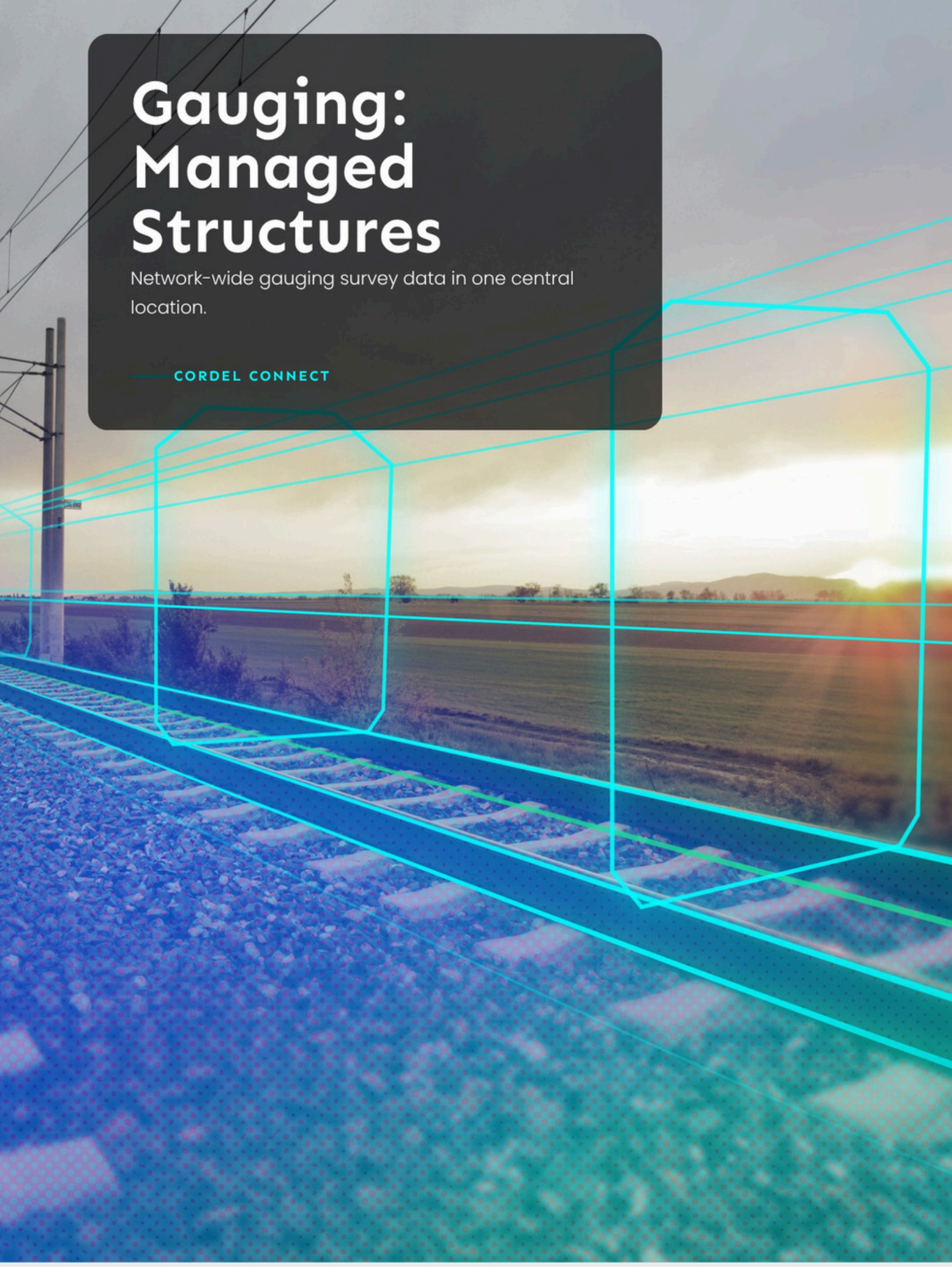


Gauging: Managed Structures

Network-wide gauging survey data in one central location.

CORDEL CONNECT

Information

Summary

Gauging Connect is a comprehensive, dynamic solution that allows rail networks to maximize their network's potential, without compromising safety. Cordel delivers a revolutionary approach to gauging management by combining interoperability, intelligence, and speed. Built on industry-standard, non-proprietary data formats and capable of ingesting data from a variety of sources, Gauging Connect integrates seamlessly with existing systems and ensures long-term flexibility. Gauging-specific AI trained on over two million miles of track data, drives unmatched accuracy in solving complex gauging challenges.

With rapid data turnaround measured in weeks, not months, Gauging Connect delivers faster, more reliable, and future-proof insights for managing your network.

Slices, Structures and Surveys

Slices

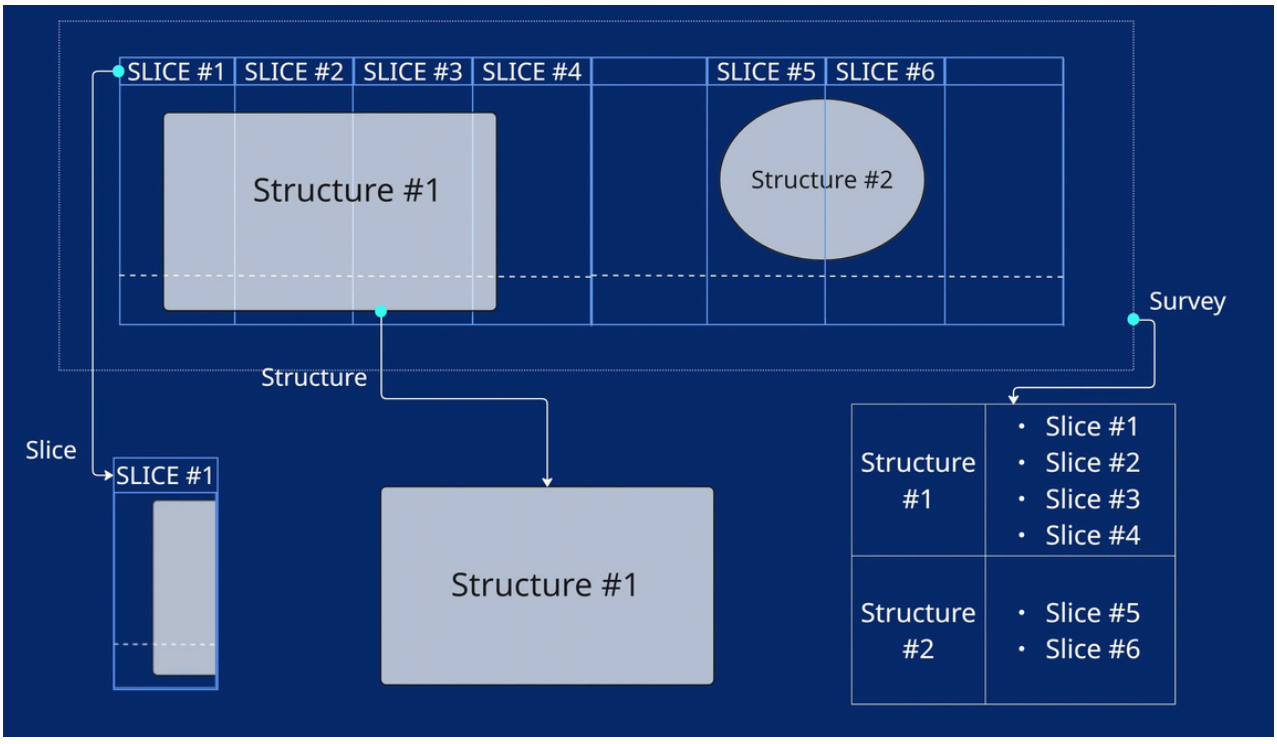
The atomic unit of data in the gauging system, a slice is a cross section of arbitrary depth (nominally 5m, though this is configurable depending on client requirements) that represents real world measurements along a rail corridor, from the rail to the objects and structures that surround it. Note: a slice is only generated when points are found inside the structure gauge. Slices are unique to 'Cross Sections' due to the fact that all information is relative to the left (running) rail-head. Slices are represented using the SCN file format when treated as system input / output files which also informs many of the fields when we represent them in a database. Slices contain metadata that is tangential to data in the 'SCN' format.

Structures

A structure in Gauging Connect represents any 'real-world' physical entity such as a platform, bridge, tunnel etc found to be within a particular proximity to a railway track. In situations where one structure is in range for multiple tracks (eg two tracks under a bridge), multiple structure records would exist - one for each track. (The exception is platforms which are only entered for the one track they are intended for). A slice might contain part of a structure, or a whole structure. For searchability and data management, each structure is assigned a Track Structure ID, or TSID. Typically gauging measurements are made from the rails to the surrounding structures.

Surveys

A survey is a collection of slices - some of which are assigned to structures - that have been grouped together according to their location on the network. Survey management is flexible by design, allowing clients to configure data management to suit their current workflows. Surveys can be transitioned through different stages and can reflect client-defined statuses. Where Cordel is capturing survey data, typically a mission is converted into a survey. Where clients supply BYOD, typically the system will maintain the same slices from the uploaded survey as a survey in Cordel connect.



Slices, Structures and Surveys: A relational diagram

Gauging Data Management

The Gauging Connect module hosts large volumes of gauging data and provides a suite of tools to empower users to extract maximum insight from this data, in a way that makes sense to their business.

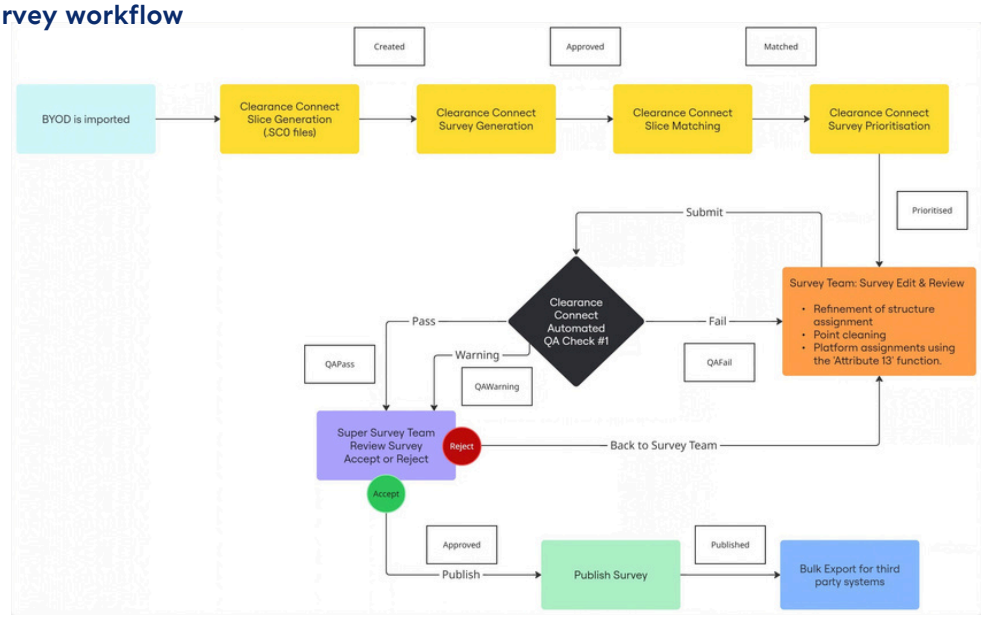
Key data management functionality:

- Storage network-wide, version controlled inspection data - with full audit history.
- Structure assignment - users are able to assign slices to existing structures (or create a new structure) and assign structures to surveys for geospatial context and structure data management.
- Identify and prioritise potential infringements and/or areas of interest for human review.
- Quality assure data - both automated and manual (manual QA can be performed by clients or Cordel's Delivery Team - depending on client requirements).
- Correct slice data - removing spurious point/noise and/or removing invalid slices from survey data prior to publishing.
- Generate surveys and transition them through custom workflows - users are able to group slices that have been through automated and human-in-the-loop quality assurance checks and transition them through various states.
- Re-survey compliance reporting - understanding the age of survey data as it relates to the network and which areas are due for compliance periods.
- Periodic network wide releases of gauging data (configurable through permissions).
- Export data for use in third party systems, such as D/Gauge.

Survey Management Workflows

The survey management process is flexible by design, allowing clients to configure survey data management processes to suit their current business workflows. Surveys can be transitioned through different states, which trigger notifications to relevant teams.

Sample Survey workflow



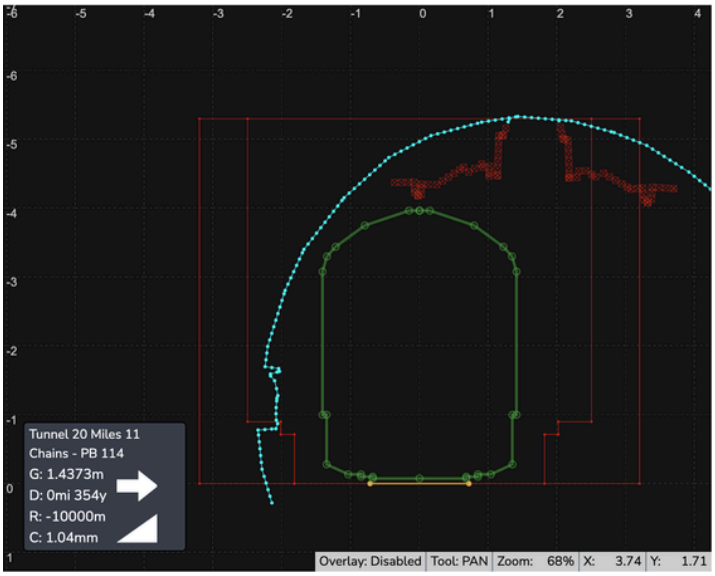
Sample Survey Management Workflow used by a Gauging Connect client

D/Gauge - Rift

Cordel provides this service in partnership with DGauge, where clients are able to perform more complex gauging assessments. Once data is imported into D/Gauge, users are able to interrogate gauging inspection data further using a range of functionality, such as custom kinematic profiles and gauging assessments that account for complex geometric factors such as dynamic loading, suspension systems and long loads.

Editing Tools

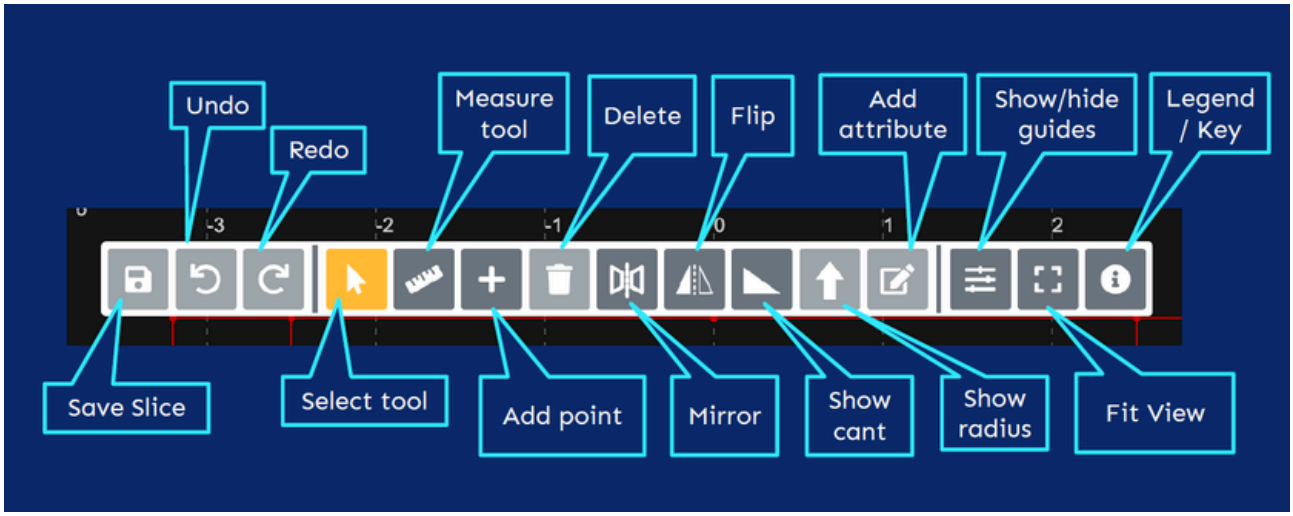
Slice Viewer/Editor



Slice Editor screen in Cordel Connect

Cordel's slice viewer drills down to the exact location of potential infringements and provides detailed information, including:

- A view of the scene, including a standard rollingstock profile and any points found around the structure gauge
- The distance between the profile and surrounding structures
- A pin on the map that corresponds to the location of the slice
- Sibling slices (slices that are located nearby)
- Slice details/meta data
- Slice history (including previous changes made)



Slice Editor toolbar in Cordel Connect with labeled functions

The Slice Editor tool allows for manual review of slice information, and manipulation/correction of points where necessary.

Visual Tools

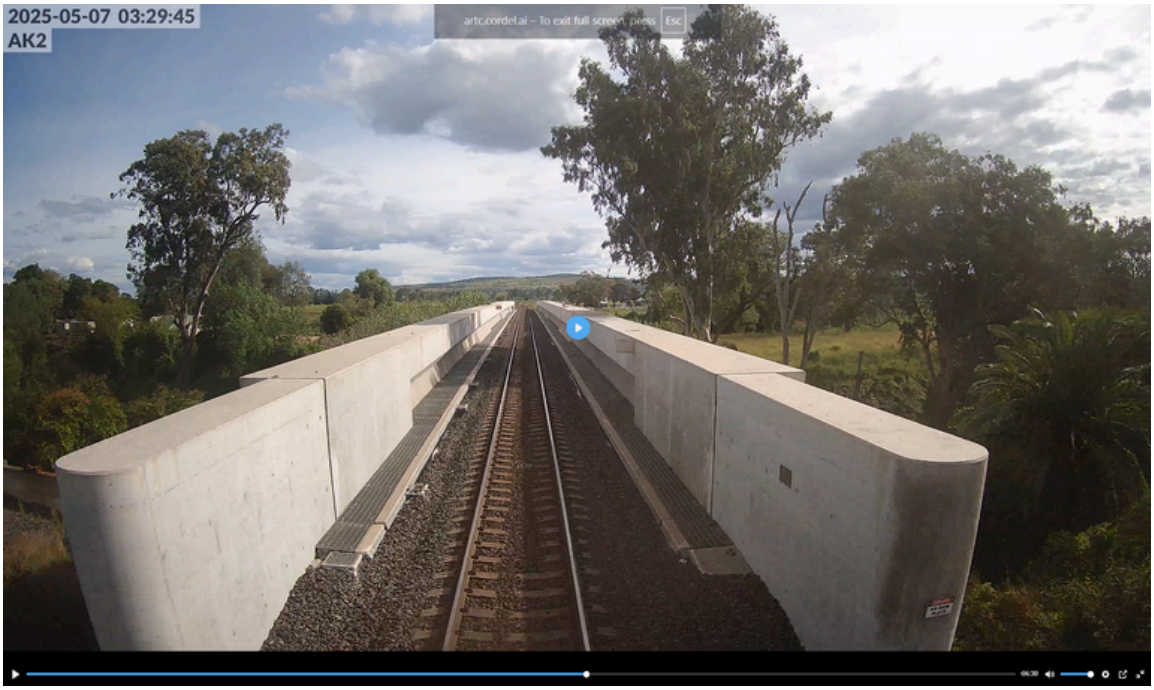
LiDAR Viewer

Users can view the corresponding point cloud using the LiDAR viewer, and can investigate potential structural gauging issues with greater context.



Forward Facing Video

The video footage captured by Cordel hardware is a powerful tool when conducting digital assessments of potential kinematic infringements



Report Graphing Tool

N/A