



## Metadata

### GISBORNE DISTRICT COUNCIL

### EAST COAST-TAIRAWHITI – 2018/19 LiDAR SURVEY

### Block 2 Pt3

**AERIAL SURVEYS PROJECT Nº: FPFA1228**

### *Summary*

#### *Project*

An Airborne Laser Scanner survey was conducted over the East Coast-Tairawhiti area totalling approximately 8,700 km<sup>2</sup>. This area covers the entire Gisborne Region of the North Island.

#### *Data*

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

- AOI
- Raw Point Cloud
- Classified Point Cloud
- Gridded DEM
- Gridded DSM
- Intensity Images
- Breaklines
- GNSS Data
- Flight Trajectory
- 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 between: 3, 4, 6 January, 14, 15 February, 5, 6 March, 14, 21, 22, 23, 26 May 2019

**Ground Support:** GPS base station data was provided by Global Surveys Ltd and LINZ base stations. The ground check points acquired by Sounds Surveying 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 Gisborne District Council.

#### **Project Contacts:**

Gisborne District Council Team Leader - Land Information: Mark Cockburn (Ph. (06) 869 2501)  
Aerial Surveys Business Development Manager: Steve Smith (Ph. (09) 415 3101)

### Data Acquisition

The project area is that shown in the shapefile 'LiDARMetadataEastCoastTairawhiti2018-19LiDAR\_Fpfa1228.shp' that accompanies the dataset. A map showing this area of interest is included in Appendix A.

LiDAR survey was collected using Aerial Surveys Optech Orion H300 and Galaxy LiDAR system.

#### Survey Specification:

- Scanner: Optech Orion H300
- Flying Height: 2,000 m AMGL
- Scan Angle:  $\pm 12.0$  degrees
- Scan Frequency: 43.0-59.8 Hz
- Pulse Rate: 125 kHz
- Swath Overlap: 55%
- Points Per M<sup>2</sup>: 2

#### Survey Specification:

- Scanner: Optech Galaxy Prime
- Flying Height: 3000 m AMGL
- Scan Angle:  $\pm 46$  degrees (with  $\pm 2$  degree cut off)
- Scan Frequency: 47.5 Hz
- Pulse Rate: 400 kHz
- Swath Overlap: 55%
- Swath Points Per M<sup>2</sup>: 2.35

Sounds Surveying 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: PPRTX base station and GISB

GISB Base Station Position: 38 38 07.21293 S 177 53 09.72572 E 87.177 Ell Height

Antenna Height: 0.055 Antenna Height

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 Sounds Surveying Ltd. This was done by calculating height differences statistics between a TIN of the LiDAR ground points and the checkpoints.

StDev	DZ	Mean	DZ	RMSE	DZ	CI95	DZ
0.057		-0.027		0.063		0.123	

The positional accuracy of the LiDAR data has been checked by overlaying Sounds Surveying Ltd. surveyed data over the LiDAR data displayed as first return TIN surface. 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

Product deliverables are supplied in terms of NZTM/GD2000 map projection and NZVD2016 and Gisborne 1926 vertical datum. The data was converted from NZGD2000 ellipsoidal heights into the local height system using the LINZ NZGeoid2016 separation model.

The following details the folder contents:

AOI:	Extent is the limit of the project area This dataset is supplied in SHP format and DXF
Raw Point Cloud:	Contains the unclassified LiDAR point cloud points as they were prior to being classified This dataset is supplied in ASCII XYZI compressed .rar format
Classified Point Cloud:	Contains the LiDAR point cloud points that have been classified This dataset is supplied in ASPRS LAS v1.4 format
Gridded DEM:	Contains the gridded ground surface (1 m separation grid) This dataset is supplied in ARC_ASCII grid format
Gridded DSM:	Contains the gridded top of surface (1 m separation grid) This dataset is supplied in ARC_ASCII grid format
Intensity Images:	Contains the raster images created using the intensity values of the LiDAR returns This dataset is supplied in TIF/TFW format
Breaklines:	Contains breaklines representing all hydro-flattened features. This dataset is supplied in SHP format
GNSS Data:	Contains GNSS data for all base station occupations of existing or new benchmarks in excess of 6 hours along with observation log sheets. Not supplied as basestation data is PPRTX
Flight Trajectory:	Geodata file showing the actual flight lines. This dataset is supplied in attributed SHP 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

Surface_Type	Classification	Point_Class
Raw_Point_Cloud	0	Unclassified
Classified Point Cloud	1	Unclassified
Classified Point Cloud	2	Ground
Classified Point Cloud	7	Noise
Classified Point Cloud	9	Water
Classified Point Cloud	14	Above_Ground
Classified Point Cloud	18	High points

All digital data supplied on 1 e-HDD-82. Data couriered to Gisborne District Council on:  
17-Jan-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 is shown in black.

