

PRODUCTS AND SERVICES

AERIAL SURVEYS

LiDAR (Light Detection & Ranging)

Aerial Surveys offers high accuracy LiDAR surveys using the Optech Orion H300 system suitable for a wide range of applications in New Zealand

Airborne LiDAR has matured as an accurate and highly effective technology for the automated capture of terrain data through x, y and z points commonly referred to as point clouds.

The point clouds represent the simplest form of ALS data which can then be classified into a variety of products including digital terrain models, contours and above ground features.

ALS systems collect many more points than are necessary to define the terrain and hence generate large sized databases which are then filtered to create usable dataset sets.

Effectively the ALS sensor emits thousands of laser pulses per second and records the time taken for each light pulse to return to the sensor.

ALS sensors also collect more than one return for each pulse emitted allowing for better point cloud definition and greater accuracy in classification of ground and above ground features.

This is particularly effective in more vegetated areas as ALS systems have the potential, with the right settings, to 'see through' vegetation.



LiDAR Unclassified Data

Elevation data provided by LiDAR is a perfect complement to high-resolution imagery, as it adds vertical dimension to enable 3D modelling and much more

ALS systems are active sensors that can be separated into two categories, discrete and full wave form, offering different advantages depending on the target.

Full Wave Form Collection which is generating high interest in the Forestry sector captures full profiles of the laser backscattered energy giving a much more detailed profile of the surface area.

Discrete ALS Systems provide high ground point density to give high resolution representation of complex targets which is ideal for mapping.

Not only does the ALS system measure the time taken for each laser pulse to return to the sensor but it also measures the strength of the return signal.

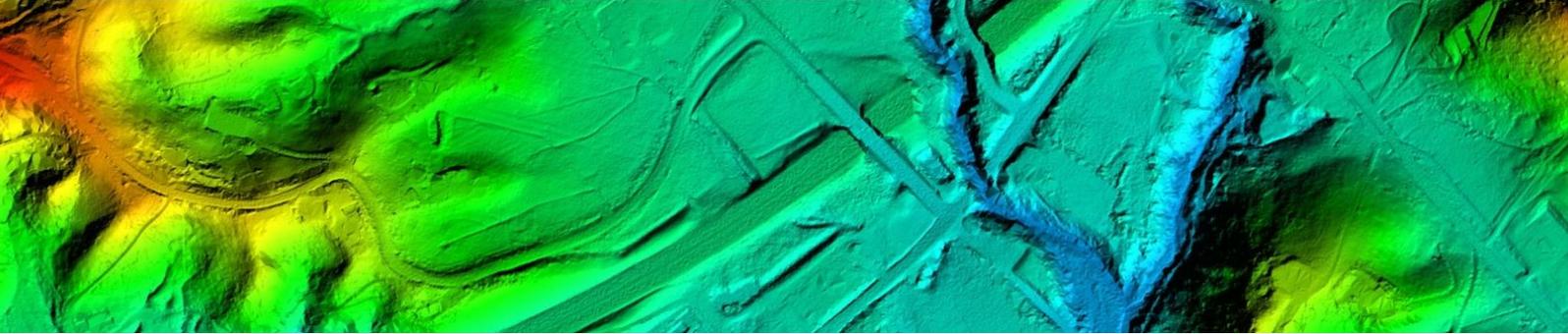
This data is referred to as intensity data and when greyscale readings are applied to the measurements an intensity image is created, effectively delivering a medium resolution black and white ortho image.

This greatly assists in validating classified datasets and identifying features in the surveyed area.



LiDAR Intensity Image

Quality Products ~ Timely Delivery ~ Latest Technology ~ Integrated Workflows ~ Open Communication ~ Project Management



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Airborne LiDAR is now extensively used throughout the world in multiple industries as the GIS community gains more knowledge of its uses

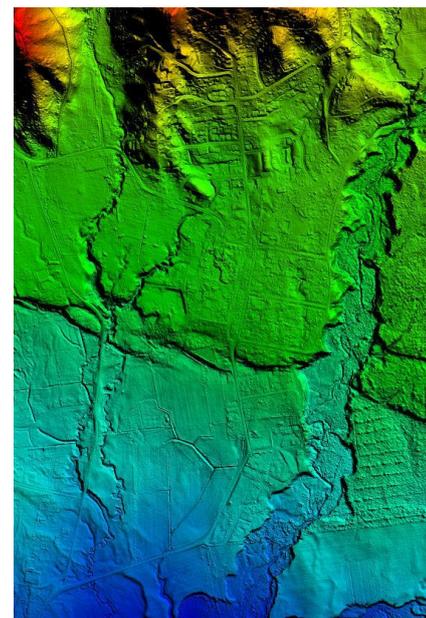
LiDAR Products:

- ▶ *Contours in any intervals*
- ▶ *Digital terrain models and digital elevation models (classified as ground and non-ground data)*
- ▶ *Point cloud data/3D modelling Data*
- ▶ *Intensity data/images (greyscale)*
- ▶ *Cross sections*
- ▶ *Gridded DEMs and DSMs*
- ▶ *Canopy height and foliage cover models*

All LiDAR data product deliverables are supplied in a GIS ready format to suit client requirement.

LiDAR Advantages:

- ▶ *Rapid acquisition (aircraft speed +200km per hour)*
- ▶ *High density DTM: 0.5m-10m point spacing*
- ▶ *High vertical accuracy: 10cm-10m z accuracy*
- ▶ *24 hour a day operation*
- ▶ *Site occupation not required*
- ▶ *Minimal ground control required*
- ▶ *Efficient surface model capture for larger areas*
- ▶ *Potential penetration through thick vegetation*



Typical Applications:

Mining and Resources

- ▶ Change detection mapping, exploration and resource evaluation, establishing volume calculations for mineral extractions, precision based DTM models, design and construction of mine plant and infrastructure, stockpile surveys

Environments

- ▶ Coastline and river assessments, monitoring change detection, flood modelling, identify flood hazards, hydrologic and hydraulic modeling, accurate definition of drainage catchments

Infrastructure

- ▶ Corridor mapping, assist with planning and design for transportation and utility corridors, determine vegetation hazards close to transmission lines, accurate mapping of transmission, power lines and above ground pipes, disaster Management

Urban and City Design

- ▶ 3D city modelling, building outlines, 3D visualisation, line of sight studies roof slopes and shadow analysis for solar applications, slope mapping

Forestry

- ▶ Ideal tool for forest management: tree counting, canopy mapping and structure, terrain mapping, accurate positioning of streams and rivers, canopy heights, biomass (forest volumes), classification analysis



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