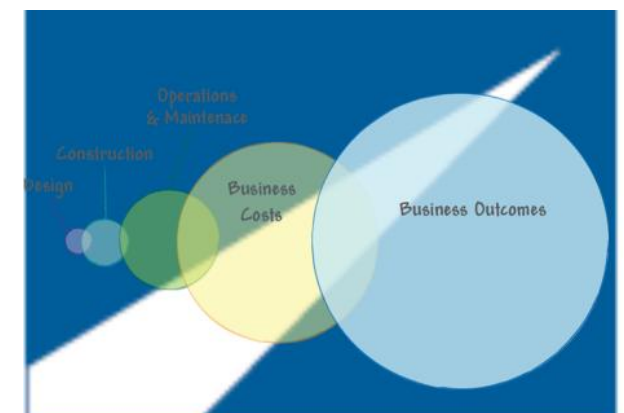


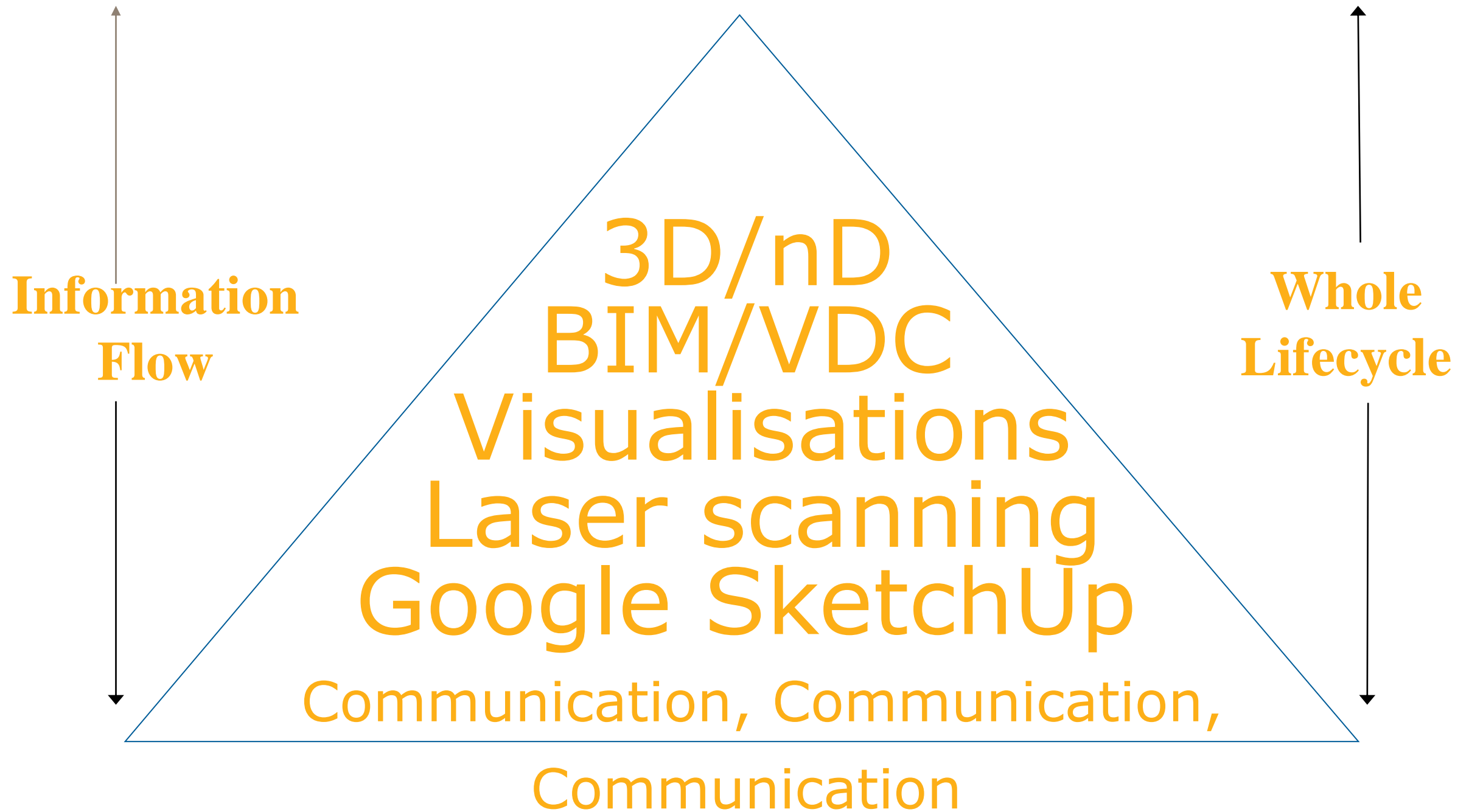
# 3D Laser mapping for BIM models

**Nick Boyle**  
**Technical Services Director**  
**20 March 2012**



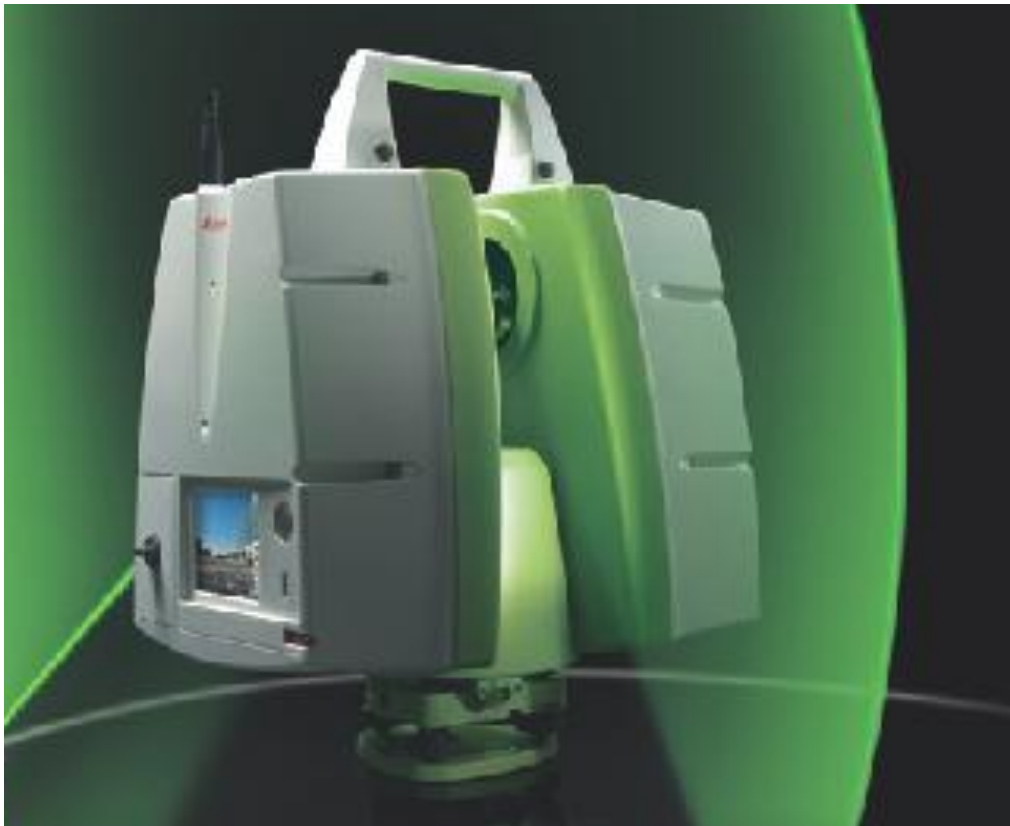
**BEYOND DELIVERY**

# BIM Techniques - Sharing Information



# Laser Scanning

Leica ScanStation C10



Faro Focus 3D 120



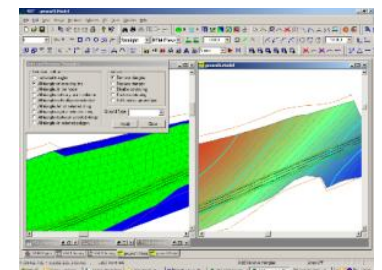
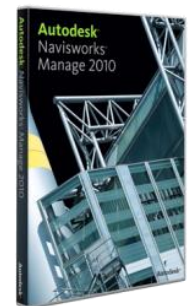
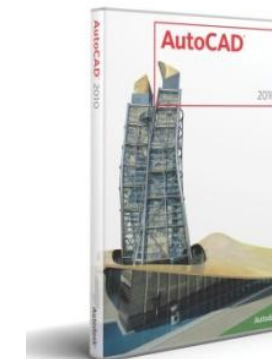
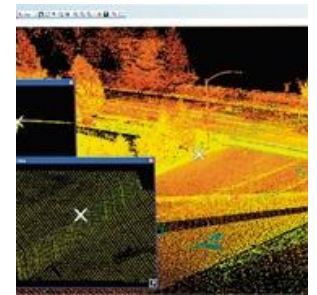
# Software

## Leica Software Suite For the ScanStation

### Leica Cyclone Register

- Leica Cyclone Model
- Leica Cyclone Publisher
- Leica Cyclone II Topo
- Cloudworx (CAD Plugin)

- AutoCAD 3D
- AutoCAD Navisworks
- Pointools View Pro
- SCC Software



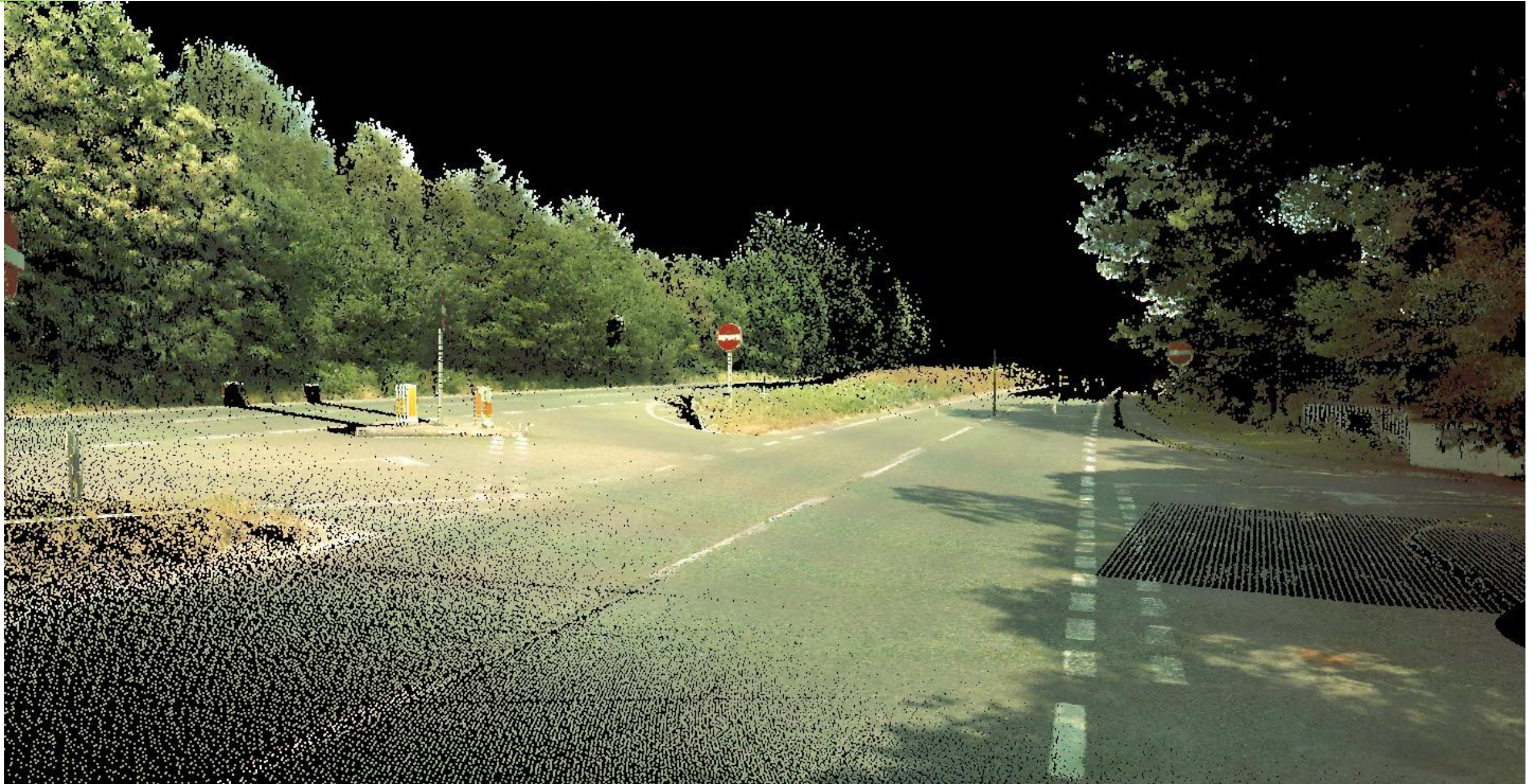


## Case studies

# Using scanning Technology

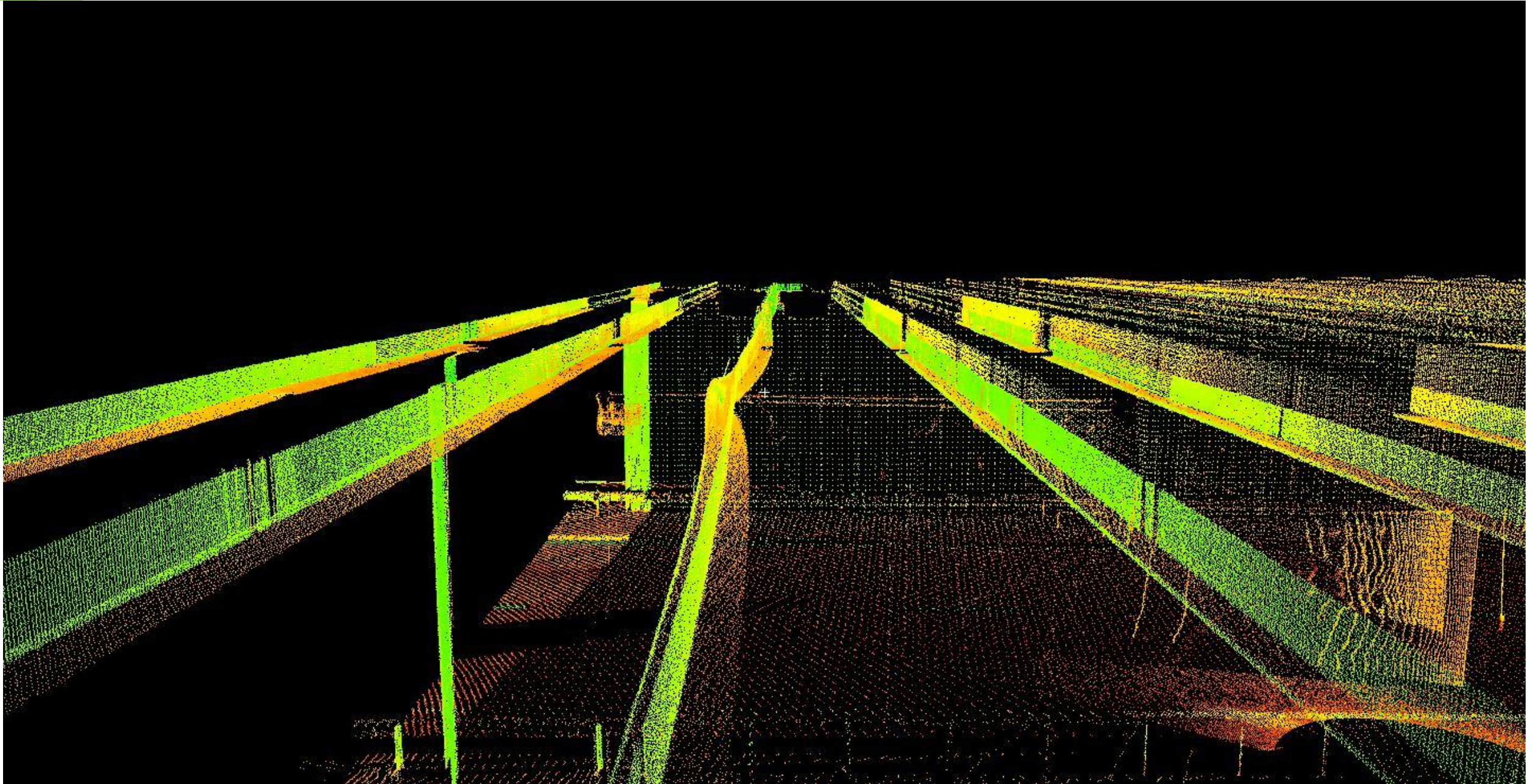


## A27 Fatality sightlines investigation – Kent



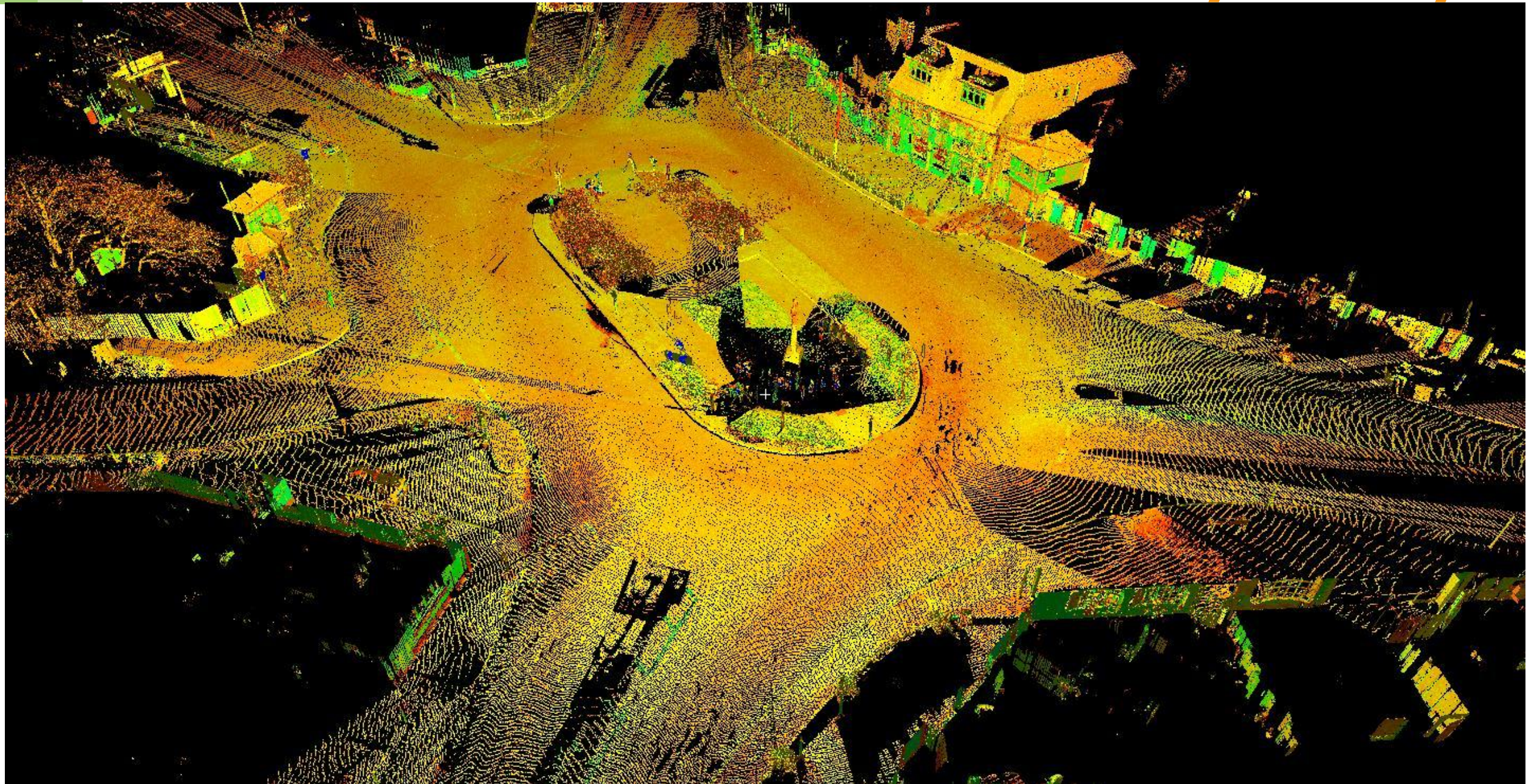


# A229 M20 Under bridge damage assessment



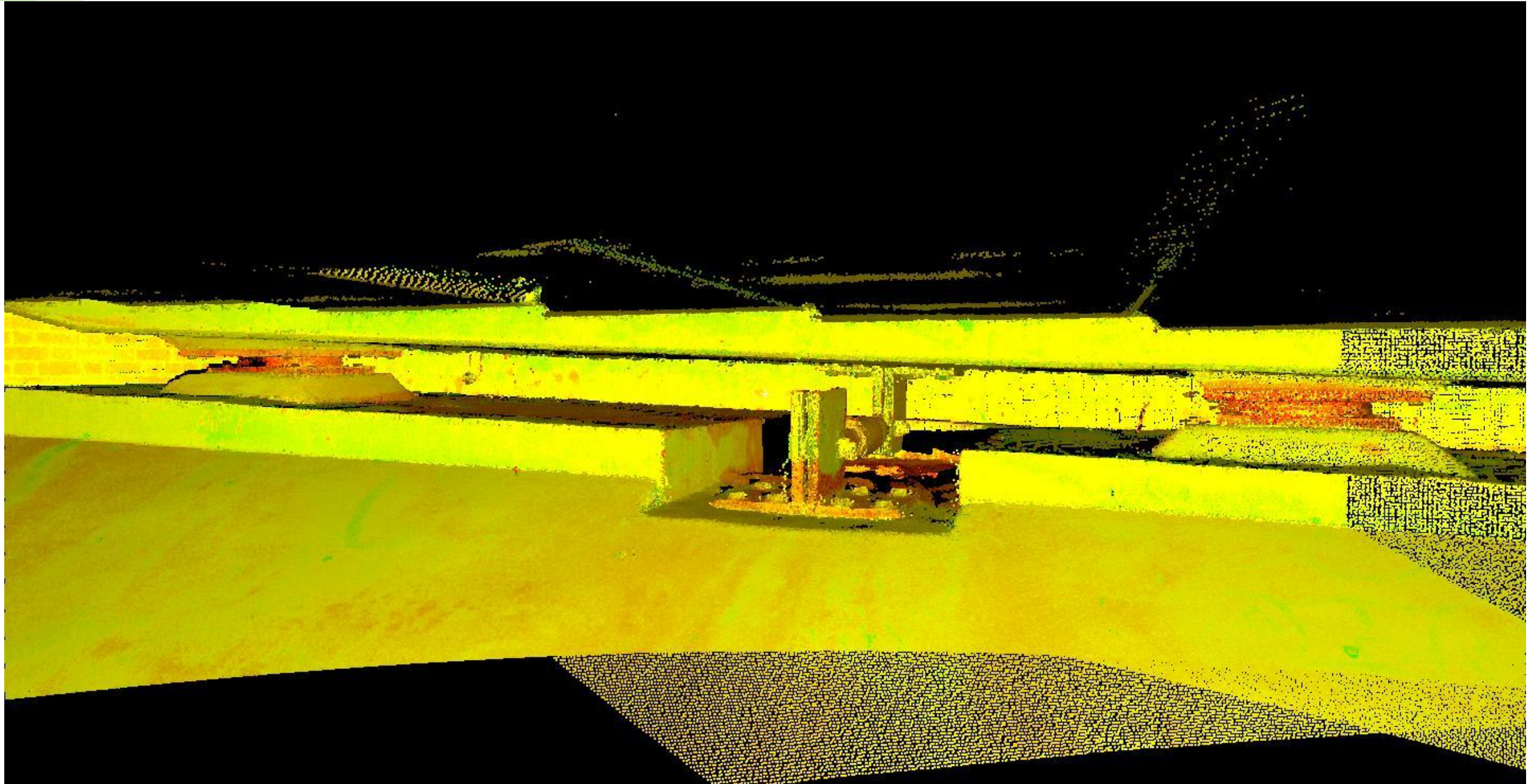


# A259 Little Common RAB Geometry survey



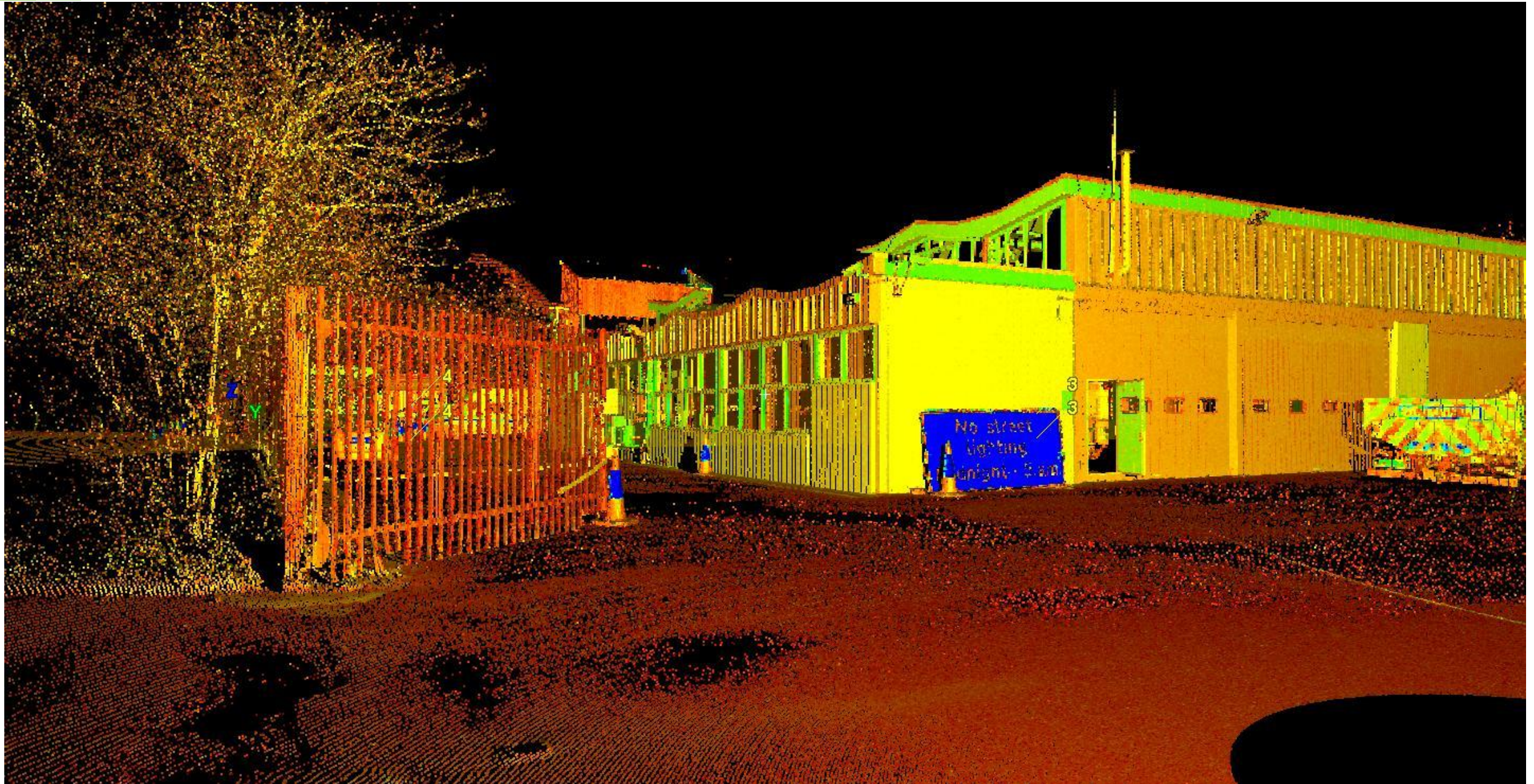


# A249 Queenborough Viaduct for bearing



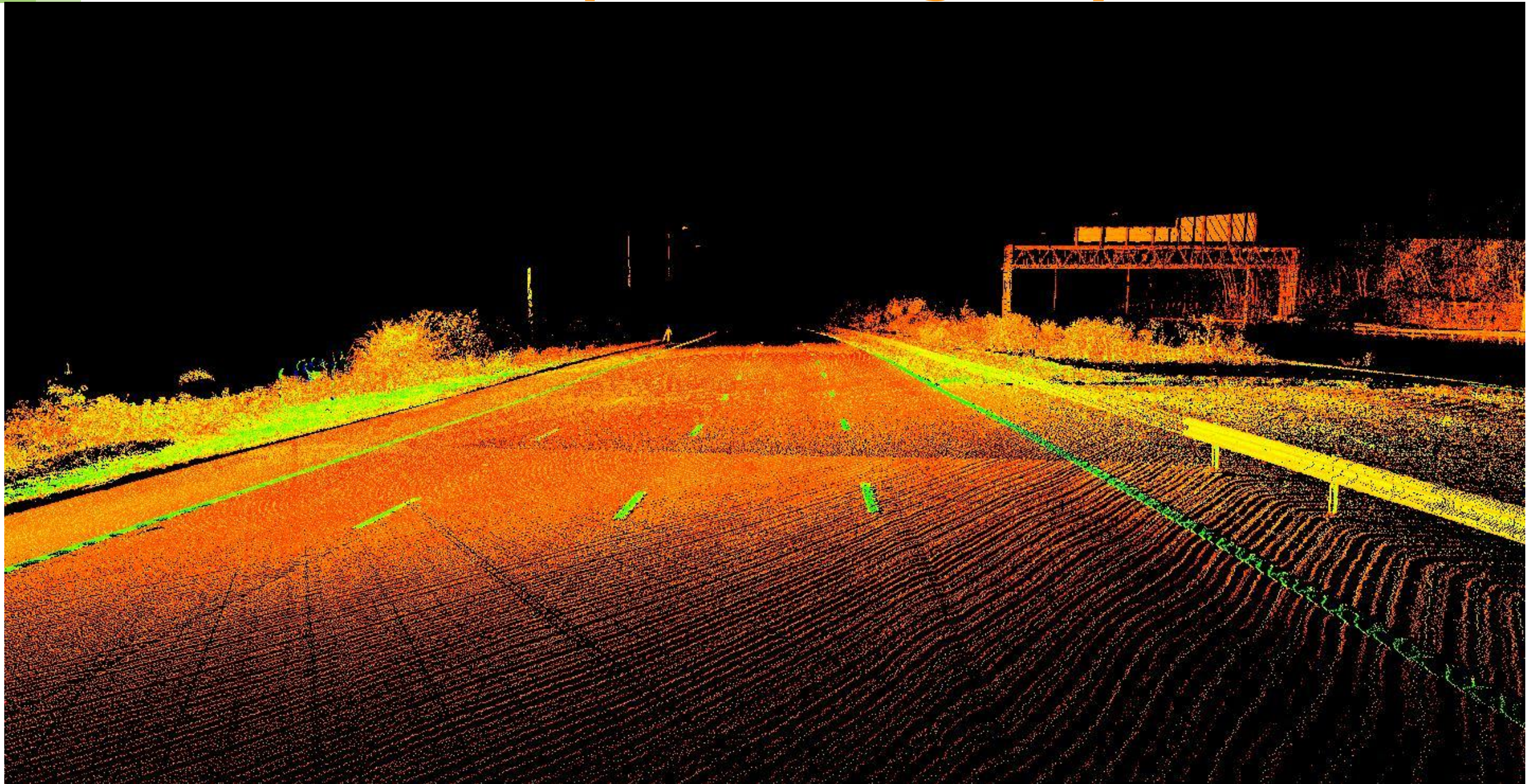


# Asset survey - Farthing Corner Depot



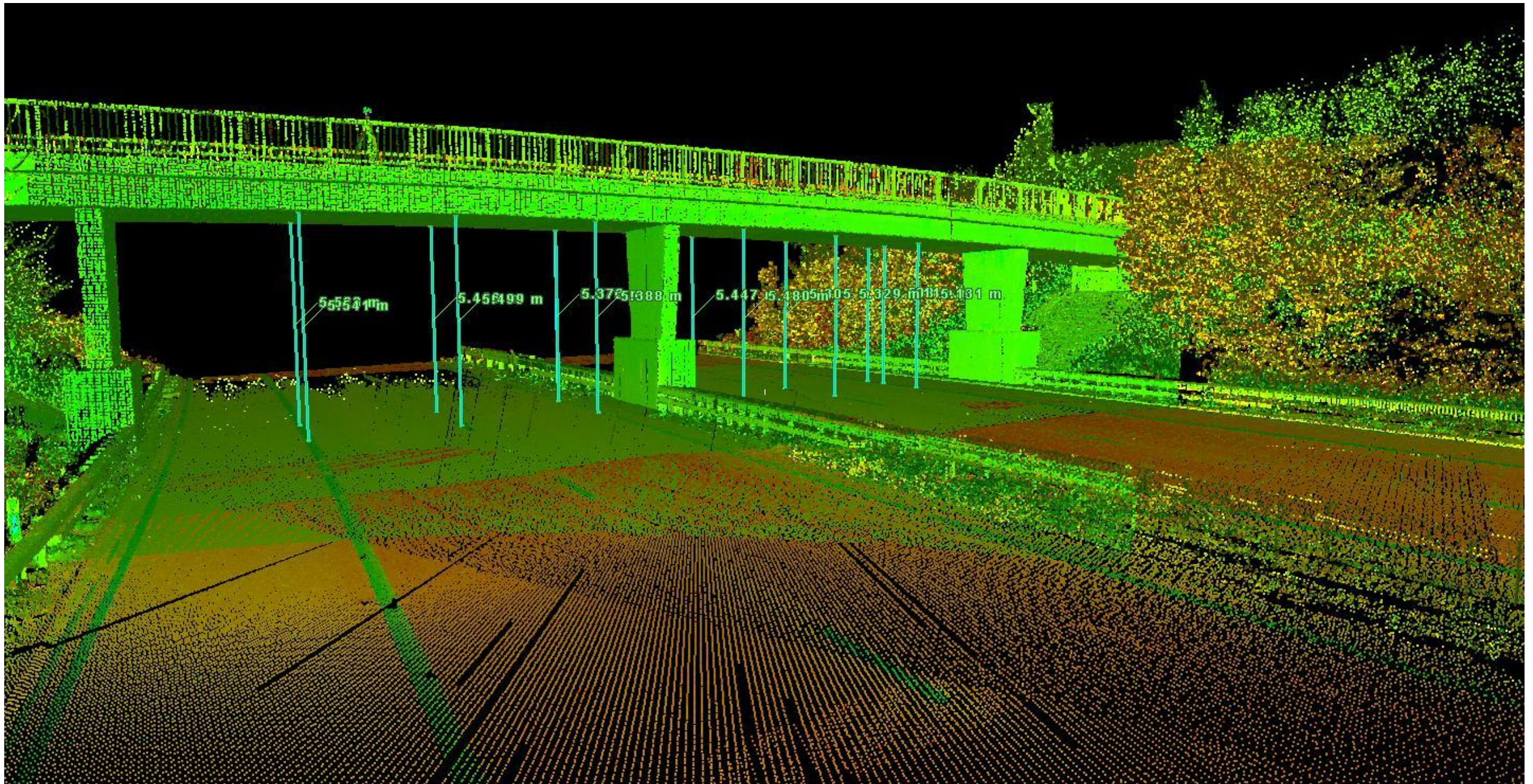


## M2 Buckmore park carriageway





# M2 & M20 bridge archive 1

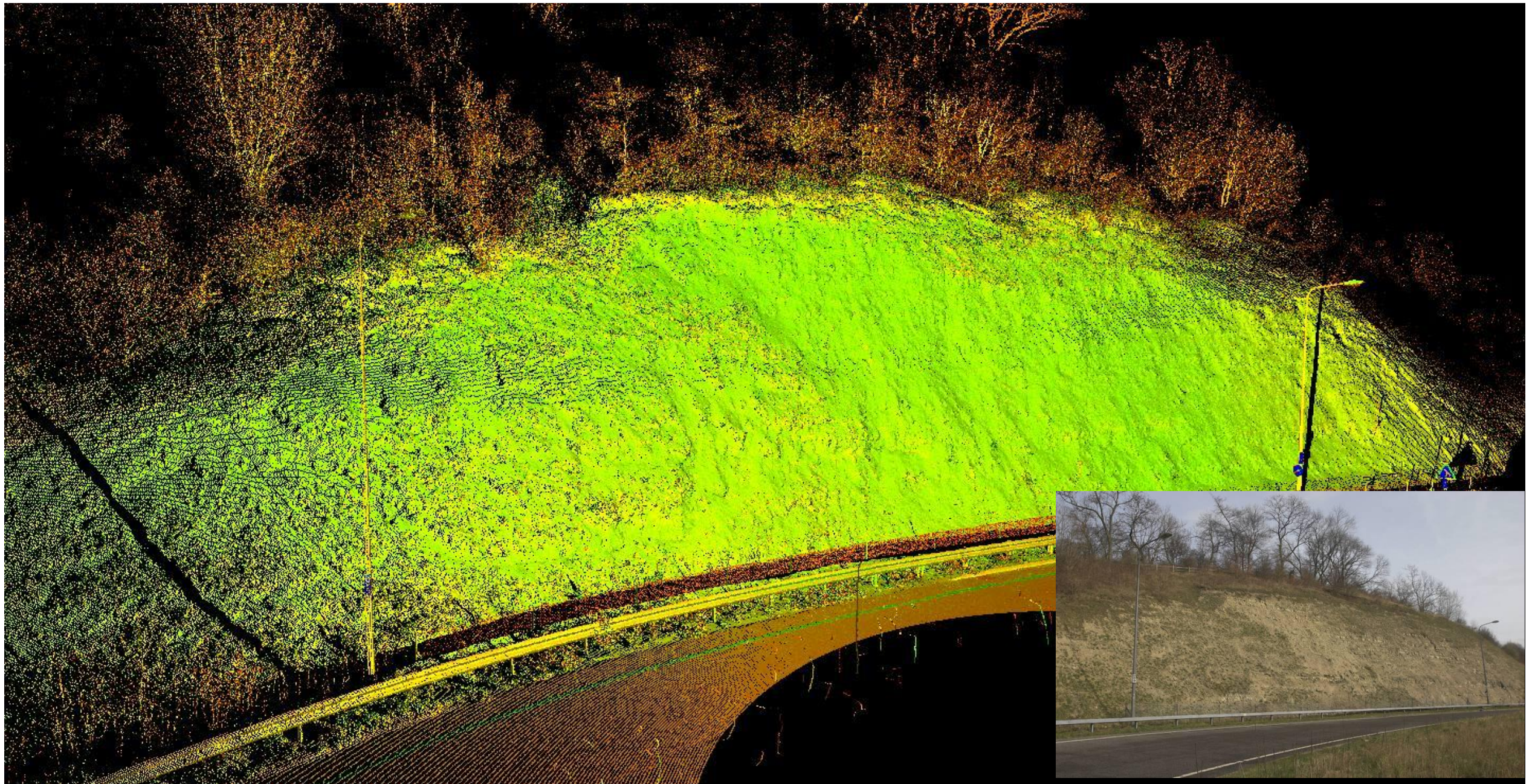






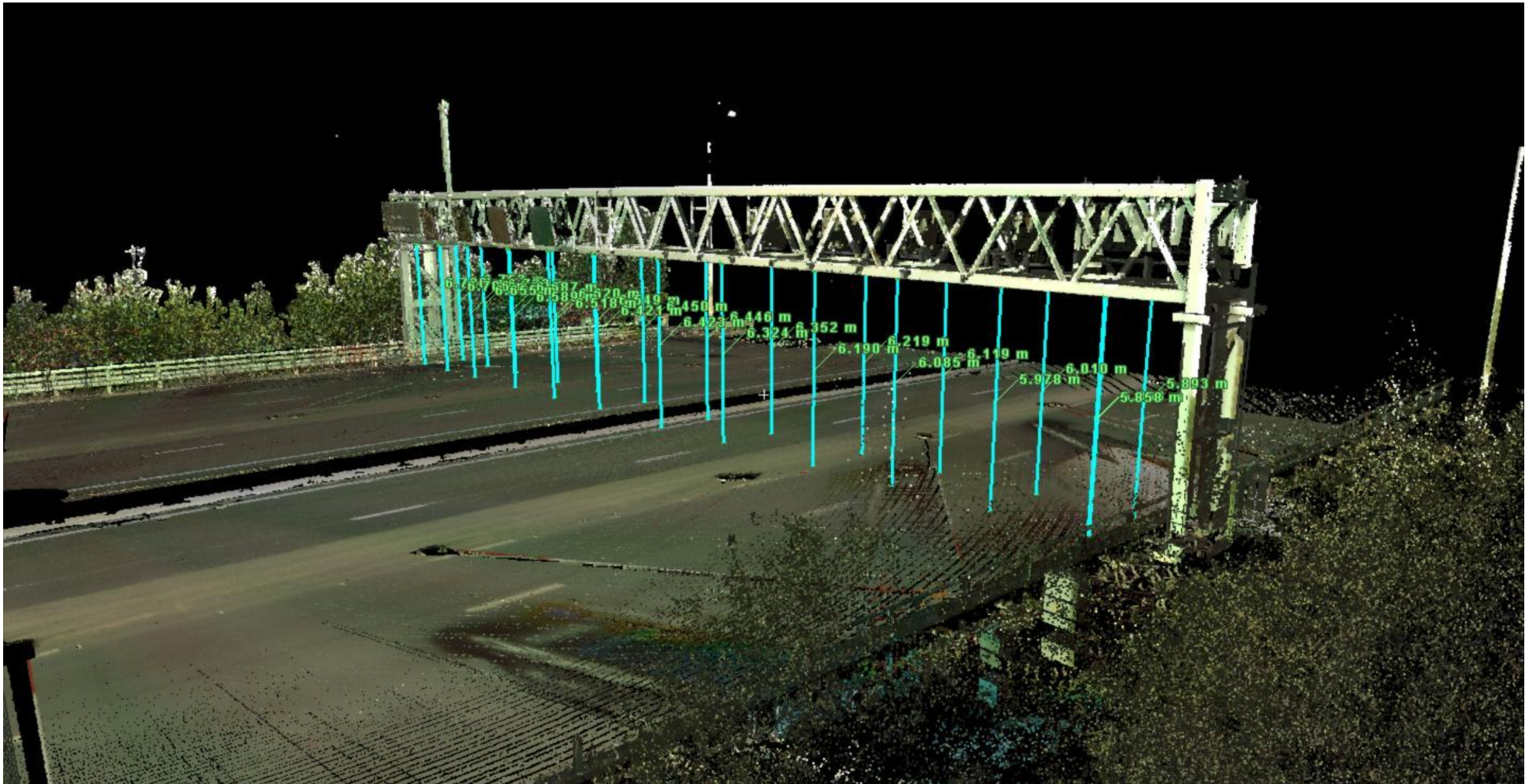


# Monitoring : Pyecombe chalk cutting

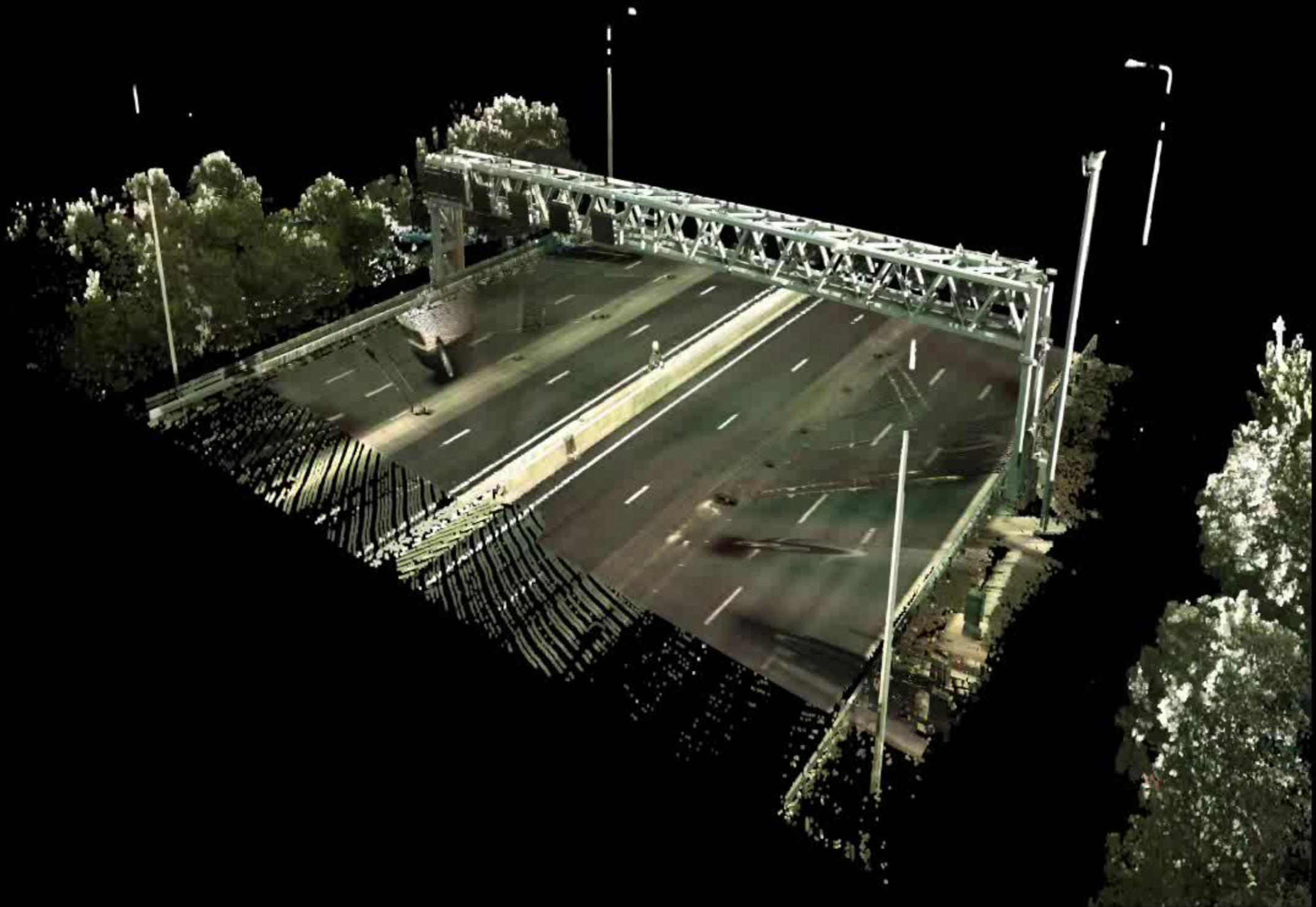




# Asset Management Gantries









# Aquatics Centre

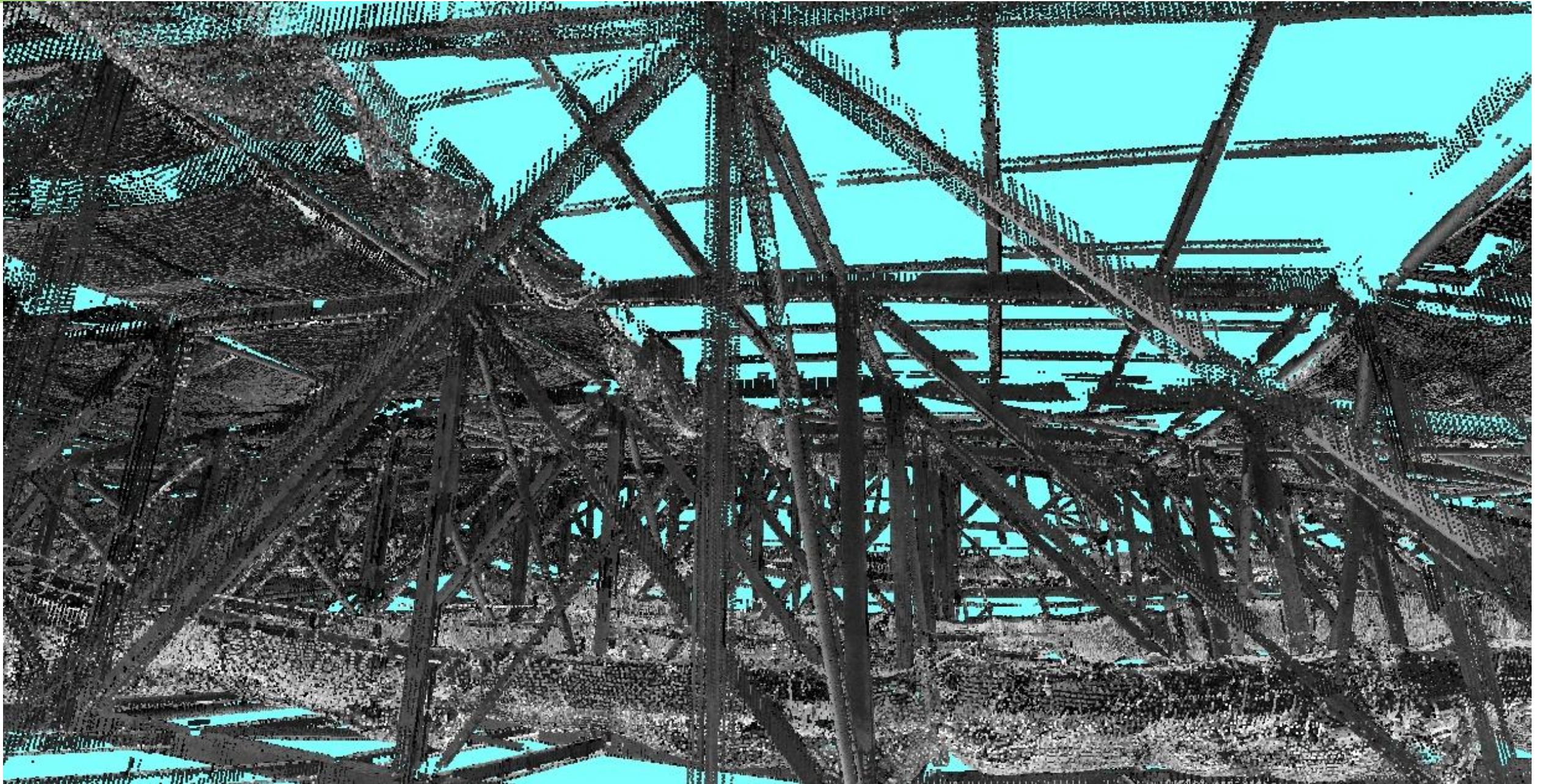




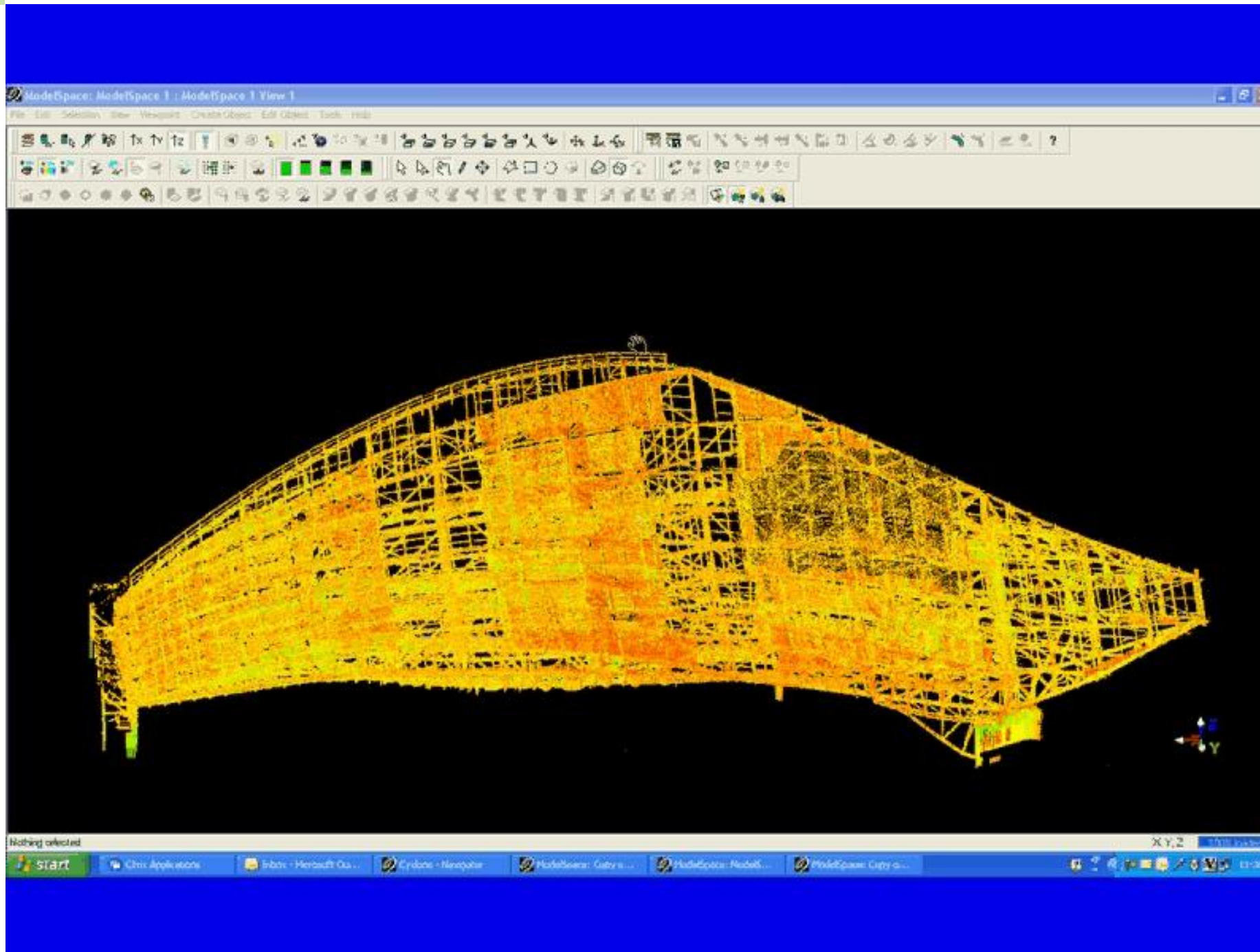
# Aquatics Centre

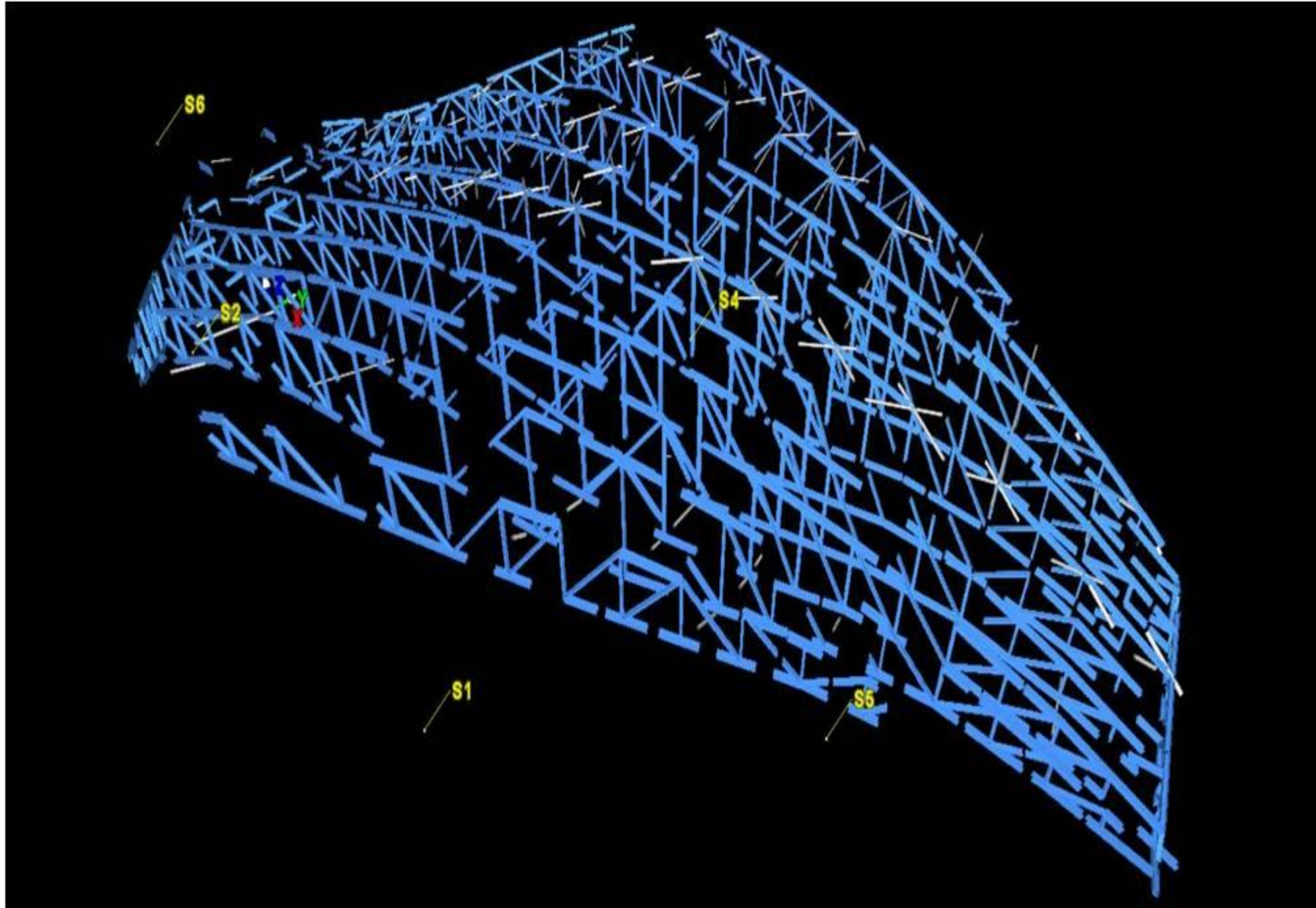












## Case Studies

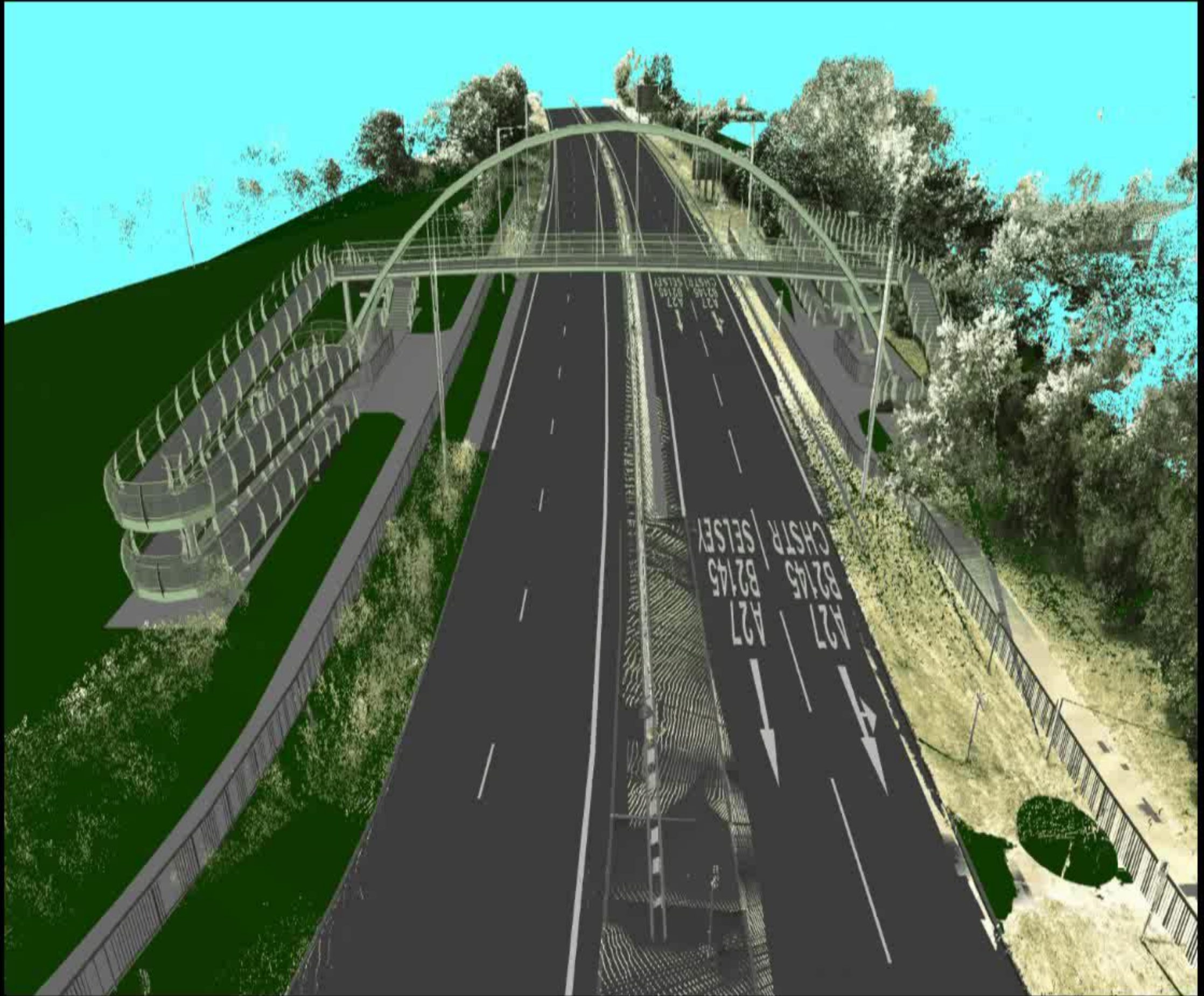
### Laser scanning to models



# A27 Kingsham Footbridge

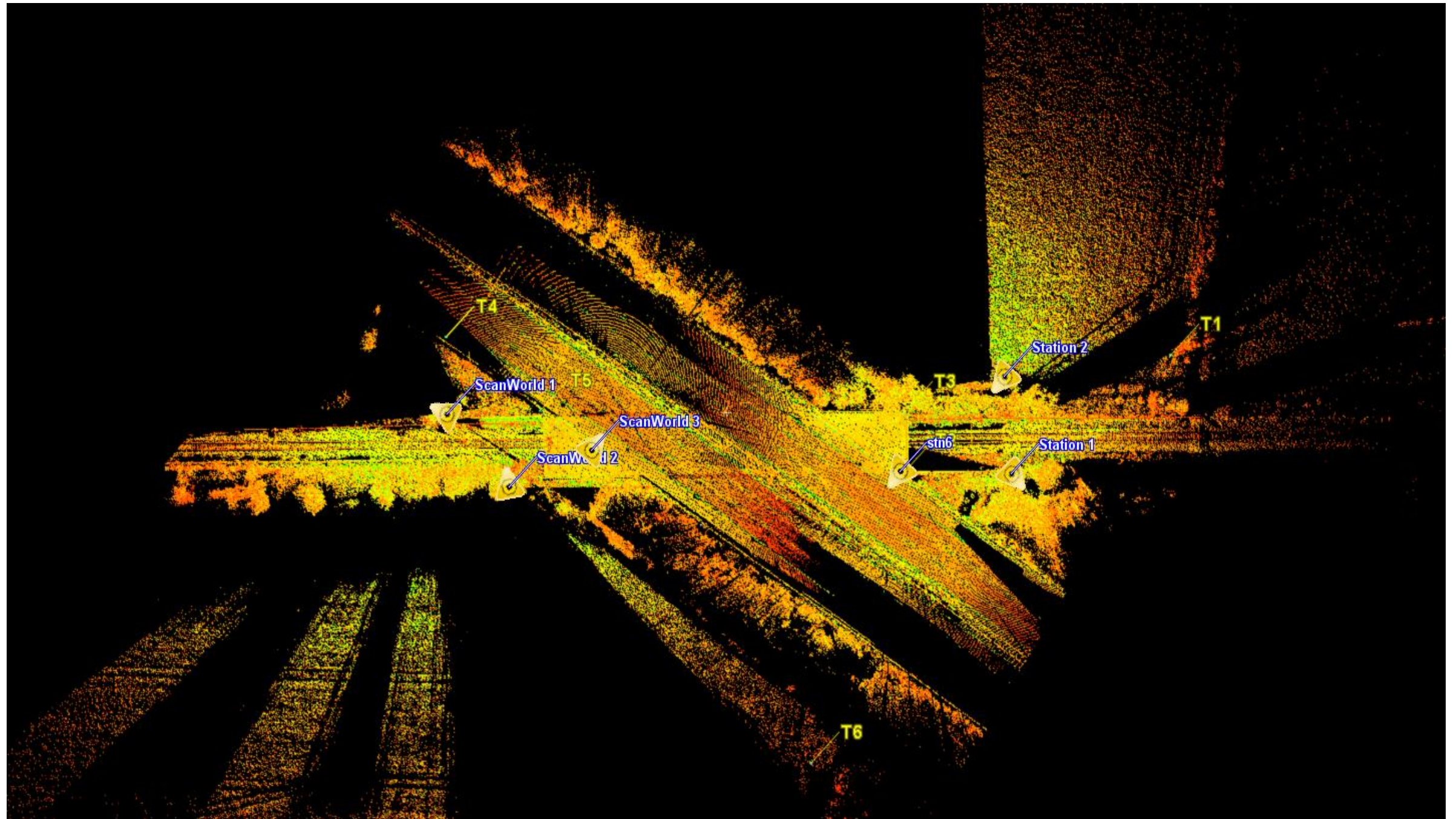








# M25 - Ockendon Railway – optimising design





## M25 - Ockendon Railway – Rail possessions?

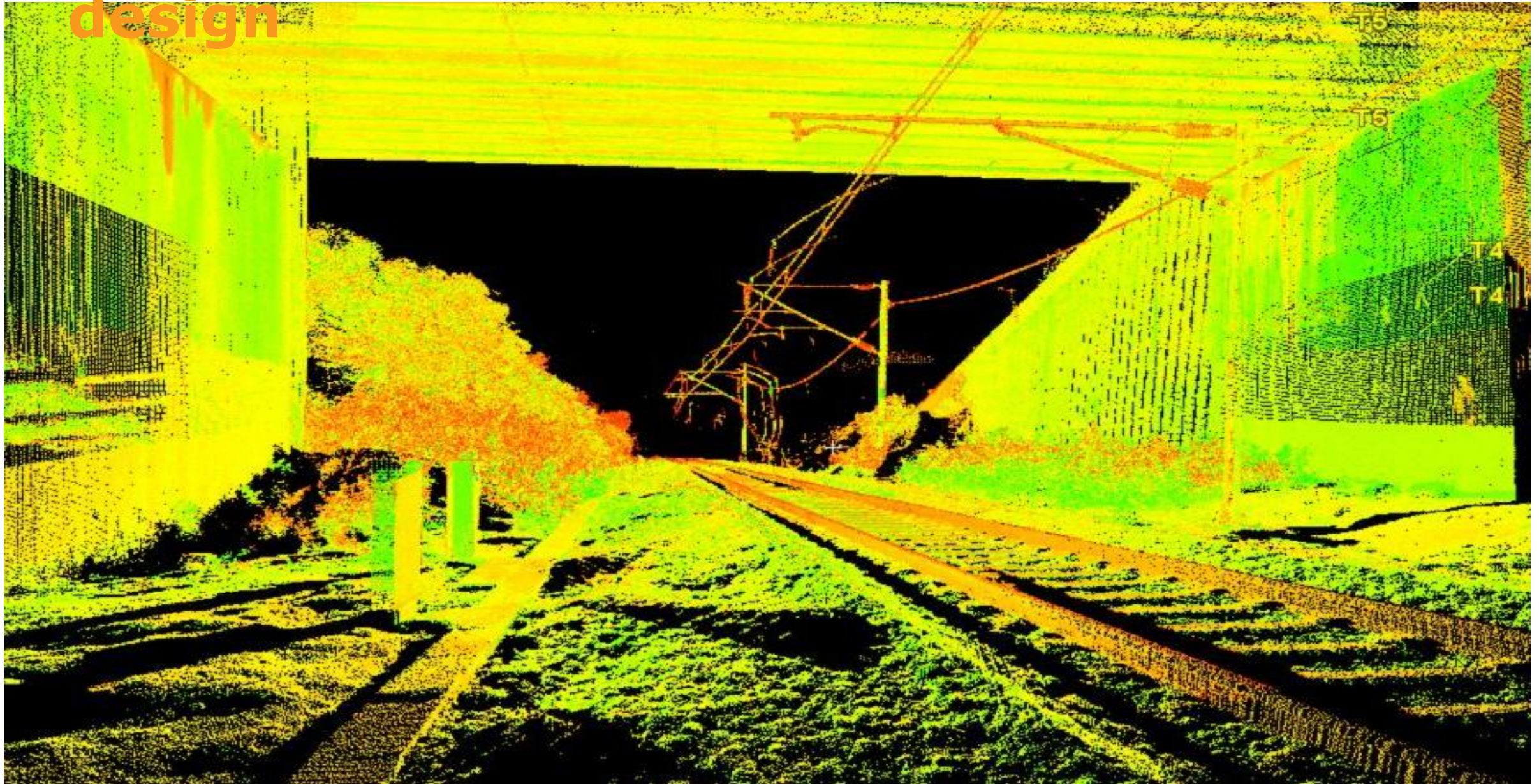


## M25 - Ockendon Railway – Lane closures?



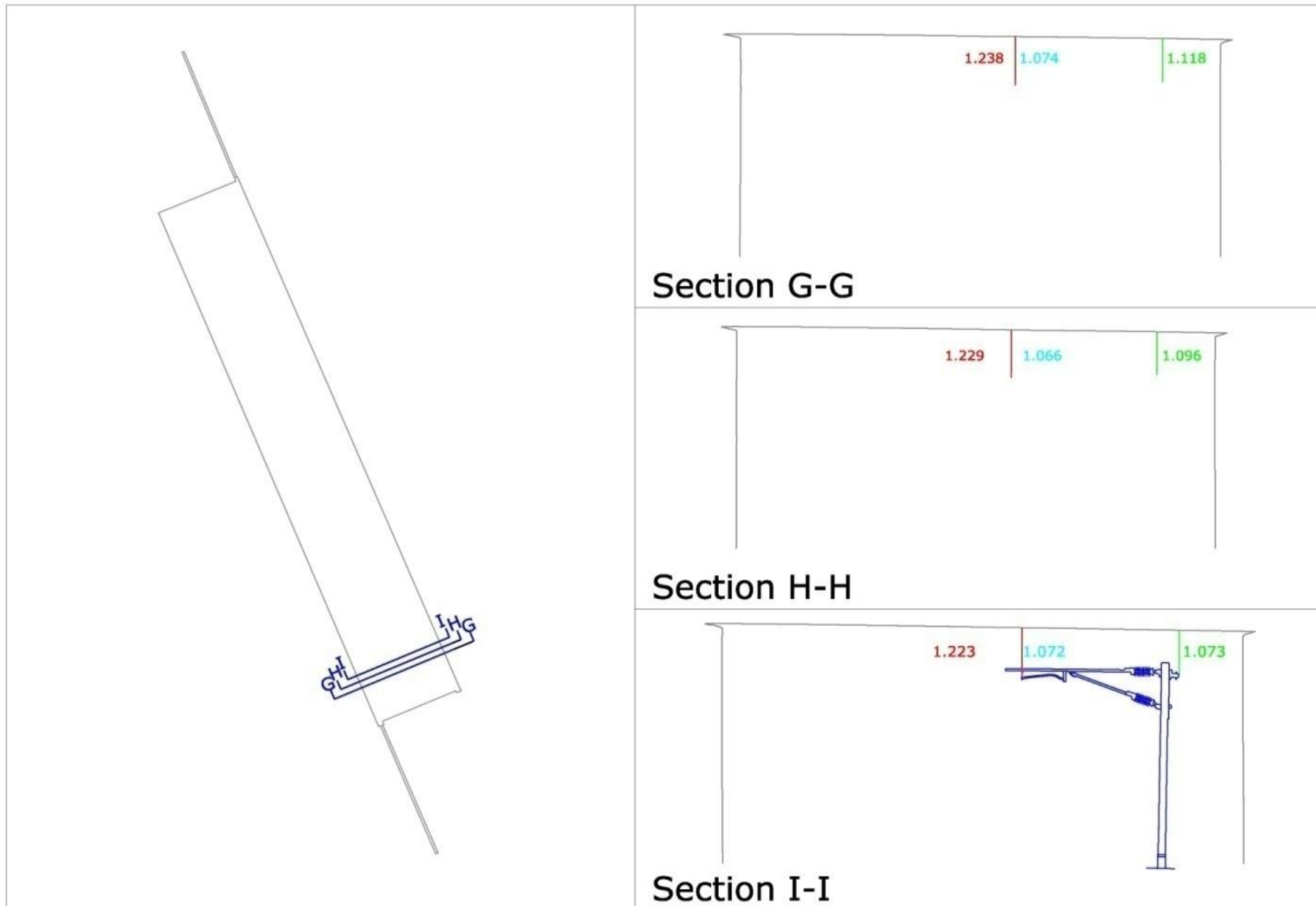


# M25 - Ockendon Railway – optimising design

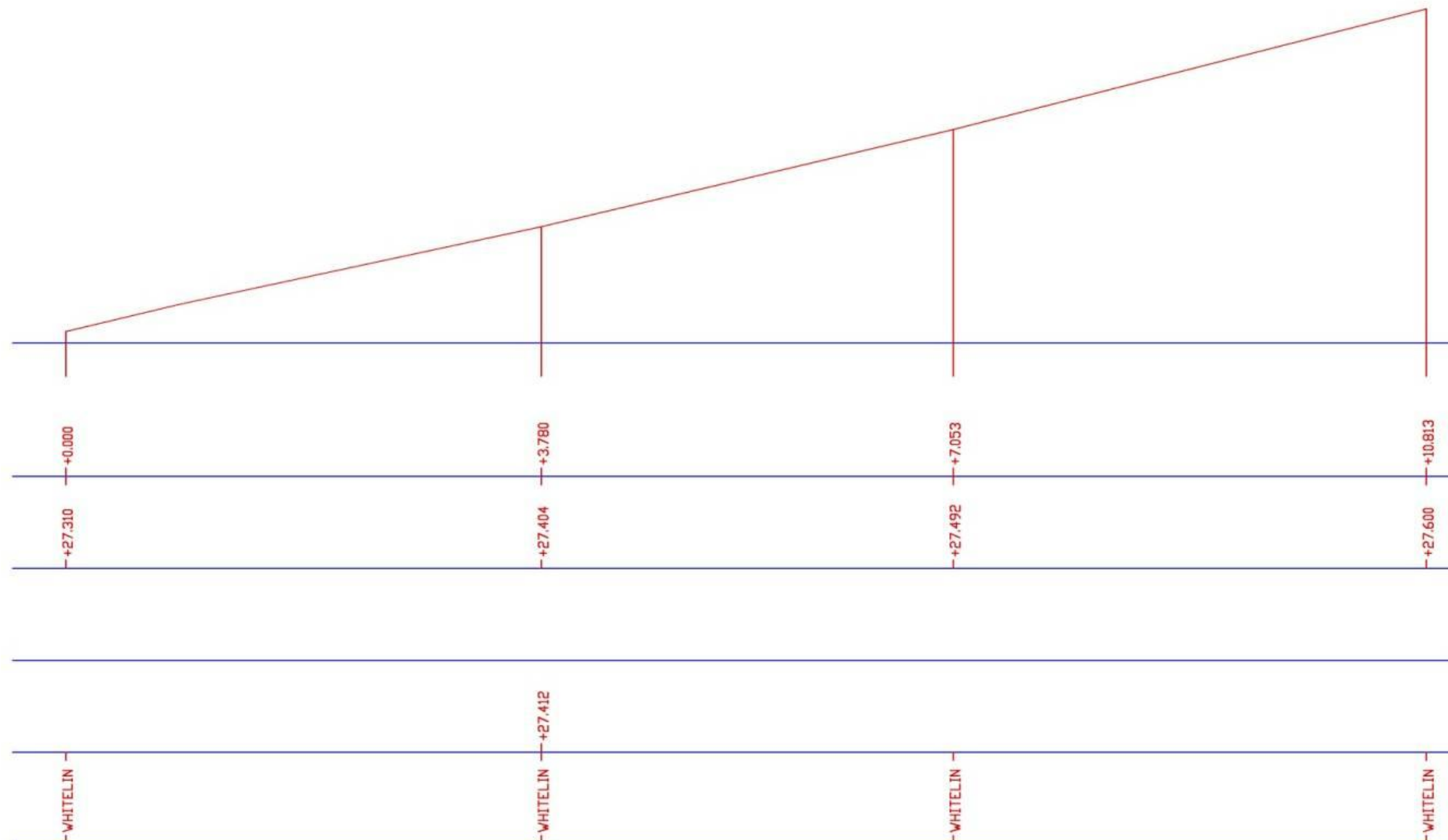




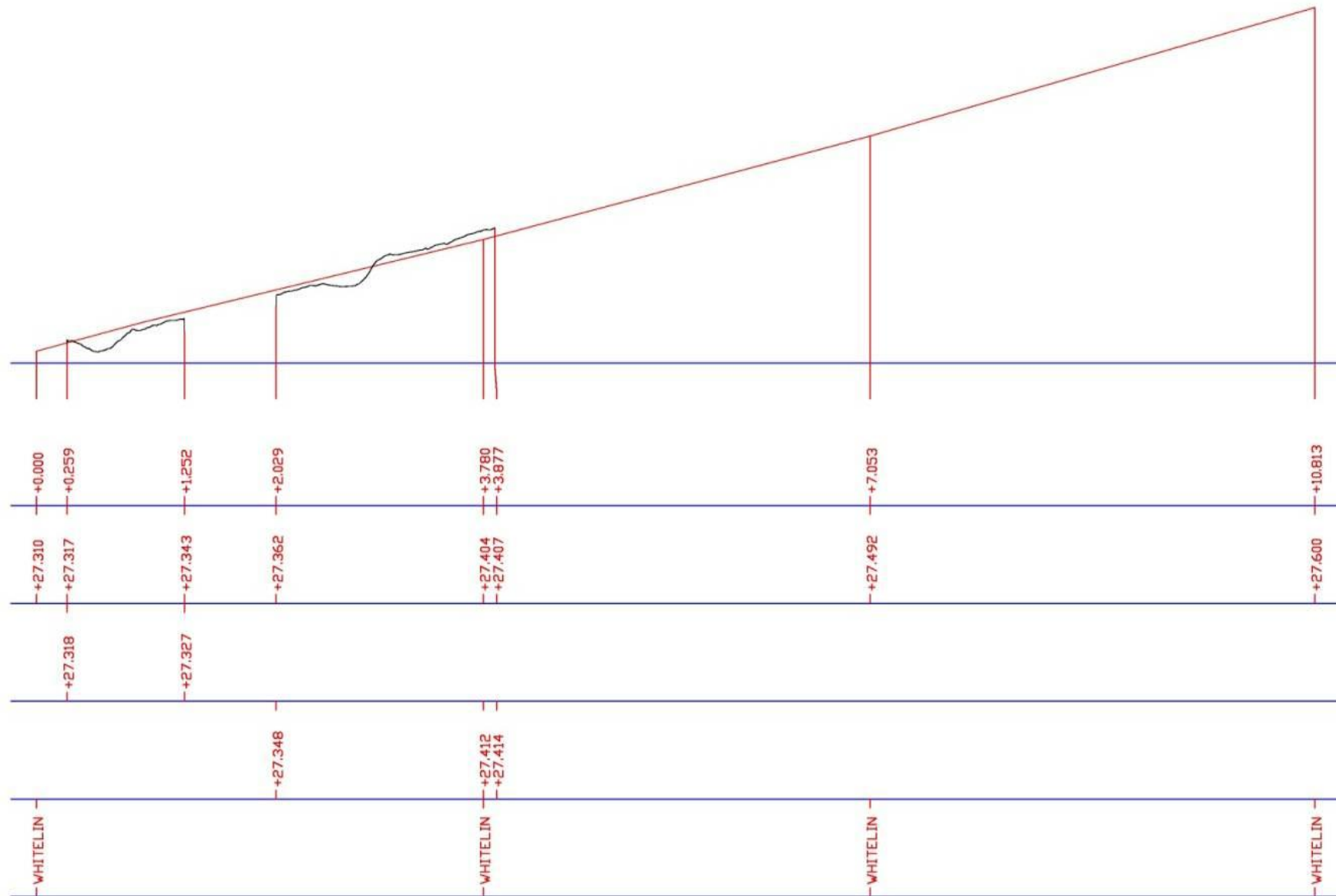
# M25 - Ockendon Railway – deliverables



# M25 - Ockendon Railway – deliverables



# M25 - Ockendon Railway – deliverables



## M25 - Ockendon Railway – deliverables

Information used to create the 3D Model:

- Laser Scan Survey
- MX Design model
- Ockendon Railway Tunnel GA drawings

Software used to create the 3D Model:

- AutoCAD 2011 Civil 3D
- Navisworks Manage 2011

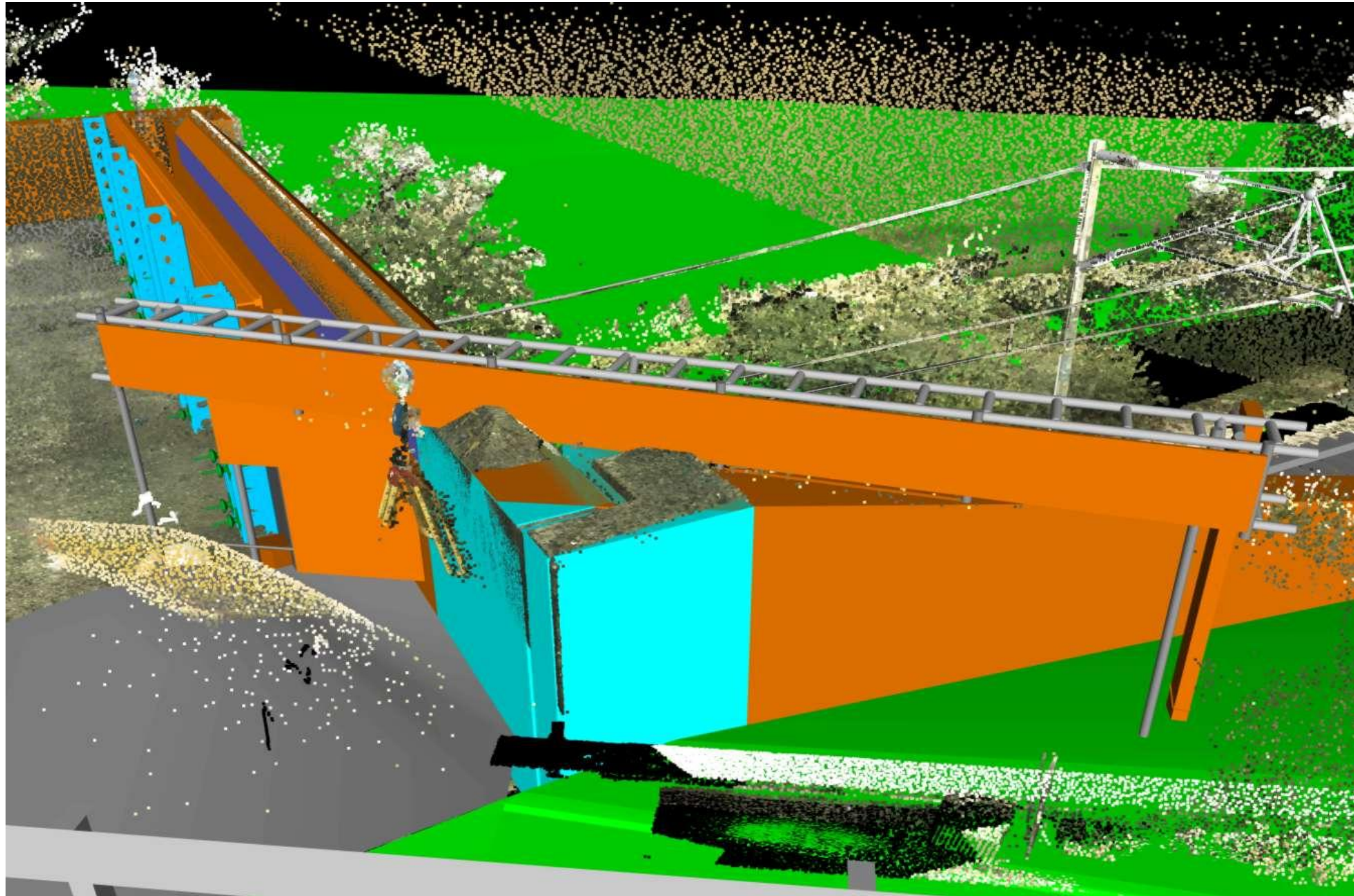


## M25 - Ockendon Railway – laser scan data

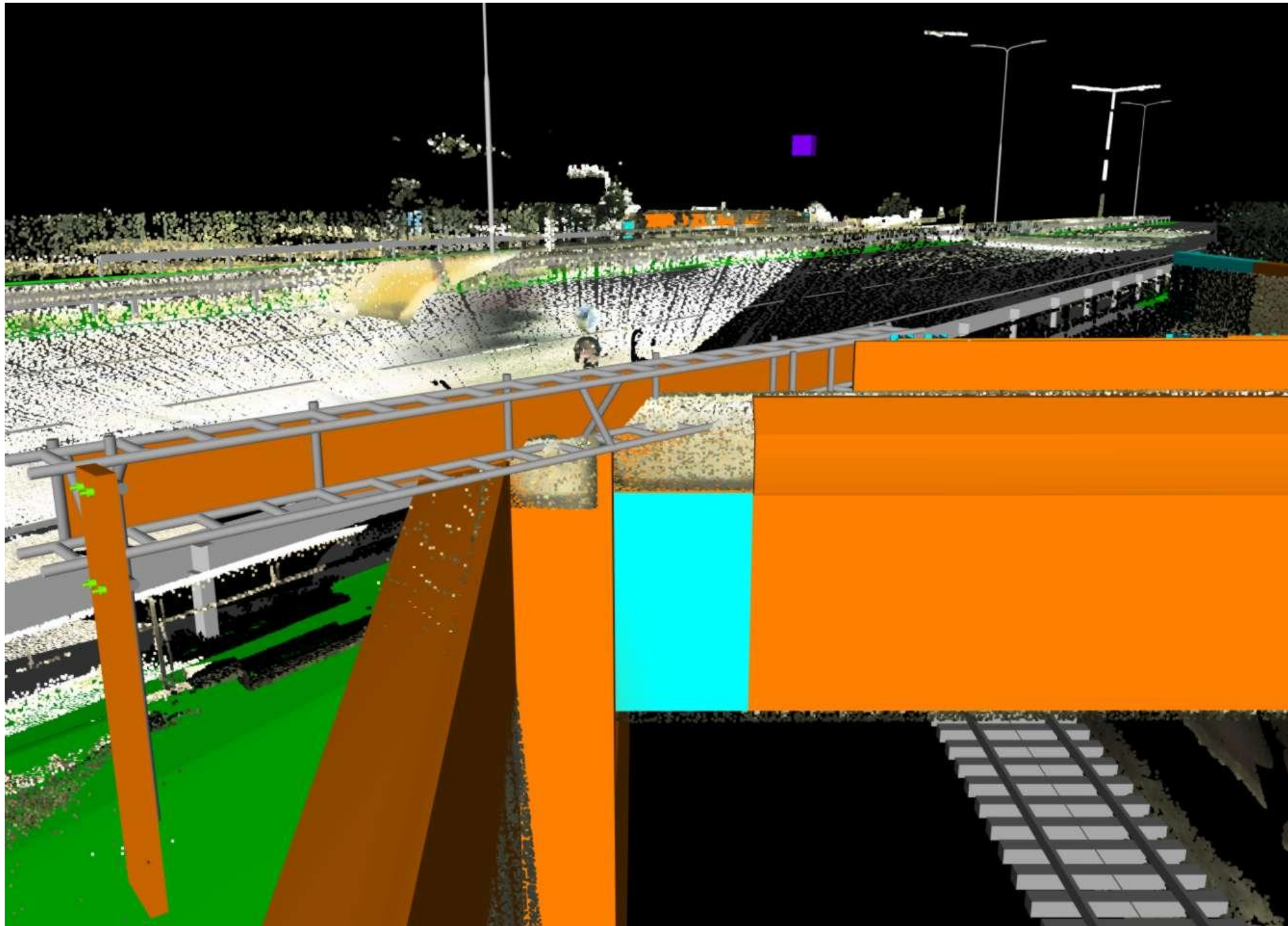




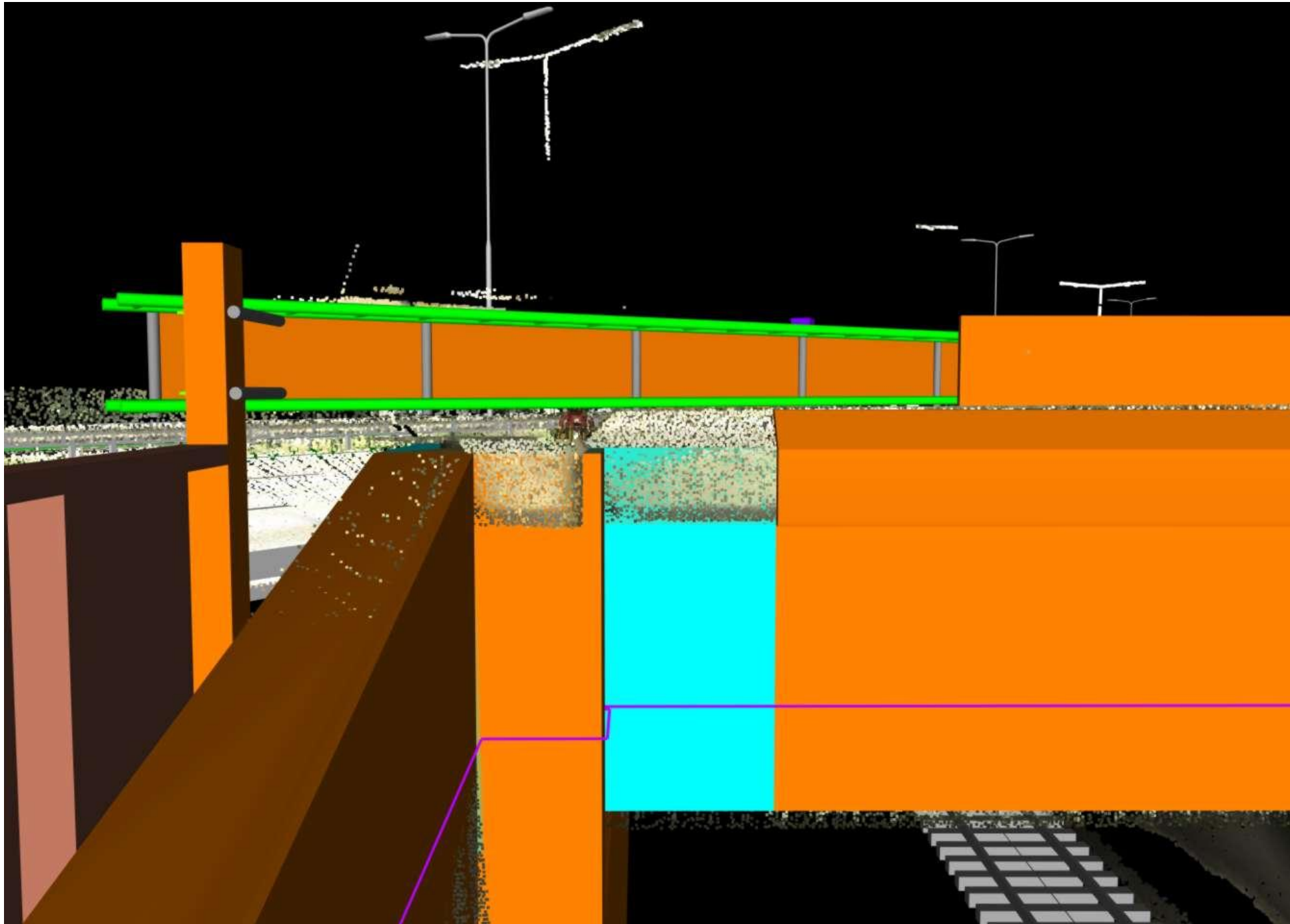
# M25 - Ockendon Railway – TW model created













## Actual element of Temporary Works



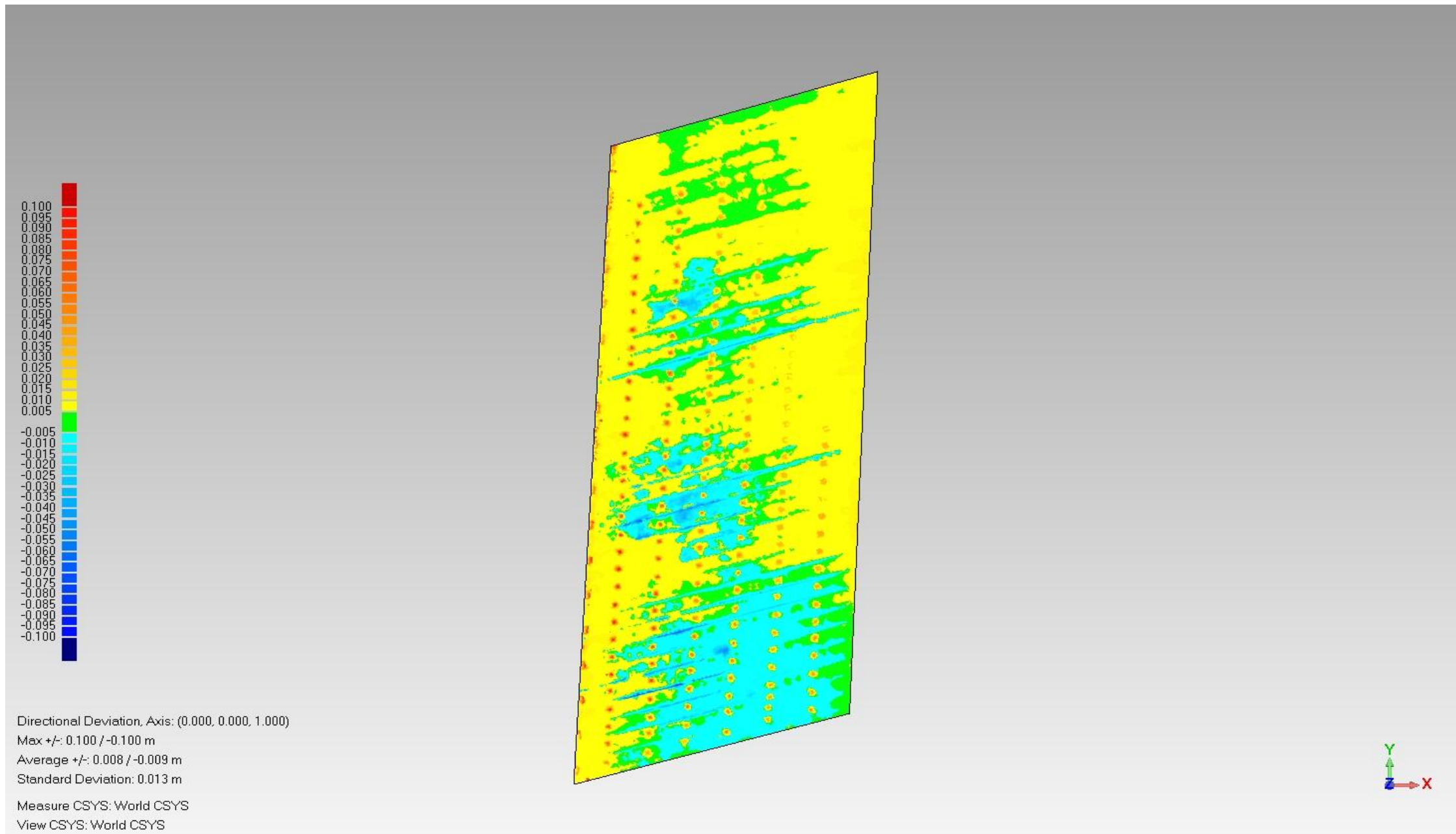


# M1 Deansbrook - 2011

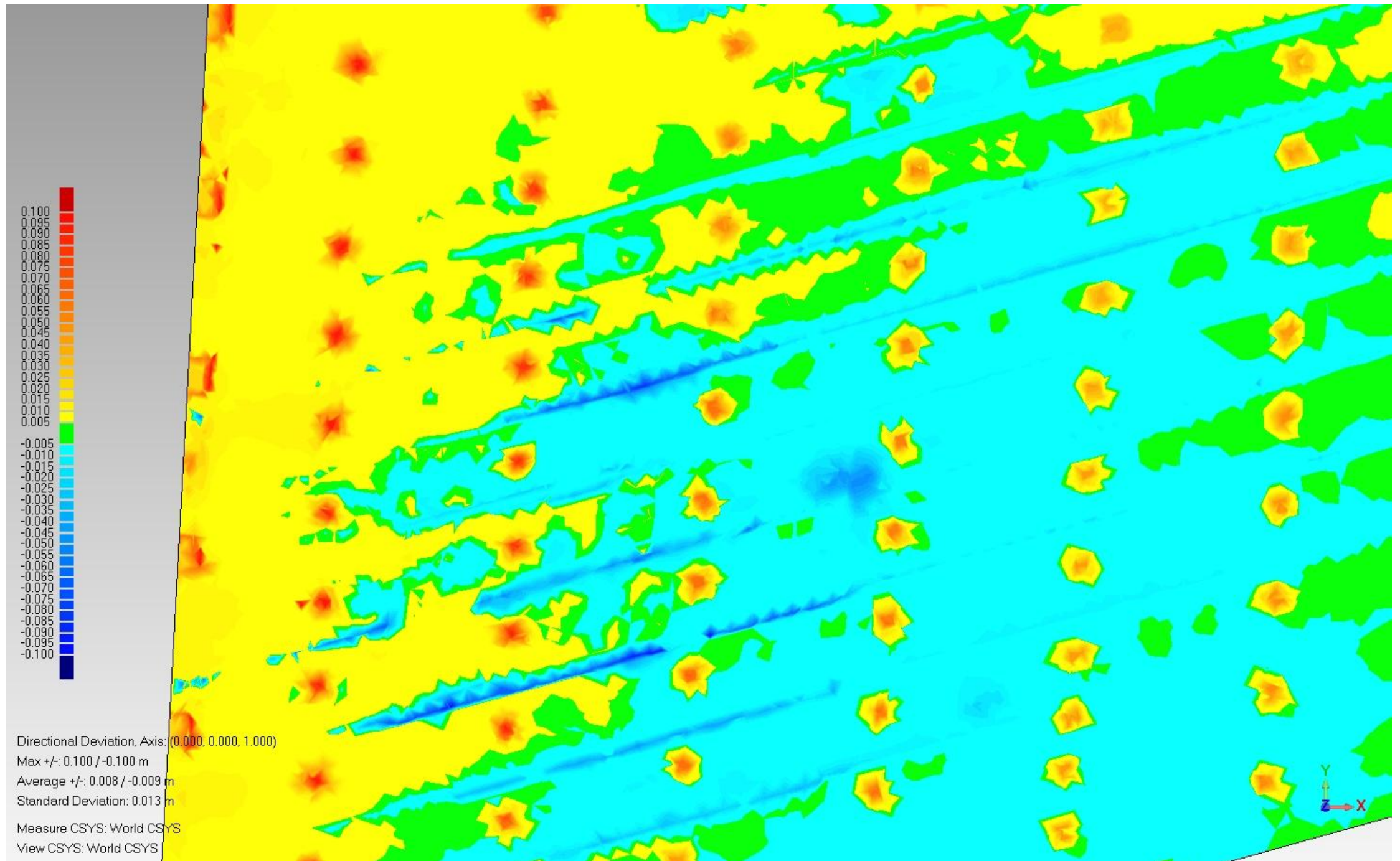




# M1 Deansbrook - 2011

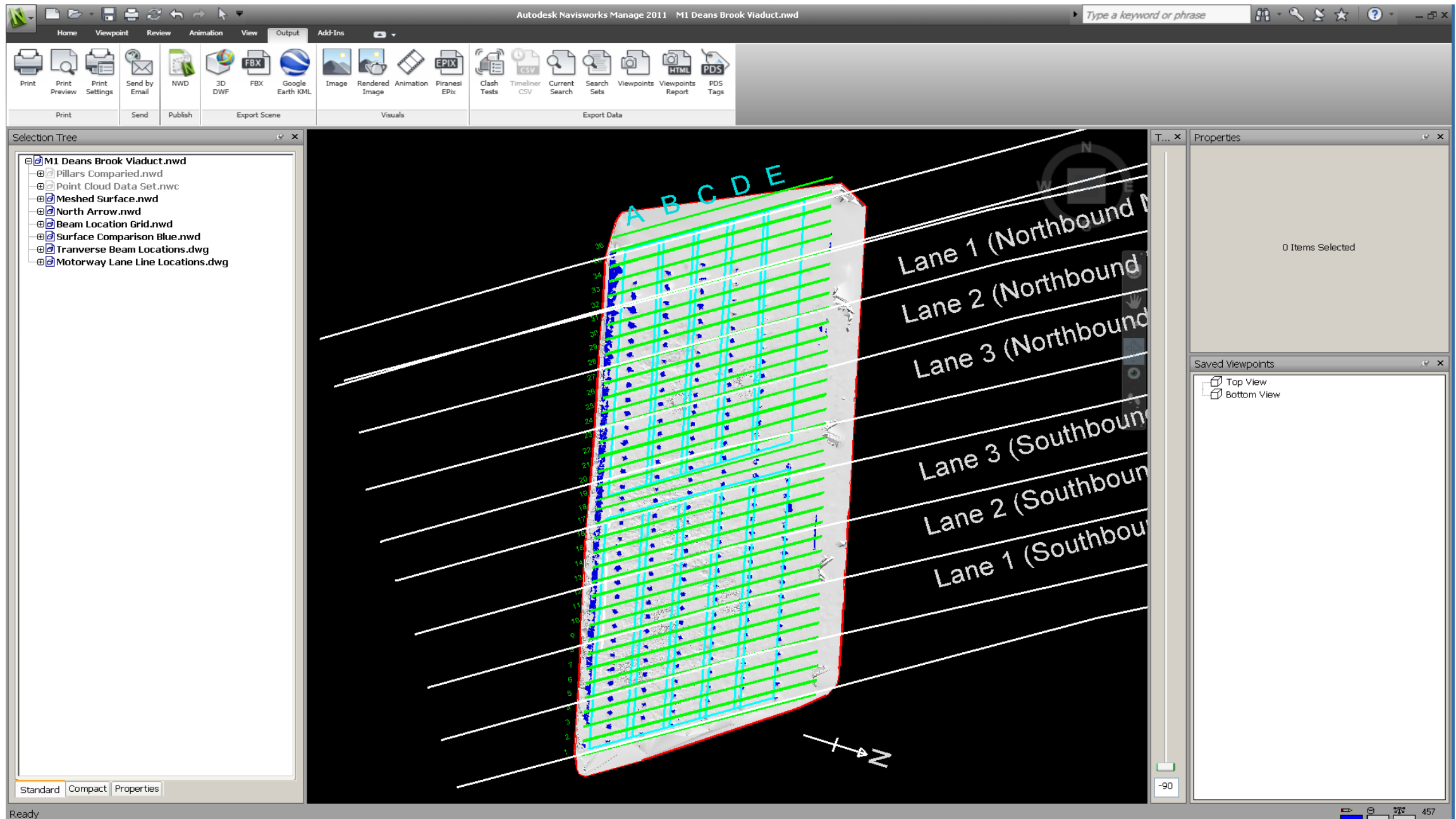






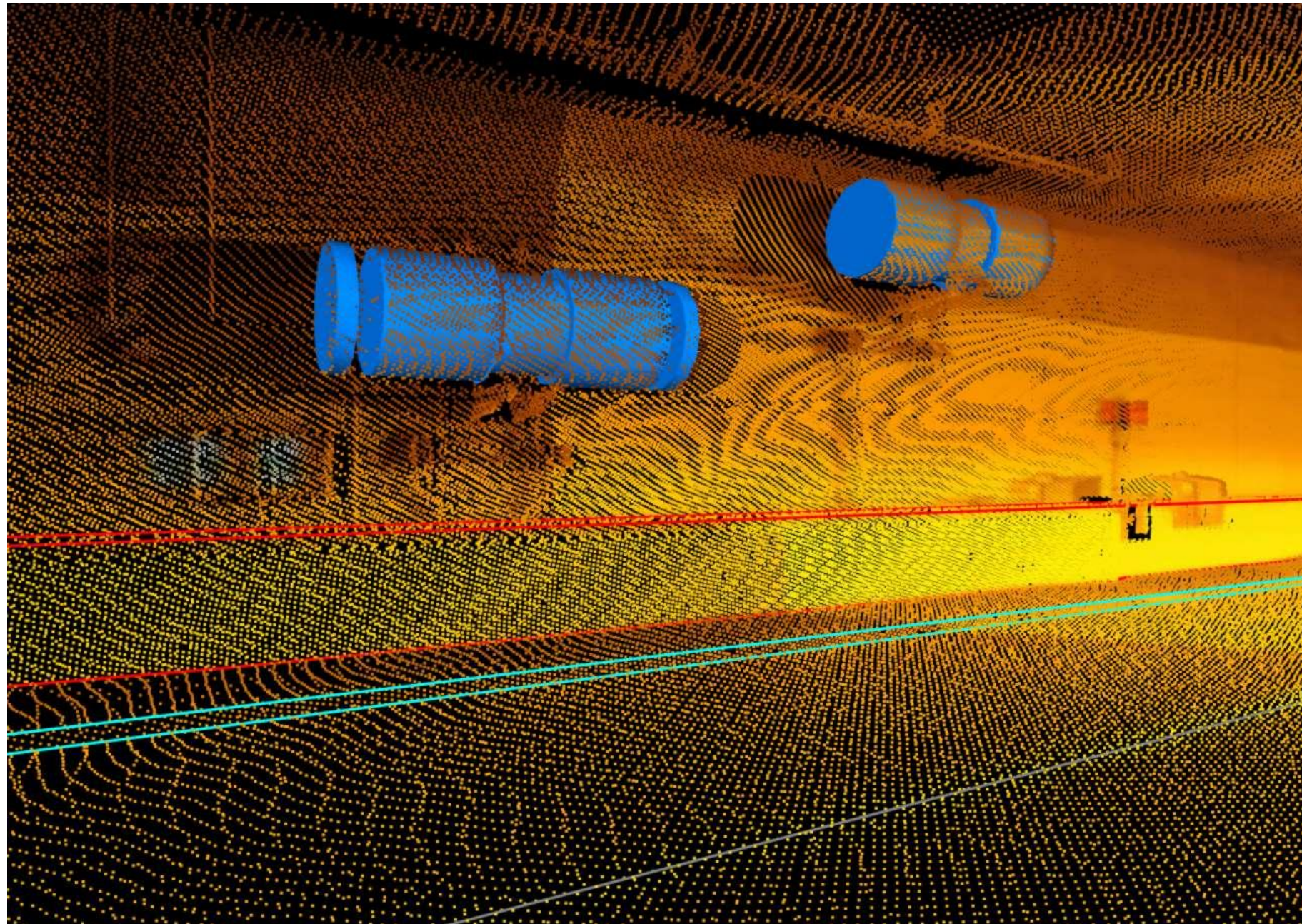


# M1 – Deansbrook – Deliver Interactive Models



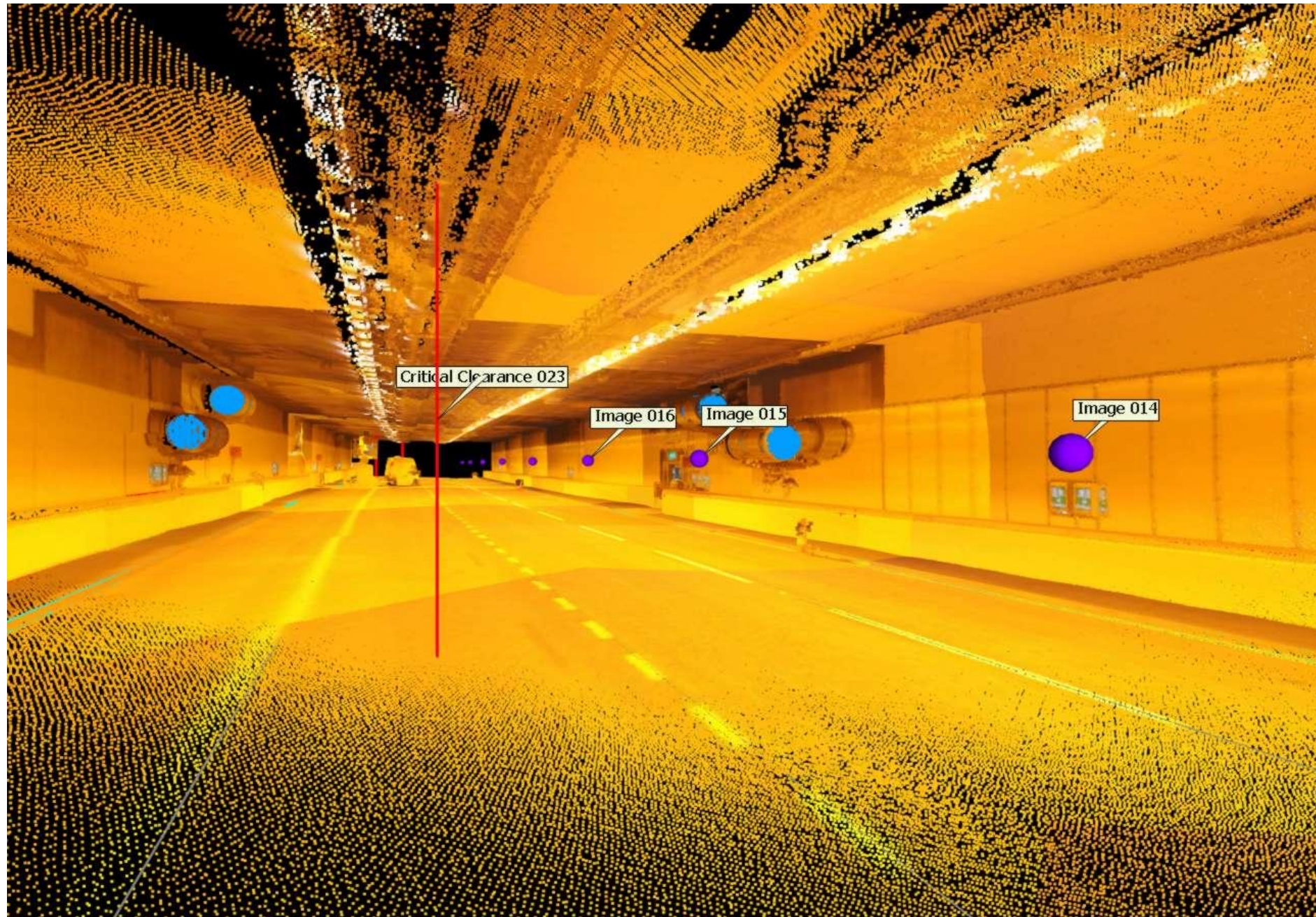


# Hatfield Tunnel As Built





# Hatfield Tunnel As Built & Kinematic Envelope



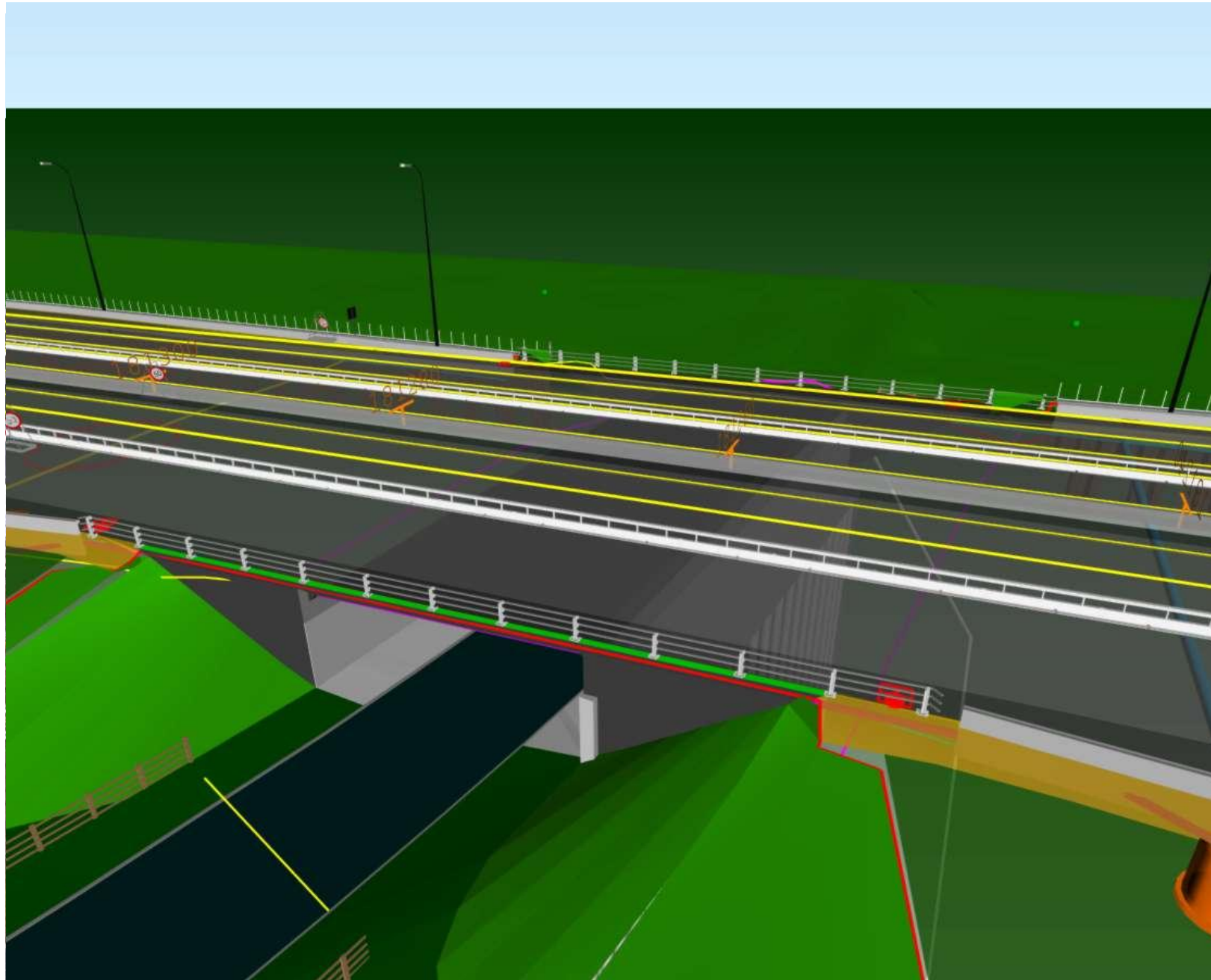


# A421 - Point Cloud Data Collected



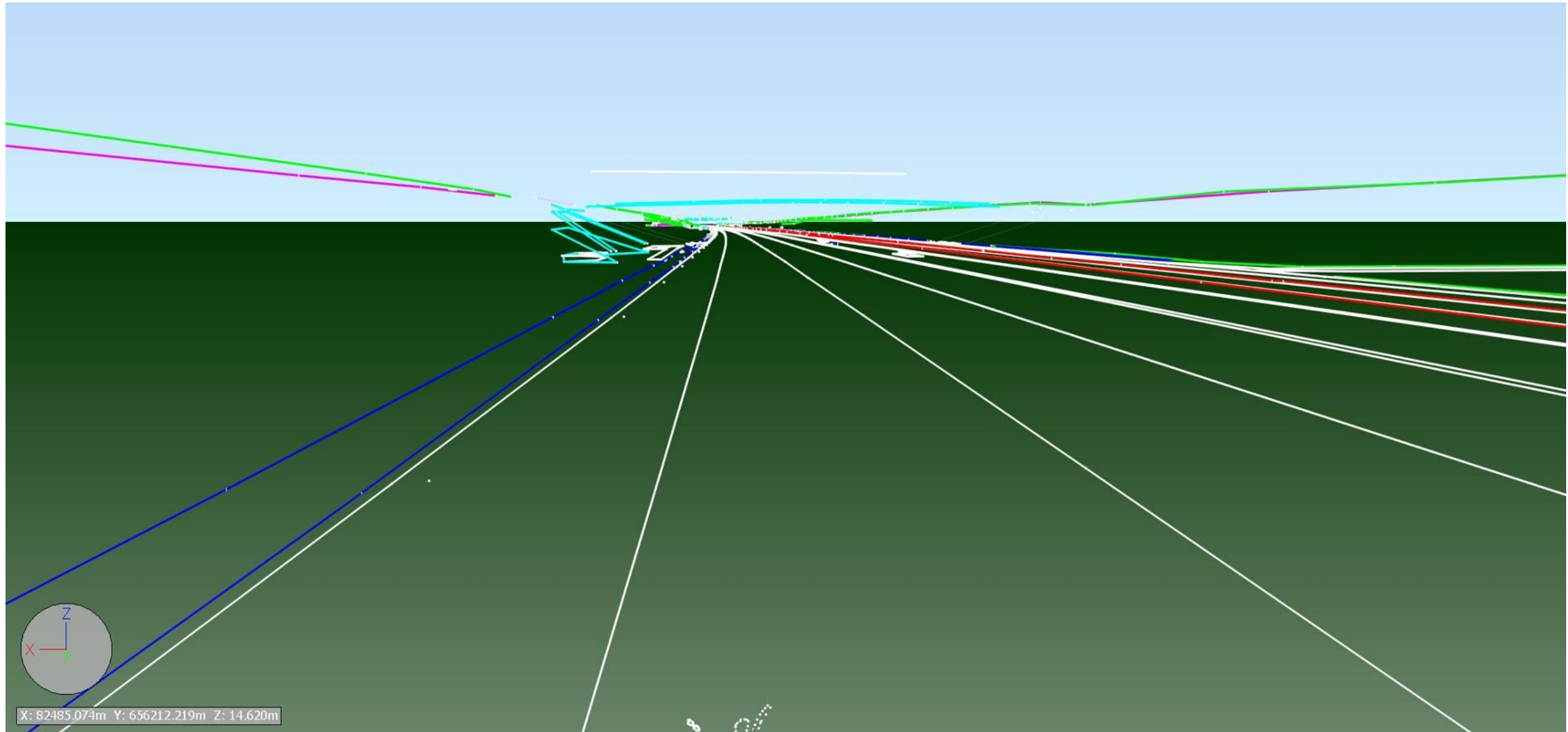


# Large Point Cloud Data sets.... to models



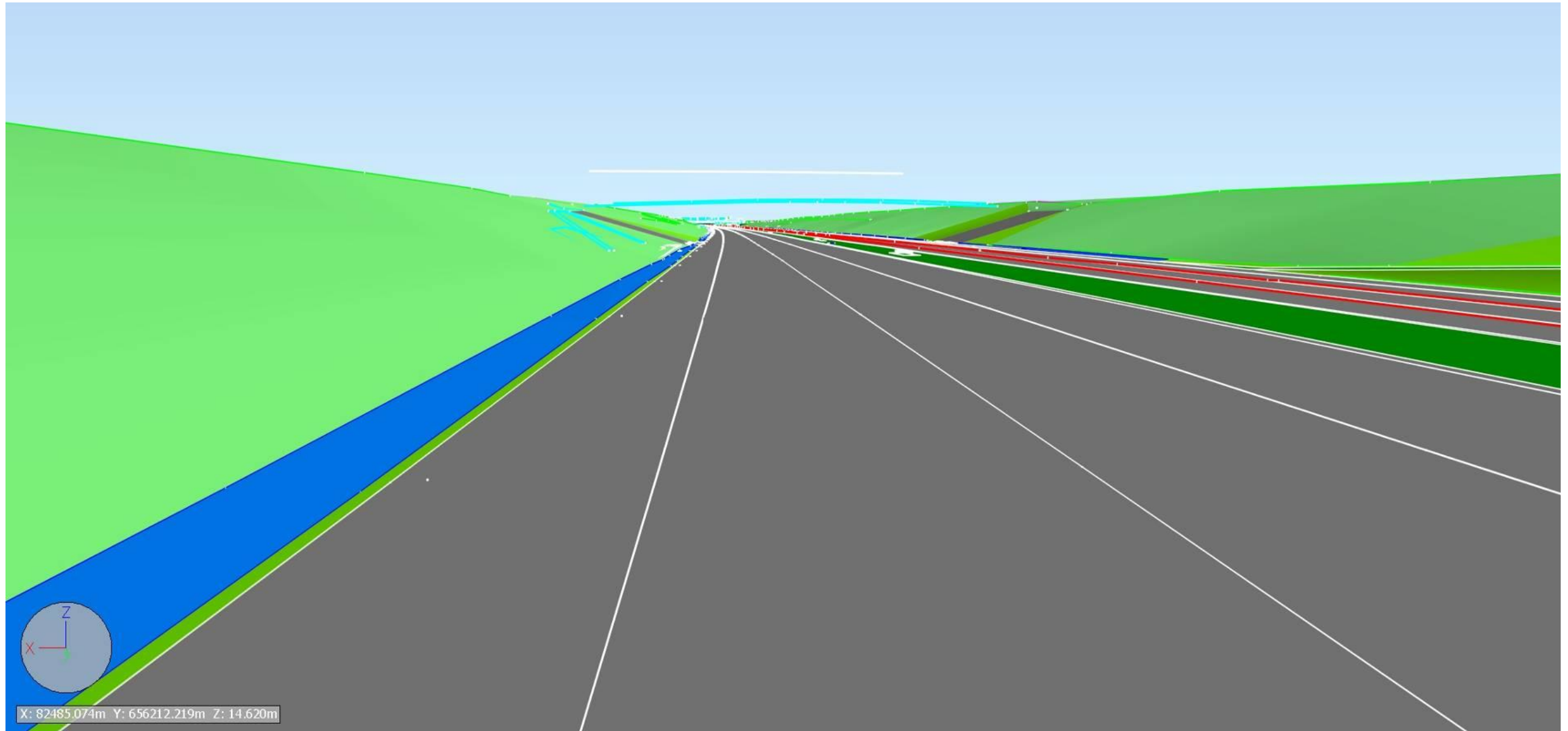


# M25 Section 4 - Topographic Information



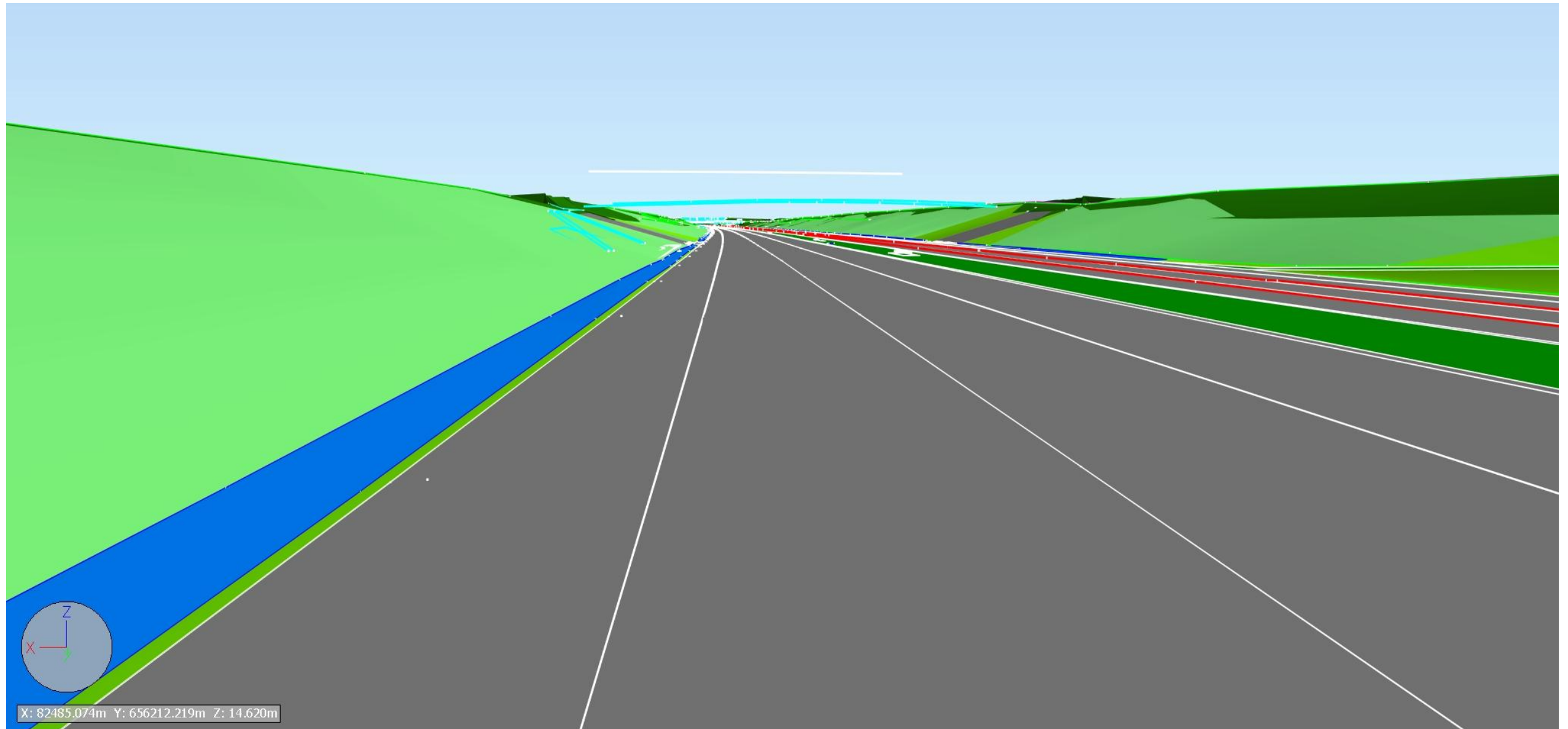


# M25 Section 4 - DTM Information



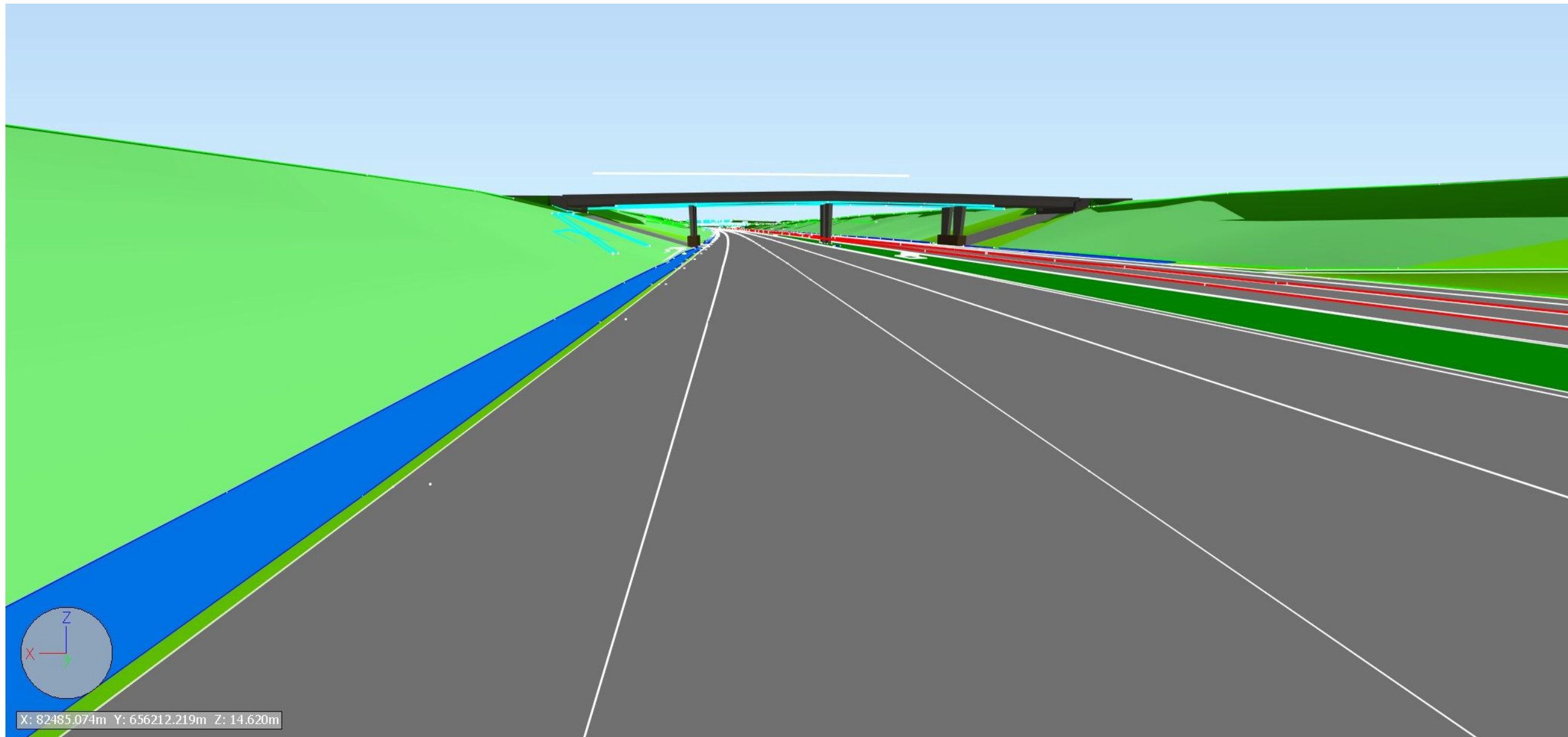


# M25 Section 4 - Lidar Information



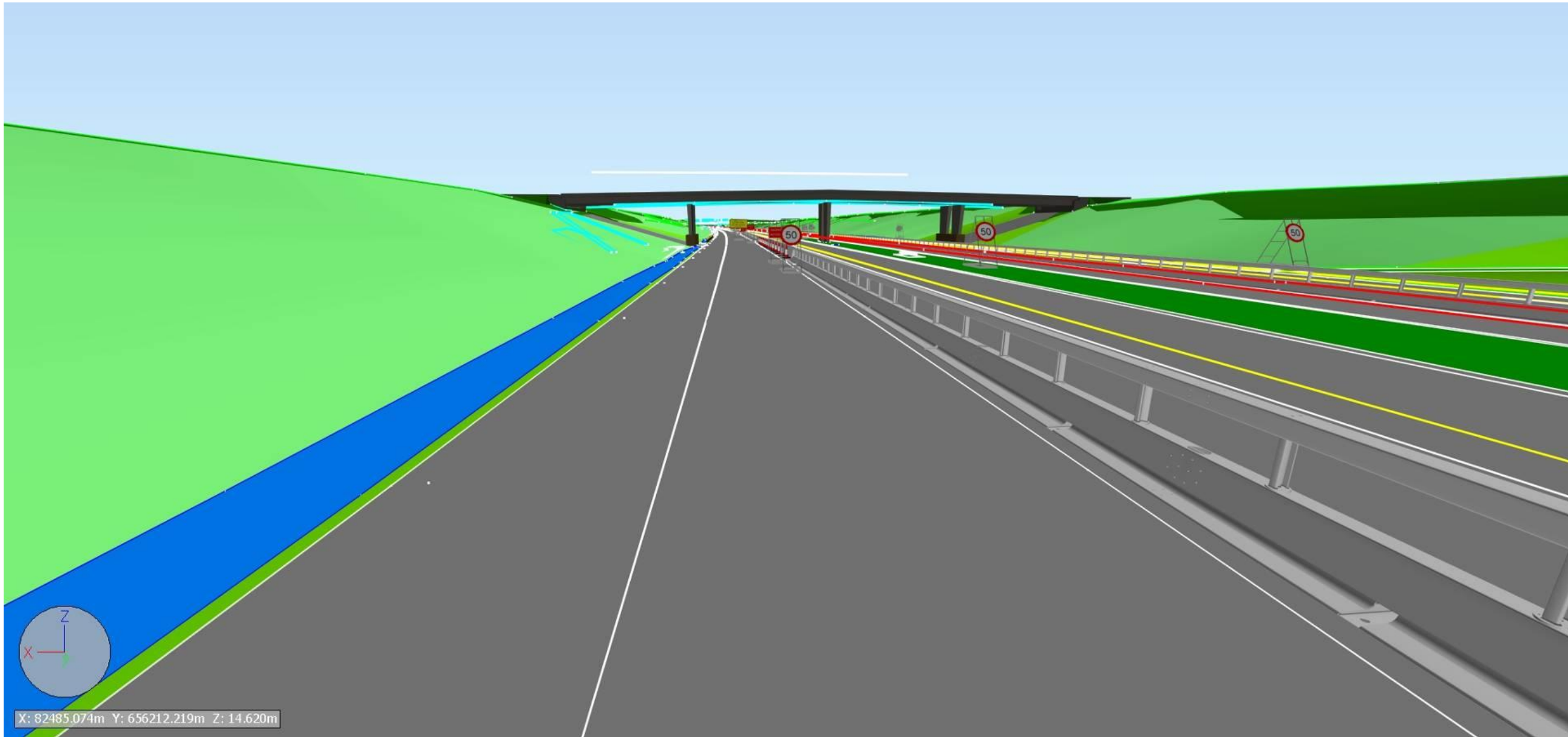


# M25 Section 4 - Existing Bridge structures



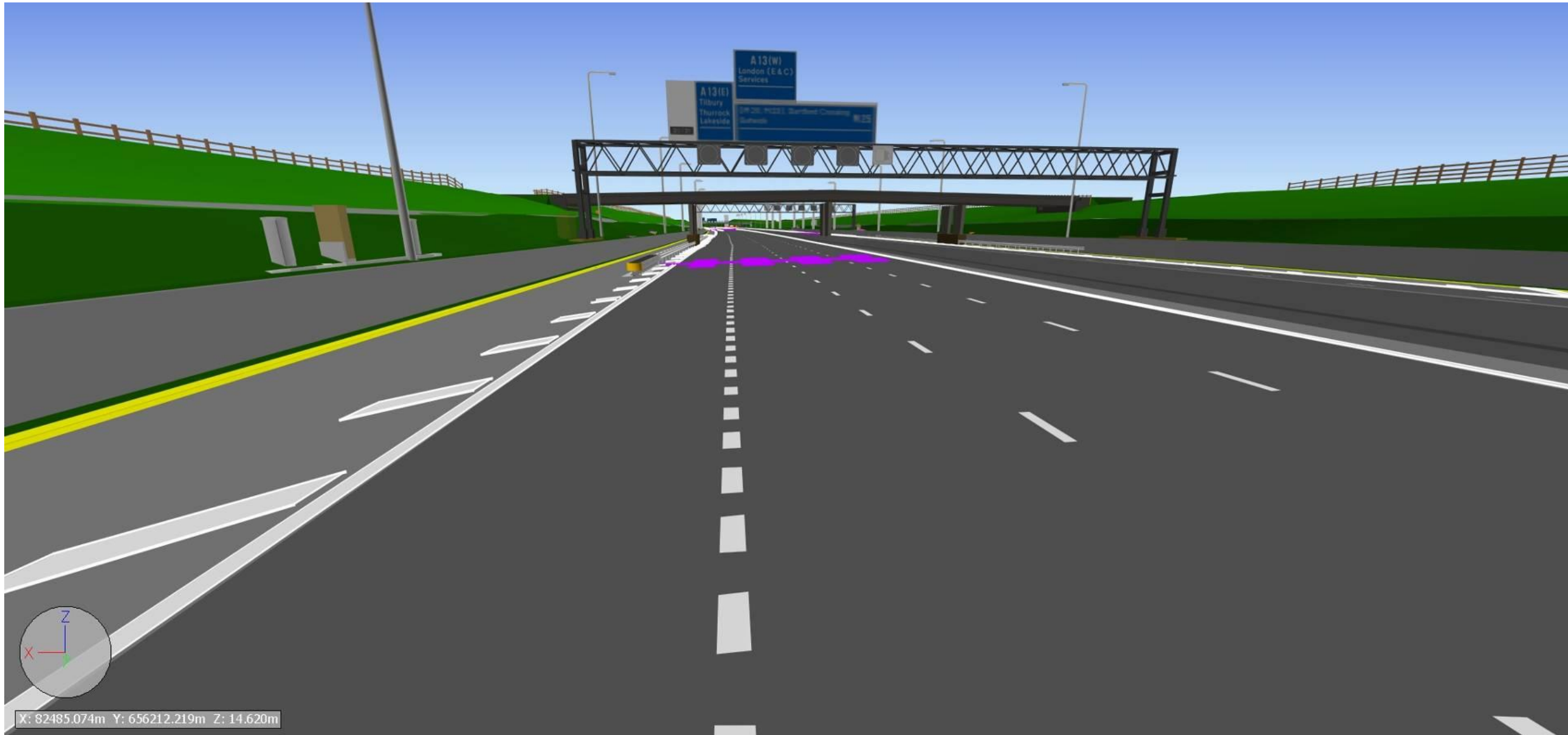


# M25 Section 4 - Traffic Management Design

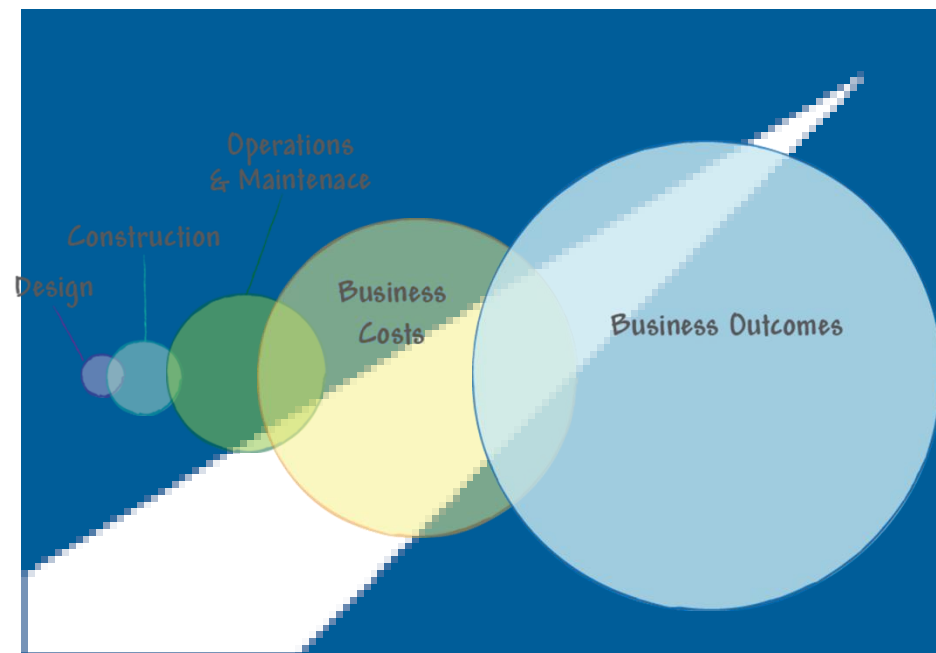




# Asset Management Model - BIM to AIM?







# BEYOND DELIVERY

© Balfour Beatty plc 2012