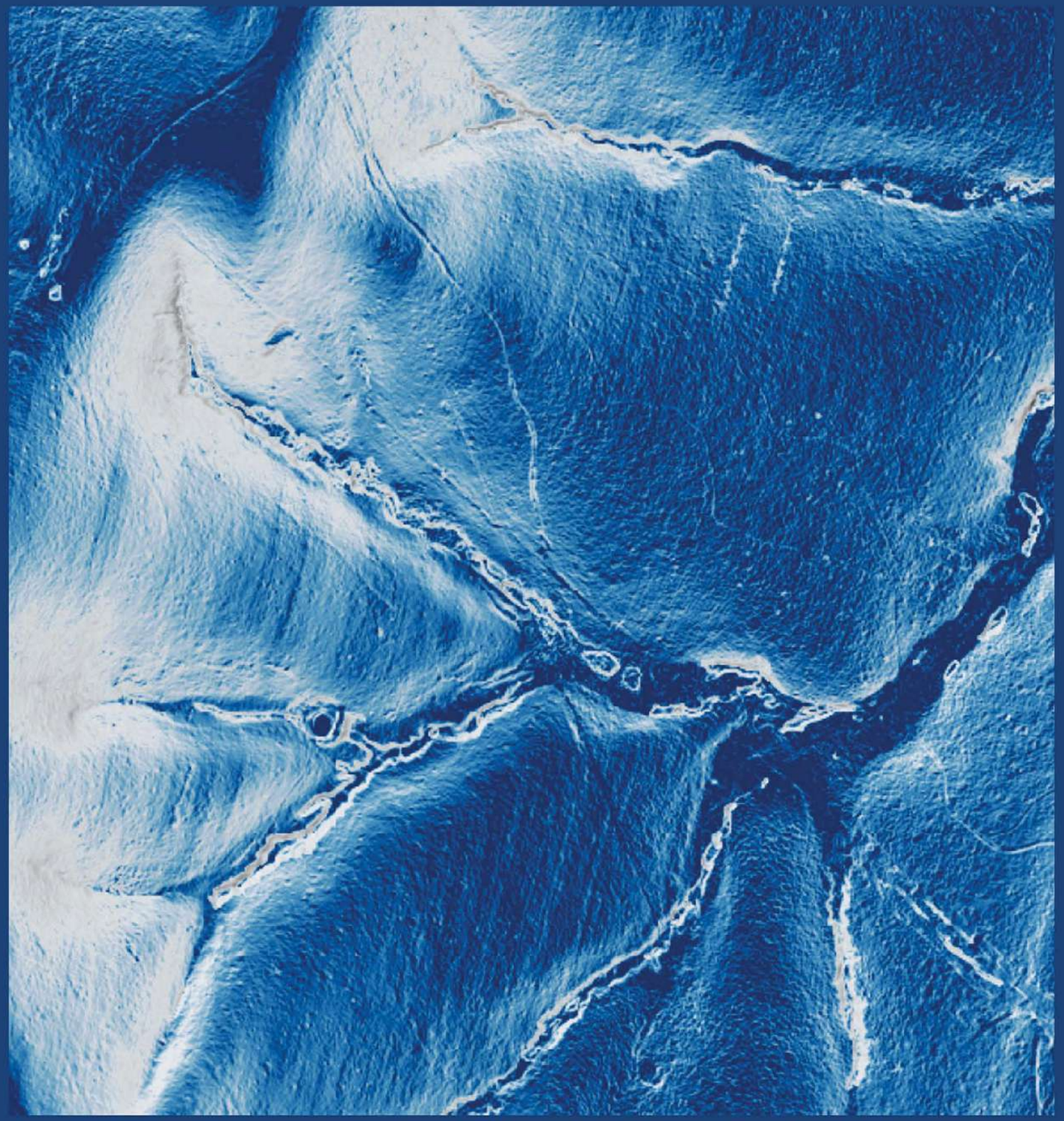
ANDITI



CAPABILITY STATEMENT

CONTENTS

www.anditi.com

Working towards more sustainable global communities, one project at a time.

A B O U T

Anditi is a Newcastle based data analytics company that specialises in spatial data transformation to provide a better understanding of how data can improve our lives.

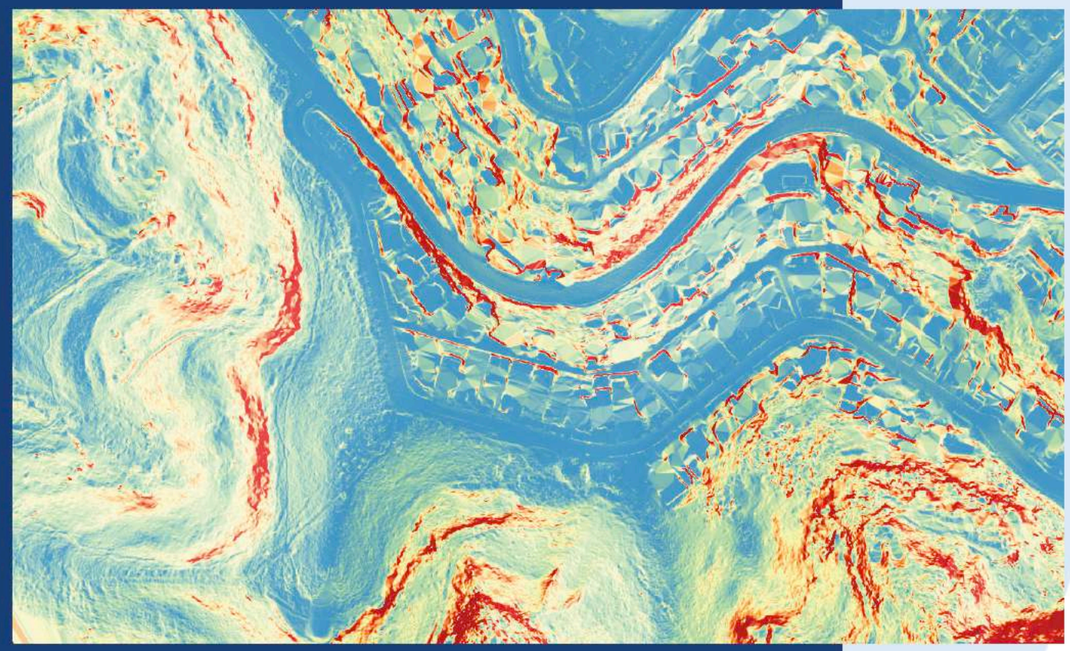
Anditi provides LiDAR and data analytic services for people in government, roads and infrastructure, urban planning, mining and energy industries.

Anditi is working to create more sustainable global communities by helping clients better manage, visualise and understand data insights. Through our projects and partnerships, **Anditi** is working to reduce waste and unnecessary use of resources, create safer roads and working environments and improve collaboration between industry and community.

SERVICES

With over 15 years experience with remote sensed data and environmental analysis, **Anditi** offer unique depth of insights into spatial data procurement, classification, analysis, management and visualisation.

Procure Analyse Manage Visualise

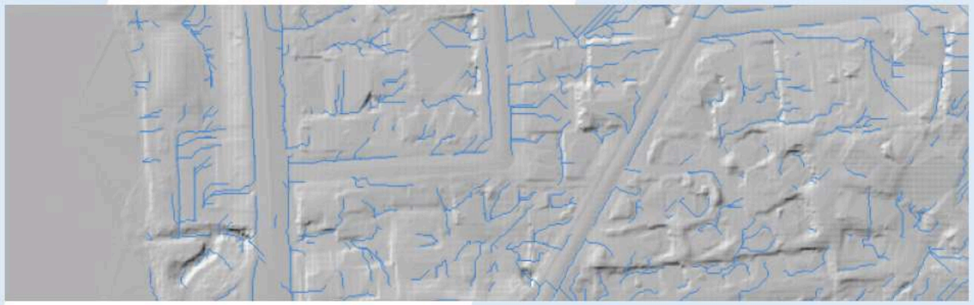


GOVERNMENT

Baseline your spatial data for accurate monitoring and assessment

City-wide analysis becomes simple with us.

We're experts in analysing the spatial attributes of natural and built environments to provide insights that help our customers make better decisions around urban planning, monitoring green strategies, and asset optimisation. We use our GIS expertise to deliver precise, tailored solutions that combine spatial data with LiDAR derived point clouds.



Terrain Modelling

DTM/DEM for slope analysis, urban analysis, mapping volumes, water flow analysis, non-intrusive surveying.

Hydro Modelling

Hydro Enforced DEMs and Hydro Flattened DEMs for overland water flow, sheet flooding and pooling analysis.

Vegetation Analysis

Individual tree count identification, canopy coverages, stratification and height models as well as carbon storage estimates for development planning and sustainability target monitoring, Local Environmental Plans and Emergency Response/ Bushfire Analysis.

Asset Identification

Building footprints and feature identification for baselining asset locations, asset monitoring, maintenance, asset optimisation and Smart City Planning. Locate, view and optimise your assets such as bridges, culverts, drainage pits, retaining walls, concrete channels, roads and urban trees.

Data Visualisation

Imagery, coloured point clouds and classified LiDAR viewable online with our 3D portal for safe desktop surveys and simple, engaging community consultation. Extracted features, derived products and GIS Layers exported for use in local GIS system.

Environmental Management and Urban Planning

Improve all stages of your environmental assessments and with current spatial information.

From the very beginning of your project, baseline your data and combine multiple sources of information in one place. Enhance your environmental management, design and planning, monitoring and community consultation with consistent, accurate 2D and 3D spatial data.

Landform Analysis

DTM/DEM for slope analysis, urban infill planning, mapping volumes, water flow analysis, non-intrusive surveying, Hydro Enforced DEMs and Hydro Flattened DEMs for overland water flow, sheet flooding and pooling analysis.

Environmental Studies

Individual tree count identification, canopy coverages, stratification and height models, carbon storage estimates and solar potential for Environmental Impact Statements, Environmental Management Plans, Environmental Monitoring, and Emergency Response/ Bushfire Analysis.

Asset Monitoring and Infrastructure Development

Building footprints, feature identification and vegetation encroachment for baselining asset locations, asset monitoring, maintenance and asset optimisation. Locate, view and optimise your assets such as bridges, culverts, drainage pits, retaining walls, concrete channels, roads, rail corridors and powerlines.

Data Visualisation

Imagery, coloured point clouds and classified LiDAR viewable online with our 3D portal for safe desktop surveys and simple, engaging community consultation. Extracted features, derived products and GIS layers exported for use in local GIS system.

Roads, Rail and Infrastructure

Pave the way for streamlined operations, more efficient ground surveys and better checks for compliance with the power of LiDAR and spatial data analytics.

Road

- Survey grade Point Cloud Mesh of road surface for design compliance checks
- Road feature identification and coding for iRAP safety ratings
- Lines, signs, safety barriers, trees, poles
- Asset location and coordinates for optimised maintenance, road widening and upgrades
- Bridges, culverts, signs, drainage pits
- Route analysis and bridge clearances for heavy vehicles
- 3D Portal for data visualisation, access and management

Rail

- Survey grade Point Cloud Mesh of rail corridor for design compliance checks
- Asset and kilometrage mark location and coordinates for optimised maintenance and upgrades
- Lights, signs, crossings
- Terrain mapping and feature identification for risk assessments and reporting
- Embankments, ballast profile, risk ratings
- 3D Portal for data visualisation, access and management

Powerlines, Transmission Lines, Transmission Towers

- Survey grade Point Cloud Mesh of Powerlines for design compliance checks
- Transmission line and transmission tower location and coordinates for optimised maintenance and upgrades
- Terrain mapping, coloured point cloud, classified LiDAR and feature identification for risk assessments and reporting vegetation encroachment, tree fall assessment, access track location, line clearance.
- 3D Portal for data visualisation, access and management

Asset Management

High resolution imagery, precise Digital Terrain Models and affordable Digital Twins are changing the game for asset management.

Asset Identification and Mapping

Asset location and attributes for initial assessment, on-going maintenance and asset health monitoring.

- Powerlines
- Roads
- Rail Corridors
- Bridges
- Buildings

Design and Planning

Inspect, visualise and plan with precise 3D data and current high-resolution imagery.

- Coloured LiDAR Point Clouds for visualising built environments
- Digital Twin for Asset Lifecycle Management

Monitoring and Maintenance

Monitor, plan and optimise maintenance with better spatial data.

- Monitor change, assess and measure assets
- Share exact asset locations with teams
- Detail exact maintenance requirements

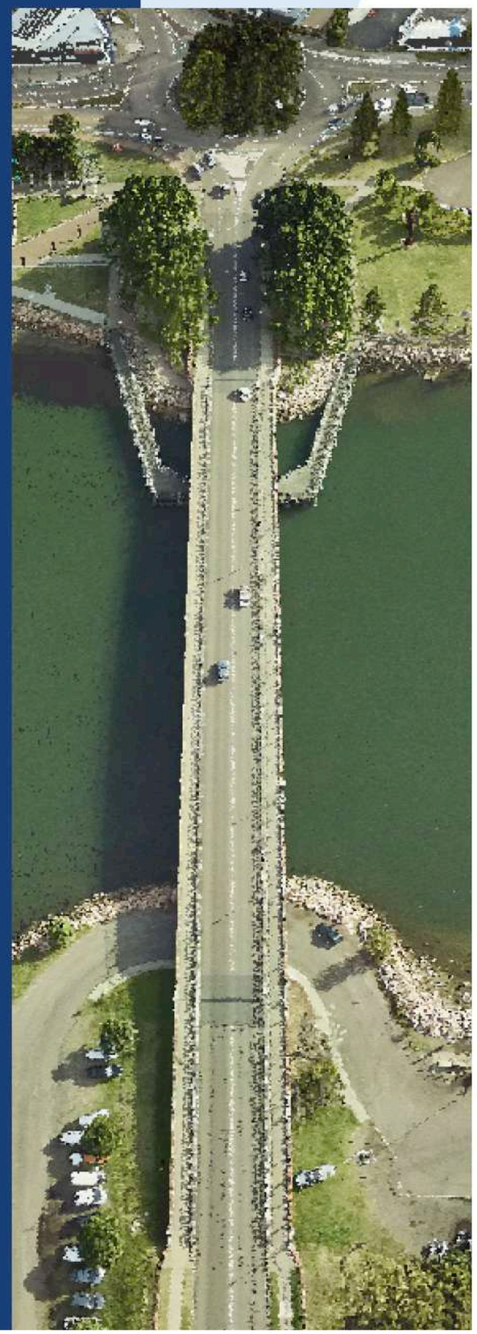
Risk

Generate more accurate risk reporting with tailored risk analysis and standardised outputs.

- Customised risk metrics
- Consistent, standard outputs for compliance
- Accurate spatial data for reporting

Data Visualisation

Visualise, combine, query, measure and annotate your spatial datasets using a web browser and intuitive interface. Easily done from your desk with no expertise required.



INSURANCE

Location specific information

With instant access to real information, insurers can access location specific information for underwriting, accurately pricing premiums and assessing claims. Virtually inspect properties, conduct virtual site assessments, and gain in-depth understanding the surrounding environment with high-resolution imagery and LiDAR all in one convenient location.

Virtual Property Assessments

- Identify property boundaries and surrounding property information
- Measure proximity to potential hazards
- Assess property features such as roof materials, solar panels, fences, pools and trampolines
- Annotate and export findings for reporting, assessing claims, reducing premiums

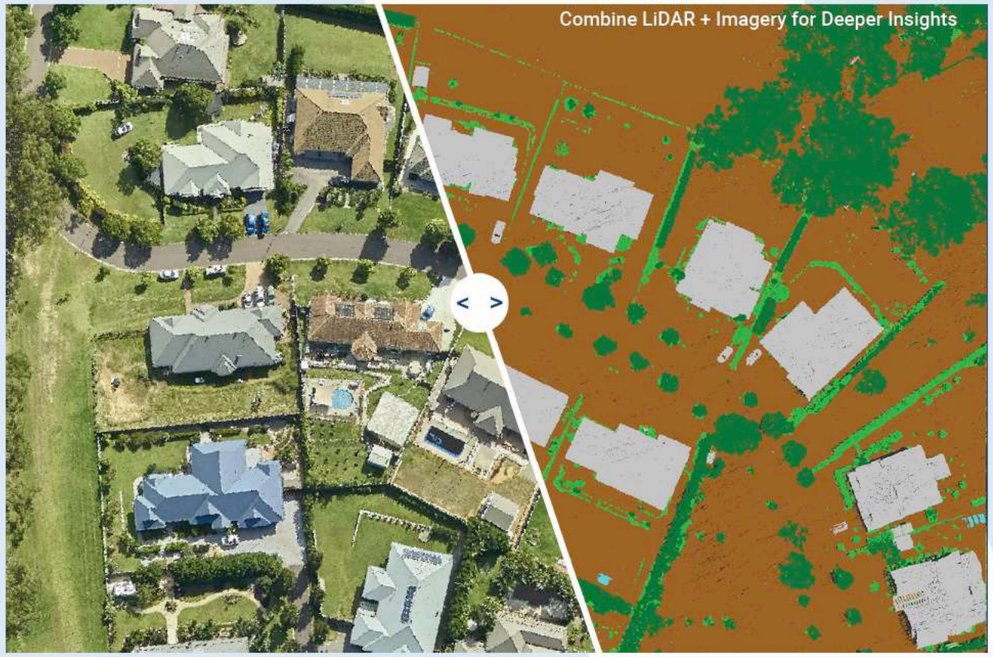
GIS Products for Advanced Assessments

- Precise DEM/DTM for assessing flooding, pooling and landslide risks
- Precise DSM for identifying and assess buildings at risk from tree fall and other hazards from
- Accurate 3D Point Clouds for Digital Twins
- Extracted building footprints
- Solar Potential and Irradiance
- Bushfire Analysis - Slope analysis, hazard proximity to buildings, vegetation density

Data Visualisation, Management And Hosting

Get direct access to real information and make more accurate decisions with spatial data in our 3D Portal.

Bridge the gap been planning, evaluation and action by accessing the full value of spatial data in one central location. Explore before you visit and share your findings with your team in a way that's fast and meaningful. With our custom built portal, you can combine multiple data sources to unlock new insights, with a suite of tools for measuring and querying the data.



>>

Have your own data?

We'll help you manage, visualise and interact with huge datasets on the fly.

Procure Analyse Manage Visualise

Specialised Development, Custom Built Solutions

Big challenges, unlimited solutions

Facing a specific challenge?

With a wealth of LiDAR expertise, an end to end custom built analytics engine and some of the brightest problem solving minds in Australia, we're uniquely equipped to solve your data analytics challenges.

Custom solutions

Since 2014, **Anditi** has delivered over 130 projects and spatial data solutions in over 28 Sectors.

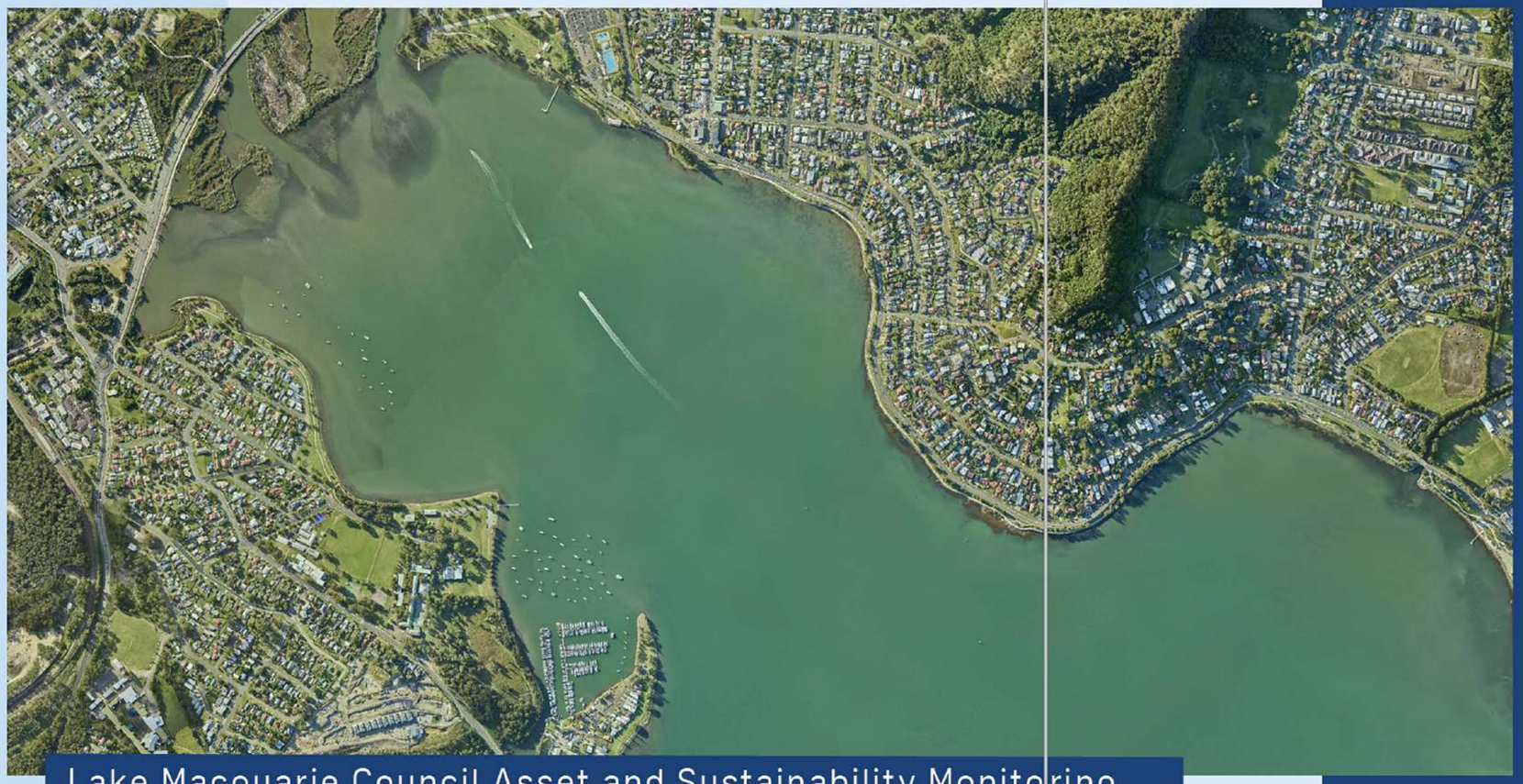
While the challenges and clients have been different, our understanding of how to unlock insights with spatial data and solve real world problems is always the same.

Anditi has fixed terabytes of misaligned datasets captured in Central America, developed custom algorithms for spatial data analysis and created a new industry standards for endangered species analysis in Australia. **Anditi** has also developed code for extracting custom features in emerging markets like international road safety, built tailored risk requirements into our classification for 2000kms of rail corridor across NSW and developed a visual analysis tool to predict heavy vehicle swept path analysis in WA.

If your solution isn't working optimally for you, let us help. We're excellent at solving big challenges!

Specialty Services

- Custom built feature extraction services
- Image processing
- Change detection
- Image pattern recognition
- Full 3D point cloud processing (ground based and mobile LiDAR sources)
- Malleefowl Mound detection
- LiDAR collection planning advice (advice on appropriate point density, scanner to use, technologies to use, associated imagery to collect etc. for a specific client need)
- Manual point cloud editing or correction
- 3D adjustment and alignment of point cloud data



Lake Macquarie Council Asset and Sustainability Monitoring

The Challenge

The Lake Macquarie City Council were looking to obtain accurate data utilising remote sensing for the Lake Macquarie Local Government area.

This data was to be used for Council Asset Management, Environmental Sustainability Tracking and Vegetation Canopy Cover Analysis.

For this they required the following products:

- City-wide digital elevation model (0.5m)
- City-wide drainage lines locations and overland flow path
- City-wide tree canopy height model
- City-wide individual tree heights and canopy perimeters
- City-wide drainage pit, bridge and culvert locations
- Retaining walls on Council owned and controlled lands
- Carbon Sequestration for rehabilitation projects

The Solution

Anditi provides a complete solution for Councils that wish to engage the services of a remote sensing specialist. We have expertise in aerial and remote data collection, analysis and interpretation. From LiDAR and aerial Imagery data we are able to extract useful information and generate the custom products.

Using **Anditi**'s proprietary analyitcs Engine to run our specialised classification algorithms, we generated a high quality Ground Elevation Model for the entirety of the Lake Macquarie LGA. Through further analysis of the Digital Elevation Model we were able to generate overland flow paths and identify the locations of drainage lines, drainage pits, bridges and culverts.

The **Anditi** vegetation classification algorithms allowed us to identify all vegetation above 3m to create a canopy tree height and stratification model which defined individual tree canopies, grouped tree canopies and canopy perimeters.

The Outcome

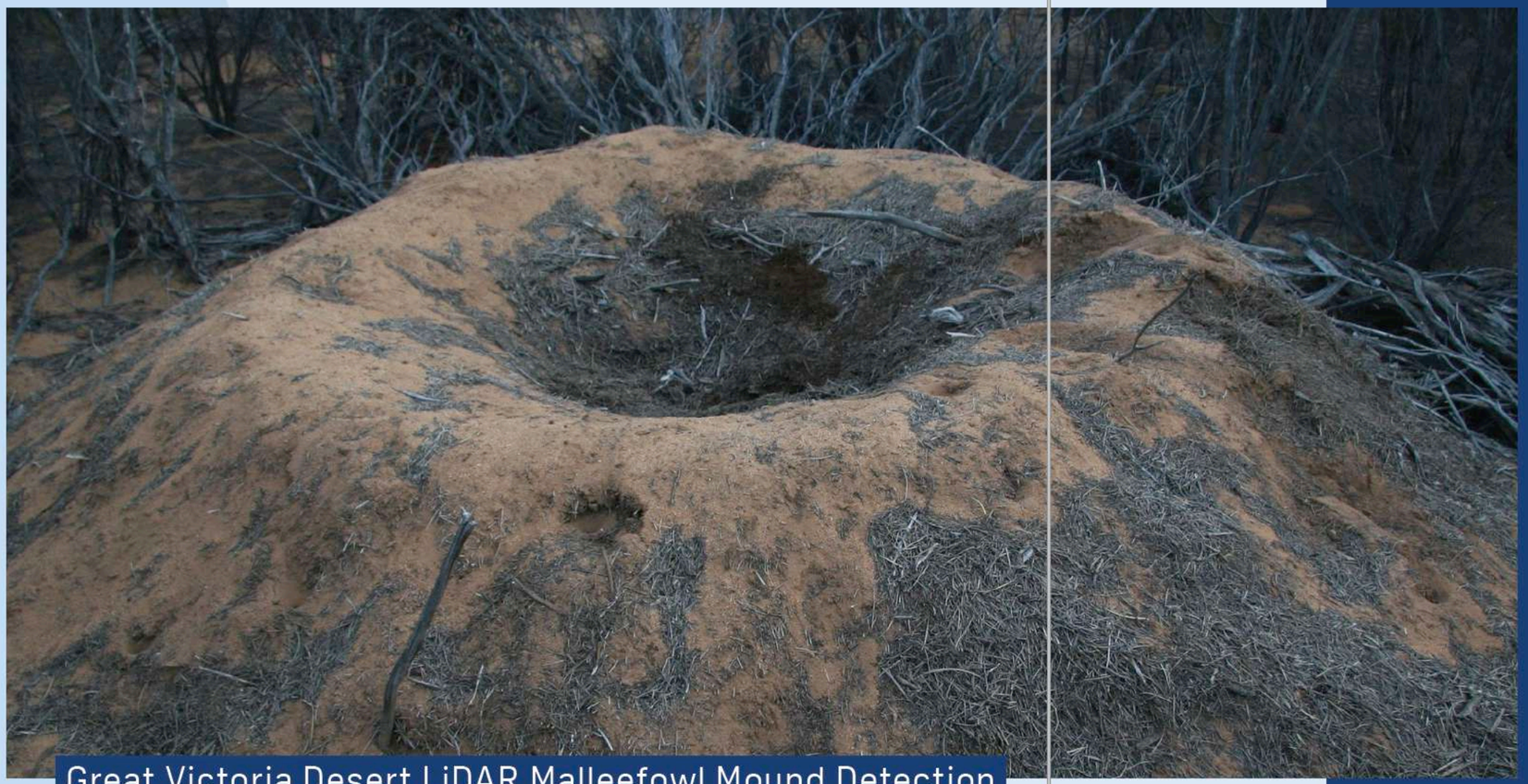
With the products generated by **Anditi** from LiDAR and imagery, Lake Macquarie council was able to:

- Assess flood risk and pooling by using the overland flow path data.
- Review performance against their Sustainability Strategy to ensure compliance with Council Sustainability Targets and State Environment Planning Policies.
- Create a baseline inventory of their assets to help with ongoing tracking and maintenance.

Hydraulic Modeling
Terrain modelling for slope and flood analysis

Environmental Strategy Assessment
Precise vegetation analysis for target monitoring

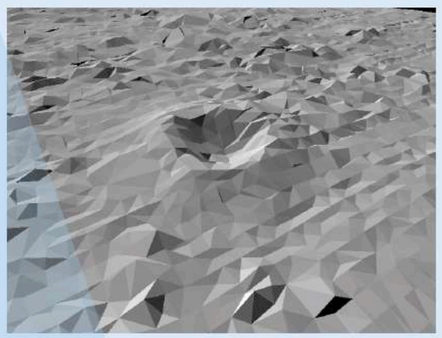
Baseline Asset Inventory
Asset identification and Locations for Asset optimisation



Great Victoria Desert LiDAR Malleefowl Mound Detection

The Challenge

In December 2018, Great Victoria Desert Biodiversity Trust Fund (GVDBT) and AngloGold Ashanti Australia Limited contracted **Anditi** for aerial laser scanning and aerial photography of 1675km of 600m wide corridors, totalling approximately 1005 km² of the Great Victoria Desert. This was commercialised as a precursor to finding existing and new Malleefowl mounds through automated analysis.



The Solution

The aerial survey was undertaken in extremely hot conditions in January 2019 and the resultant point cloud totalled 40GB of data. We processed the raw laser point cloud and generated a high resolution DTM that was accurate enough to find features as low as 50mm high. This information was then used for analysis and detection of Malleefowl mound-like features using our proprietary smart algorithms. On project completion, a comprehensive report was compiled for the clients covering all facets of the survey.

The Outcome

Over 100 potential Malleefowl mounds were identified. Having a location for potential mounds means that in a huge area of arid, remote country field researchers are able to go directly to these locations for verification and to determine whether the mounds are active. This saves the huge effort of large ground crews trying to find the proverbial “needle in the haystack”. It increases effectiveness and value for scarce environmental funding, as well as reducing Work Health and Safety risks.

Cost Reduction
Project completed for a tenth of traditional method

Over 100 mounds located
Consistently applied method that improves rate of identification

Approved industry standard
The innovative technique has been approved as the new industry standard for Malleefowl Mound Identification

Road Asset Management and Road Safety Analysis for Main Roads Western Australia

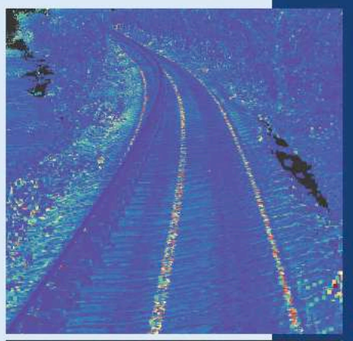
The Challenge

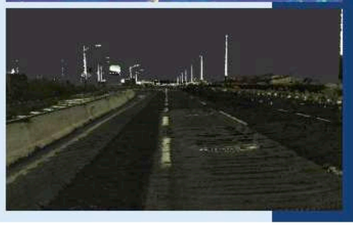
Traditionally, road asset management has required road surveyors driving thousands of kilometres of road and recording videos and visually assessing road side features. For both road asset maintenance and road safety risk analysis, the processes are time consuming and, costly, with the outputs being subject to a large degree of human error. Main Roads Western Australia are a leader in the public sector and an organisation passionate about the health and safety of people in their community. Main Roads Western Australia engaged **Anditi** to design and develop a more automated, accurate and cost-effective solution for road assessment, to work towards their target of assessing the safety rating of the 80% most travelled roads. The project involved analysing 2000 km of urban and rural roads using Mobile LiDAR and 360 Degree Imagery to produce the following products:

- Road survey date & location
- Median type and width e.g. physical raised median, painted median etc
- Roadside severity
- Centreline rumble strips
- Intersection type
- Street lighting
- Property access points
- AusRap/ iRAP Coding

The Solution

Anditi set out to design, develop and test a system that would allow Main Roads to regularly update roadside risk ratings and extract asset management data more effectively and more frequently than is currently possible. To attain the required information for AusRAP risk ratings and desired asset management data, **Anditi** developed a semi-automated routine to identify and extract a number of features. The data was then delivered via Anditi's 3D Web Portal for visual quality checking, with GIS layers made available via the cloud for integration with Main Roads' existing local GIS system. Additionally, **Anditi** produced results in an AusRap/ iRAP compatible format.





The Outcome

With the method for scalable and efficient road assessment that **Anditi** developed, Main Roads was able to:

- Progress towards their target of assessing 80% of roads most travelled
- Eliminate the WHS risk by using remote sensed data
- Visually inspect and assess their road data via a 3D Web Based Portal
- Host, manage and access their spatial data assets for evaluating maintenance requirements and compliance checks on an on-going basis.

Cost Reduction
Project completed for a 50% reduction in costs compared to traditional method

2000 km of Road Surveyed
Consistently applied method that improves rate of identification

Developed new, consistent approach for AusRap Coding
Repeatable, scalable method that can be applied across all of WA.