



TASMAN DISTRICT COUNCIL

TASMAN DC LIDAR 2016-17

VOLUME 11327B01NOK

Summary

Project

AAM was engaged by Tasman District Council to undertake the Aerial Imagery and LiDAR survey over part of Tasman encompassing coastal areas from Riwaka in the south to Onekaka in the north. To this end, LiDAR data was captured from a fixed wing aircraft between 13th - 14th of December 2016.

Data

Products supplied in this volume as follows:

- Ancillary files:
 - Flight Trajectories in Shapefile
 - Project Extent and Tile Layout in Shapefile Format
 - Project Report
- Orthophotos in GeoTIFF/TFW
- LiDAR data in NZVD2016 & Nelson 1955
 - Classified Point Cloud in LAS 1.2
 - Ground Point Cloud in LAS 1.2
 - Non Ground Point Cloud in LAS 1.2
 - TIN in ESRI Terrain
 - Digital Elevation Model – ESRI ASCII Grid, 1m interval
 - Digital Surface Model - ESRI ASCII Grid, 1m interval
 - 0.5m Contour in Shapefile

The vertical accuracy for this dataset is 0.06m RMS, and the horizontal accuracy is 0.50m RMS. This dataset is supplied in NZTM2000 map projection, and in two vertical datums – NZVD2016 and Nelson 1955, (using NSN55-NZVD16).

(Ref: PWNZ 11327B, PW 27308B)

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1. PROJECT REPORT

Safety: No safety Incidents were reported during the project

Acquisition: Airborne Laser Scanning (ALS) data, with concurrent imagery was acquired from a fixed wing aircraft on 13th - 14th of December 2016.

Ground Support: GPS base station support was sourced from GeoNET CORS. The ground check points acquired by Sound Surveying Ltd allowed an assessment of the accuracy of the ALS data.

Data Processing: Reduction of the ALS data proceeded without any significant problems. Laser strikes were classified into ground and non-ground points using a single algorithm across the project area. Manual checking and editing of the data classification further improved the quality of the terrain model. Ground and water classes have been classified to ICSM Level 3.

ArcGIS 10.1 Terrain Grids were derived using the Natural Neighbour interpolation. This method uses the closest triangles and applies weights to the proportionate areas from the grid cell centroid to interpolate the value. It uses known elevation data, it does not make any predictions regarding the surface and accurately depicts existing troughs and peaks in the data and supports irregular point spacing, which suits the nature LiDAR data.

Breaklines have been used where required to ensure contour hydro flow shape and accuracy, and hydro flattening on the DEM products.

The contours supplied on this volume are engineering contours. They are compiled from a rigorous triangulation of the supplied data. No cartographic licence has been applied. They are intended to provide a visual representation of the terrain data, and are not suitable to be used as a cartographic map.

Imagery captured concurrently with the LiDAR data, has been georeferenced using direct referencing methods, and ortho-rectified using the ALS digital terrain model. Seamlines are automatic.

Data Presentation: The data provided on this volume has been supplied in accordance with a specification agreed with the primary client. Subsequent users experiencing difficulties in handling the data should please contact AAM to arrange a more appropriate data presentation.

Further Issues: There are no further issues to report.

Project Contacts:

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2. DATA INSTALLATION

Data format : LAS, SHP, PDF
Number & type of media : HDD
Information files on media : Readme_11327B01NOK.pdf
Data formatted on : 27.04.2017
Disk volume : 11327B01NOK

README FILE

This document (Readme_11327B01NOK.pdf) is provided as an Acrobat file in this volume.

To open the file, double click on the PDF file to activate Acrobat Reader Software.

Adobe Acrobat Reader may be downloaded from:

<http://www.adobe.com/products/acrobat/readstep2.html>

FILE SIZES AND NAMES

Data is provided in LINZ NZTopo50, 1:2000 tiles 960m by 1440m to the following filenaming convention:

Structure: BP25_2K_1715_ *PRODUCT_ID*.abc

Classified Point Cloud	e.g. BP25_2K_1715_CL.las
Non-ground Point Cloud	e.g. BP25_2K_1715_NON.las
Ground Point Cloud	e.g. BP25_2K_1715_GRN.las
DEM	e.g. BP25_2K_1715_DEM.asc
DSM	e.g. BP25_2K_1715_DSM.asc
Contours	e.g. BP25_2K_1715_CONT.shp
Orthophotos	e.g. BP25_2K_1715_O.tif
TIN	single file, not tiled

LAS file point classifications levels are formatted to comply with ASPRS Standard LiDAR Point Classes.

1	Default
2	Ground
3	Low Vegetation
4	Medium Vegetation
5	High Vegetation
9	Water

Folder structure is used to differentiate products supplied in two Vertical Datums:

- NZVD2016
- Nelson 1955

Folder structure is also used to differentiate products

Please refer FileList_Volume_11327B01NOK.txt

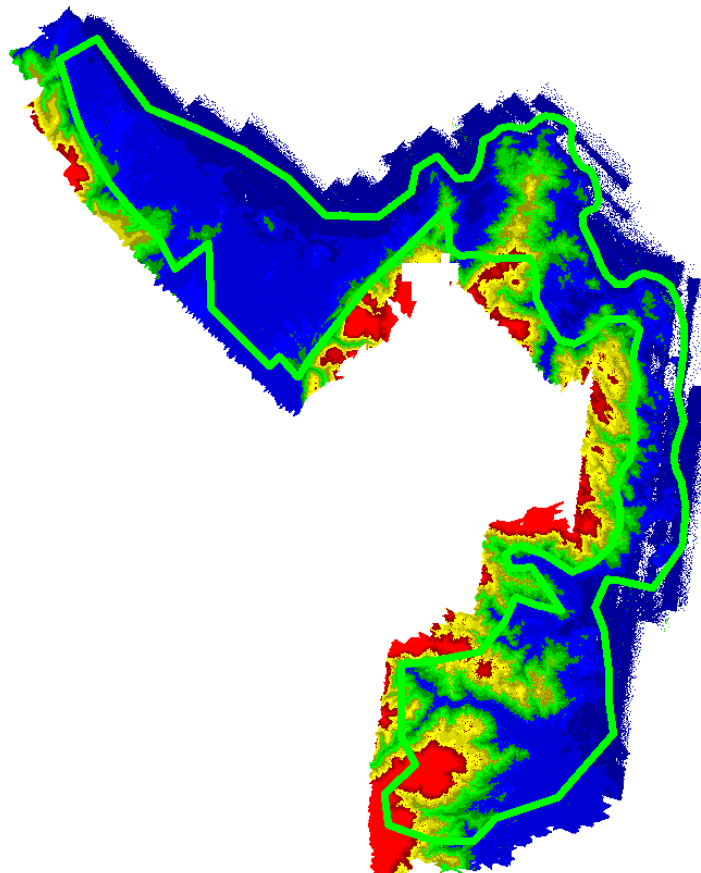
3. ADDITIONAL SERVICES

Product Generation

AAM can perform the following additional services on the data contained on this volume if required:

Change horizontal datum	: to another local grid
Alter geoid modeling	: by transforming ALS data to fit orthometric survey heights
Improve data classification	: by tailoring parameters to suit regional variations
Further classification	: assist building identification by further classifying non-ground strikes
Data thinning	: to remove superfluous points not adding to the terrain definition
Data subset	: by dividing the data into different tiles or polygons
Data presentation	: by creating contours, profiles, perspectives, flythrough, colour-coded height plots etc.
Ground truthing	: by comparing the ALS terrain model with extra independent height data
Data gridding	: to convert the measured spot heights into a regular grid
Extra data	: extra data was collected beyond that supplied on this volume (see below)
Intensity Image	: grayscale image created from laser's intensity returns
Fly – Through/3d Perspectives	: image draping /slope models

Extra Data Captured



Laser Data shown in the above image outside the project boundary may be of a lower accuracy. It is not supplied within this volume and no manual classification editing has been undertaken.

4. METADATA

SOURCE DATA

Item	Source	Description	Ref No	Date
Laser System	AAM	Q1560	11327B	13-14/12/2016
GPS Base Data	GeoNET	CORS	11327B	13-14/12/2016
Base Stn Coords	GeoNET	Static RTK	11327B	13-14/12/2016
Field Survey Data	Sounds Surveying Ltd	RTK GPS	11327B	22/11/2015

LASER DATA CHARACTERISTICS

Characteristic	Description
Device Name	ALS 60
Half Scan Angle	30 degrees
Laser Pulse Rate	300 kHz
Laser Pulse Mode	Multi Pulse
Average Point Spacing	2.0 pts/m ²
Laser return	1 st , 2 nd , 3 rd and last
File Format	LAS 1.2
Horizontal Datum	NZGD2000
Vertical Datum	NZVD2016 & Nelson 1955
Map Projection	NZTM
Vertical Accuracy Specification	±0.06m Standard Error (68% confidence level or 1 sigma)
Horizontal Accuracy Specification	±0.50m Standard Error (68% confidence level or 1 sigma)

REFERENCE SYSTEMS

	Horizontal	Vertical
Datum	NZGD2000	Nelson 1955
Projection	NZTM	N/A
Geoid Model	N/A	NZ Geoid 2016
Primary Reference Station	NLSN	NLSN
Secondary Reference Station	GLDB	GLDB

5. ACCURACY

PROJECT DESIGN ACCURACY

Project specifications and technical processes were designed to achieve data accuracies as follows:

	Measured Point	Basis of Estimation
Vertical data	0.06	Project Design
Horizontal data	< 0.50m	System specifications (1/5500 x flying height)
Test points	0.05m	Survey methodology used

Notes on Expected Accuracy

- Values shown are at 68% confidence interval, in metres.
- “Measured points” are those observed directly.
- Accuracy estimates for terrain modelling refer to the terrain definition on clear ground. Ground definition in vegetated terrain may contain localized areas with systematic errors or outliers which fall outside this accuracy estimate.
- Laser strikes have been classified into “ground” and “non-ground”, based upon algorithms tailored for major terrain/vegetation combinations existing in the project area. The definition of the ground may be less accurate in isolated pockets of dissimilar terrain/vegetation combinations.

LIMITATIONS OF DATA

- The definition of the ground under trees may be less accurate.

DATA VALIDATION

- Ground data in this volume has been compared to 468 test points obtained by field survey and assumed to be error-free. The test points were distributed across the mapping area and located on clear open ground. The mean difference has been removed from the data. Final accuracy estimates after removing the mean offset yielded:

Ref Point Site	No. of Points	Mean Difference (m)	Std Deviation (m)	RMS (m)
Nelson1955	468	+0.003	0.065	0.065
NZVD2016	468	+0.004	0.065	0.065

- Data classification has been manually checked and edited against any available imagery.

USE OF DATA

- Intended use : Preliminary Design subject to final survey
- Intended use : Planning, Conceptual Design
- Intended scale of use : 1:1000

6. CONDITIONS OF SUPPLY

The data in this volume has been commissioned by **TASMAN DISTRICT COUNCIL**.

The data in this volume is provided by AAM NZ Limited (AAM) to **TASMAN DISTRICT COUNCIL** under the AAM Terms of Engagement (MQM021_Terms_of_Engagement_NZ), which provide **TASMAN DISTRICT COUNCIL** with a full and unrestricted license in perpetuity to use all reports, mapping and other delivered data, in accord with documented provisions, and subject to the following conditions:

1. This file (Readme_11327B01NOK.pdf) is always stored with the unaltered data contained in this volume.
2. The data is not used for purposes beyond that explicitly agreed in the description of the Services provided by AAM.

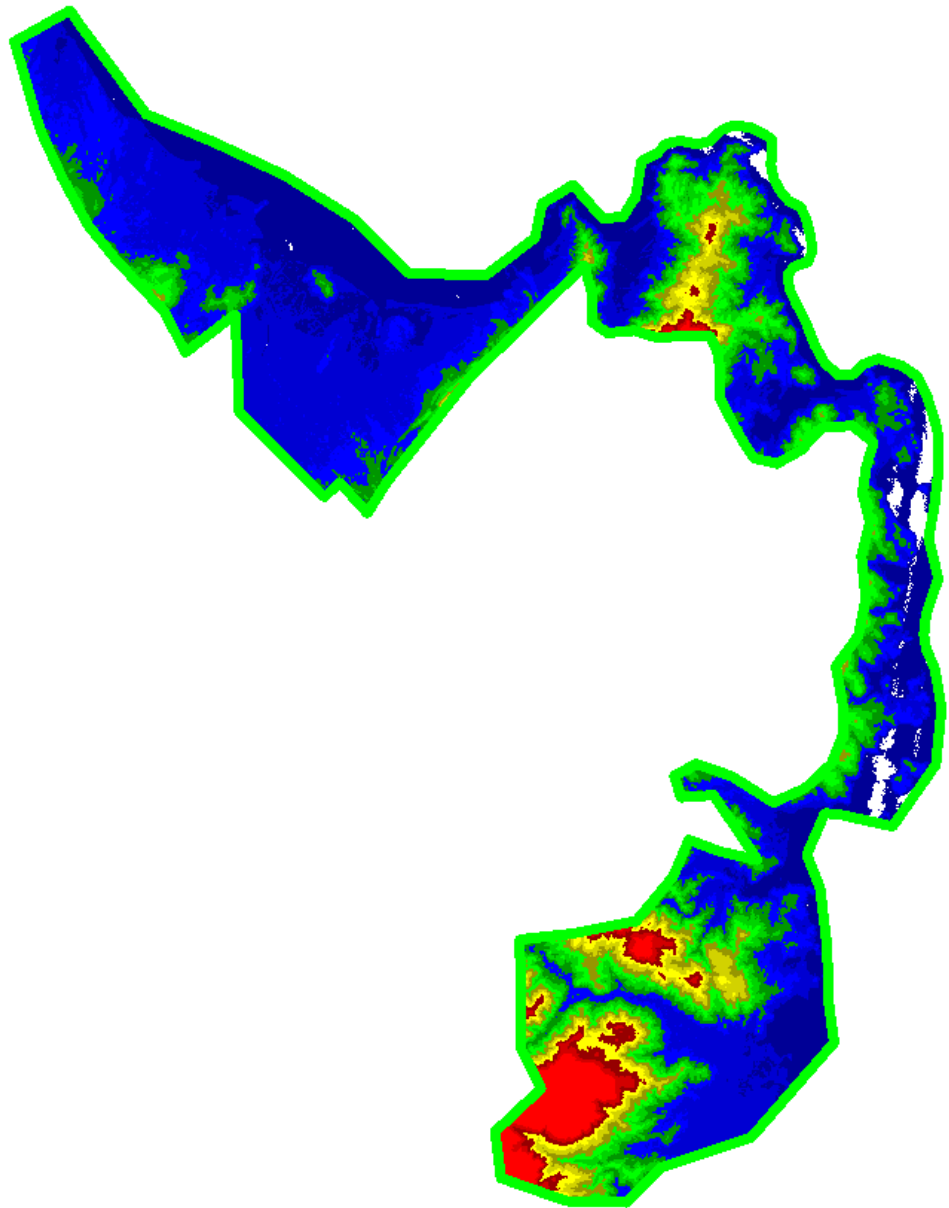
Any breach of these conditions will result in the immediate termination of the license issued by AAM, and **TASMAN DISTRICT COUNCIL** will indemnify AAM from all resulting liabilities.

Any problems associated with the information in the data files contained in this volume should be reported to AAM NZ Limited. A complete list of project related contacts is listed on page 3 under the Project Report heading.

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7. VALIDATION PLOTS

Tasman area LiDAR coloured by elevation





8. LOCATION PLOT

