Agmay
TECHNOLOGIES



SERVICE BROCHURE

LiDAR Drone Mapping

The ground under the trees, the wires above it, in one point cloud

A LiDAR sensor on the drone fires hundreds of thousands of laser pulses a second and records where each one returns. Some pulses pass through gaps in leaves, so LiDAR measures the ground under trees and crops as well as wires, towers and buildings, and gives a classified 3D point cloud for design and analysis.

- Up to 16 returns per pulse
- DJI Zenmuse L3 on the M400
- DJI D-RTK 3 kit
- Classified LAS/LAZ

OVERVIEW

Measure what photographs cannot see

LiDAR measures distance with laser light. The drone's satellite positioning and inertial system place every return in 3D, building a point cloud of the ground, vegetation, structures and wires.

We fly the DJI Zenmuse L3 on the DJI Matrice 400, tie the survey to ground control, then classify the points and turn them into surfaces, contours and drawings.

up to **16**	**3 cm**	up to **59 min**
Laser returns per pulse (Zenmuse L3)	Vertical accuracy (RMSE) at 120 m, DJI specification	Flight time on the DJI M400, DJI figure

Why LiDAR with Agmay

- ✓ Bare-earth terrain models under vegetation, where photogrammetry only sees the canopy
- ✓ Points classified into ground, vegetation, buildings and wires, ready for design software
- ✓ DGPS ground control and check points tie the survey to your coordinate system
- ✓ Conductors, towers and trees captured in one flight for clearance and sag analysis
- ✓ The Zenmuse L3 carries mapping cameras, so the same flight gives a colourised point cloud and an orthomosaic
- ✓ DGCA-certified pilots, with airspace checked on Digital Sky before every flight

LIDAR OR PHOTOGRAMMETRY

When LiDAR does better

	Drone LiDAR	Drone photogrammetry
Ground under trees and crops	**Measured: pulses reach the ground through gaps in the canopy**	Only the visible top surface is modelled
Power lines and thin wires	**Conductors captured as points for sag and clearance**	Thin wires rarely reconstruct
Surfaces with little texture	**Measured directly by the laser**	Needs visible texture to match images
Light conditions	**Ranging works in low light; colour needs daylight**	Needs good, even daylight

Photogrammetry is still the better value on open, well-textured sites where a colour orthomosaic is the main output. We recommend the method after seeing the site.

APPLICATIONS

Where LiDAR earns its place

From power lines to flood plains: wherever vegetation hides the ground, wires matter or surfaces have little texture.



Power-line and utility corridors

Conductor positions, sag, clearance to ground and vegetation encroachment along the line.



Mining volumes and stockpiles

Pit surfaces, benches and stockpile volumes, including areas with scrub cover.



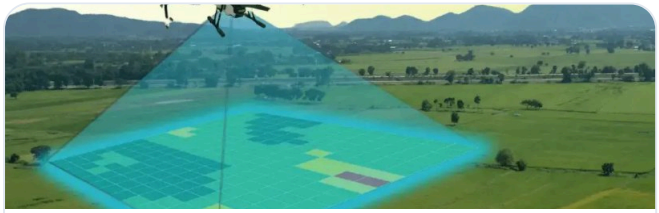
Forestry and canopy

Canopy height, tree positions and the terrain beneath the forest floor.



Roads, highways and rail

Terrain, structures and features along new and existing alignments for design and land acquisition.



Contours, DTM and DEM

Bare-earth surfaces and contours at the interval your engineers need.



Flood and drainage studies

Ground levels for flow paths, catchments, embankments and flood extents.



Construction progress

Repeat scans compared with the design surface and the previous survey.



3D models and digital twins

Classified point clouds as the base for 3D city models and asset twins in GIS.

PROCESSING

What we do with the point cloud

Raw points are only the start. Classification and feature extraction turn them into layers and drawings your team can use.

Point-cloud classification

Points sorted into standard classes so each can be used on its own.

- Ground
- Low, medium and high vegetation
- Buildings and structures
- Wires, conductors and towers
- Water, and removal of noise points

Feature extraction

Vector features drawn from the classified cloud.

- Building footprints and roof outlines
- Road edges, kerbs and centre lines
- Conductor lines and tower positions
- Tree positions and canopy heights
- Breaklines for terrain models

Surfaces and drawings

Engineering outputs for design and quantities.

- DTM (bare earth) and DSM (surface)
- Contours at the required interval
- Cross-sections and longitudinal profiles
- Volumes against a base or design surface
- Colourised point clouds and orthomosaics

HOW IT WORKS

From enquiry to delivered data

1

Scope the job

We agree the area or corridor, point density, classes, outputs and coordinate system.

2

Plan and clear the flight

Airspace is checked on Digital Sky, permissions are arranged where needed and the flight plan is loaded.

3

Fly with ground control

The Zenmuse L3 flies on the DJI M400 along planned lines, with RTK corrections from the D-RTK 3 base where needed and DGPS control on the ground.

4

Process and classify

Trajectories are processed, flight strips aligned, and points classified and checked against the check points.

5

Deliver and review

You receive the agreed files and a short walkthrough, with support for follow-up questions.

ACCURACY YOU CAN CHECK

Tied to your coordinate system

- DGPS ground control points, with independent check points to prove the result
- RTK corrections from the DJI D-RTK 3 base station where precision mapping needs it
- Target accuracy stated in the proposal; achieved accuracy reported against the check points

EQUIPMENT

The sensor, the drone and the base station

DJI Zenmuse L3

Aerial LiDAR with mapping cameras

- 1535 nm LiDAR detects targets up to 950 m away at 10% reflectivity
- Up to 16 returns per pulse to reach the ground through vegetation and pick out power lines
- 3 cm vertical and 4 cm horizontal accuracy (RMSE) at 120 m flight height
- Dual 4/3 CMOS mapping cameras: 100MP photos across a 107° combined field of view

DJI Matrice 400

The drone that carries the L3

- Up to 59 minutes of flight and 53 minutes of hover, by DJI's figures in still air
- Carries up to 6 kg, including the Zenmuse L3
- Rotating LiDAR and six-direction mmWave radar detect obstacles and power lines
- IP55 protection for work in rain and dust, from -20°C to 50°C

DJI D-RTK 3 kit

Base station for precision mapping

- Set up as a base station on site
- Sends real-time RTK corrections to the drone
- Works where there is no network RTK service
- Ground control and check points still verify the result

DJI figures are from DJI's published specifications for the Zenmuse L3 and Matrice 400. What a survey achieves depends on ground control, terrain and vegetation; we state the target accuracy for your site in the proposal.

DELIVERABLES

Files you can use straight away

Output	Format	Use
Point cloud	**LAS, LAZ**	Classified points for CAD, GIS and point-cloud software
Elevation models	**DTM and DSM (GeoTIFF)**	Bare-earth and surface heights for design and analysis
Contours	**DWG, DXF, SHP**	Contour lines for AutoCAD, civil design software and GIS
Cross-sections and profiles	**DWG, DXF, PDF**	Sections at the interval and chainage you specify
Orthomosaic	**GeoTIFF**	Colour image from the L3 mapping cameras
Extracted features	**SHP, DXF, GeoPackage**	Buildings, roads, wires and trees as vector layers
Survey report	—	Control and check-point results; every file is in the coordinate system you specify

QUESTIONS

Common questions

What is drone LiDAR?

A laser scanner on the drone measures the distance to a very large number of points, and the aircraft's satellite positioning and inertial system place each point in 3D. The result is a point cloud of the ground, vegetation, structures and wires.

LiDAR or photogrammetry?

LiDAR when you need the ground under vegetation, when wires and thin structures matter, or when surfaces have little texture. For open sites where a colour orthomosaic is the main output, photogrammetry is usually better value.

How accurate is a LiDAR survey?

DJI specifies the Zenmuse L3 at 3 cm vertical and 4 cm horizontal (RMSE) at 120 m, and 5 cm and 7.5 cm at 300 m. What a survey achieves depends on ground control, terrain and vegetation, so we state the target in the proposal and report it against independent check points.

Can LiDAR see through trees?

Not through solid foliage. The L3 records up to 16 returns per pulse, and pulses that pass through gaps in the canopy reach the ground. Denser vegetation gives fewer ground points, which we plan for with flight height and overlap.

Can you survey power-line corridors?

Yes. Conductors, towers and trees are captured in the same flight, so clearances and vegetation encroachment can be measured. Our power-line inspection service covers the thermal and visual side.

Do you train teams on LiDAR?

Our academy's surveying, mapping and inspection course covers LiDAR and photogrammetry workflows, and we train customers who buy the Zenmuse L3 from us.

How do I get a quotation?

Send us these and we reply with a scope and a price.

- ✓ The area, or the corridor and its length
- ✓ What the survey is for
- ✓ The outputs and coordinate system you need
- ✓ Your timeline

Plan your LiDAR survey with Agmay

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