EEA Line Designers' Forum

Modern Solutions for Overhead Lines Asset Management and Design

Reducing engineering uncertainty through better field evidence

InnerView Insights Ltd
John Ashley, Business Development
021841564
john.ashley@innerviewinsights.com

InnerView Insights
www.innerviewinsights.com

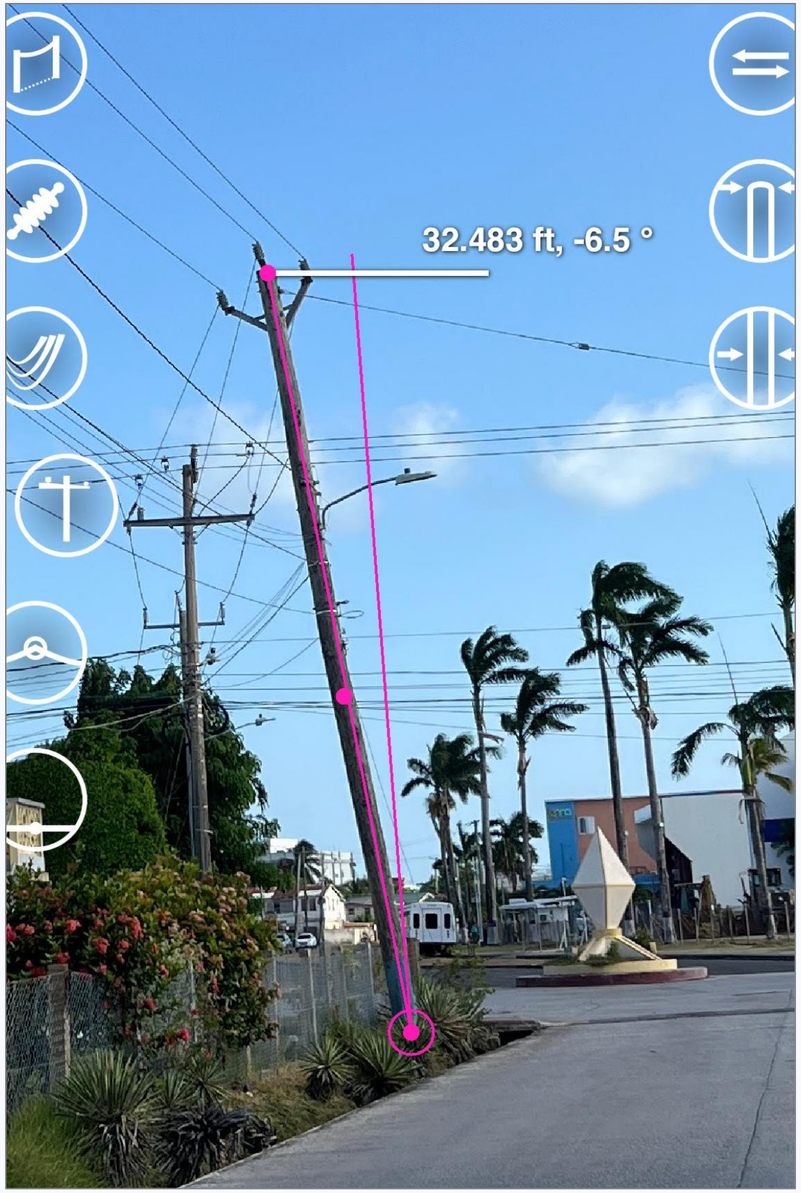
LineSmarts Axonic

19 May 2026

v1.0

Can this structure do the job that’s being asked of it?

- What’s the original strength of the pole?
- What is the current internal and external condition of the structure?
- Which conductors have been strung on the pole, and what else is going on in the network and neighbouring poles?
- Are the conductors correctly tensioned?
- How stable are the footings, and is the pole correctly embedded?
- Could the structure safely support additional loading?
- What action do we need to take now, and in the future?



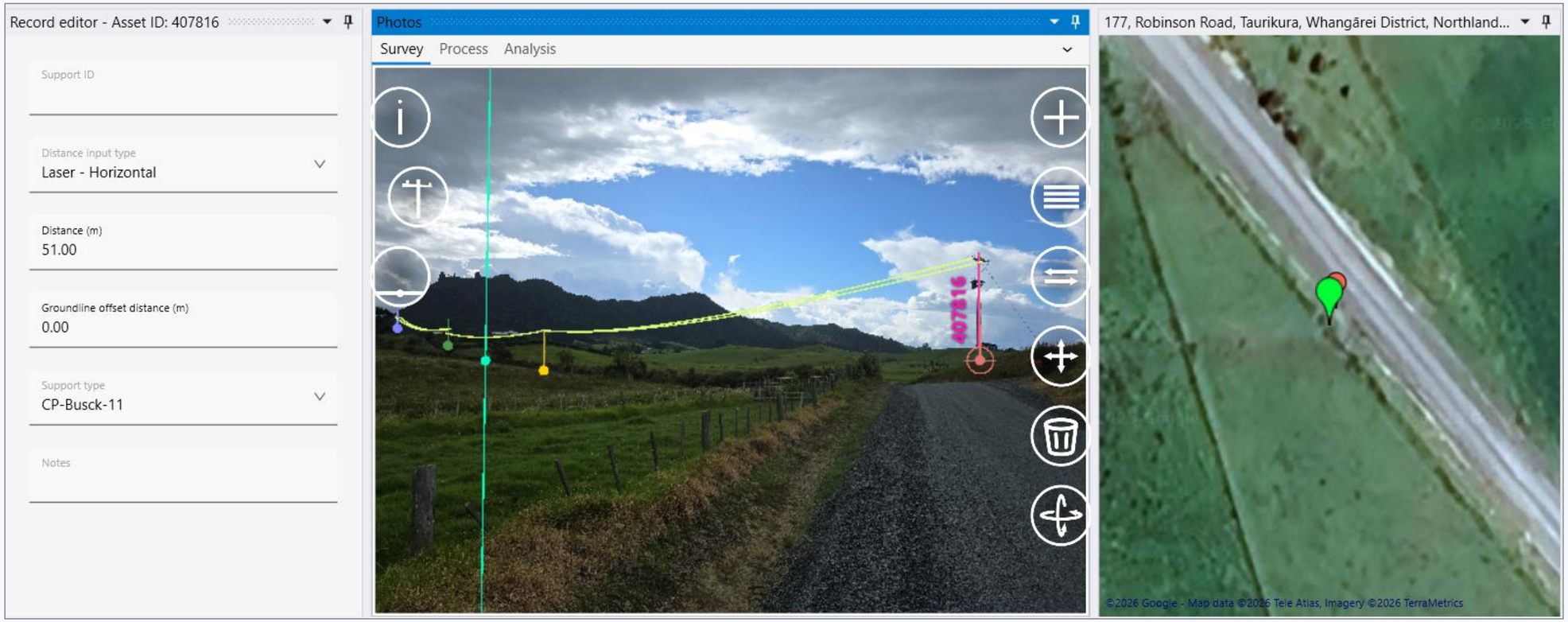
InnerView Insights

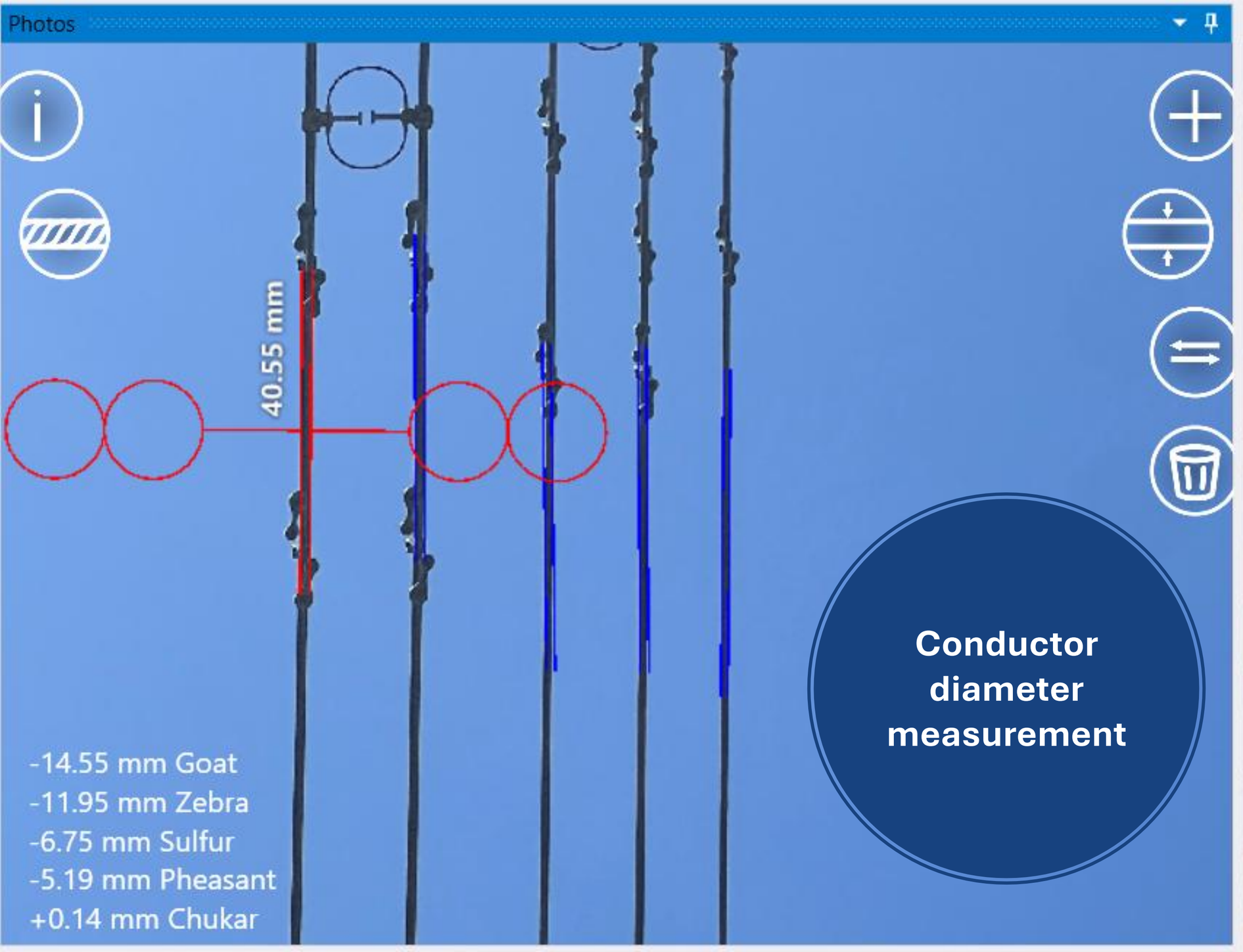
The reality of modern line design

- Design decisions are often made from incomplete or outdated field information
- GIS and as-built records frequently differ from field reality
- Experienced designers mentally reconstruct networks from sparse evidence
- Revisits and redesigns add cost, delay and engineering risk

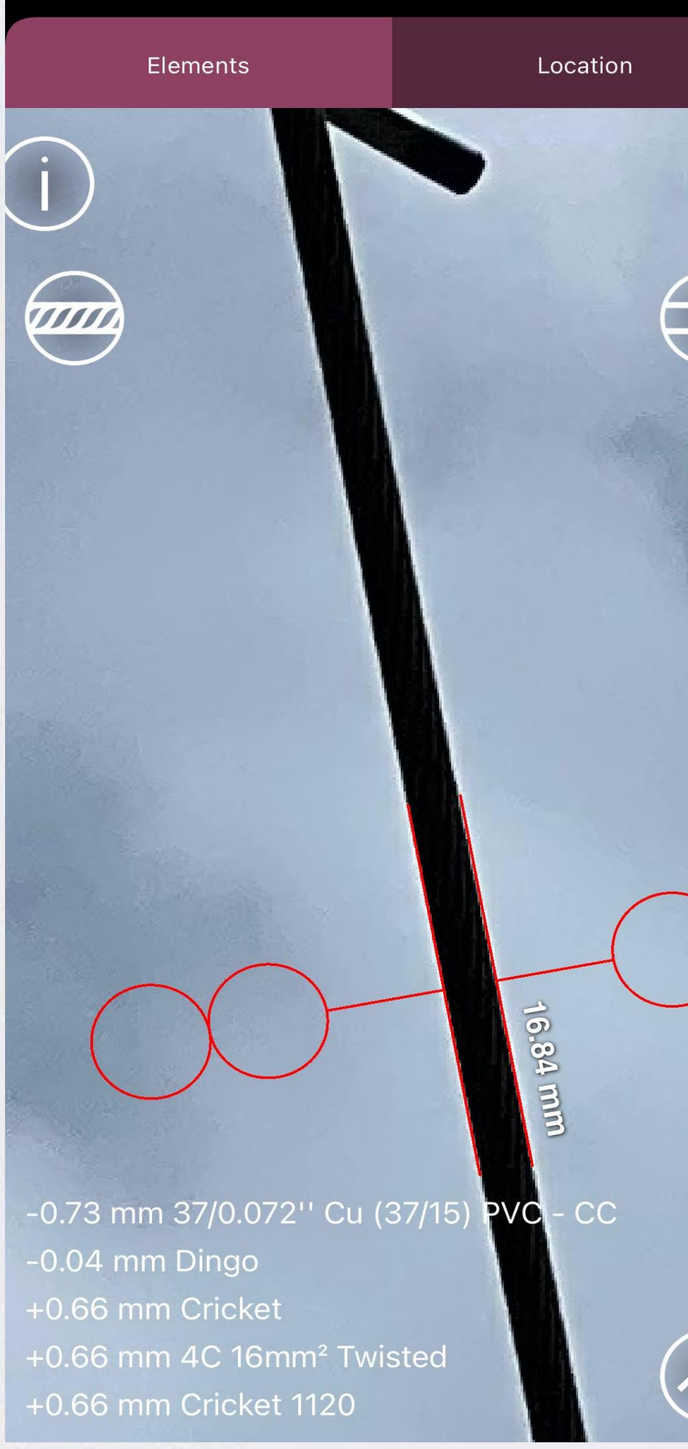
What designers and asset managers actually need

- Clear images of the structure and attachments
- Reliable conductor identification
- Real-world measurements of tensions, loads, sag
- Defensible clearance measurements
- Field-to-model integration with advanced engineering tools





Conductor diameter measurement



Structure info – height, lean, deflection embedment, load

Transverse conductor component of design load case pole-top force (kN)

-1.7

Longitudinal conductor component of design load case pole-top force (kN)

-81.6

Transverse total component of design load case pole-top force (kN)

-1.7

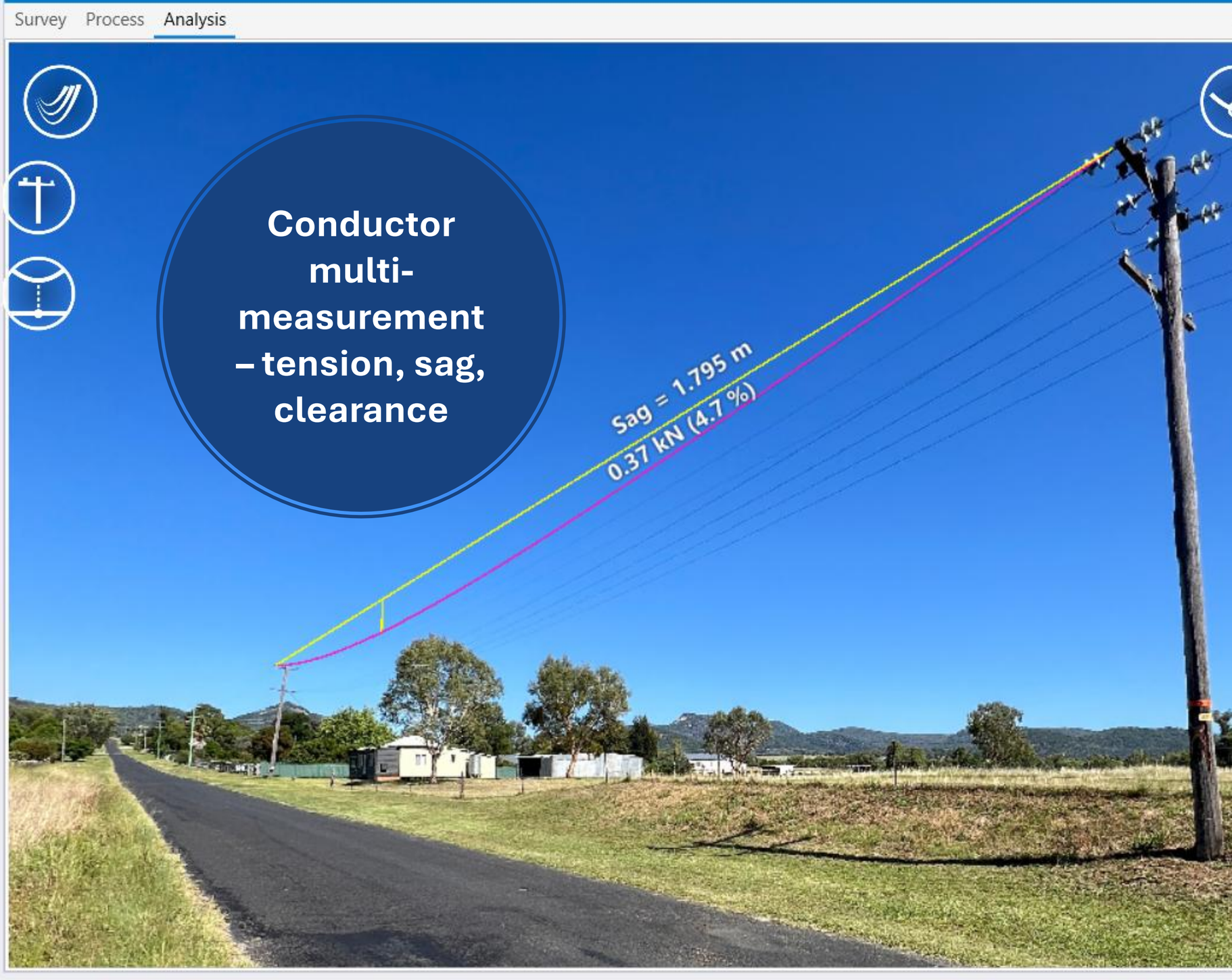
Longitudinal total component of design load case pole-top force (kN)

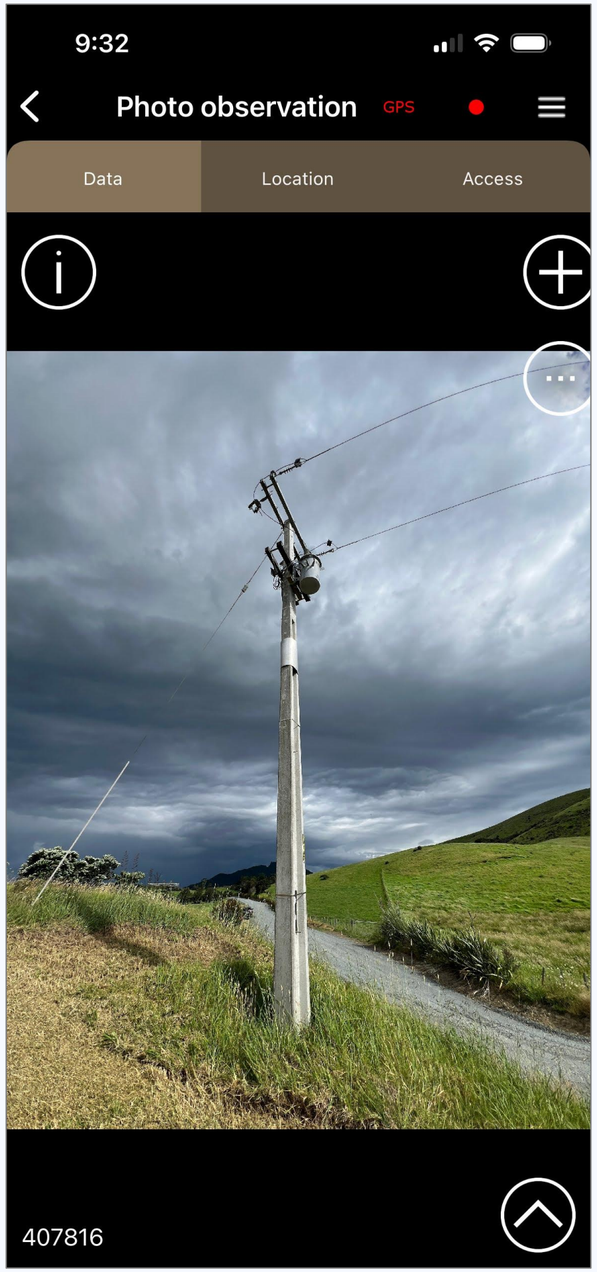
-81.6

Axial total component of design load case pole-top force (kN)

12.4


9:27
Multi measurements
GPS
Survey
Location
Process
Analysis
Sag = 7.644 m
5.53 kN (15.4 %)
Circuit
33kV - Dingo - 17.30 °C
Left calculated attachment offset (m)
-1.09


Survey
Process
Analysis
Conductor multi-measurement – tension, sag, clearance
Sag = 1.795 m
0.37 kN (4.7 %)



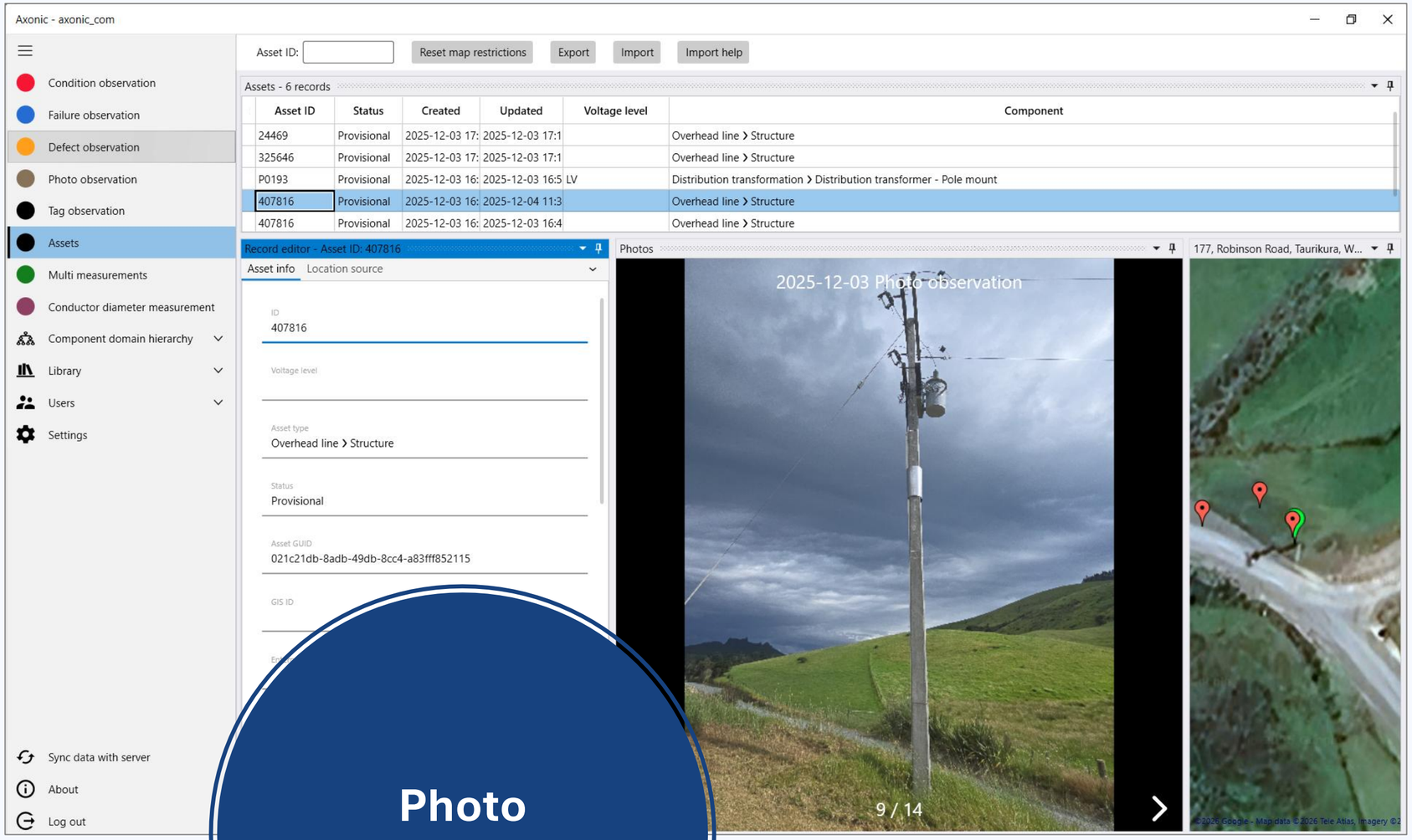
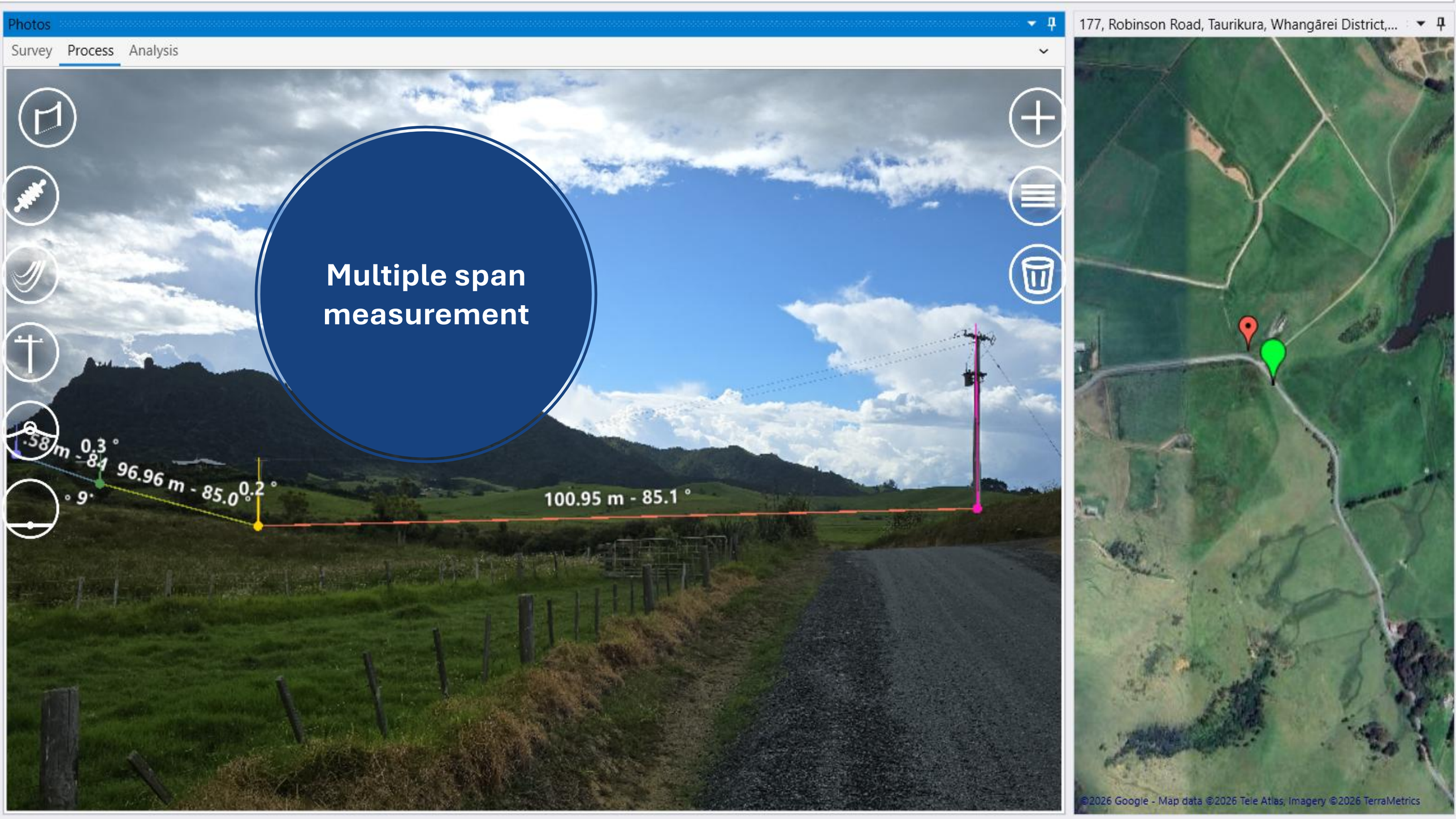
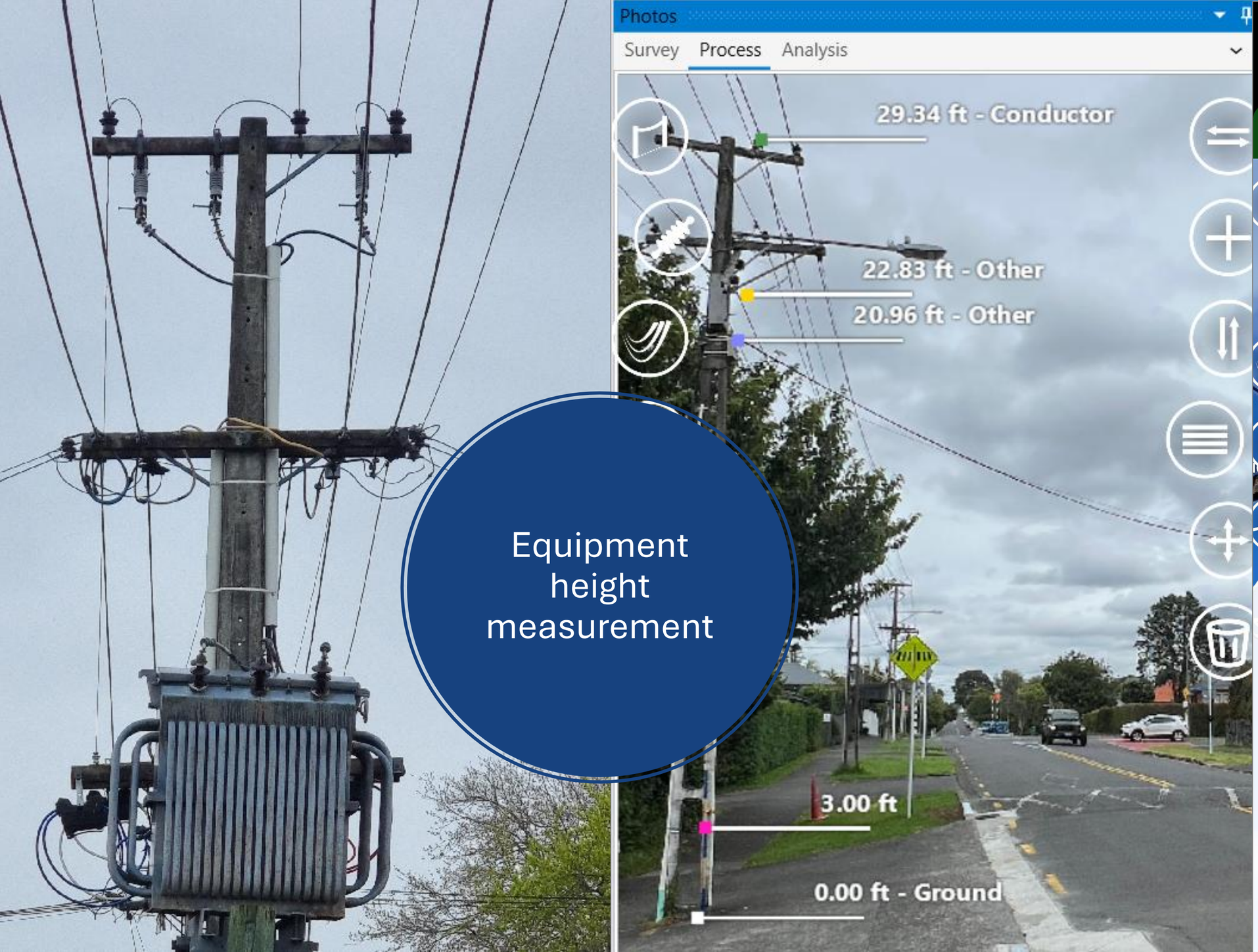
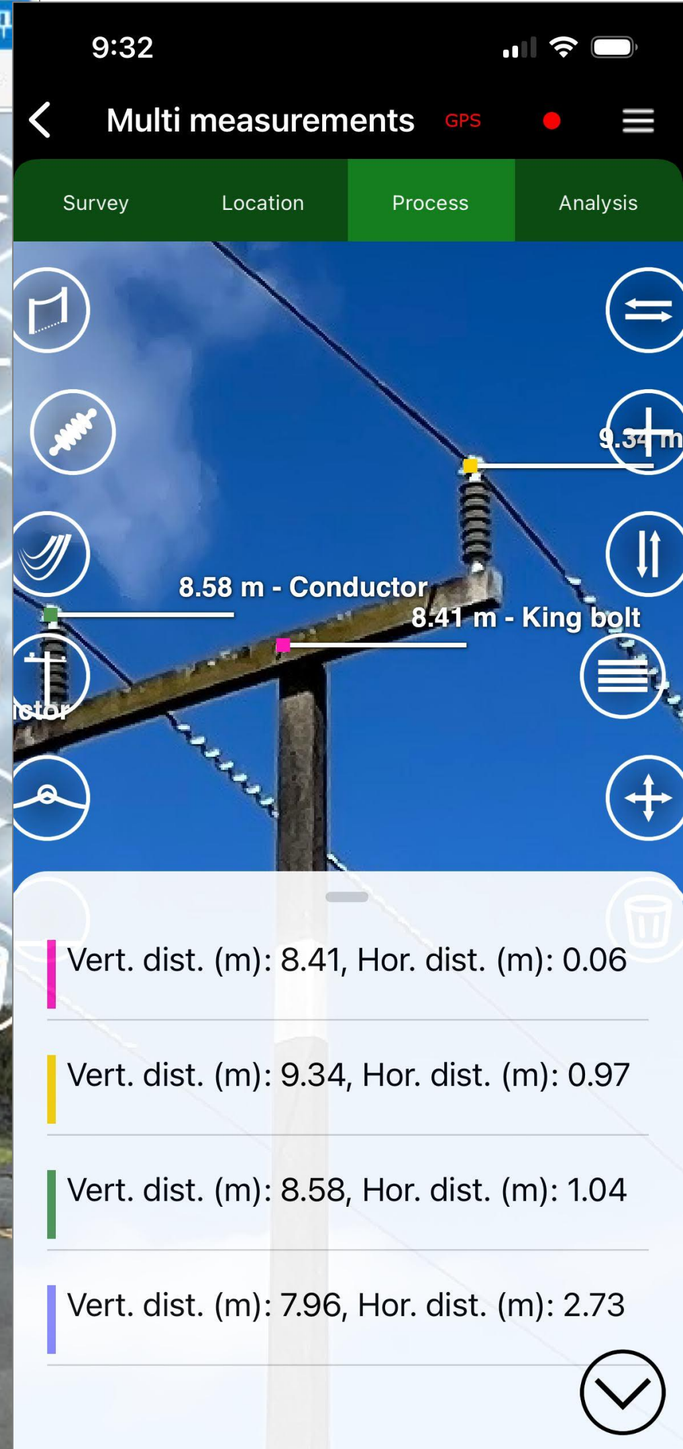


Photo Observations


Photos
Survey
Process
Analysis
Multiple span measurement
.58 m - 84
96.96 m - 85.0
0.2 °
100.95 m - 85.1 °
177, Robinson Road, Taurikura, Whangārei District,...
©2026 Google - Map data ©2026 Tele Atlas, Imagery ©2026 TerraMetrics



Equipment height measurement



Pole ID: 407816

Owner

Orientation
Horizontal object

Voltage level

Component

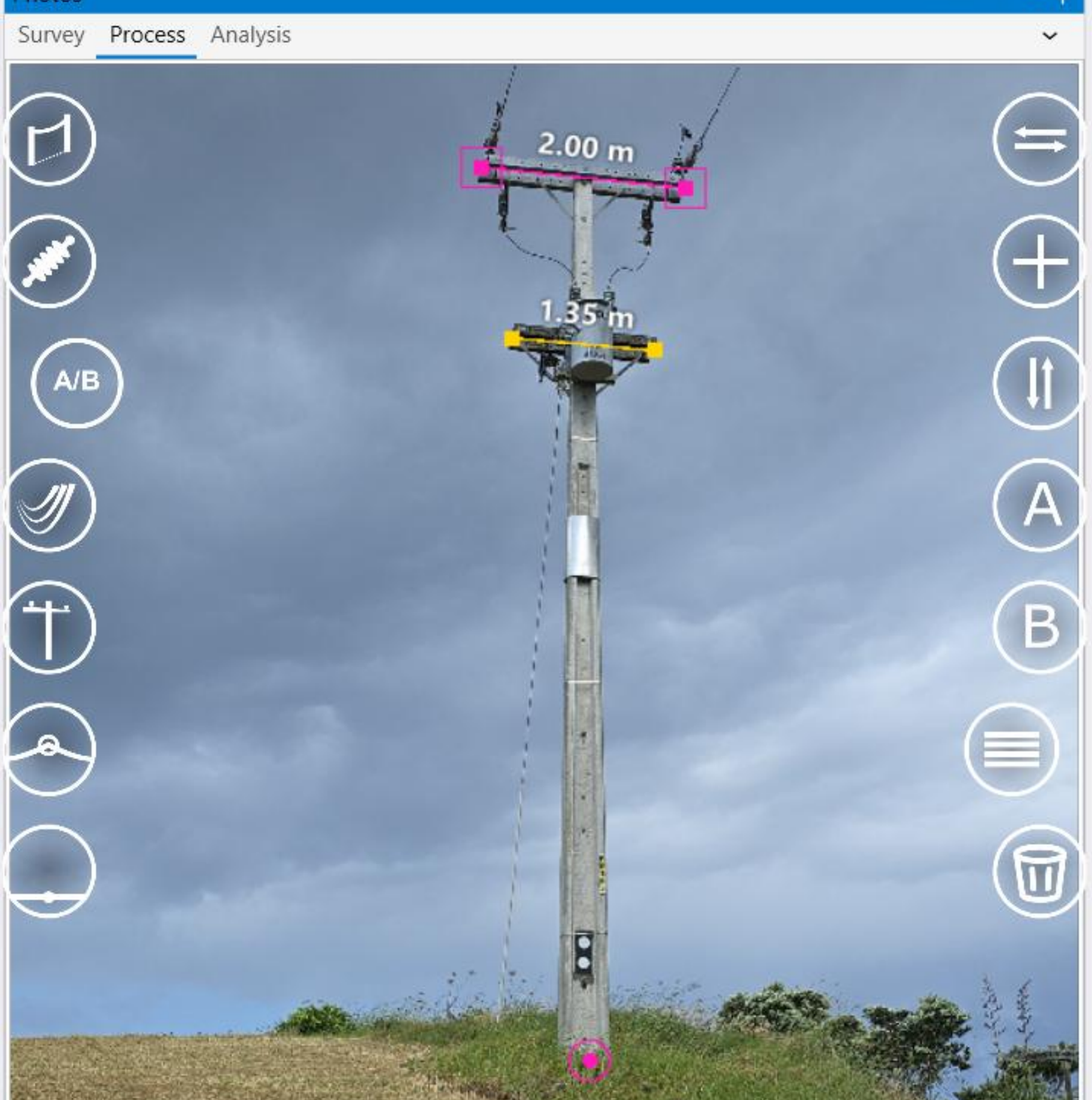
Notes

AB distance (m)
2.00

AB vertical distance (m)
0.00

AB horizontal distance (m)
2.00

Tools to measure attachments and key points



Asset ID: | Captured by: All observers | Date created: All | Start date: 29/05/1975 | End date: 29/05/2025 | Display mode: Data | Reset map restrictions | Export

- Condition observation
- Failure observation
- Defect observation
- Photo observation
- Tag observation
- Assets
- Multi measurements
- Conductor diameter measurement
- Component domain hierarchy
- Library
- Users
- Settings
- Sync data with server
- About
- Log out

Multi measurements - 8 records

Asset IDs	Support count	Observer	Created	
313180; 416804	2	John Ashley	2025-12-04 19:	2025-12-05 12:31
416804; 313180	2	Carl Rathbone	2025-12-04 19:	2025-12-05 12:32
313180; 241318	2	Carl Rathbone	2025-12-04 18:	2025-12-05 12:32
313180; 241318	2	John Ashley	2025-12-04 18:	2025-12-05 13:40
	0	John Ashley	2025-12-04 18:	2025-12-05 12:24
416804; 313180;	3	John Ashley	2025-12-04 18:	2025-12-05 12:36
	0	John Ashley	2025-12-04 18:	2025-12-04 18:44
313180; 416804;	3	Carl Rathbone	2025-12-04 18:	2025-12-09 16:07

Clearances with load cases

Record editor - Asset ID: 313180; 416804; 241318

Results reported
Minimums

Analysis type
Total clearance

Location
Offset (m): 3.280; To left pole (m): 9.721; To right pole (m): 32.194

Circuit: 11kV, Dog
Minimum: Total clearance 3.869 m, High wind 135° load case

Did not find minimum value

Vertical clearance (m)
3.353

Horizontal clearance (m)
1.931

Total clearance (m)
3.869

Photos

Survey | Process | Analysis

Porchester Road, Sunline Est...

Data | Map | Access

Voltage level

11kV

Component

Overhead line ❯ Structure

Asset ID

512551

Component

...ossarm ❯ Hardwood ❯ Bolt hole - Insulator

Defect type

Decay ❯ Internal

D5 | D4 | D3 | **D2** | D1 | D0

Defect notes

+...

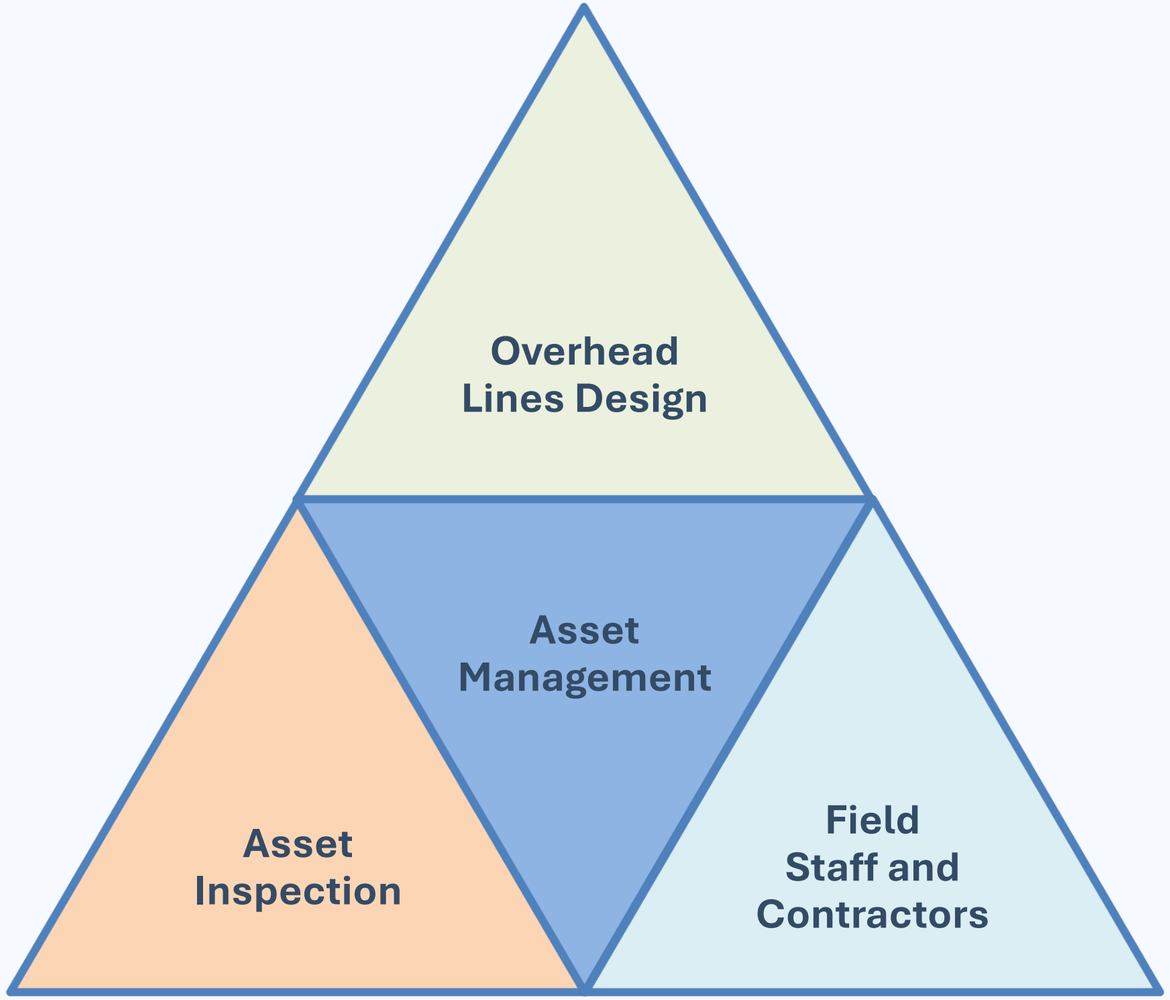
Tag status

Mobile asset condition and defect capture

Connecting the field and the office

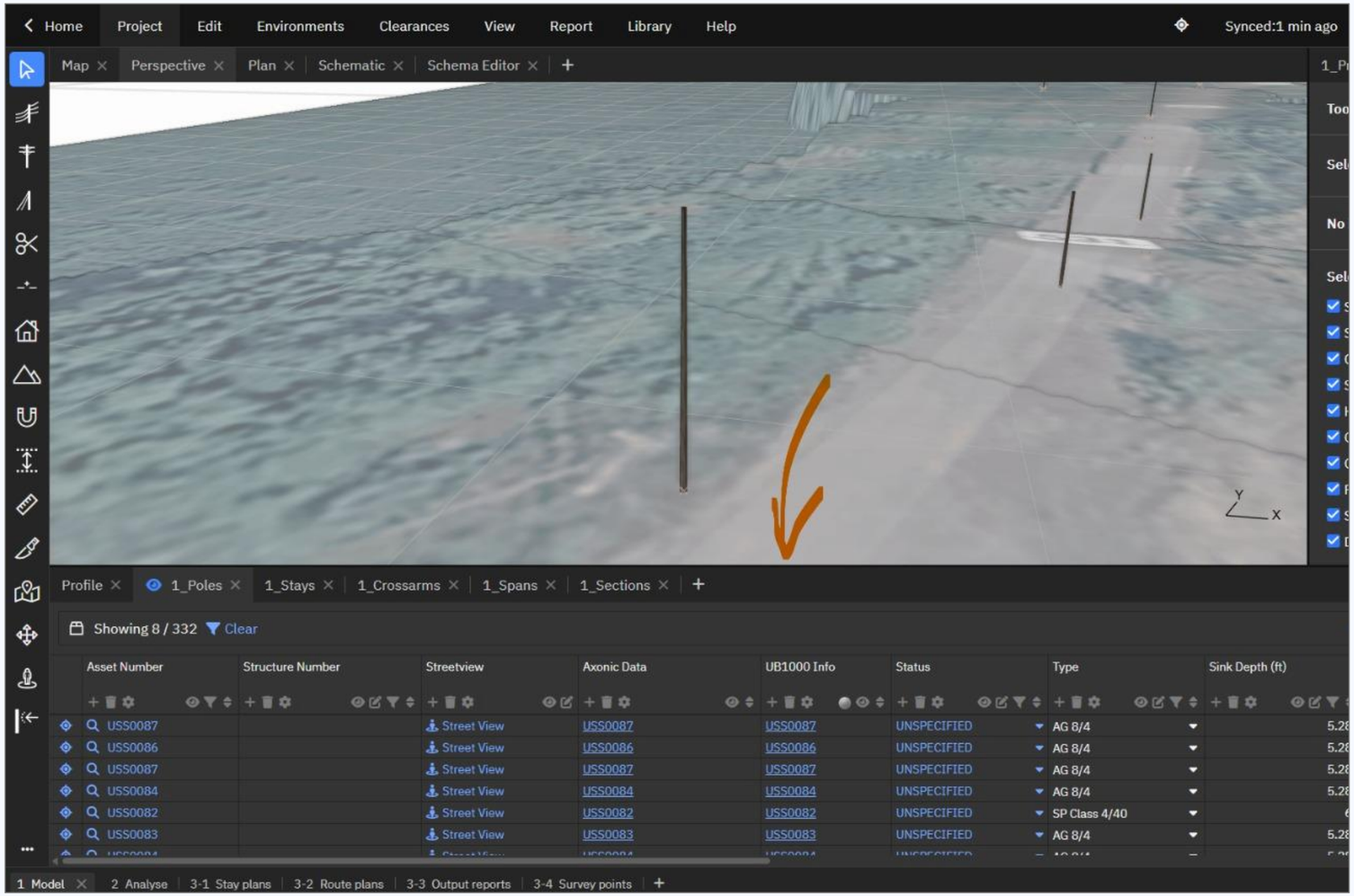
- Field teams ↔ Designers
- Inspectors ↔ Asset Managers
- Contractors ↔ Engineers

Shared evidence improves decision quality



Reducing the gap between field reality and engineering models

- Capture geometry and asset data directly in the field
- Export into engineering and digital twin environments
- Support loading, clearance and utilisation analysis
- Link back to source systems for more in-depth review and follow-up measurement
- Improve confidence in modelling outcomes



Demo of Axonic and Neara workflows

axonic://axonic_com/216672

Axonic - axonic_com

Asset ID: Reset map restrictions Export Import Import help

- Condition observation
- Failure observation
- Defect observation
- Photo observation
- Tag observation
- Assets
- Multi measurements
- Conductor diameter measurement
- Component domain hierarchy
- Library
- Users
- Settings
- Sync data with server
- About

Assets - 5 records

Asset ID	Status	Created	Updated	Voltage level	Component
415486	Provisional	2026-05-14 11:	2026-05-14 11:4		Overhead line › Structure
415498	Provisional	2026-05-14 11:	2026-05-14 18:0		Overhead line › Structure
415491	Provisional	2026-05-14 11:	2026-05-14 15:0		Overhead line › Structure
216672	Provisional	2026-05-14 10:	2026-05-14 15:0		Overhead line › Structure
216672	Provisional	2026-05-14 10:	2026-05-14 17:5		Overhead line › Structure

Record editor

Photos

Map

Axonic and Neara integration brief demo

https://youtu.be/j0jHl3TfHpQ

But geometry is only part of the story

- Some of the highest-risk defects are not externally visible
- Visual inspection alone can miss internal deterioration
- Condition and consequence must both be understood
- Hidden decay creates uncertainty in network resilience

InnerView Insights

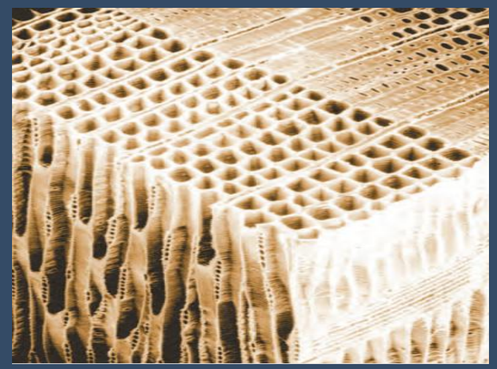
Ultrasound finds what the eye can’t see

- Non-destructive evaluation of wooden poles
- Detection of incipient and early-stage decay
- Digital audit trail and repeatable evidence
- Supports prioritised maintenance and remediation

Decay fungi progression in timber poles (soft rot / white rot / brown rot)

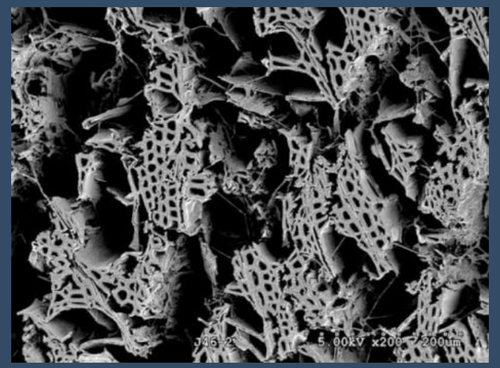
- Fungi spores develop fungus filaments (hyphae)
- Hyphae secrete enzymes to breakdown hemicellulose into sugars
- Hemicellulose is ~40% of weight of wood

Healthy wood



Sound Scatters – Energy attenuation and slower time of flight

Decayed wood



Source: Dr J Morrell – 2012. Wood Pole Maintenance Manual / Pr J Winandy

InnerView Insights

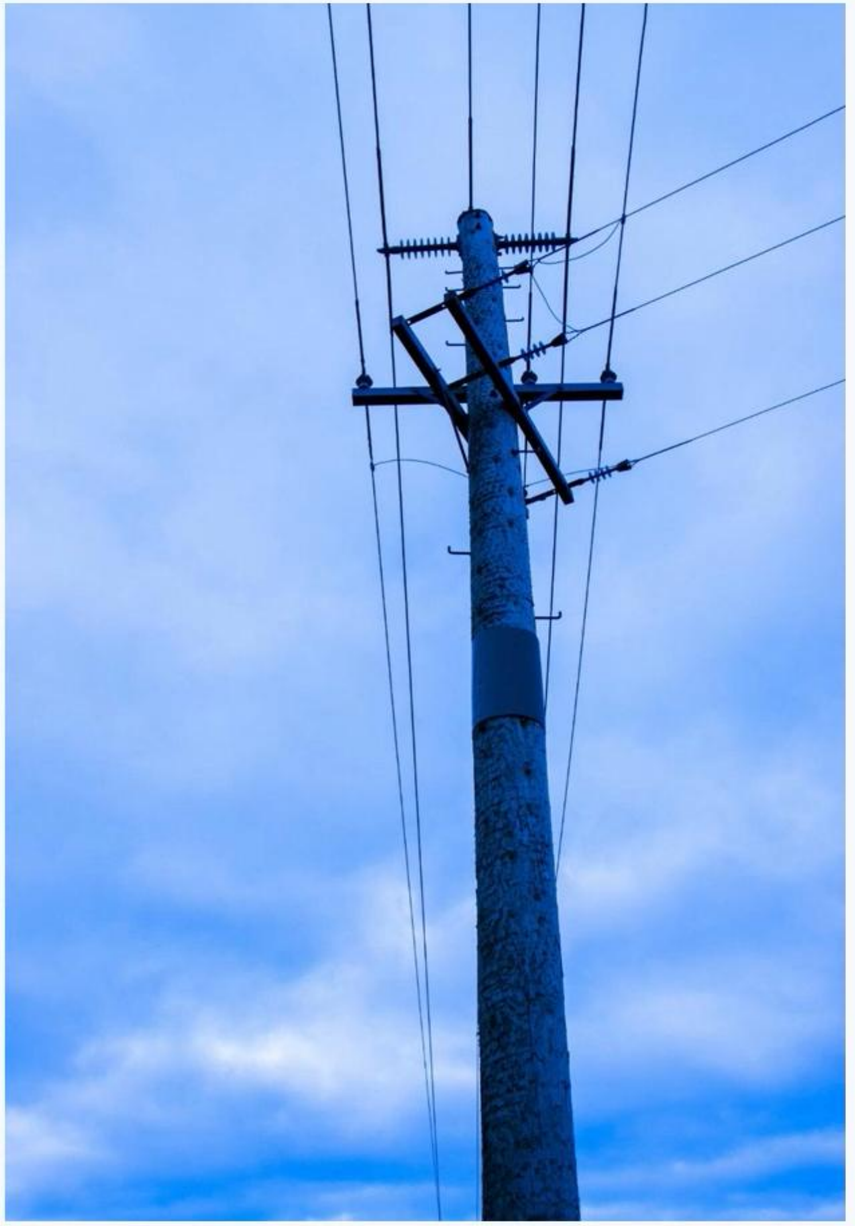
InnerView Insights Ltd

Enhancing Safety, Resiliency and Compliance for Utilities

Pole Inspection Process

UB1000 brief demo

https://youtu.be/d8Xj3bcEkjE



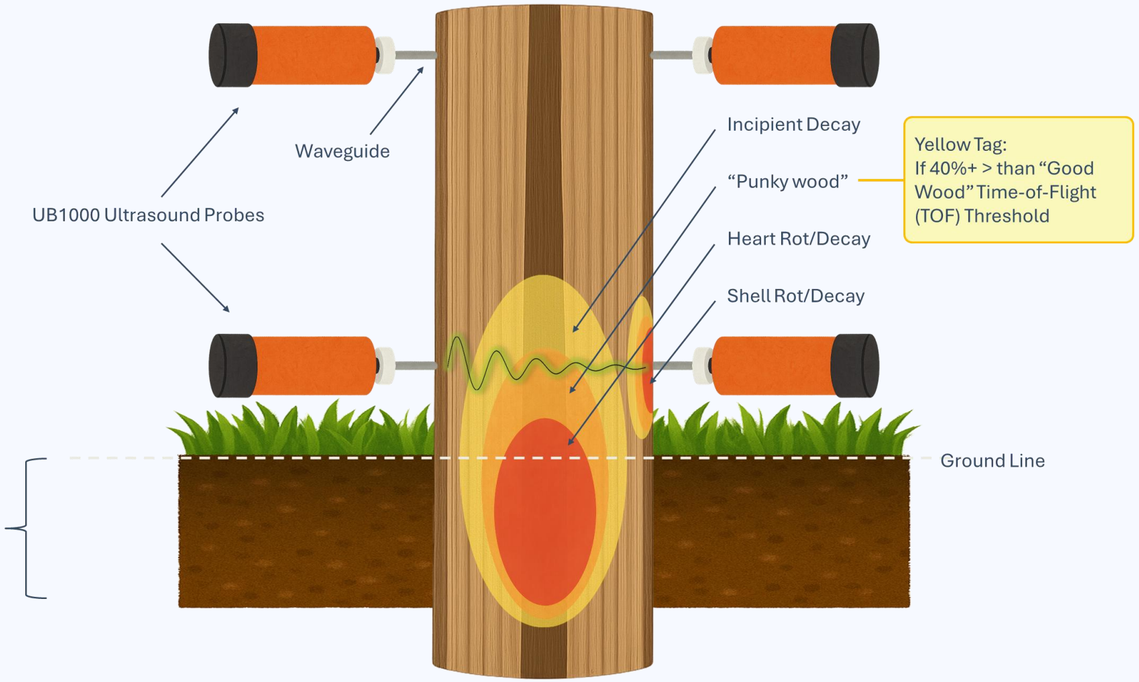
InnerView Insights

Enhancing Safety, Resiliency and Compliance for Utilities

www.innerviewinsights.com

UB1000: Detecting Decay at all Stages – our Ultrasound Advantage

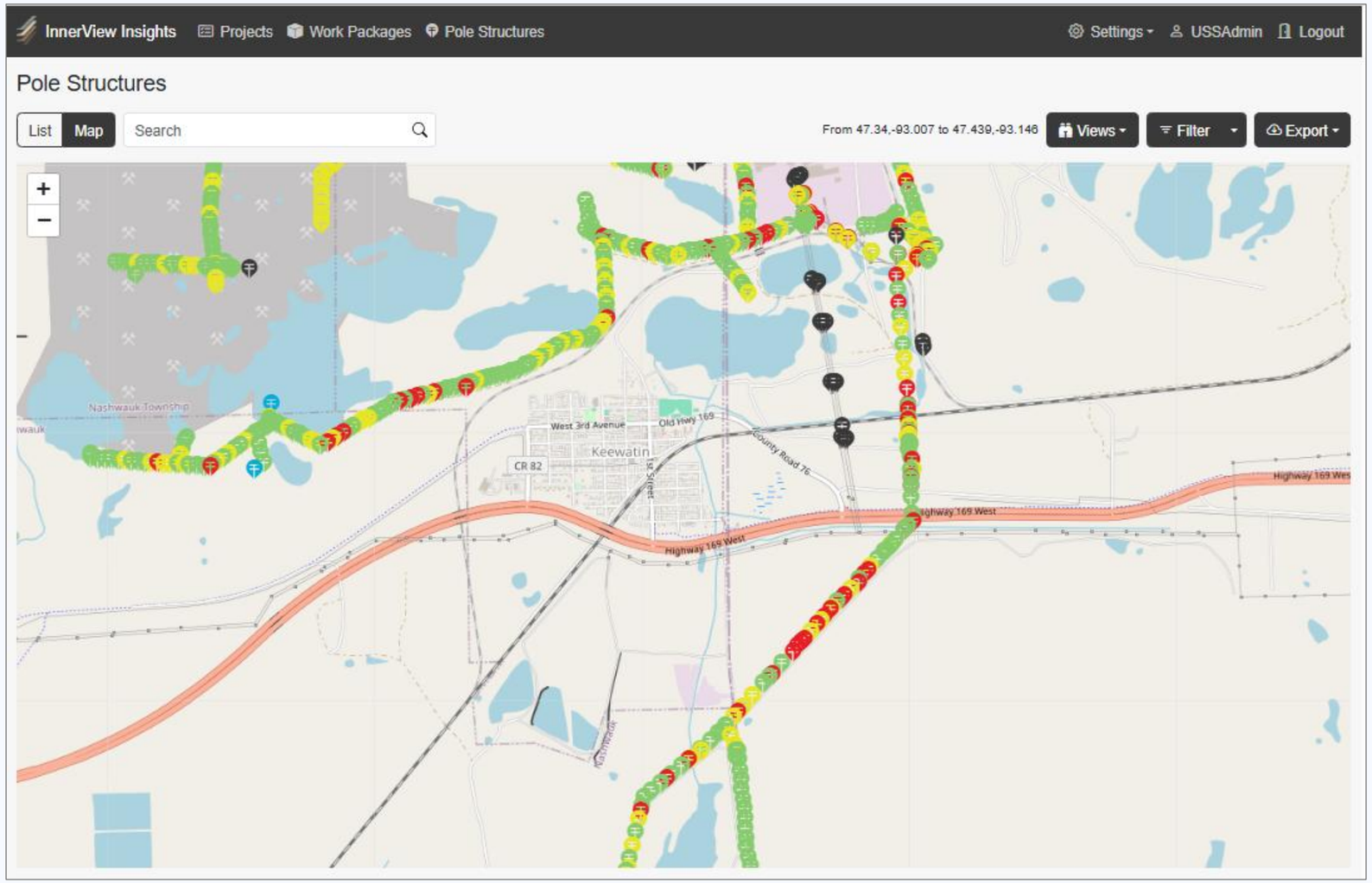
UB1000 Ultrasound NDE probes provide equivalent efficacy to the “Partial Excavate, Sound and Bore” process… without the damage



InnerView Insights

Risk is rarely distributed evenly across a network

- Not every ageing pole is high risk
- Not every healthy-looking pole is safe
- Targeted intervention beats blanket replacement
- Better evidence enables smarter prioritisation



InnerView Insights

Preparing networks for storms and future demands

- Storm resilience starts before the weather event
- Understand loading, clearances and structural condition
- Combine field evidence with engineering models
- Improve preparedness and response planning

Thousands in Ireland still without power after Storm Éowyn, as more wild weather wallops UK, France

LONDON (AP) — Ireland called in help from England and France as repair crews worked to restore power to hundreds of thousands of people after the most disruptive storm for years . Even as the cleanup continued, more wet and windy weather hit the U.K.

Jill Lawless, The Associated Press
Jan 26, 2025 8:15 AM
Updated Jan 26, 2025 8:35 AM

Workers clear a fallen tree on Grove Park Drive as ESB networks continue to reconnect homes and businesses across the country after Storm Eowyn, in Dublin, Sunday, Jan. 26, 2025. (Brian Lawless/PA via AP)

InnerView Insights

Scaling engineering capability

- Online training, micro-credentials
- Consistent field capture methods and shared libraries and workflows
- Reducing dependency on individual or tribal knowledge
- Supporting the next generation of line designers

PRODUCT

Training and Onboarding

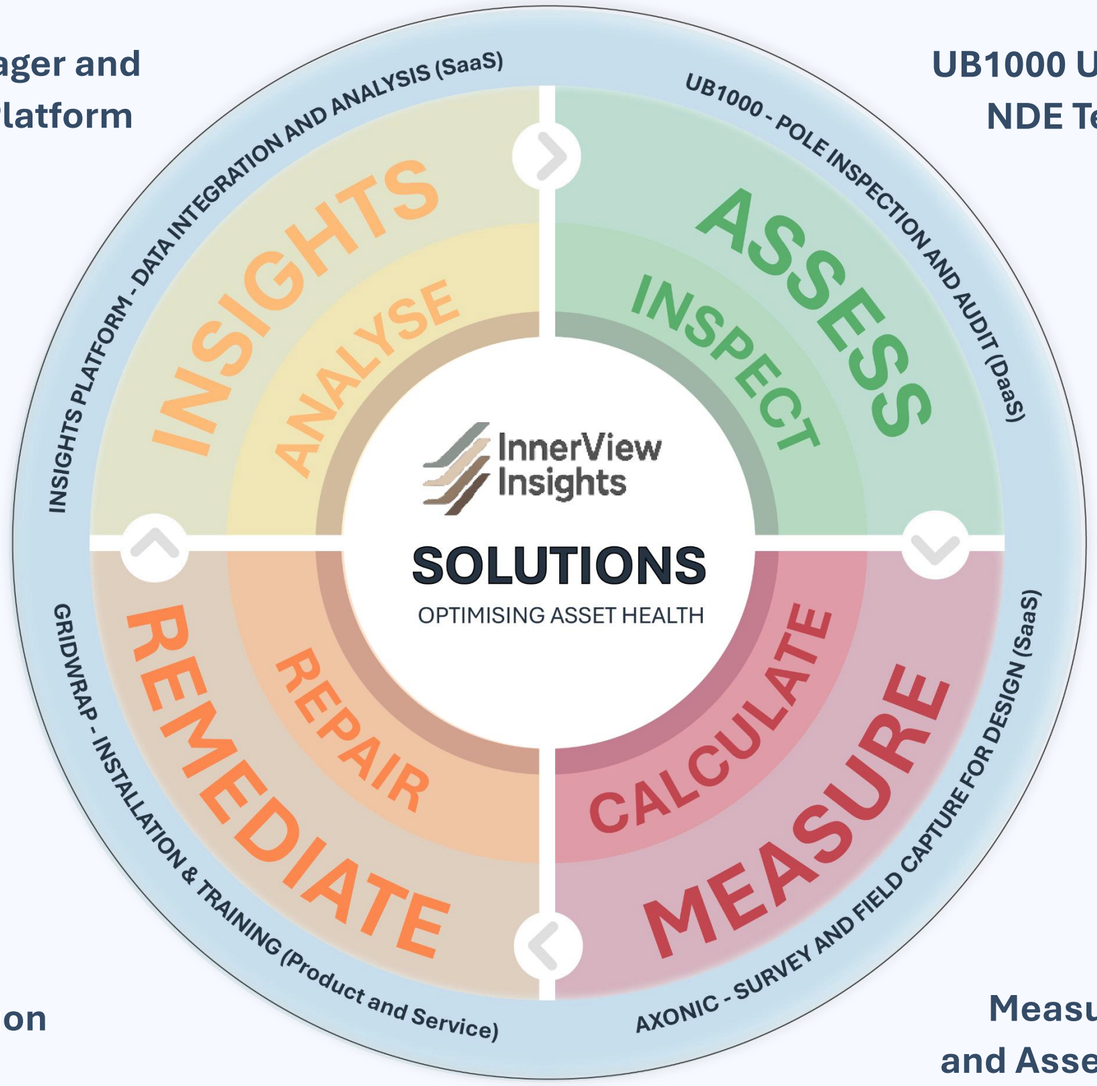
InnerView Insights offers comprehensive **training and onboarding** for users of our UB1000 ultrasound device **and** Axonic photo-based inspection app, ensuring teams are confident **and** capable from day one. We provide...

InnerView Insights

Integrated solution portfolio

Grid Manager and Insights Platform

UB1000 Ultrasound NDE Technology



Pole Remediation Solutions

Axonic Measurement and Assessment

InnerView Insights' technology enhances pole inspections and line design with:

- Non-Destructive Evaluation (NDE)
- Advanced Data Analytics
- Improved Asset Management
- Auditability for insights, efficiency and regulatory compliance that helps de-risk utility operations
- Overhead lines measurement
- Options for remediation

InnerView Insights

Why InnerView Insights?

Improved Safety

Safety of staff, contractors and the public enhanced through identification of weakened poles and out-of-specification networks

Better Engineering Decisions through better field Data

Reduced risk of outage through pole breakage or cascade failures
Optimal design of networks to harden and increase distribution reliability

Regulatory Compliance and Auditability

Ability to audit source data including objective test results, with additional context from measurements and observations in near real time to meet legal requirements

InnerView Insights

Thank You

John Ashley
Business Development
+6421841564
john.ashley@innerviewinsights.com

InnerView Insights Ltd
PO Box 527
Waiheke Island
Auckland 1840
NEW ZEALAND

InnerView Insights

www.innerviewinsights.com