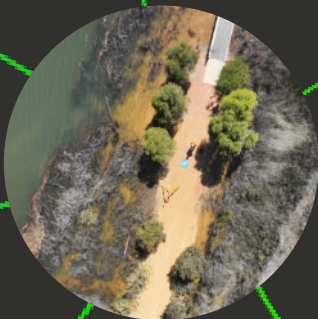




Do You Make Measured Decisions?

The data, expertise, and collaboration you need to make informed decisions across your projects.

Explore our data capture and processing services.



Shafts

Ventilation and escapeways are critical life-of-mine assets. Understanding the condition of these assets over their lifespan can allow strategic decisions to be made.

Is the raise deteriorating? Will the shaft survive the life-of-mine? Ideally a raise or shaft is scanned immediately after construction; however, it is never too late to start.

Below, and right: video, and LiDAR scanning of historic mine shaft



Our team can provide the information that you need to support further analysis and make these strategic decisions.

Depending on conditions (such as water, vent velocity, or size) we can obtain data either using drone or winch mounted LiDAR scanning using our Emesent Hovermap units.

We can also scan shafts up to 700m long, from 1.2m in diameter and can process the data to assess:

- Design vs actual conditions
- Changes over time
- Overbreak and conformance to design limits

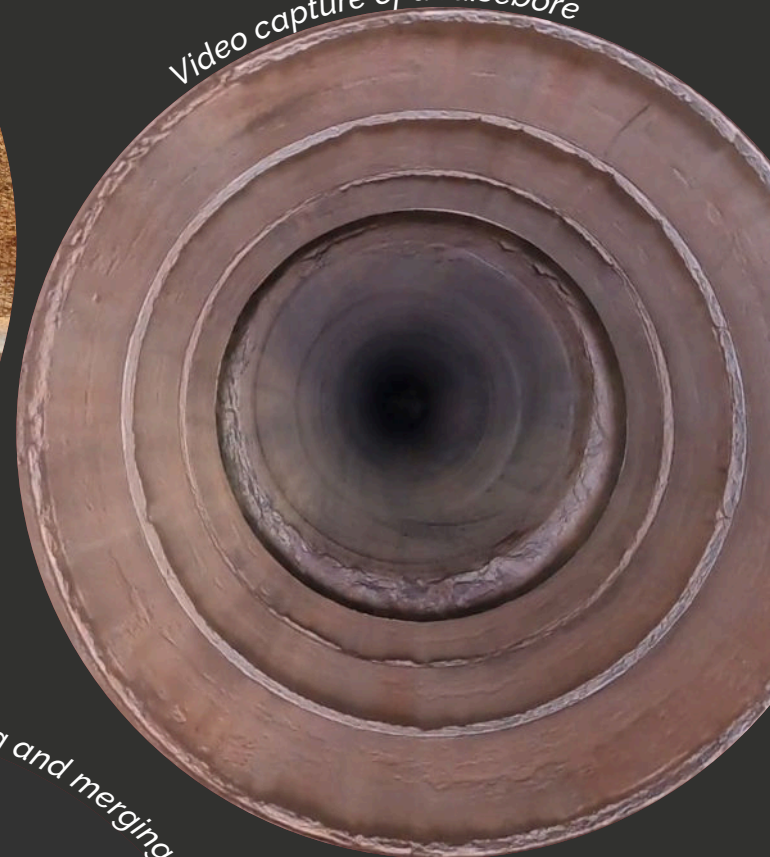


Shafts

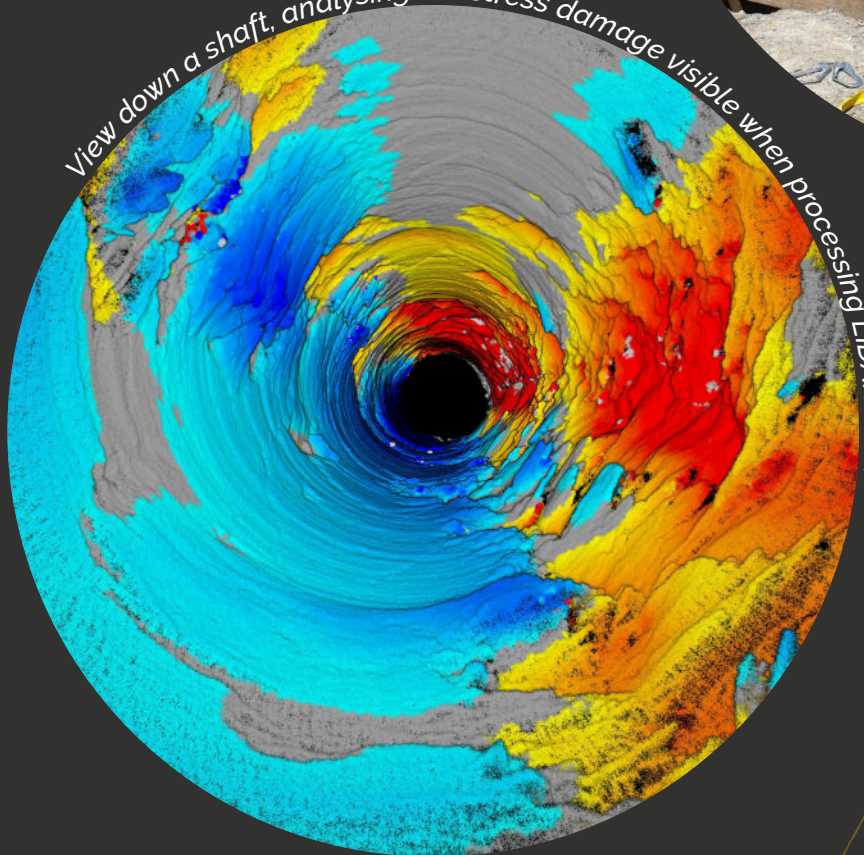
Winch and boom down a shaft in the field



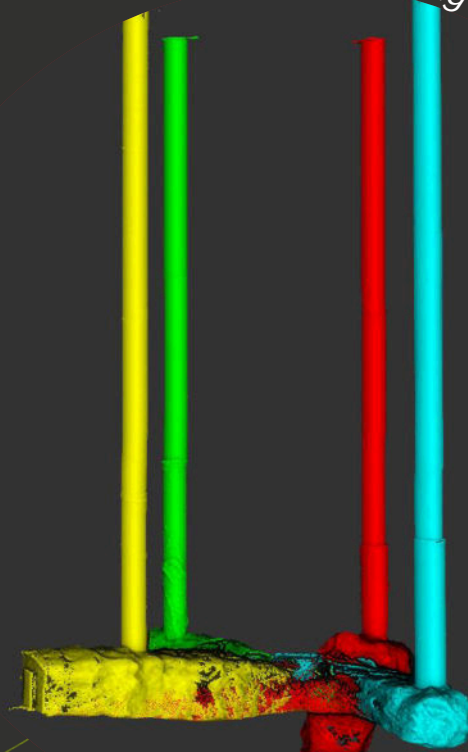
Video capture of a raisebore



View down a shaft, analysing the stress damage visible when processing LIDAR data



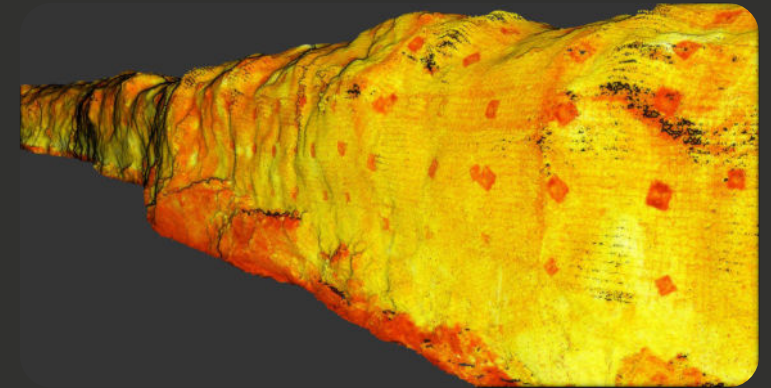
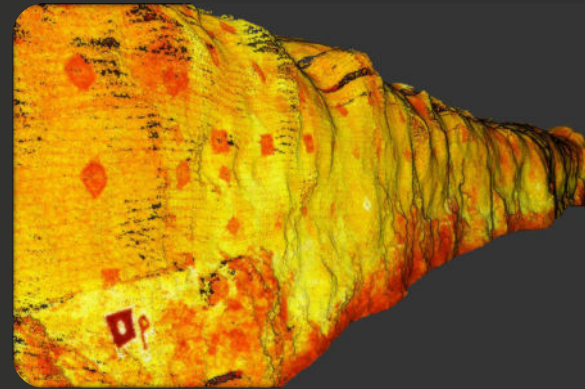
Scanning and merging multiple raisebore scans



Underground Scanning

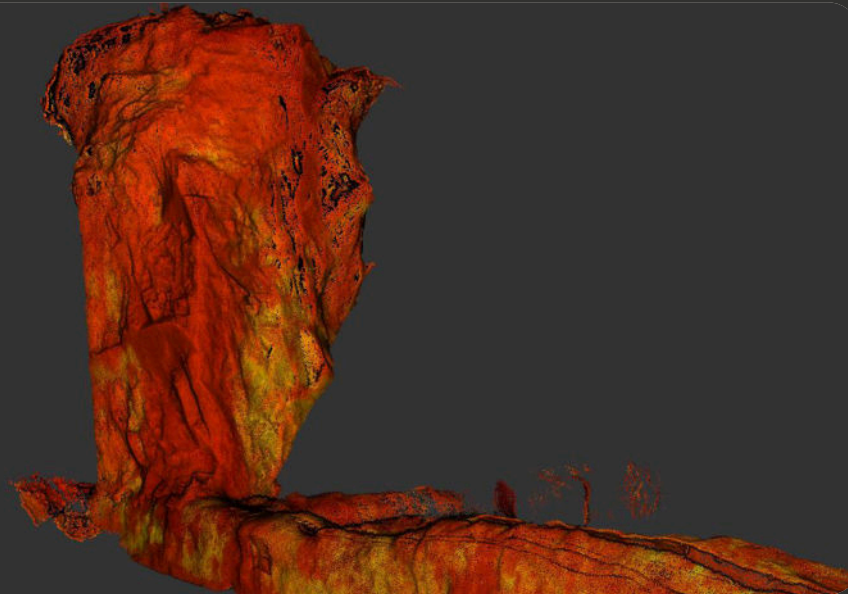
LiDAR scanning can be used for a range of purposes, from stope scanning to historic mining areas. We like to ask; what is the question you want answered? From there we can talk through the solutions.

With over 40 years of experience in the mining industry, our team has the practical knowledge that can help to solve your challenges.



Detailed volumes from stopes, stockpile volumes on surface and underground, scans for end of month is data that can be collected as part of a routine scanning service.

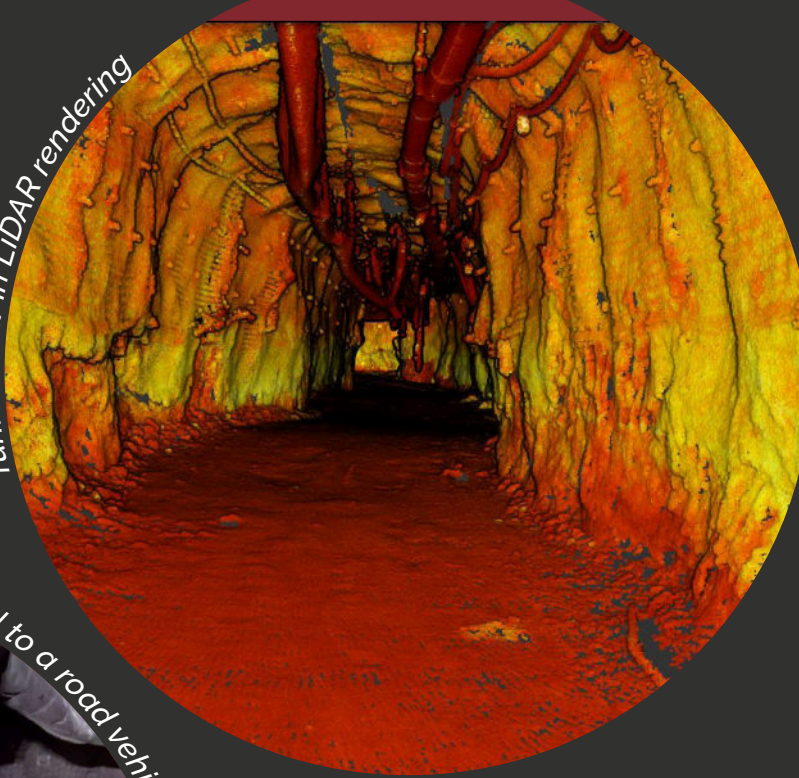
Intersecting old mine workings can be a significant hazard in both underground and surface mines. Hovermap can help to manage the risk of unplanned intersections with old workings or improve your design to avoid interactions.



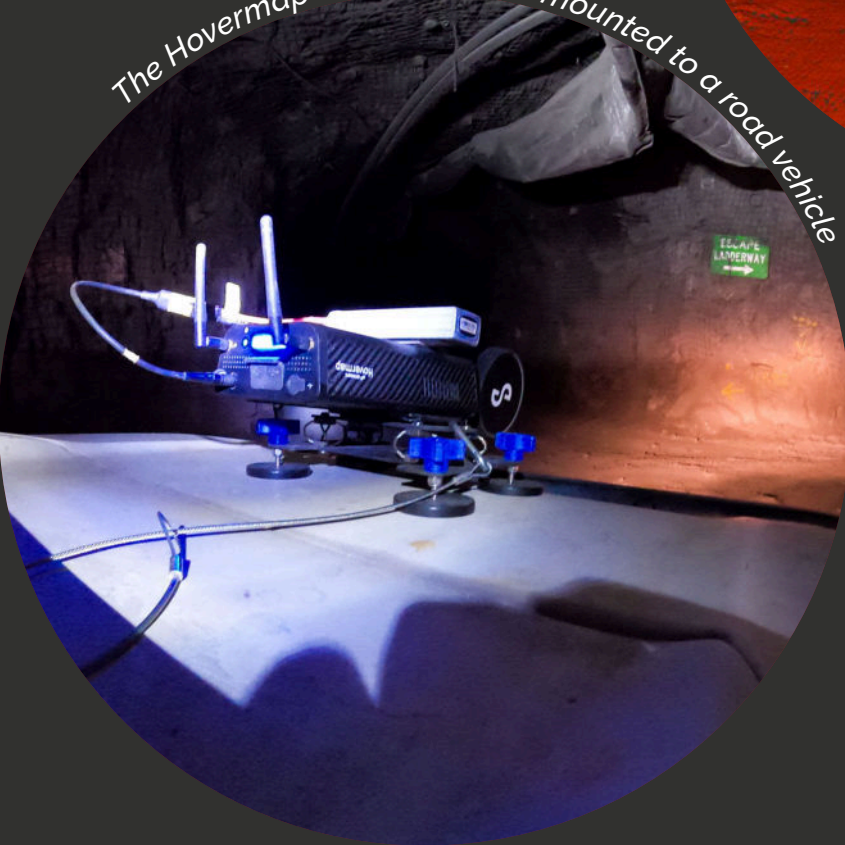
Isometric view of drone mounted stope LiDAR scan

Underground Scanning

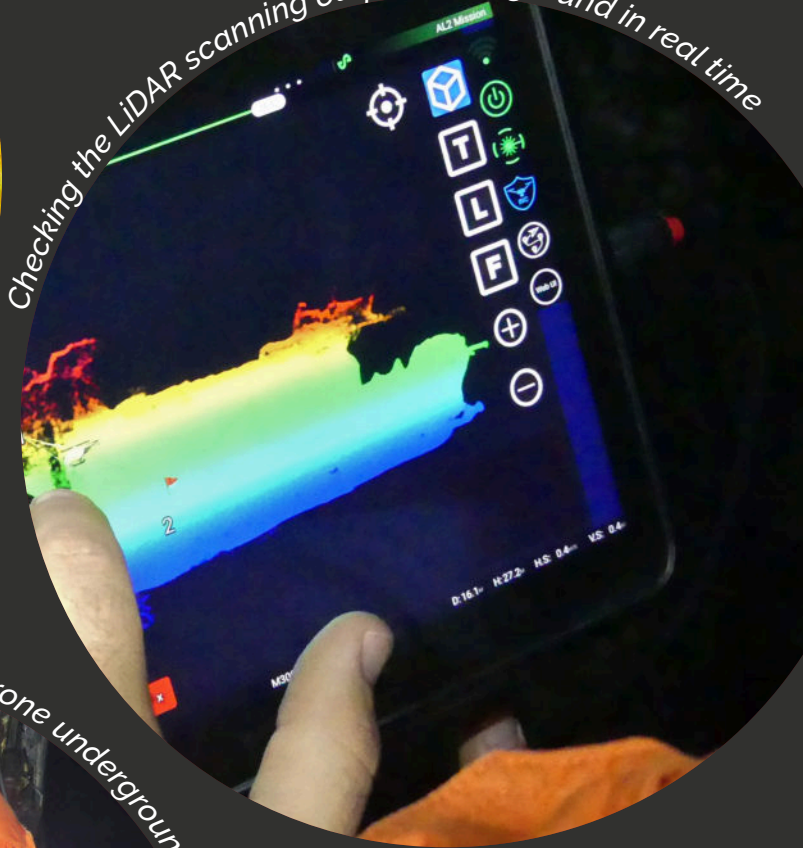
Tunnel view in LiDAR rendering



The Hovermap LiDAR scanner mounted to a road vehicle



Checking the LiDAR scanning output underground in real time



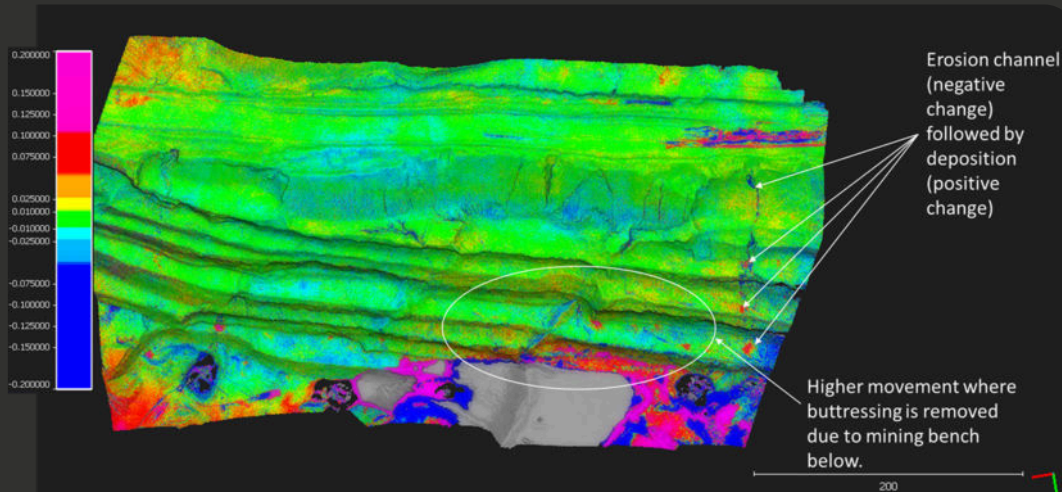
Setting up the drone underground



Surface Scanning

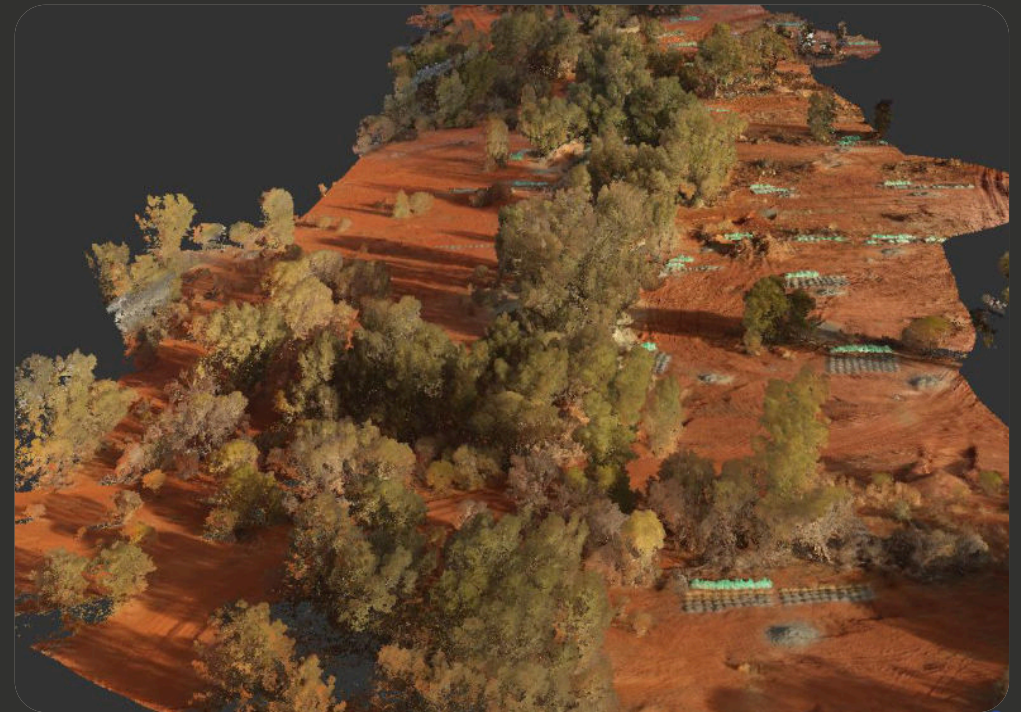
Surface environments provide plenty of challenges where LiDAR data can provide valuable data to help answer questions and support your decisions. Potentially LiDAR data is best combined with other sensors to provide the best answer.

Erosion mapping to determine the acceptability of landform stability (and compliance with completion criteria).



Periodic monitoring of mine voids in care and maintenance or active monitoring of pit slopes. LiDAR scanning and photogrammetry can be used to capture detailed information of pit walls for the purpose of stability assessments.

To assist in the monitoring of rehabilitation or other areas that are being impacted by erosion, routine scanning can determine if erosion is increasing or accelerating or if the landform has achieved a stable shape.



Bathy Scanning

Map deep below the water with Bathymetric Surveys. We want to help people understand sedimentation, profile changes, anomalies, and wall instabilities.

Bathymetry is the study and measurement of the depth at various places in a body of water, including rivers, streams, and lakes. Talk to us about measuring your tailings storage facilities, flooded pits, dams, lakes, and rivers.



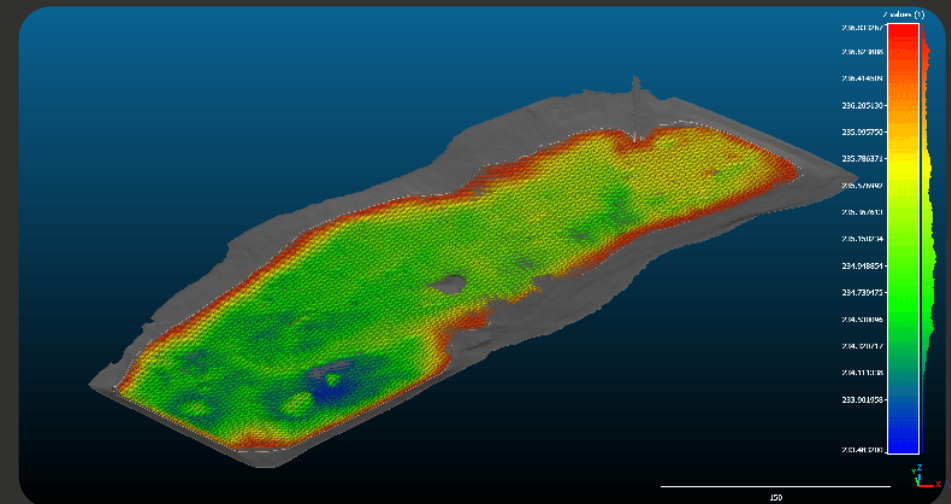
Capabilities include:

- Surveying water bodies up to 100m deep
- Up to 10 pings per second
- 9 degree beam width
- Single beam sonar



*Left:
Path of the BathyCat
on a lake survey*

*Below:
Bathymetry results
clipped to surface
survey for an
agricultural dam*



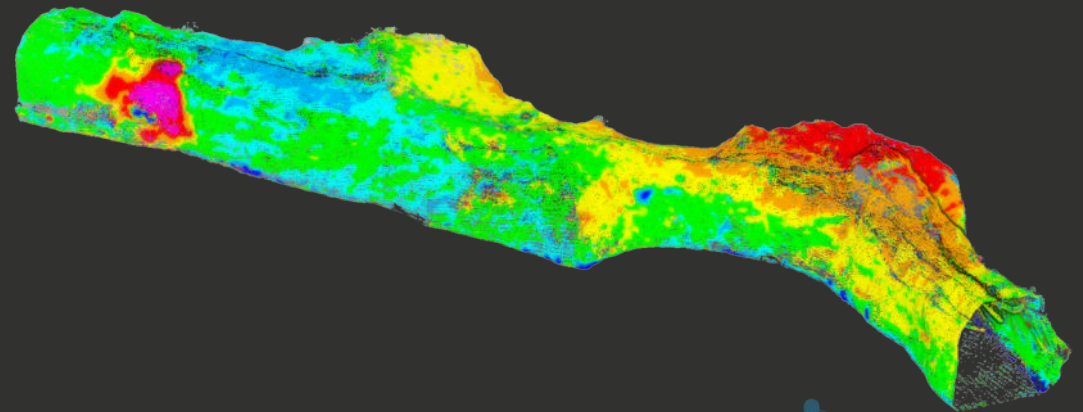
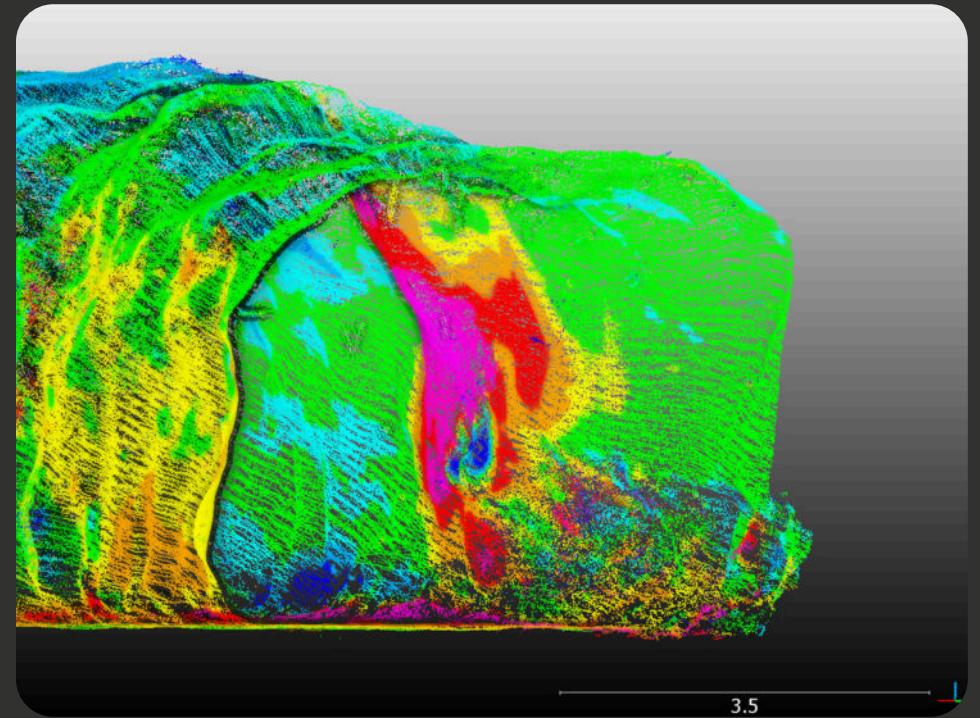
Convergence Monitoring

Convergence/displacement monitoring or change detection is a primary use of LiDAR scanning data. This method can be used on underground mining tunnels, erosion monitoring, construction progress, or vegetation growth.

We use LiDAR scanning in underground mines to obtain point cloud data around the full tunnel profile for convergence monitoring, ensuring that informed decisions can be made in relation to rehabilitation timing, ground support capacity, and excavation dimensions.

In conjunction with Emesent, we have published a white paper on convergence monitoring and the benefits of SLAM-based LiDAR scanning to the mining industry.

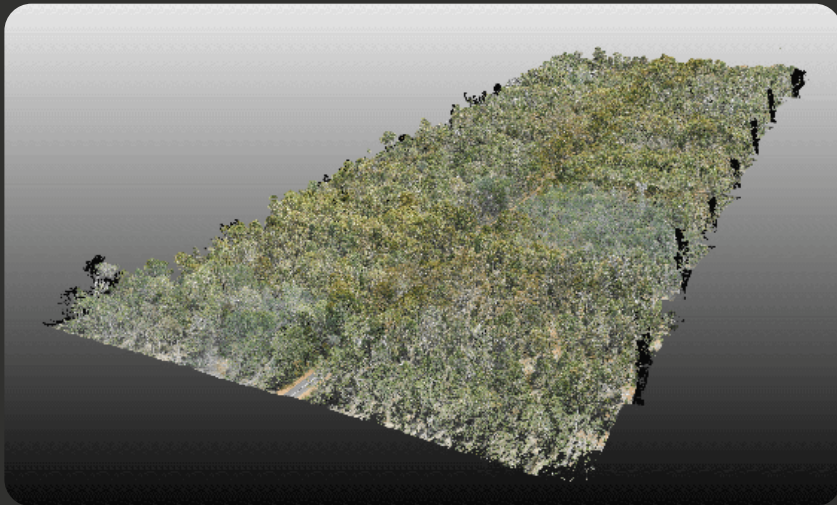
You can [download your copy here >](#)



Routine Data Processing

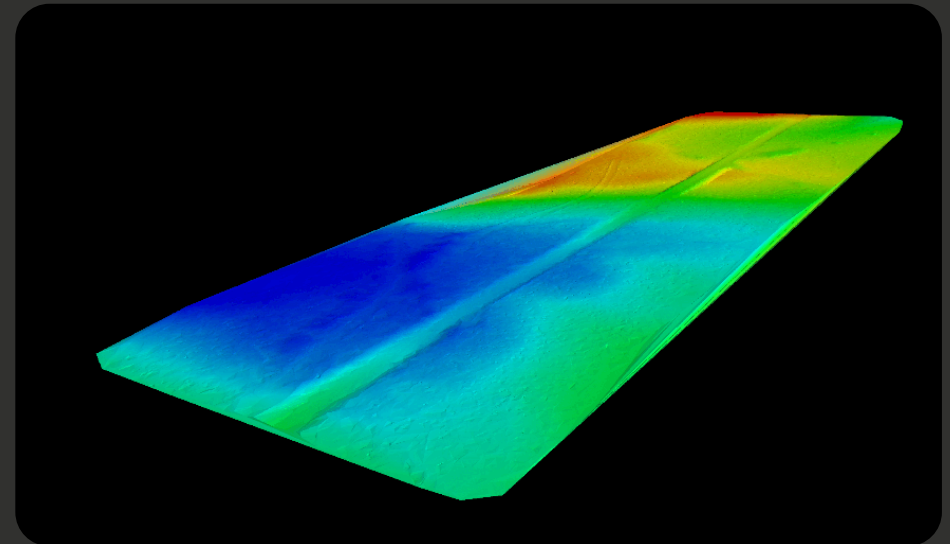
Capturing high-quality data is only one part of the equation. Processing, analysing and interpreting turns great data into great solutions.

Mapping of structures and failure planes can be taken directly from LiDAR scanning data either in underground voids or surface areas such as open pits or road/rail cuttings. Data can subsequently be provided with information on structural orientation (such as dip/dip direction, and trend/plunge) as well as trace length data.



Hovermap data can take stope back analysis and reconciliation to another level. Shadowless void data is just the start. Detailed structural mapping, plotting of blast holes, identification of lithological boundaries and intrusive features is also possible.

Creating Digital Terrain Models (DTMs) from LiDAR data captured in vegetated terrain is a fundamental task of data processing. We can help you generate a DTM in challenging vegetated terrains.

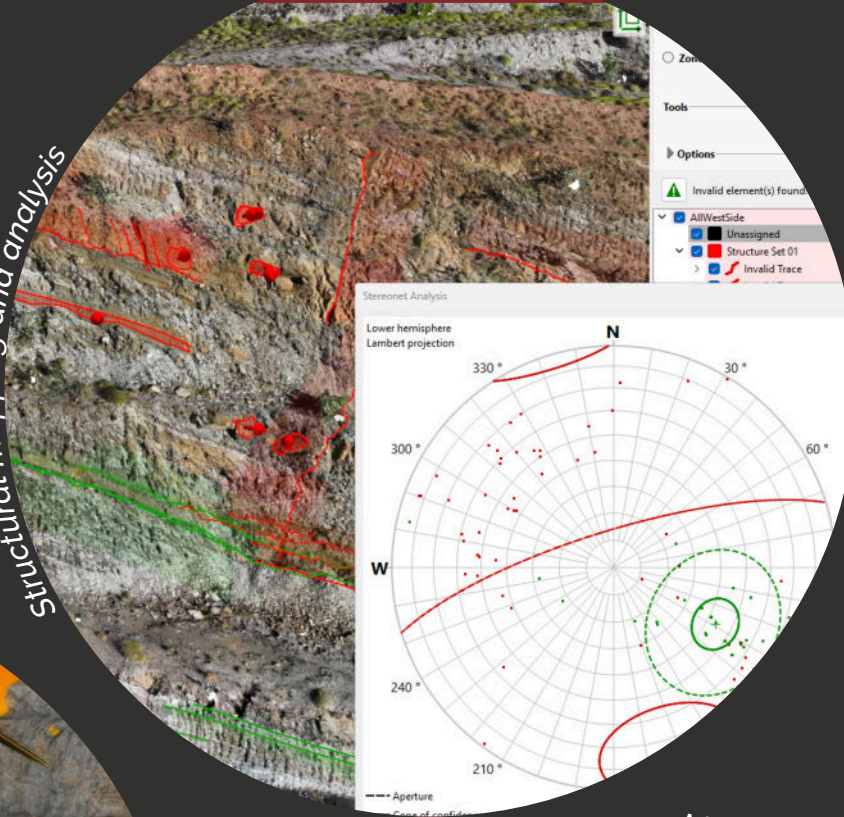


Left: LiDAR scan prior to processing

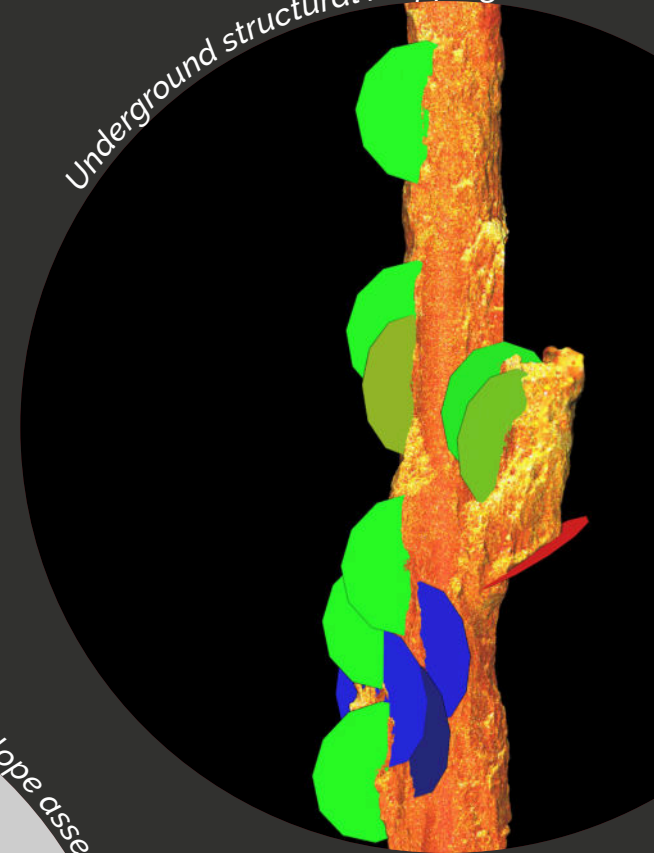
Above: Ground surface (DTM) following LiDAR classification

Routine Data Processing

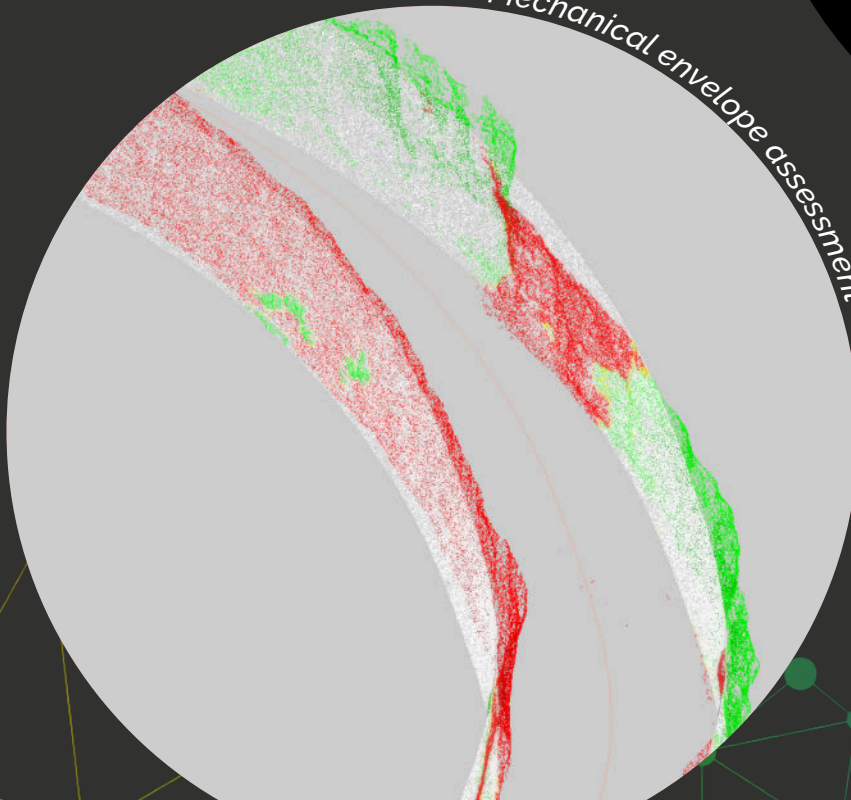
Structural mapping and analysis



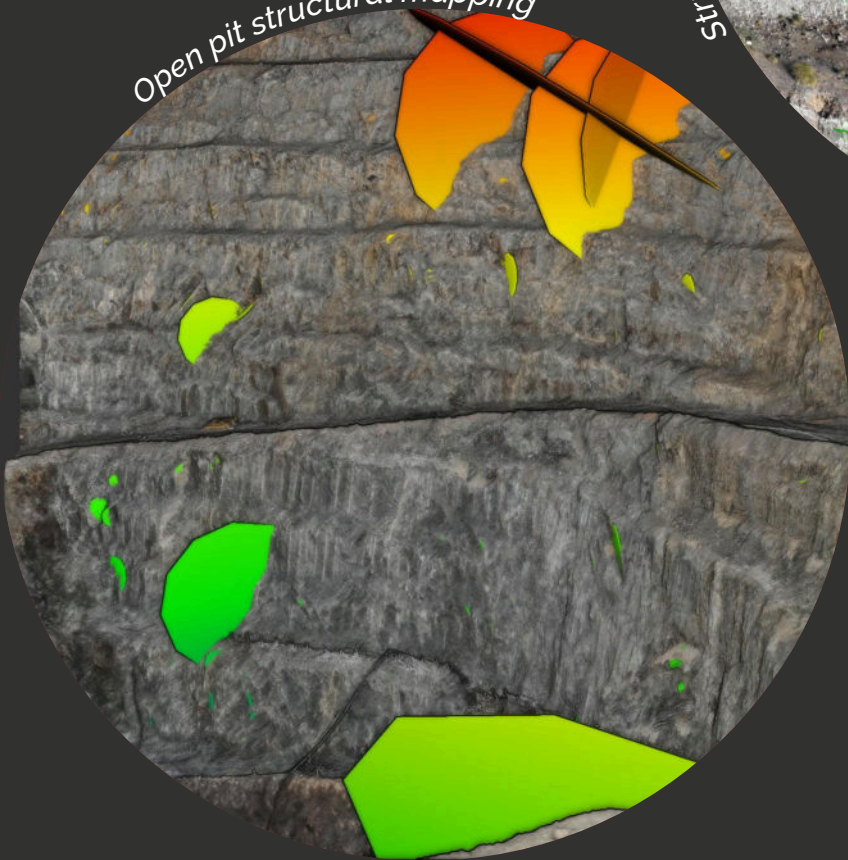
Underground structural mapping



Mechanical envelope assessment



Open pit structural mapping



LiDAR Vegetation Analysis

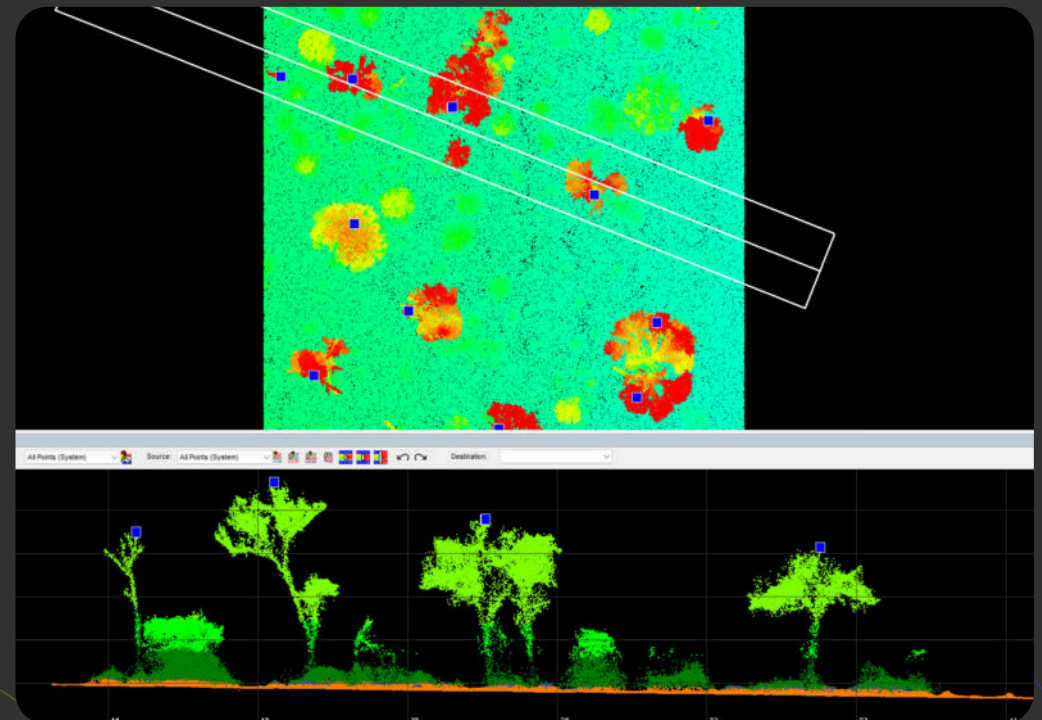
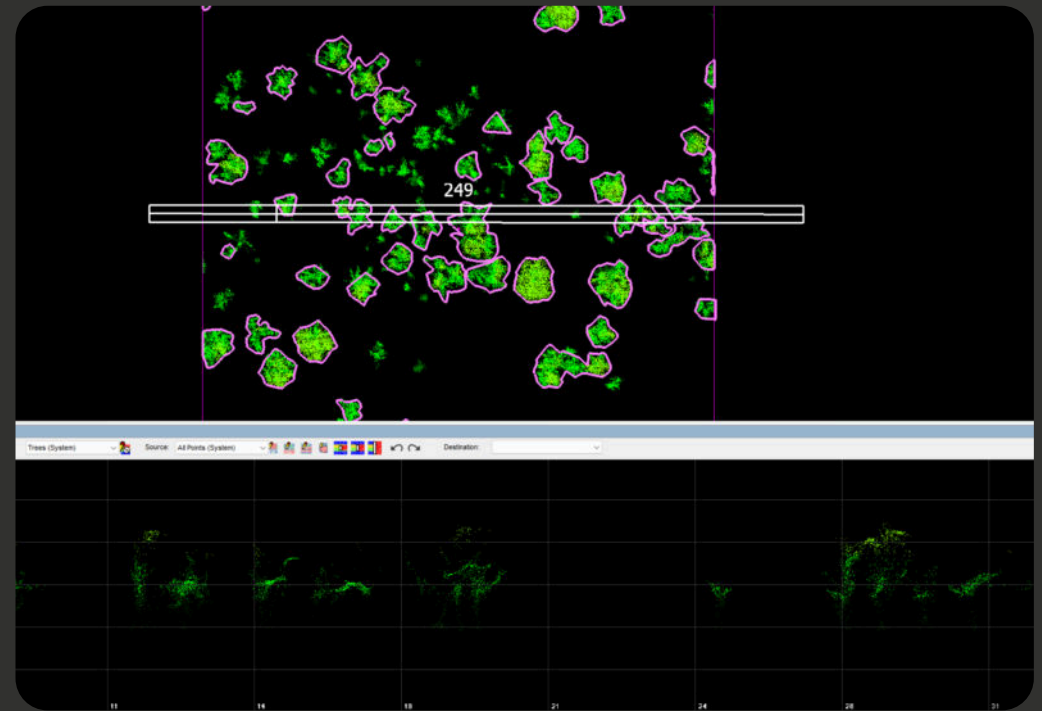
Since 2021, we have been working extensively with our clients on using LiDAR data for vegetation analysis. This has evolved from basic ground and vegetation classification to:

- Rasterisation and Vectorisation of classified data
- Tree segmentation
- Tree canopy areas and heights

Our clients continue to return to us because of the quality data that we provide from raw data capture to processed outputs. We ensure that the quality of our data is maintained through QAQC processes with selected quadrats re-processed to ensure consistency.

Right, above: Generation of vegetation canopy area polygons

Right, below: Tree segmentation and analysis of tree heights



Infrastructure

LiDAR scanning creates a 3D representation of any space and with Hovermap this can even work in GPS denied environments, such as under a bridge, and close to surrounding structures.

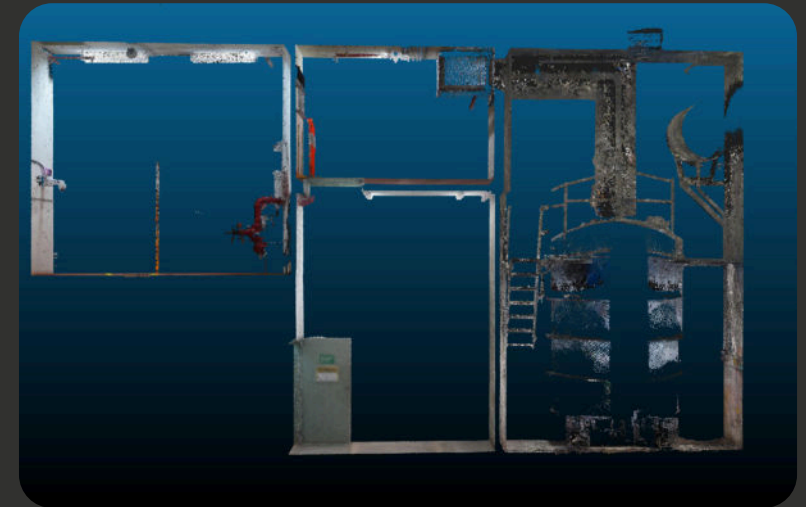
Using the Hovermap's collision avoidance technology we can scan whilst maintaining a minimum stand-off distance to the structures.

Infrastructure scanning covers a wide range of scanning options that we can provide, such as:

- Underside of bridges
- Phone towers
- Road and rail tunnels
- Hydro tunnels
- Road or rail cuttings

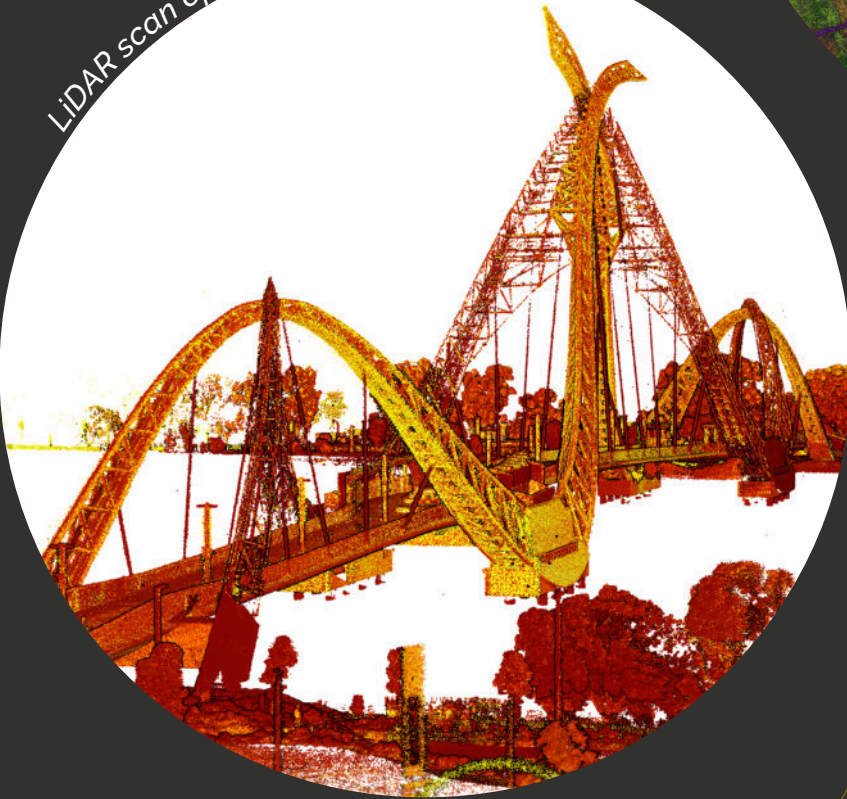
These can be done in combination with high-resolution imagery or as colourised point clouds.

Post-processing is where the data turns into action. We offer a variety of data processing services; from meshing, to assessing mechanical envelopes, to excavations or constructed buildings and condition monitoring.

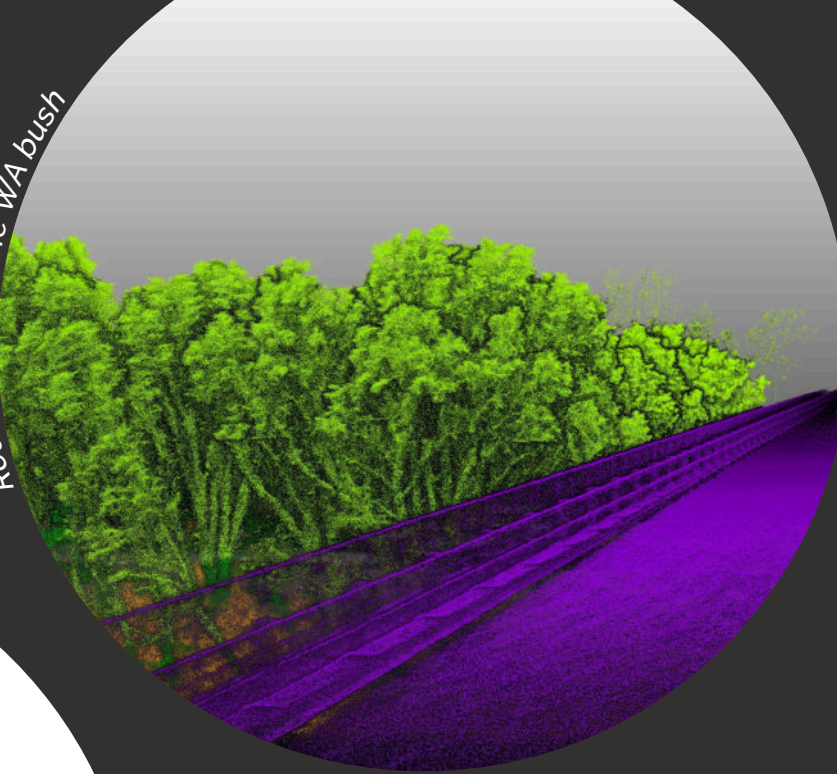


Infrastructure

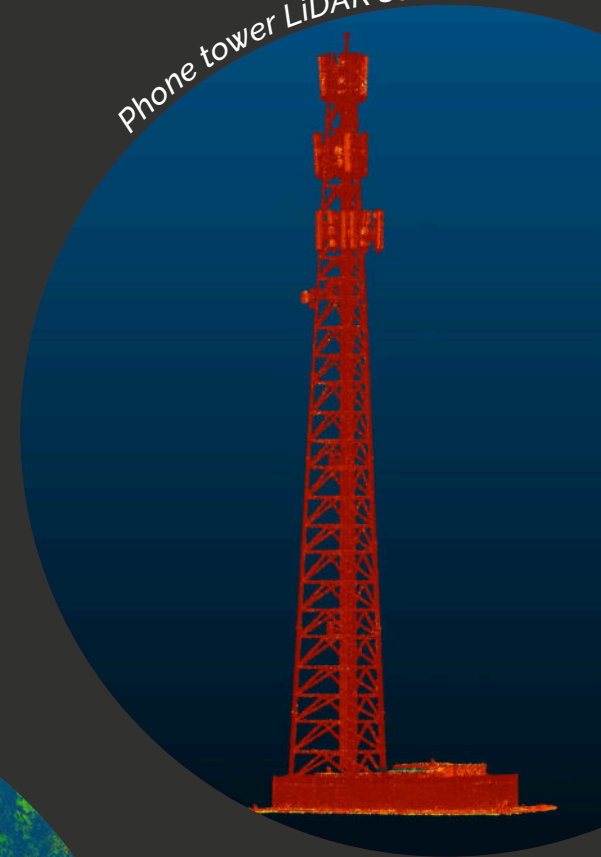
LiDAR scan of the Matagarup Bridge in Perth



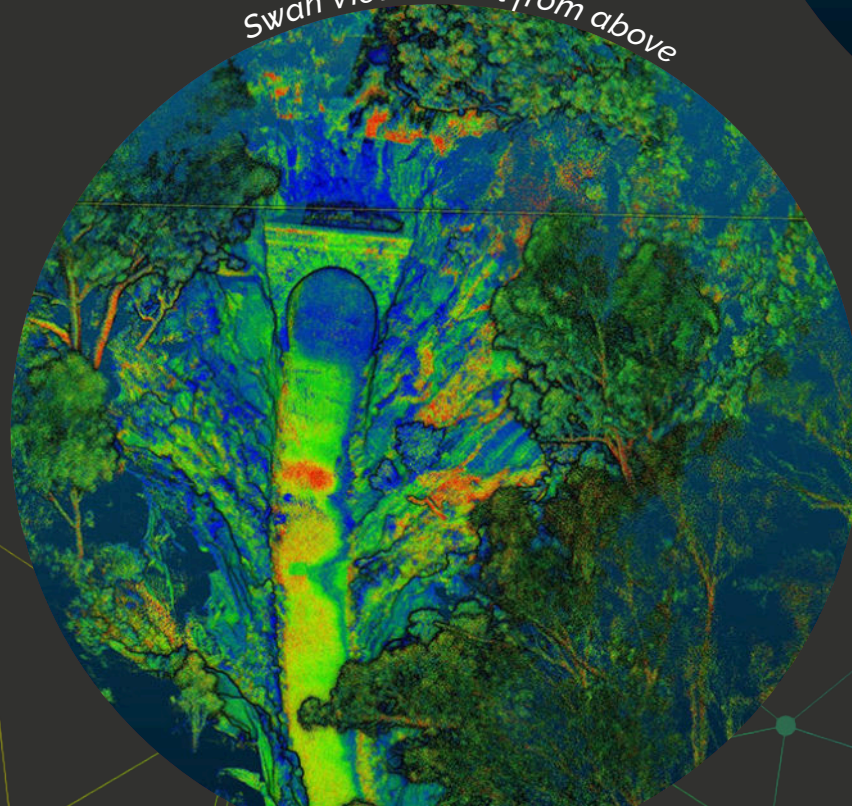
road bridge in the WA bush



phone tower LiDAR scan



Swan View Tunnel from above



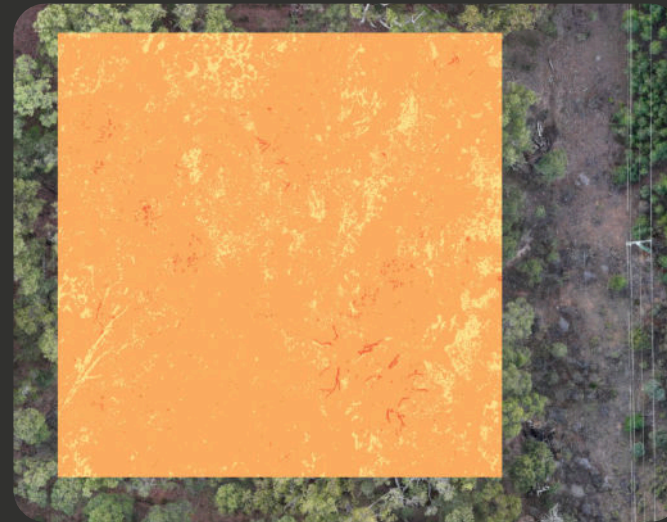
Multispectral

Quadrats of vegetation across their management property are selected and are monitored biannually, at the end of summer and winter. The statistical data captured over the quadrats are subsequently fed into the site database.

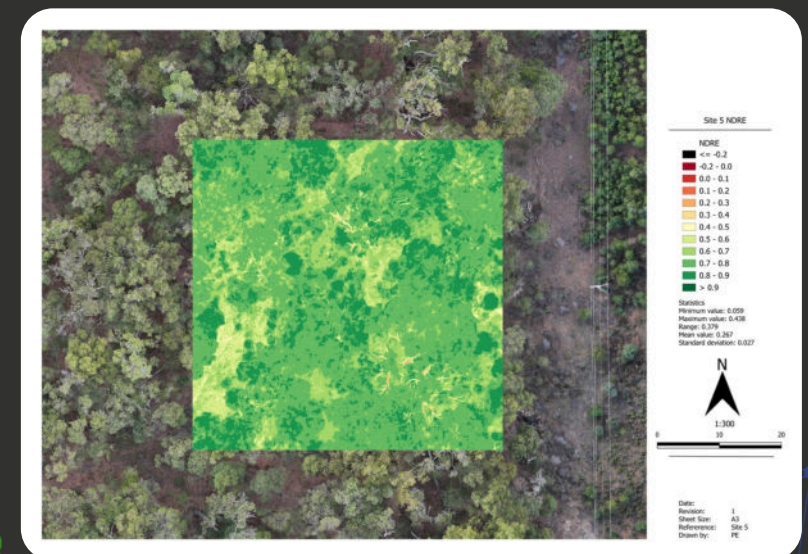
We offer vegetation health monitoring using drone-based multispectral sensors. Calculation of typical vegetation health indices such as Normalised Difference Vegetation Index (NDVI) and Normalised Difference Red Edge (NDRE) parameters can be obtained.

Common in agricultural areas, we also get routinely engaged to conduct this monitoring over areas of native vegetation to monitor the ongoing health of an area. This is typically done in conjunction with botanical consultants for on-ground data validation.

This work forms part of our clients' routine vegetation health monitoring program which is a component of their Environmental Management System.



*Left and below:
Multispectral data
image processing*



Curious to see how LiDAR can help
you make measured decisions?

Speak with our team today.

Phone:

+61 8 9382 8386

Email:

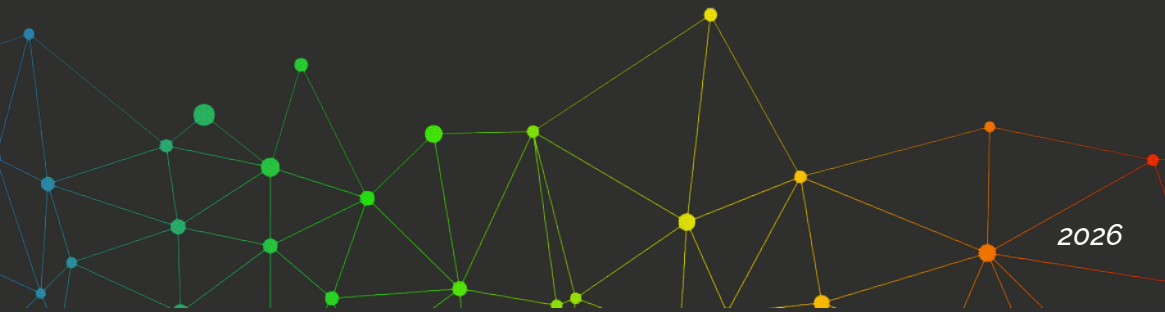
contact@minelidar.com.au

Website:

www.minelidar.com.au



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