Building Resilience Through Technology

ARNO KNIGHT

26/11/2024

INTERNAL

What technology are we using?

- Light Detection and Ranging (LiDAR)
  Ground and aerial scanners
- Remote Piloted Aircraft (Drones)
  Mavic 3, Matrice 30, Matrice 300
- Geolocate All Data
  Allows for GIS modelling

What We Use Technology For

Asset Condition Assessment

Extend Asset Life Spans

Plan Maintenance and Projects

Manage Natural Hazards

Landslides

Flooding

Vegetation Growth

Remote Site Access

Reduce Site Visits

Give New Perspectives

Safe Work Zones

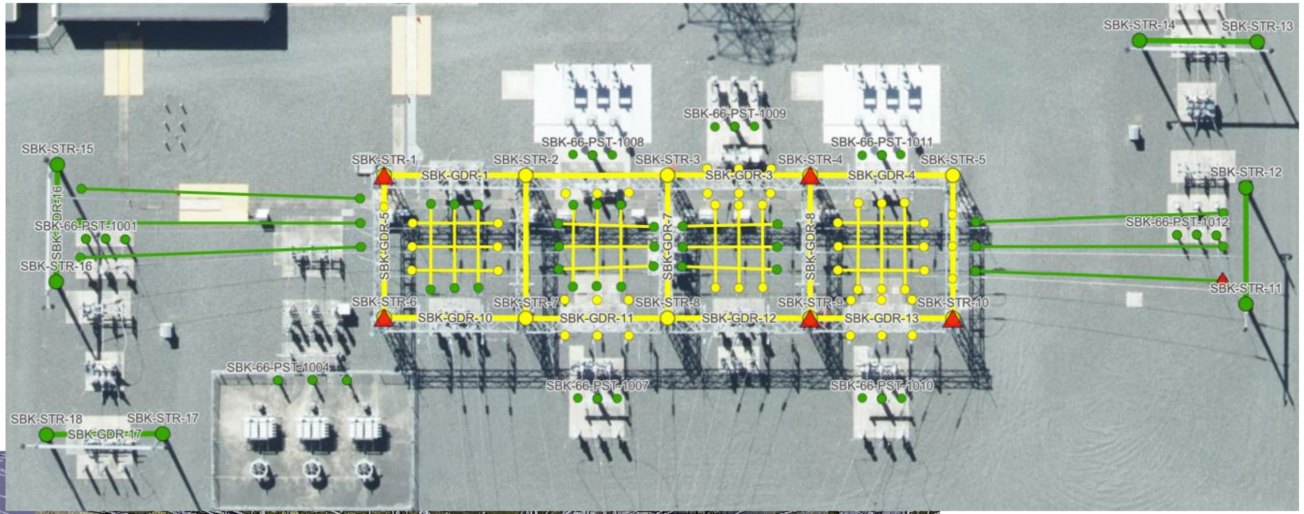
Measure Distance From HV Equipment

Reduce Risk of Injury for Workers

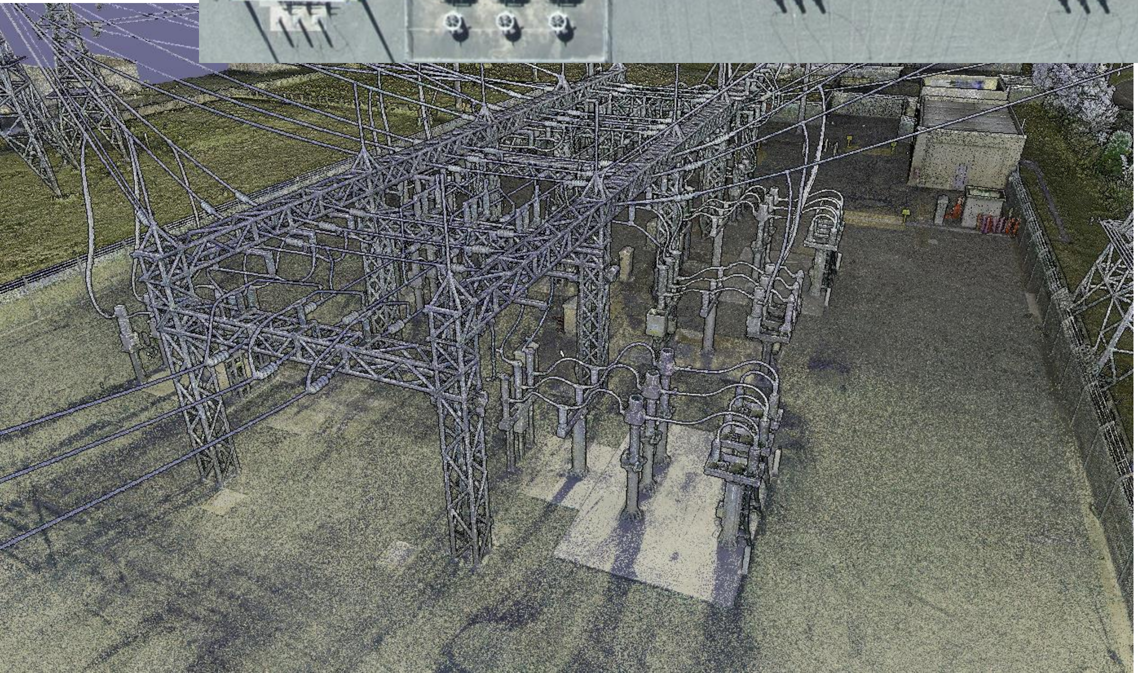
Asset Condition Management

- Improves asset analysis and lifespan prediction
- Captures missing assets
- Makes data more accessible and understandable
- Sets platform for future automation
- Simplifies defect management

Substation Condition Assessment



CSTR_EWSS_ATT_STEC	CSTR_EWSS_ATT_TH	CSTR_BOLT_10	CSTR_BOLT_20	CSTR_BOLT_30	CSTR_BOLT_40	CSTR_BOLT_50	CSTR_BOLT_60	CSTR_BOLT_70	CSTR_BOLT_80	CSTR_BOLT_90	CSTR_BOLT_100
Earthwire Attachment I	Earthwire Attachme	Bolts % Condition 0-10	Bolts % Condition 1	Bolts % Condition 2	Bolts % Condition 3	Bolts % Condition 4	Bolts % Condition 5	Bolts % Condition 6	Bolts % Condition 71-80	Bolts % Condition 8	Bolts % Condition 91-100
GAUGE	GAUGE	GAUGE	GAUGE	GAUGE	GAUGE	GAUGE	GAUGE	GAUGE	GAUGE	GAUGE	GAUGE
%	%	%	%	%	%	%	%	%	%	%	%
0	0	0	0	0	0	0	20	80	0	0	0
0	0	0	0	0	0	5	25	70	0	0	0
0	0	0	0	0	0	0	5	25	70	0	0
0	0	0	0	0	0	10	50	40	0	0	0
0	0	0	0	0	0	0	5	25	70	0	0
0	0	0	0	0	0	5	15	80	0	0	0
0	0	0	0	0	0	5	25	70	0	0	0
0	0	0	0	0	0	5	25	70	0	0	0
0	0	0	0	0	0	20	50	30	0	0	0
0	0	1	0	0	0	0	4	25	70	0	0
0	0	0	0	0	0	0	0	0	100	0	0
0	0	0	0	0	0	0	0	0	100	0	0
0	0	0	0	0	0	0	0	0	100	0	0
0	0	0	0	0	0	0	0	0	100	0	0
0	0	0	0	0	0	0	0	0	100	0	0
0	0	0	0	0	0	0	0	0	100	0	0
0	0	0	0	0	0	0	0	0	100	0	0
0	0	0	0	0	0	0	0	0	100	0	0



- LiDAR scan converted to GIS service
- Improves on-site CA workflow
- Makes data accessible

Substation Condition Assessment

- Defects highlighted for urgent repair
- Drones provide improved site coverage

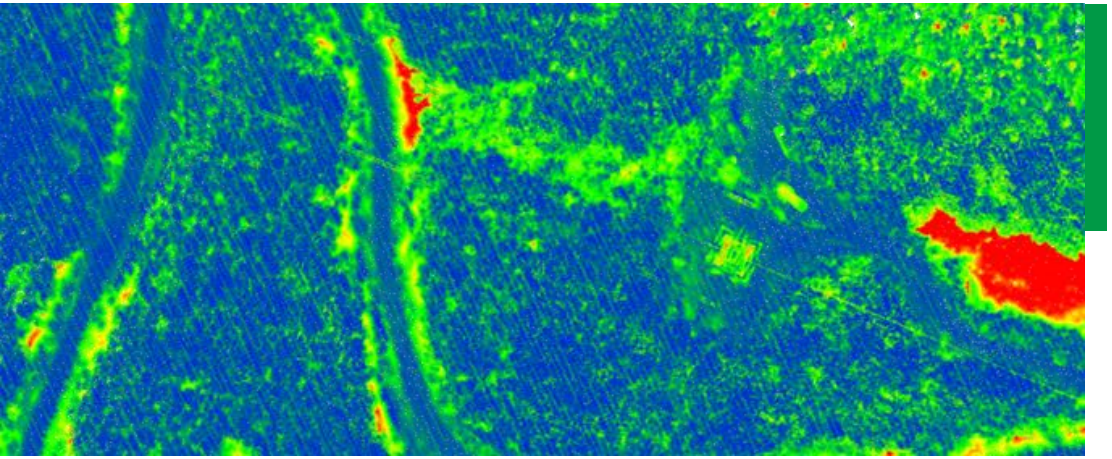
Transmission Line Condition Assessment

- Defects highlighted for urgent repair
- Better for landowners
- Less reliance on specific workers

Managing Natural Hazards

- Improve resilience to natural hazards
- Proactive and reactive monitoring of high-risk sites
- Making information more accessible
- Importance will only grow with time

LiDAR Slip Surveys

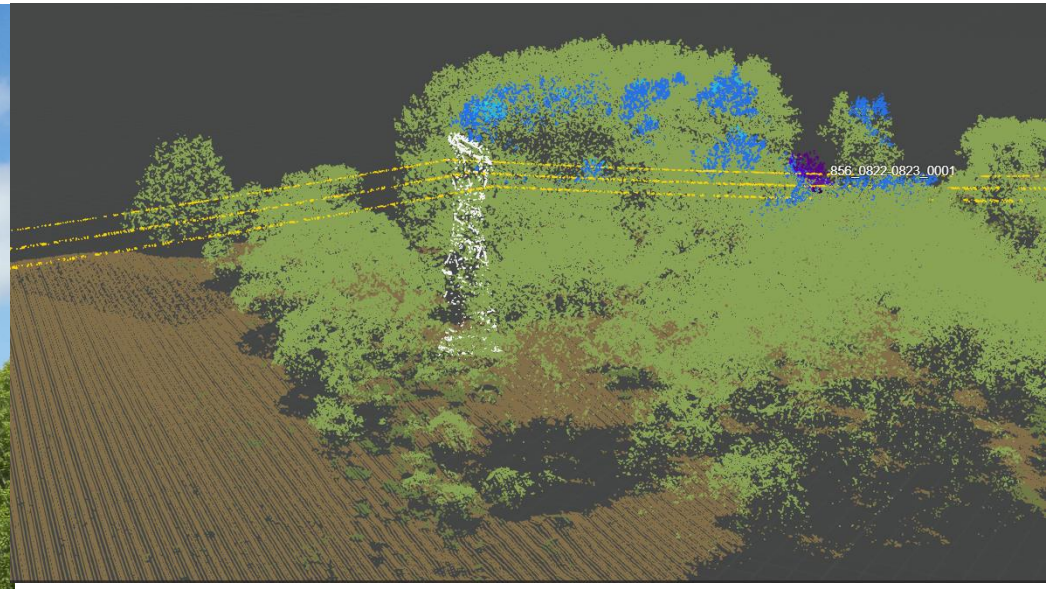


- Reactive management of landslide risk
- Highlights areas where remediation is required
- LiDAR comparisons provides view unseen by human eye
- Tree growth on average 30cm from 2022 to 2024

River Monitoring

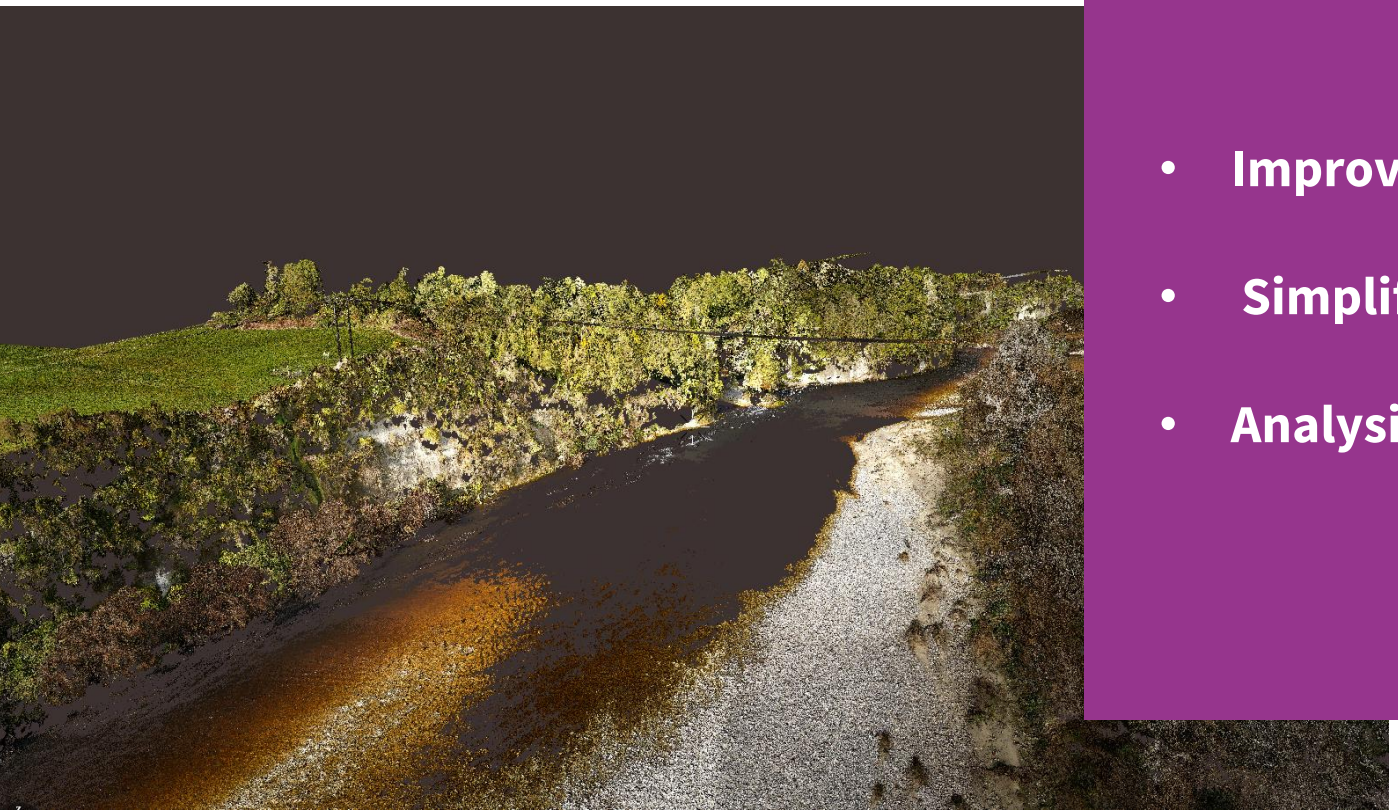
- Managing flood risk
- Combining LiDAR with photos
- Need data before/after flooding

Vegetation Management



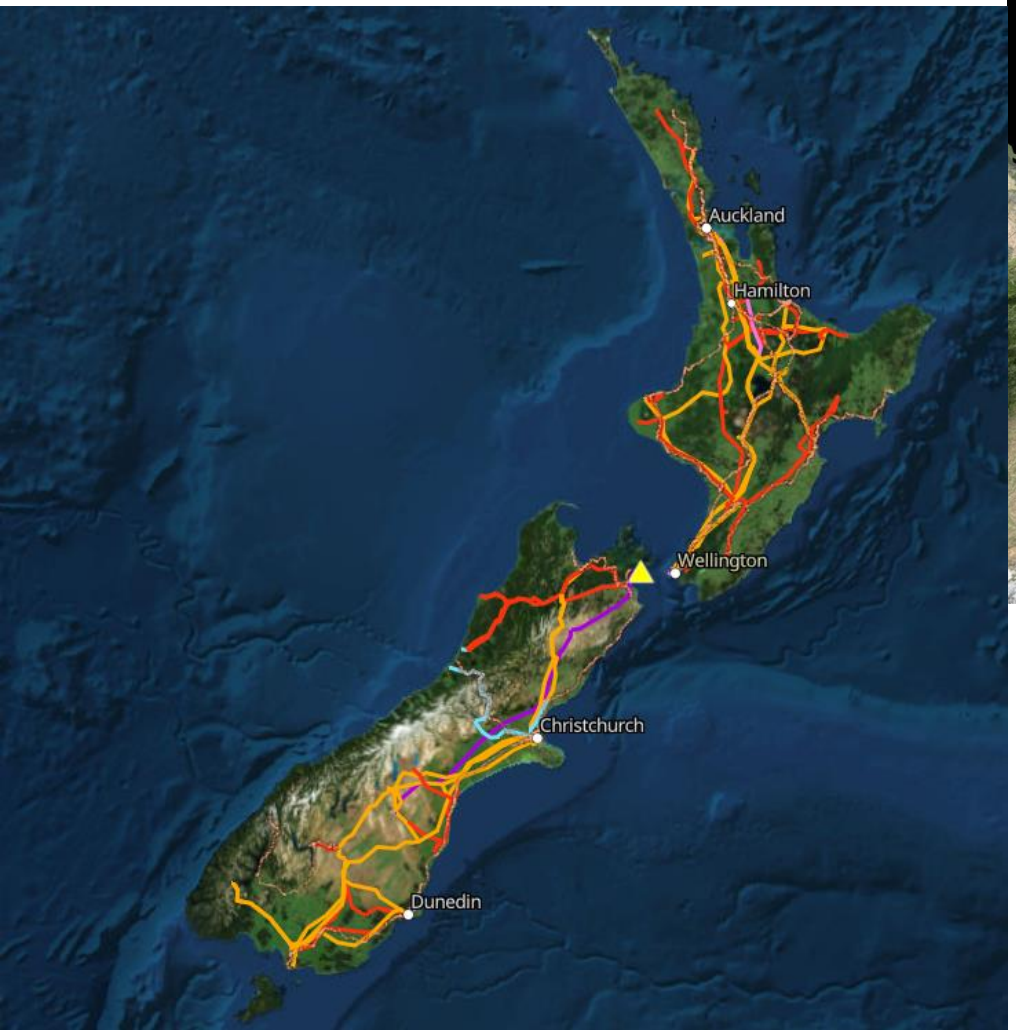
- Proactive/Reactive vegetation management
- Reduces risk of shorting to vegetation
- Reduces reliance on worker knowledge of area

Remote Site Access



- Improved planning for upgrade projects
- Simplified site familiarization
- Analysis following significant weather events

Remote Substations



- Data used for work planning
- Site familiarization ahead of time
- Reduce site visits and travel

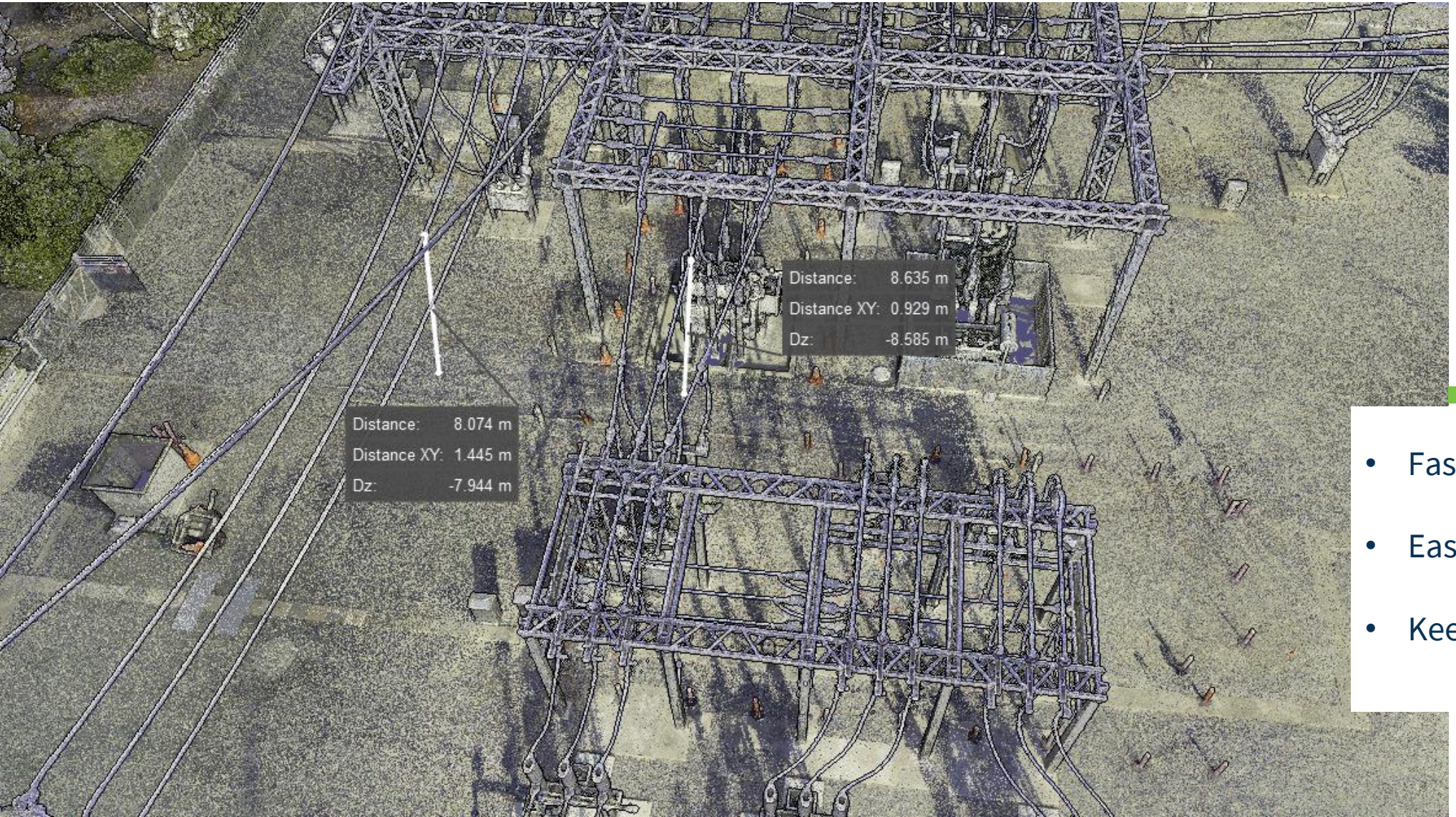
Transmission Line Access Tracks

- Alternate route required
- Model can be used to plan new track
- Helpful for client liaison

Safe Work Zones

- Always maintain safe work distance for workers
- Make more accurate measurements
- Display data in understandable formats

Minimum Approach Distances



- Fast, accurate process
- Easy to understand
- Keeps workers safe

How does this improve resilience?

- Improve safety within the network
- Respond quickly to natural hazards
- Better asset lifespans and future planning
- Monitor defects and problem areas
- Keep the knowledge of experienced workers

Thank You

ARNO KNIGHT

26/11/24