surveys Managing Director: Steve Laming (Ph. (09) 415 3101)

### *Data Acquisition*

A map showing this area of interest is included in Appendix A.

LiDAR survey was collected using Aerial Surveys Optech Galaxy LiDAR system.

#### Survey Specification:

- Scanner: Optech Galaxy
- Flying Height: 1300 m AMGL
- Scan Angle:  $\pm 17.0$  degrees
- Scan Frequency: 80.0 Hz
- Pulse Rate: 500 kHz
- Swath Overlap: 55%
- Points Per M<sup>2</sup>: 16

Beca Ltd field surveyed check sites that were used to verify the accuracy of the processed ground dataset.

### *Data Processing*

The LiDAR sensor positioning and orientation (POS) was determined using the collected GPS/IMU datasets and Applanix POSPac software.

Base Station Positions: PP-RTX

The POS data was combined with the LiDAR range files and used to generate LIDAR point clouds in NZTM and ellipsoidal heights. This process was undertaken using Optech LMS LiDAR processing software. The data was checked for completeness of coverage. The relative fit of data in the overlap between strips was also checked.

The height accuracy of the ground classified LiDAR points was checked using open land-cover survey check site data collected by Beca Ltd. This was done by calculating height differences statistics between a TIN of the LiDAR ground points and the checkpoints. The standard deviation statistic is 0.041 m; a RMS of 0.041 m and the average difference is -0.001 m. LiDAR is relative to the control check points.

StDev_DZ	Mean_DZ	RMSE_DZ	CI95_DZ
0.041	-0.001	0.041	0.08

The positional accuracy of the LiDAR data has been checked by overlaying Beca Ltd surveyed data over the LiDAR data displayed coded by intensity. The data was found to fit well in position.

The point cloud data was then classified with TerraSolid LiDAR processing software into ground and above ground returns using automated routines tailored to the project landcover and terrain.

### *Product Deliverables*

All product deliverables supplied in terms of NZTM/GD2000 map projection and NZVD2016 vertical datum. The data was converted from NZGD2000 ellipsoidal heights into the local height system using the LINZ NZGeoid16 separation and offset model.

The following details the folder contents:

Raw Point Cloud:	Contains the unclassified LiDAR point cloud points as they were prior to being classified This dataset is supplied in ASPRS LAS v1.4 format.
Classified Point Cloud:	Contains the LiDAR point cloud points that have been classified to Level 2 as ground returns and above ground returns. This dataset is supplied in ASPRS LAS v1.4 format.
Contours:	Contains 0.5 m, 1 m and 5 m contours. The contours were interpolated from a smoothed TIN created using the LiDAR point cloud dataset. The contours are classified into majors and minors. Four minors to every major and shown on different levels. This dataset is supplied in SHP & DXF format.
Gridded DEM:	Contains the gridded ground surface (1 m separation grid) This dataset is supplied in GeoTIFF format.
Gridded DSM:	Contains the gridded top of surface (1 m separation grid) This dataset is supplied in GeoTIFF format.
Intensity Images:	Contains the raster images created using the intensity values of the LiDAR returns This dataset is supplied in TIF/TFW format.
Tile Layout	Tiles is the tile layout for the project area Tile size 1:1000 sheet layout (480 x 720 m) Tile dataset is supplied in SHP format and DXF.

All digital data supplied ON Ehdd-100. Data sent to Michael Brownie, Wellington City Council on: 23 July 2020.

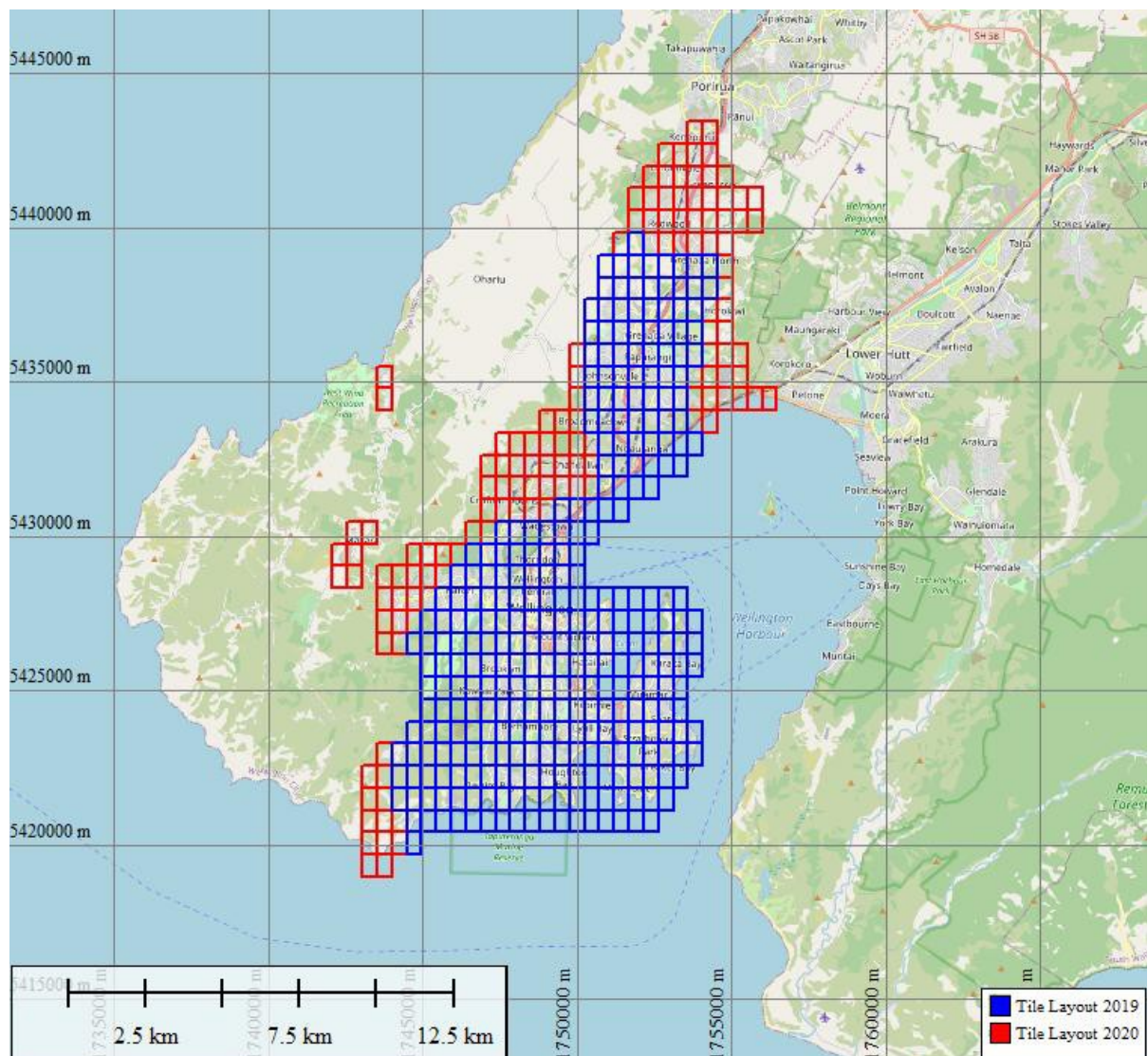
If you have requirements for the data in other file formats, map projections please contact Aerial Surveys.

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### *Appendix A: Project Area*

The tile layout shows the new tiles in red and existing in blue.



This delivery includes all 2020 tiles and the entire delivery of contours