

Agmay
TECHNOLOGIES

SERVICE BROCHURE

Mining Drone Survey

Stockpile volumes, pit models and highwall maps, with no one in the pit

Volumetric surveys for open-cast mines, quarries, aggregate yards and earthworks. Photogrammetry and LiDAR with RTK/PPK control give stockpile volumes, pit models and highwall maps without a surveyor walking the pit.

- Under 1% volume error
- 50+ pits surveyed
- Photogrammetry and LiDAR
- RTK/PPK control

OVERVIEW

Measure the whole pit while it keeps working

A drone maps the pit, benches and stockpiles from above in a single visit. Haul trucks and excavators keep running, and no surveyor has to stand near an unstable highwall.

The survey is tied to ground control and RTK/PPK positioning, then processed into a 3D surface for volumes, cut and fill, remaining capacity and tonnage.

50+
Active quarry pits surveyed

under 1%
Volume error against weighbridge records

1.4 M m³
Excavated volume measured in one audit

Why Agmay

- ✓ Volume error under 1% against weighbridge records
- ✓ Cut-and-fill quantities, remaining pit capacity and tonnage
- ✓ Photogrammetry and LiDAR with RTK/PPK control, chosen for the site
- ✓ Active pits surveyed without stopping haul trucks or excavators
- ✓ No surveyors exposed to unstable highwalls
- ✓ DGCA-certified pilots, with airspace checked on Digital Sky before every flight

DRONE OR GROUND SURVEY

Drone survey compared with ground survey in a pit

	Drone survey	Ground survey
Surveyors inside the pit	None	On benches and near highwalls
Production	Haul trucks keep running	Areas stopped for access
Surface detail	Millions of points across the whole pit	Spot heights

WHAT WE MEASURE

Four surveys for a working mine

01

Stockpile volumes

Volumes against an agreed base surface, with tonnage estimates.

02

Pit and bench mapping

Orthomosaics, contours and DEM/DTM models for mine planning.

03

Highwall and slope records

Repeat surveys document bench angles and visible surface change.

04

Lease boundary monitoring

Overlays on the lease boundary flag changes for investigation.

STOCKPILE VOLUMES

How a volume is measured

1

Capture the surface

Drone imagery or LiDAR is processed into a 3D surface of the pit or stockpile.

2

Agree the boundary and base

A defined stockpile boundary and an agreed base surface are set before anything is computed.

3

Compute and report

The volume and tonnage estimate are reported, with the boundary and base surface stated.

Photogrammetry or LiDAR?

Photogrammetry

Suits visible surfaces with good image coverage, and gives a colour orthomosaic of the pit.

LiDAR

Measures with laser pulses and helps in vegetated or complex terrain.

We recommend the method after seeing the site.

DELIVERABLES

What you receive

- ✓ Cut-and-fill volume reports with tonnage estimates
- ✓ 3D terrain models (DTM) with stockpile boundaries
- ✓ Highwall slope and bench-angle maps

PDF reports · CSV volume summaries · GeoTIFF rasters · LAS/LAZ point clouds · SHP or KML layers · DWG/DXF drawings

PROJECTS

Mines and quarries we have surveyed

GODAVARI VALLEY COALFIELDS

Open-cast coal mining operations

Monthly volume audits of overburden excavation and coal stockpiles.

1.4 million cubic metres of excavation measured within 99.2% of billed quantities.

Equipment: DJI Zenmuse L3 LiDAR and AeroVTOL-X

KARIMNAGAR AND KHAMMAM STONE BELTS

Granite and aggregate quarry audits

Highwall stability inspection, bench slope angles and royalty audit reports.

3D models delivered to Directorate General of Mines Safety (DGMS) requirements.

Equipment: DJI Zenmuse L3 and DJI M400

HOW IT WORKS

From enquiry to delivered data

1

Scope the job

We agree the site boundary, outputs, accuracy and schedule, and visit or review the site on maps.

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 and capture

A certified crew flies the mission with the right aircraft and sensor, and checks the data on site.

4

Process and check

Data is processed, checked against control points or references and reviewed by a second person.

5

Deliver and review

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

EQUIPMENT

DJI Zenmuse L3

Aerial LiDAR

- 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

Agmay AeroVTOL-X

Fixed-wing VTOL, built by Agmay

- Up to 120 minutes in the air from any clearing
- For large leases and long haul roads

DJI Matrice 400

Heavy enterprise drone

- 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

DJI figures are from DJI's published specifications.

QUESTIONS

Common questions

How is stockpile volume calculated?

Drone imagery or LiDAR is processed into a 3D surface. A defined stockpile boundary and an agreed base surface are then used to compute the volume; the report states both.

Photogrammetry or LiDAR: which do I need?

Photogrammetry suits visible surfaces with good image coverage. LiDAR measures with laser pulses and helps in vegetated or complex terrain. We recommend the method after seeing the site.

How often should a mine be surveyed?

It depends on extraction rate, stockpile turnover and reporting needs. Monthly volumetric audits are common; your survey and geotechnical teams set the interval.

Which formats do you supply?

PDF reports, CSV volume summaries, GeoTIFF rasters, LAS/LAZ point clouds, SHP or KML layers and DWG/DXF drawings.

How do I get a quotation?

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

- ✓ Mine or quarry location
- ✓ Lease area, or the stockpiles to measure
- ✓ One-off or repeat audits
- ✓ Your timeline

Plan your mine survey with Agmay

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