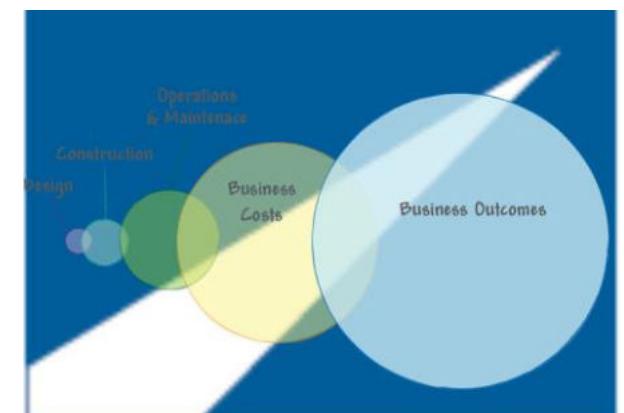


# 3D Laser mapping for BIM models

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



**BEYOND DELIVERY**

# BIM Techniques - Sharing Information



# Laser Scanning

Leica ScanStation C10



Faro Focus 3D 120



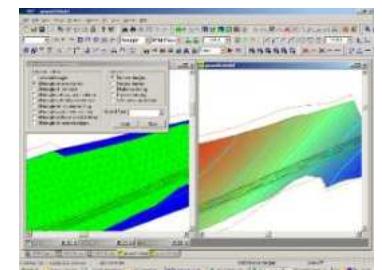
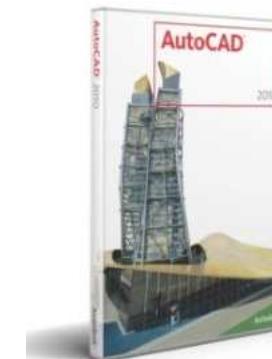
# Software

## Leica Software Suite For the ScanStation

### Leica Cyclone Register

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

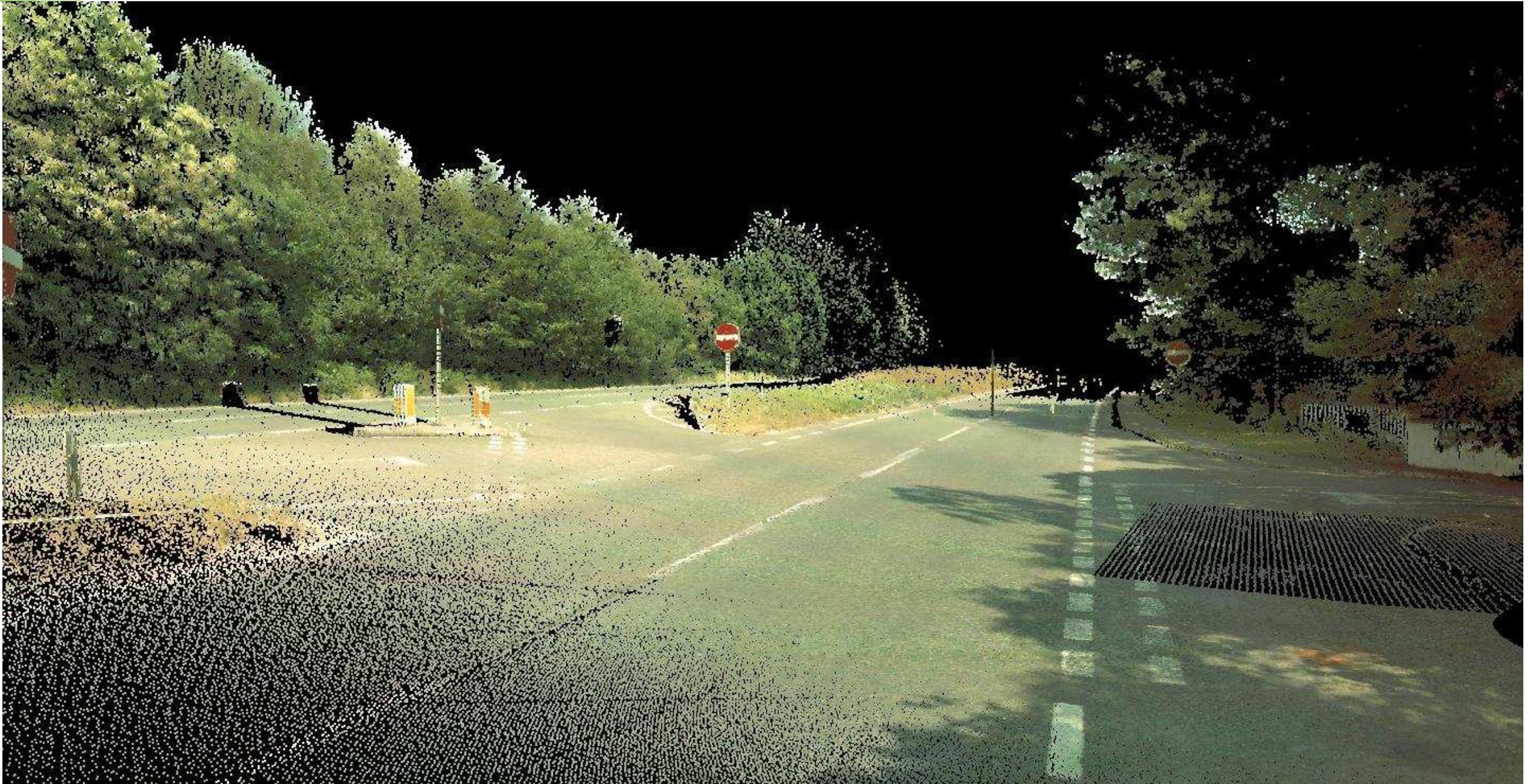
- AutoCAD 3D
- AutoCAD Navisworks
- Pointools View Pro
- SCC Software



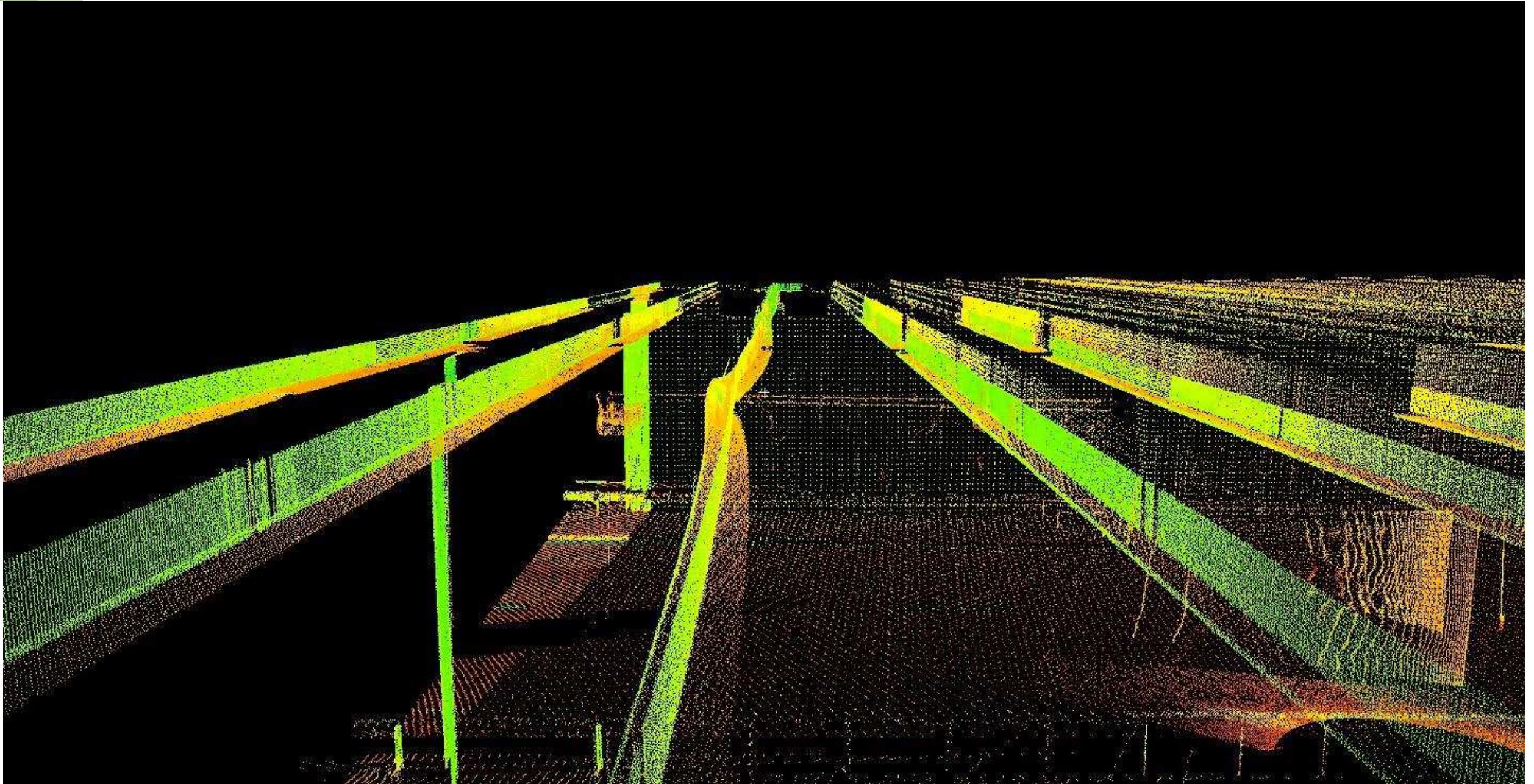
## Case studies

# Using scanning Technology

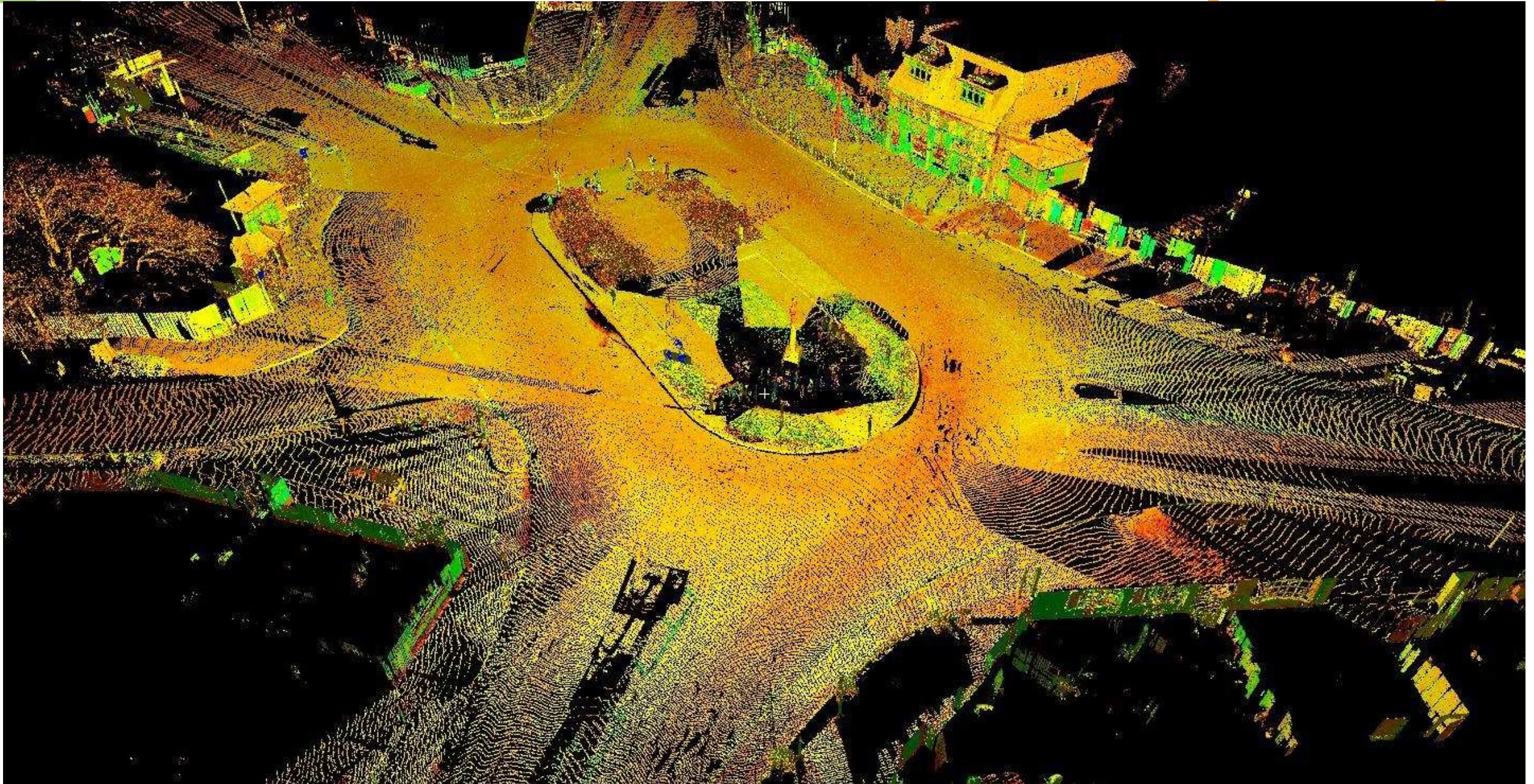
## A27 Fatality sightlines investigation – Kent



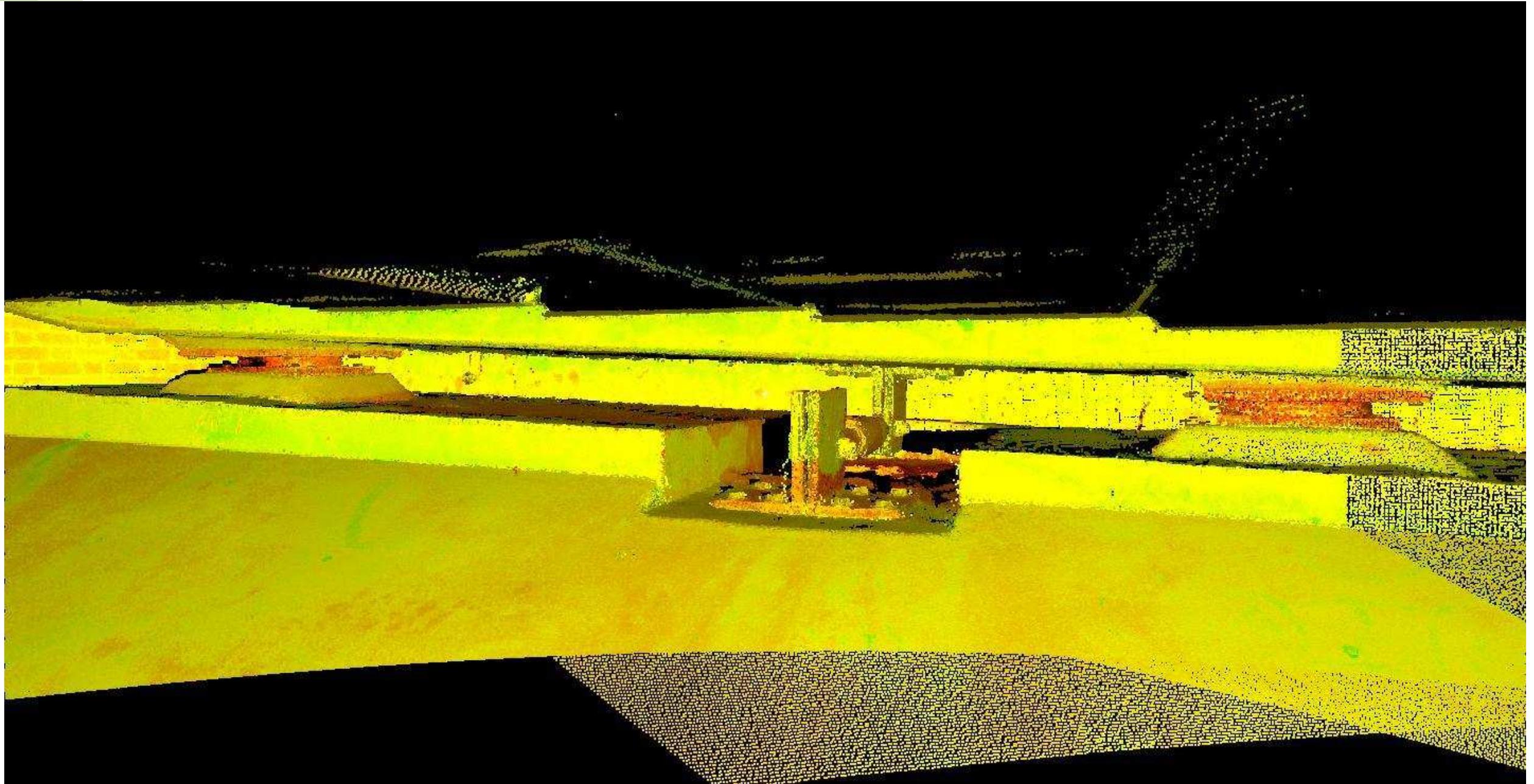
# A229 M20 Under bridge damage assessment



# A259 Little Common RAB Geometry survey



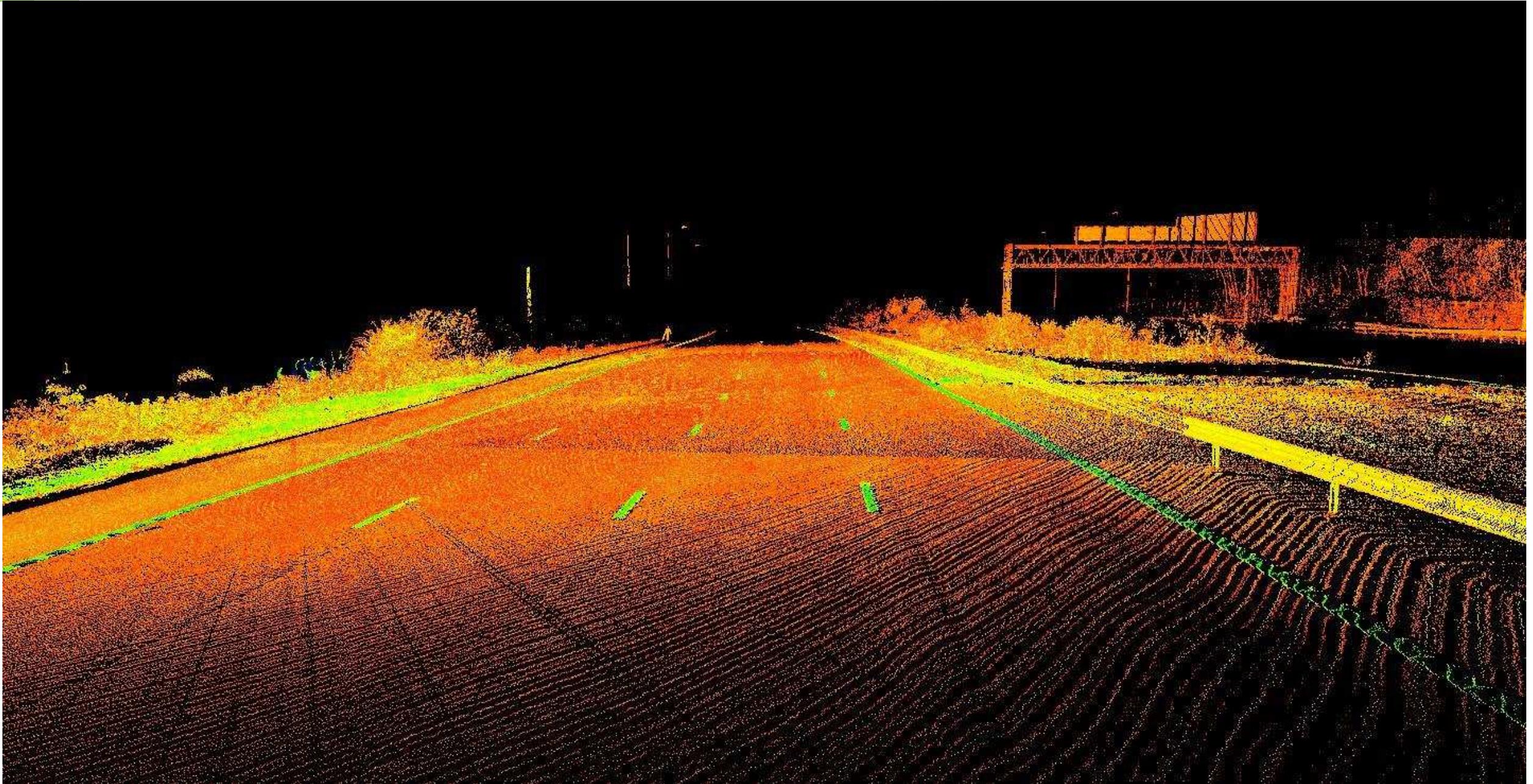
# A249 Queenborough Viaduct for bearing



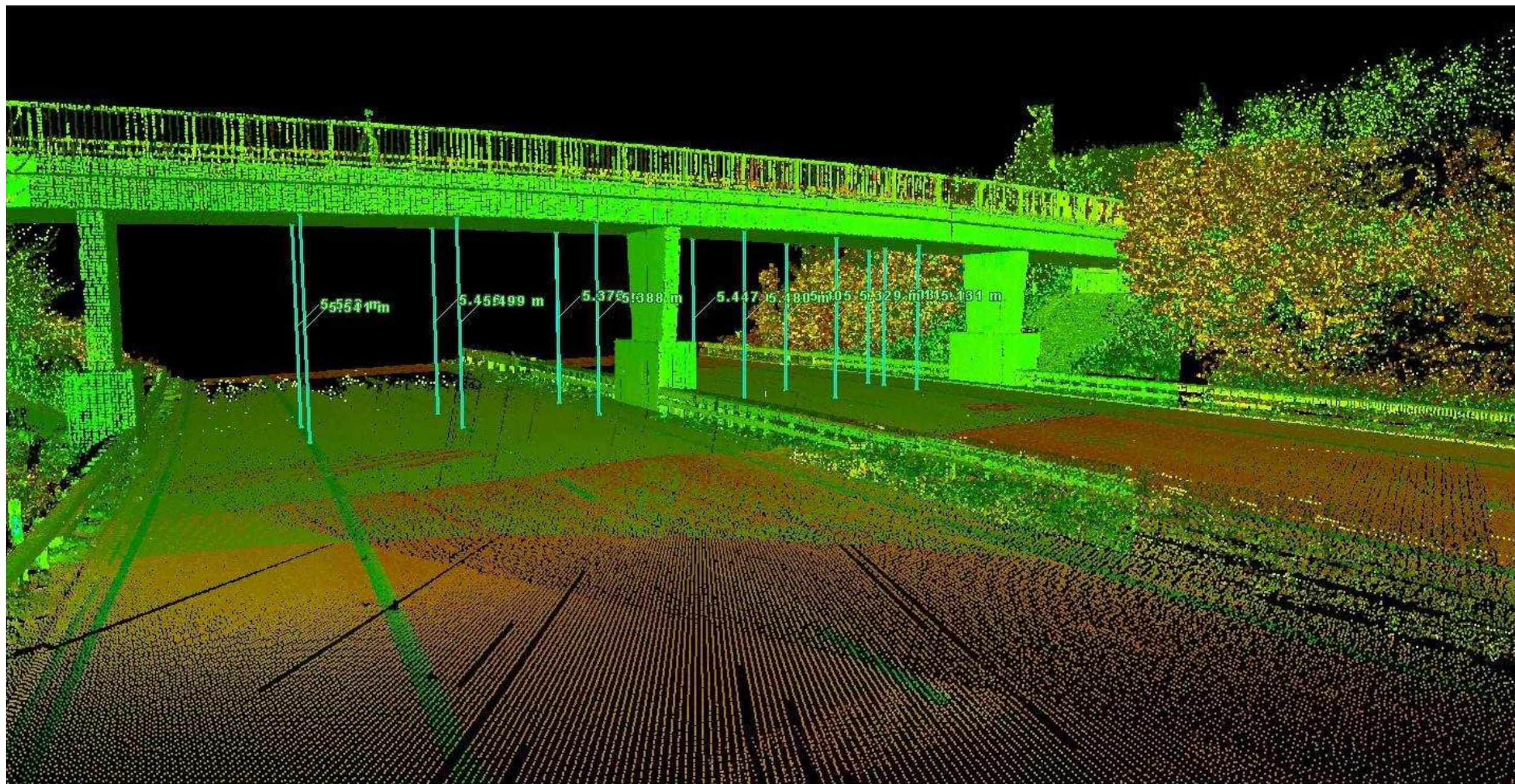
# Asset survey - Farthing Corner Depot



## M2 Buckmore park carriageway



# M2 & M20 bridge archive 1



# M2 & M20 bridge archive 1

**Bridge Elevation Along Coastbound Carriageway**  
Not to Scale

**Section B-B Through Bridge Coastbound Traffic**  
Scale 1:200

**Section A-A Through Bridge Londonbound Traffic**  
Scale 1:200

**M2 Critical Clearances**  
A228 Maidstone Road  
MP 51.7

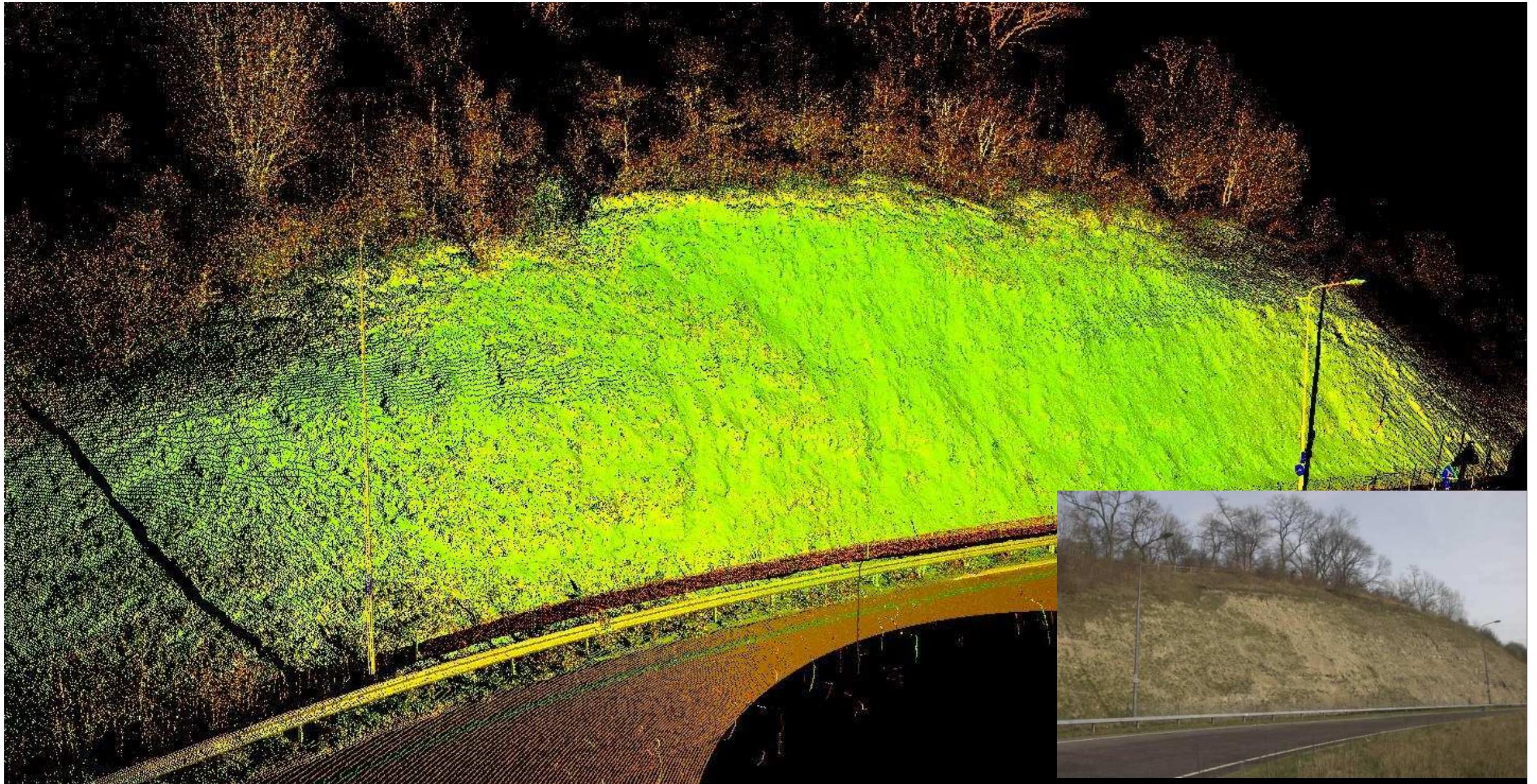
| Rev | Date     | Drawn | Description             | CHKD | APPD |
|-----|----------|-------|-------------------------|------|------|
| P1  | 28.05.09 | AJM   | Final Information Draft |      |      |

InterRoute  
A228 Maidstone Road  
MP 51.7

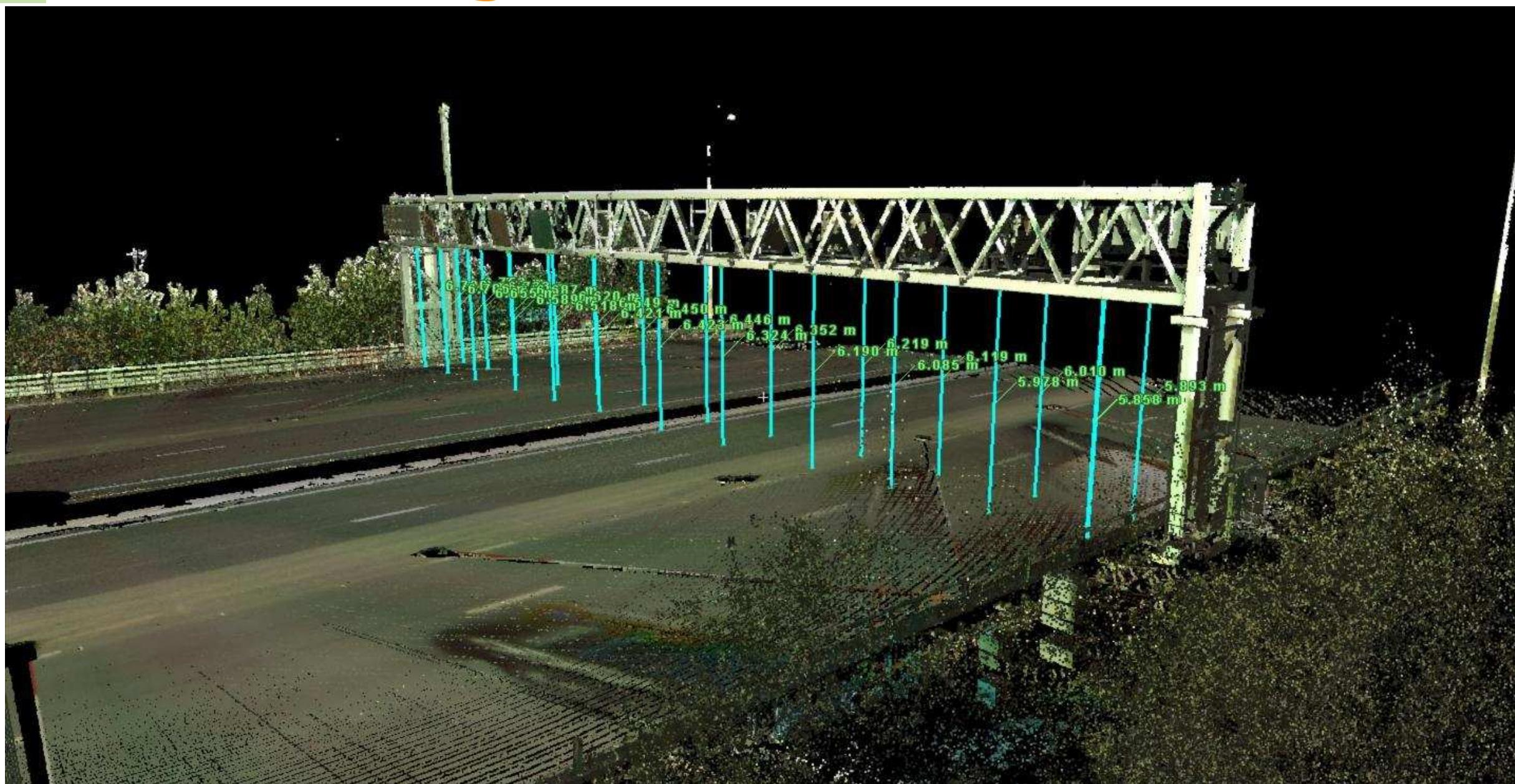
Highways Agency

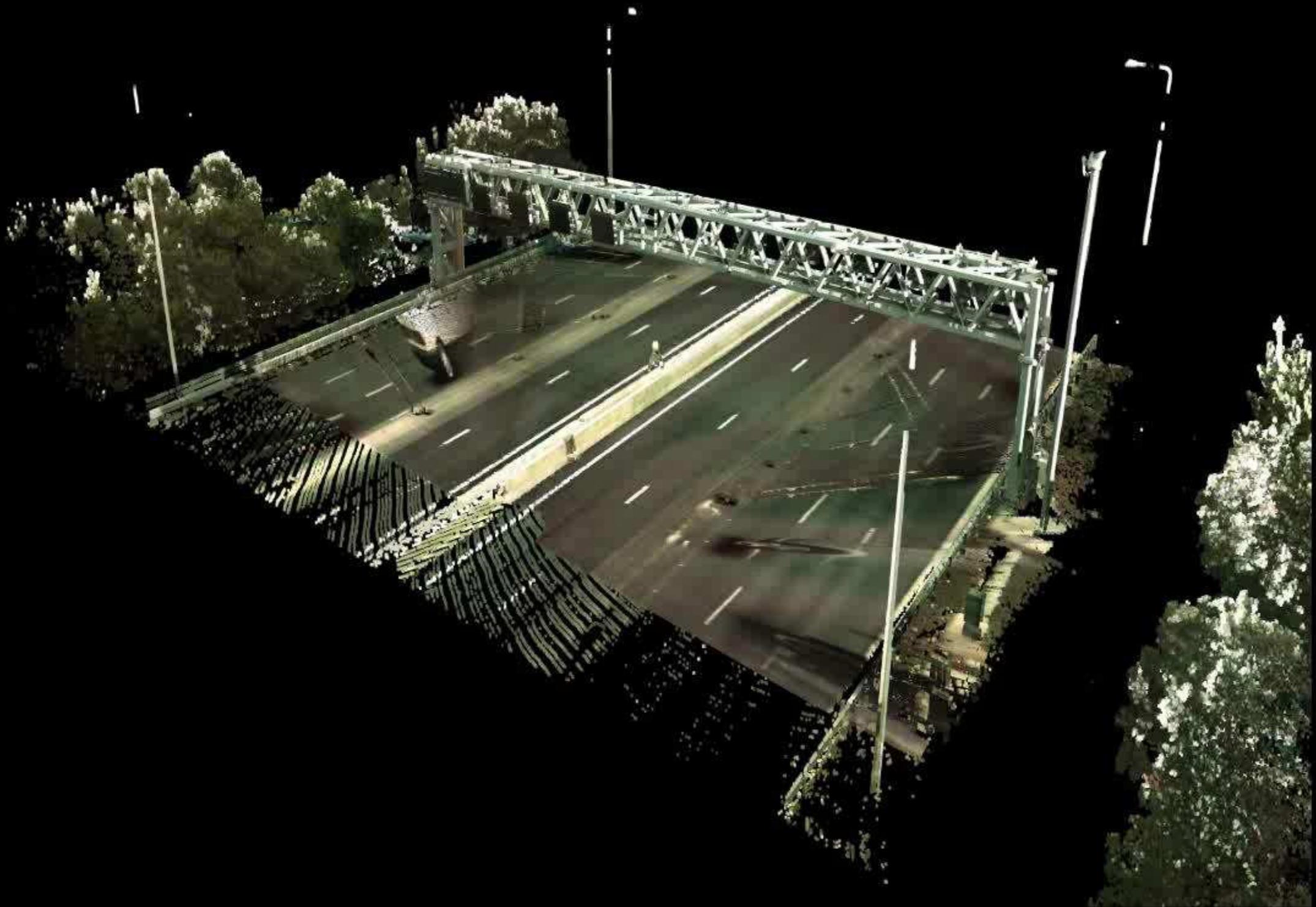
Designed: AJM/aw  
Drawn: AJM/aw  
Scale: As Shown  
Project: 09-04-2680  
Drawing No: S/09-04-2680/51.7  
Status: INF  
Rev: P1

# Monitoring : Pyecombe chalk cutting

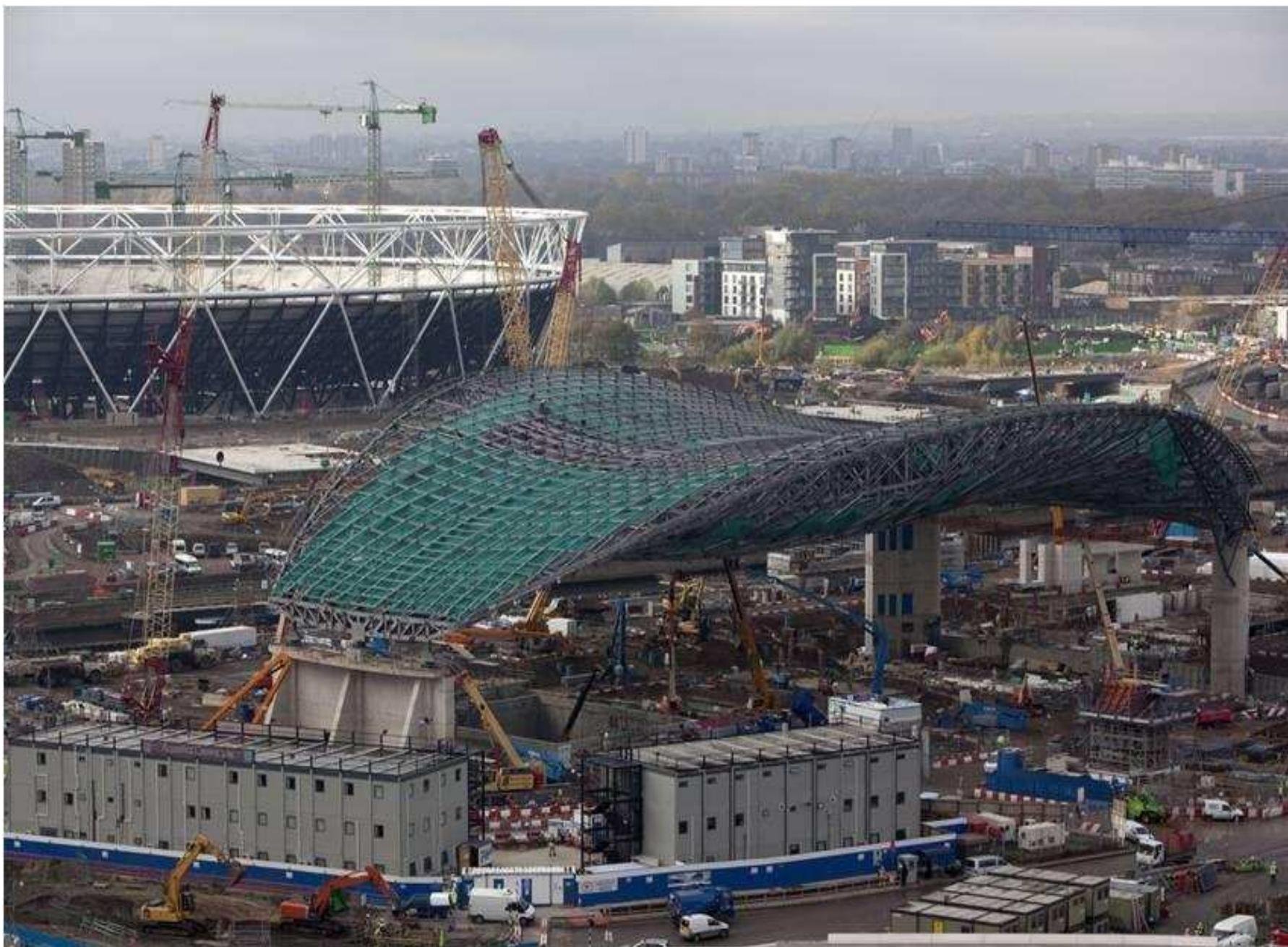


# Asset Management Gantries



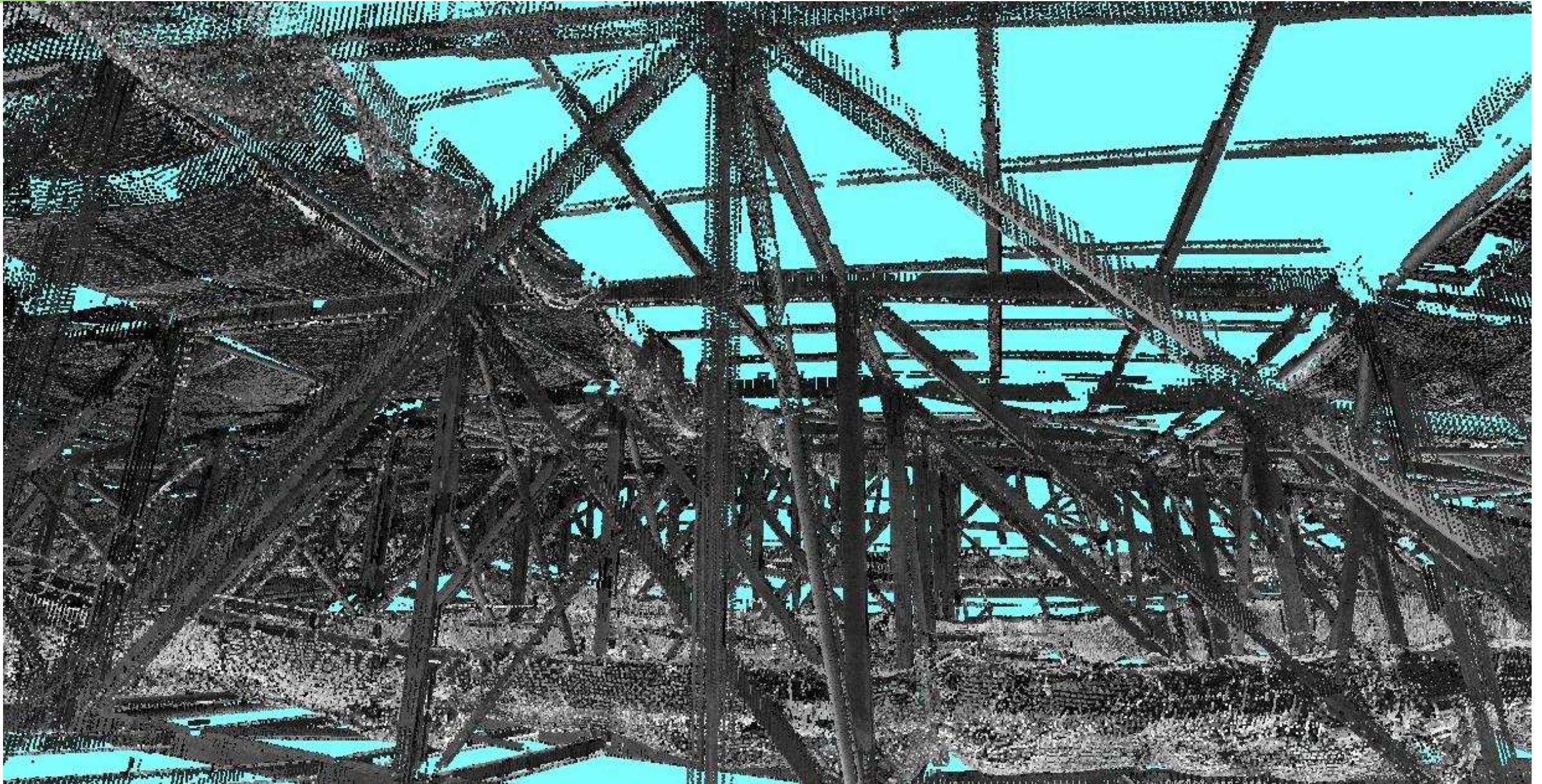


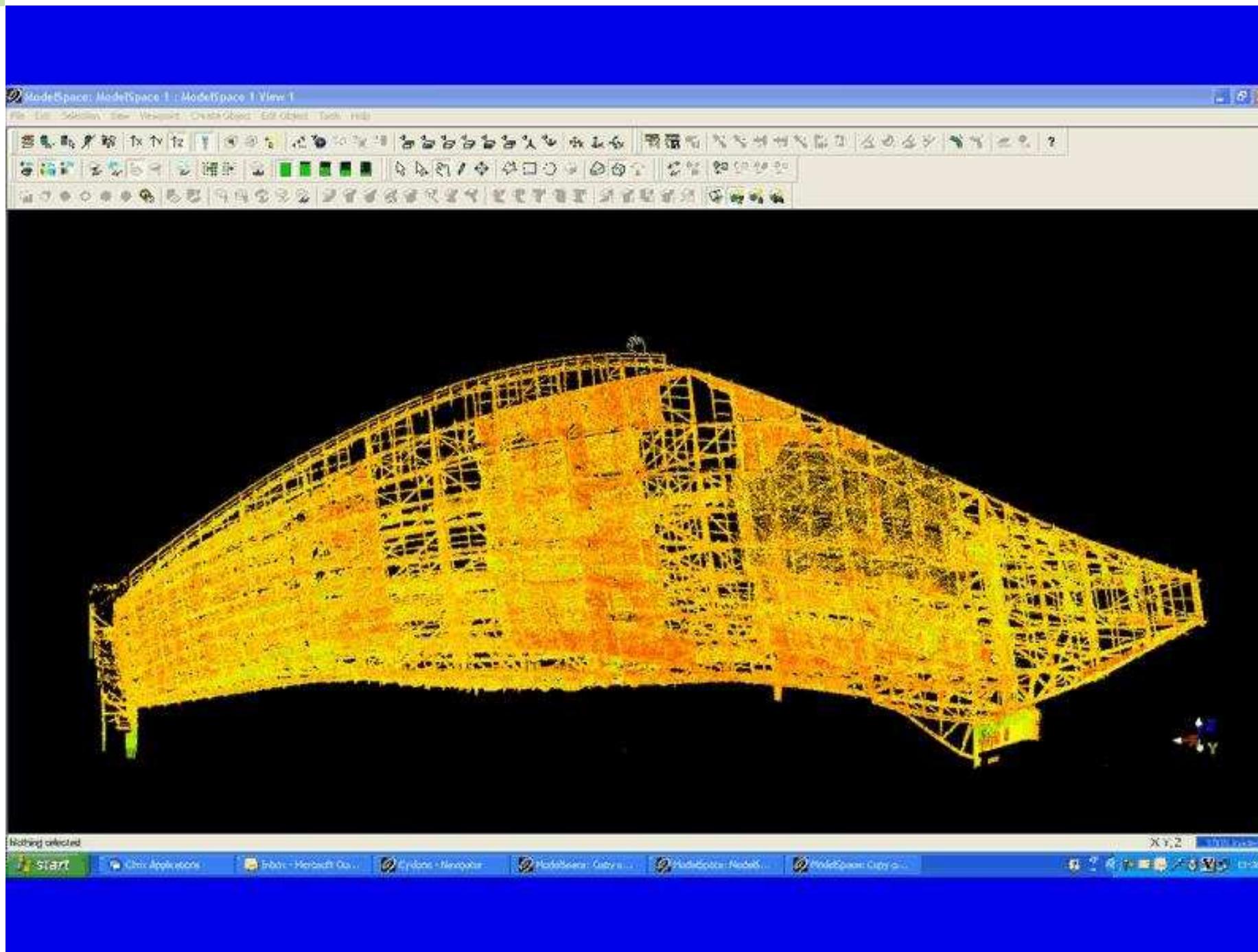
# Aquatics Centre

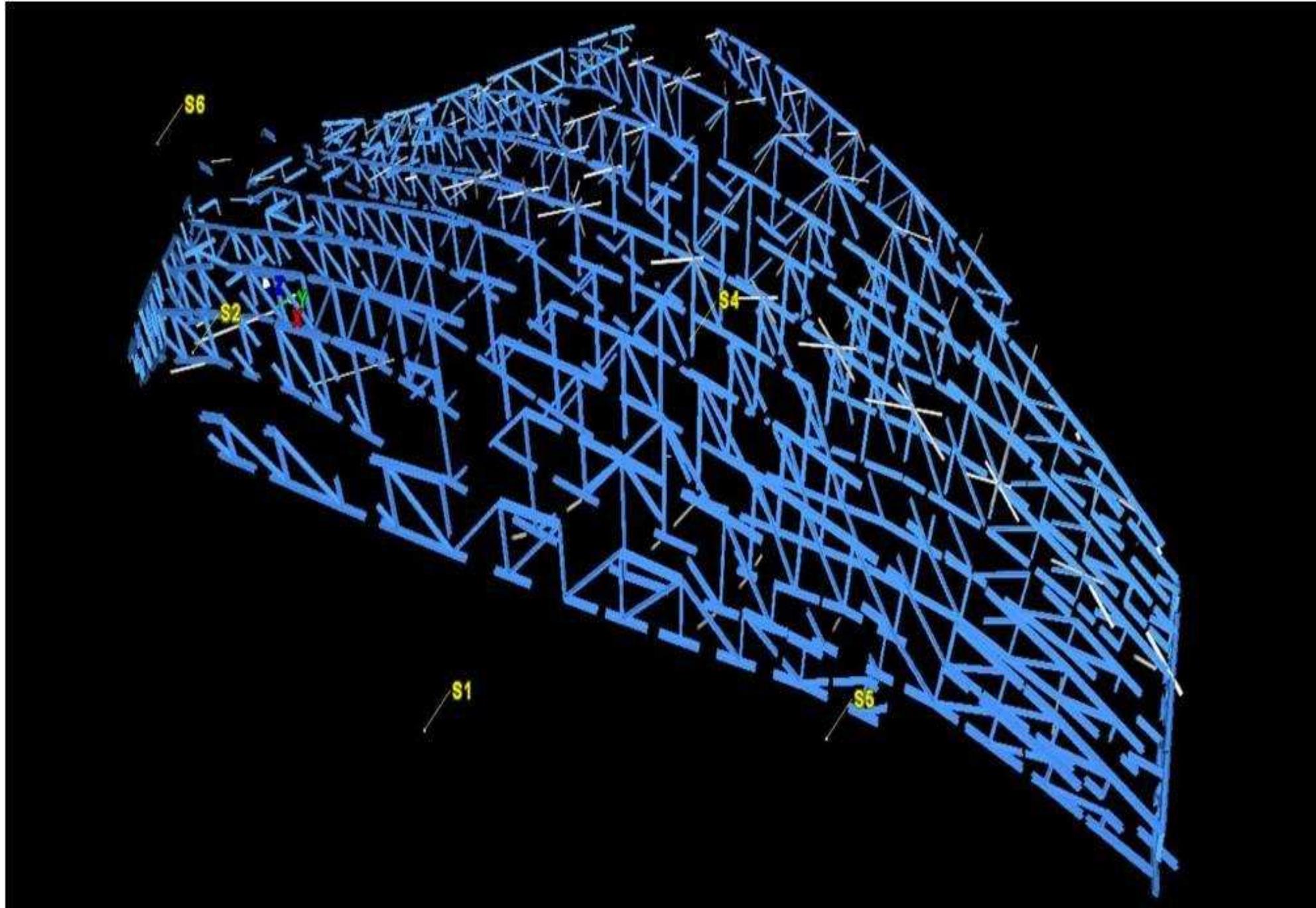


# Aquatics Centre







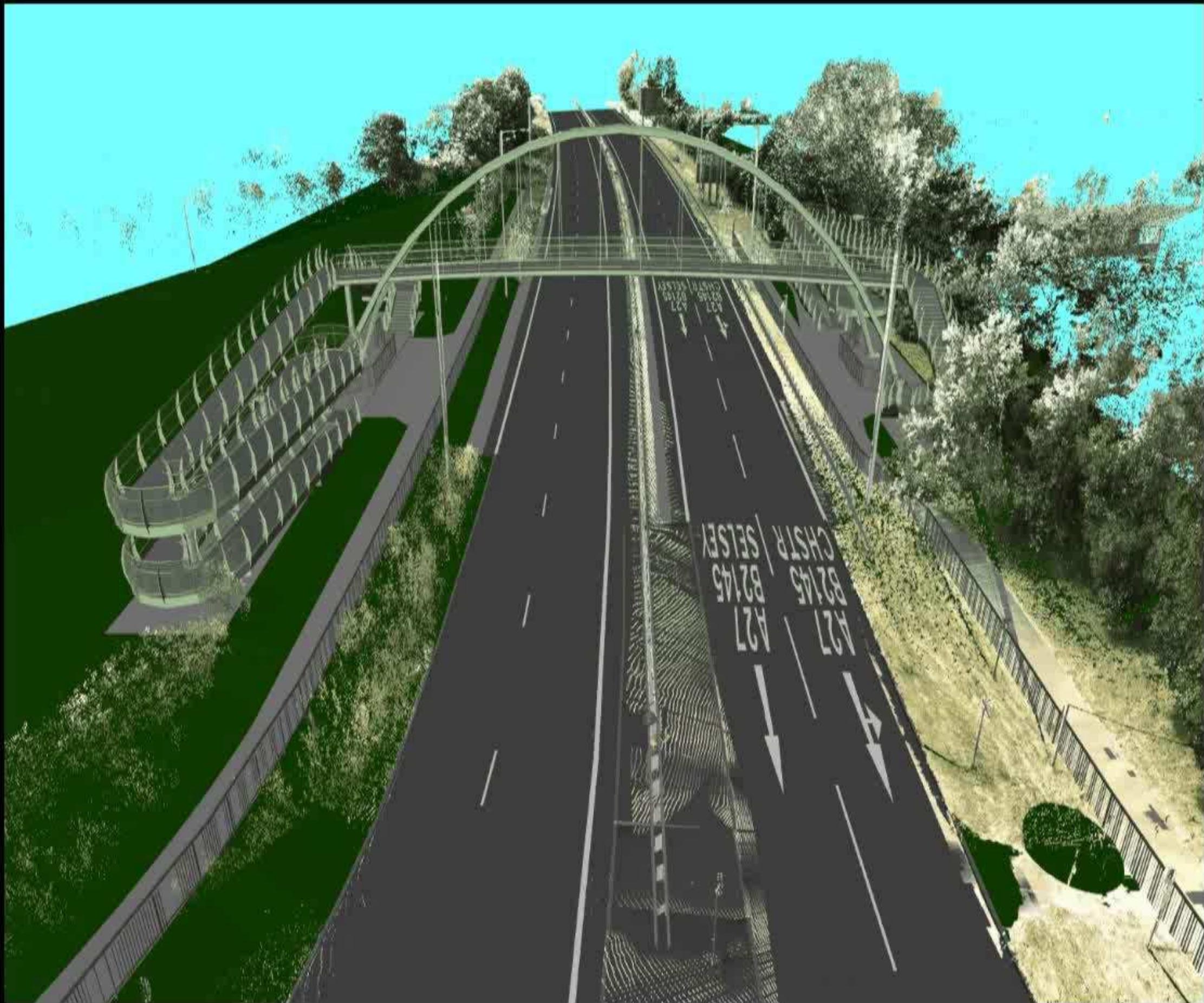


## Case Studies

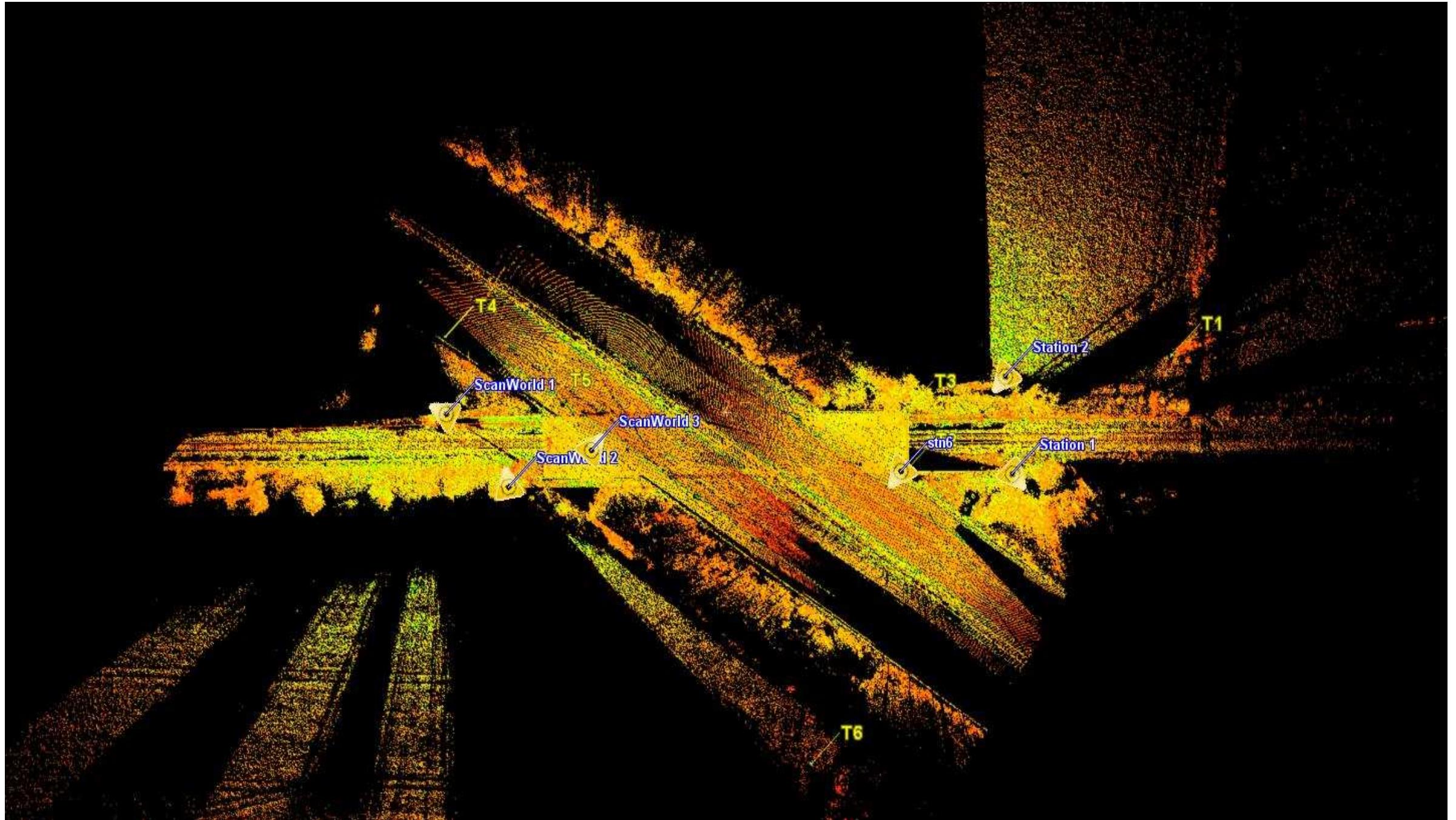
### Laser scanning to models

# A27 Kingsham Footbridge





# M25 - Ockendon Railway – optimising design



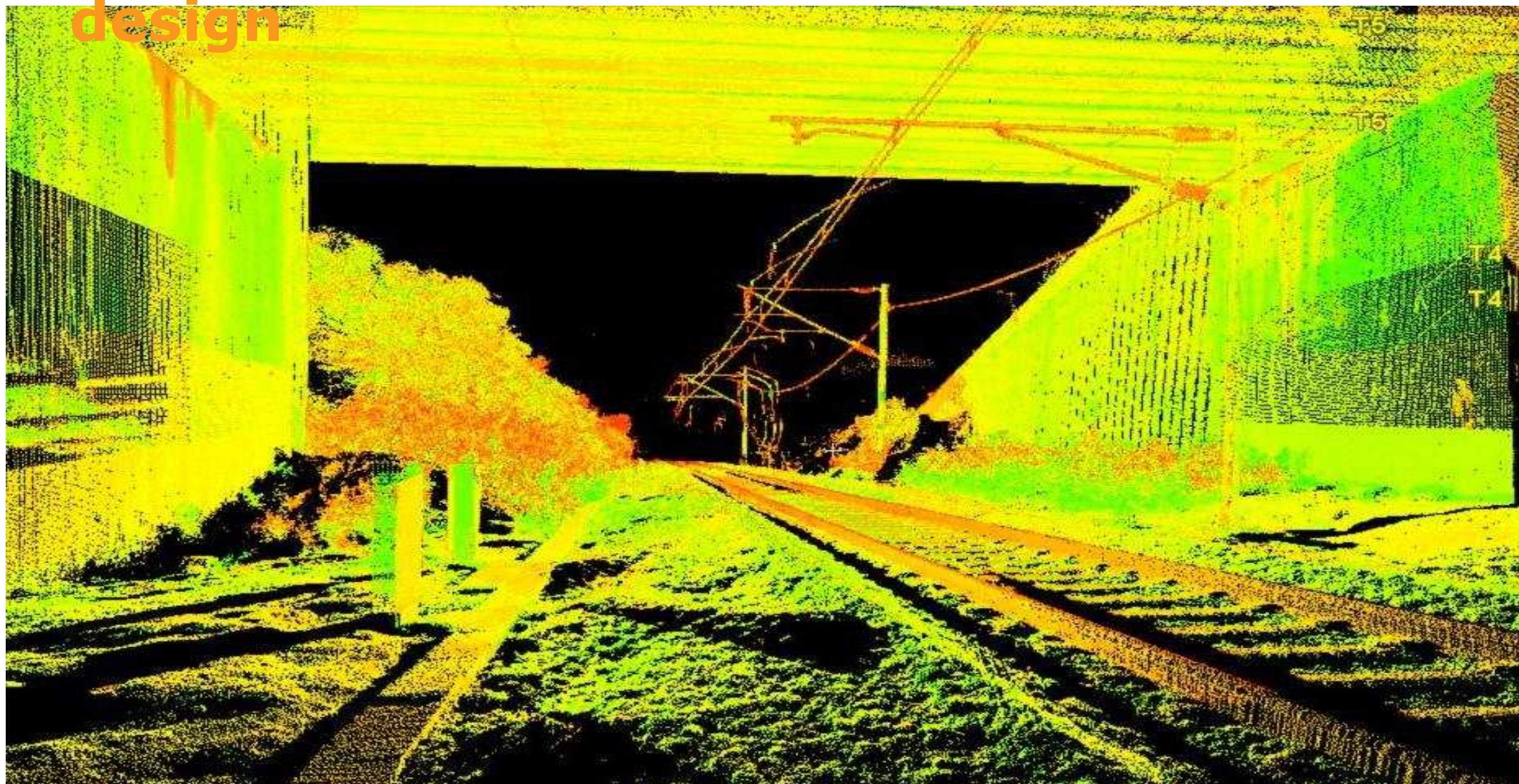
## M25 - Ockendon Railway – Rail possessions?



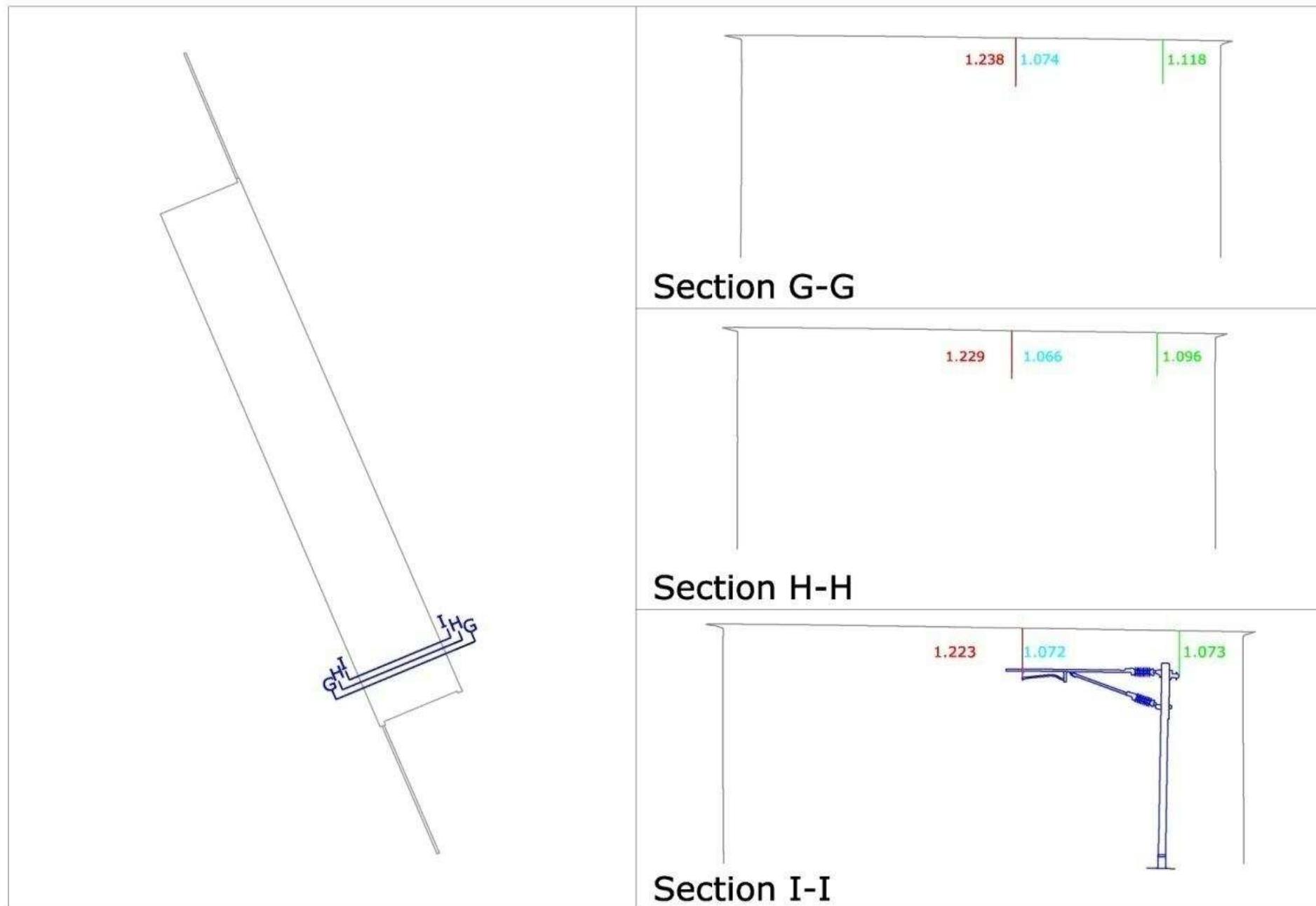
## M25 - Ockendon Railway – Lane closures?



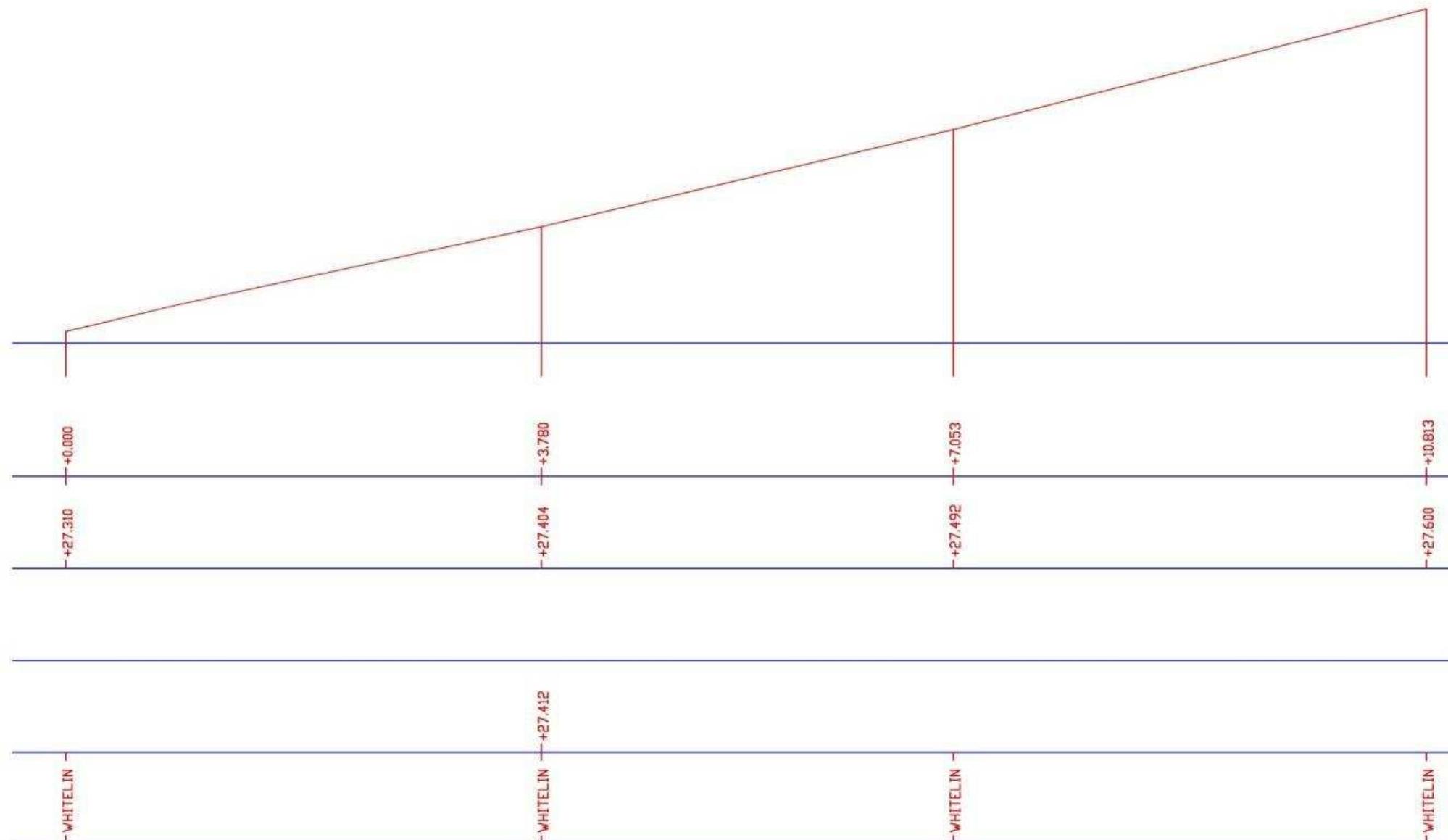
# M25 - Ockendon Railway – optimising design



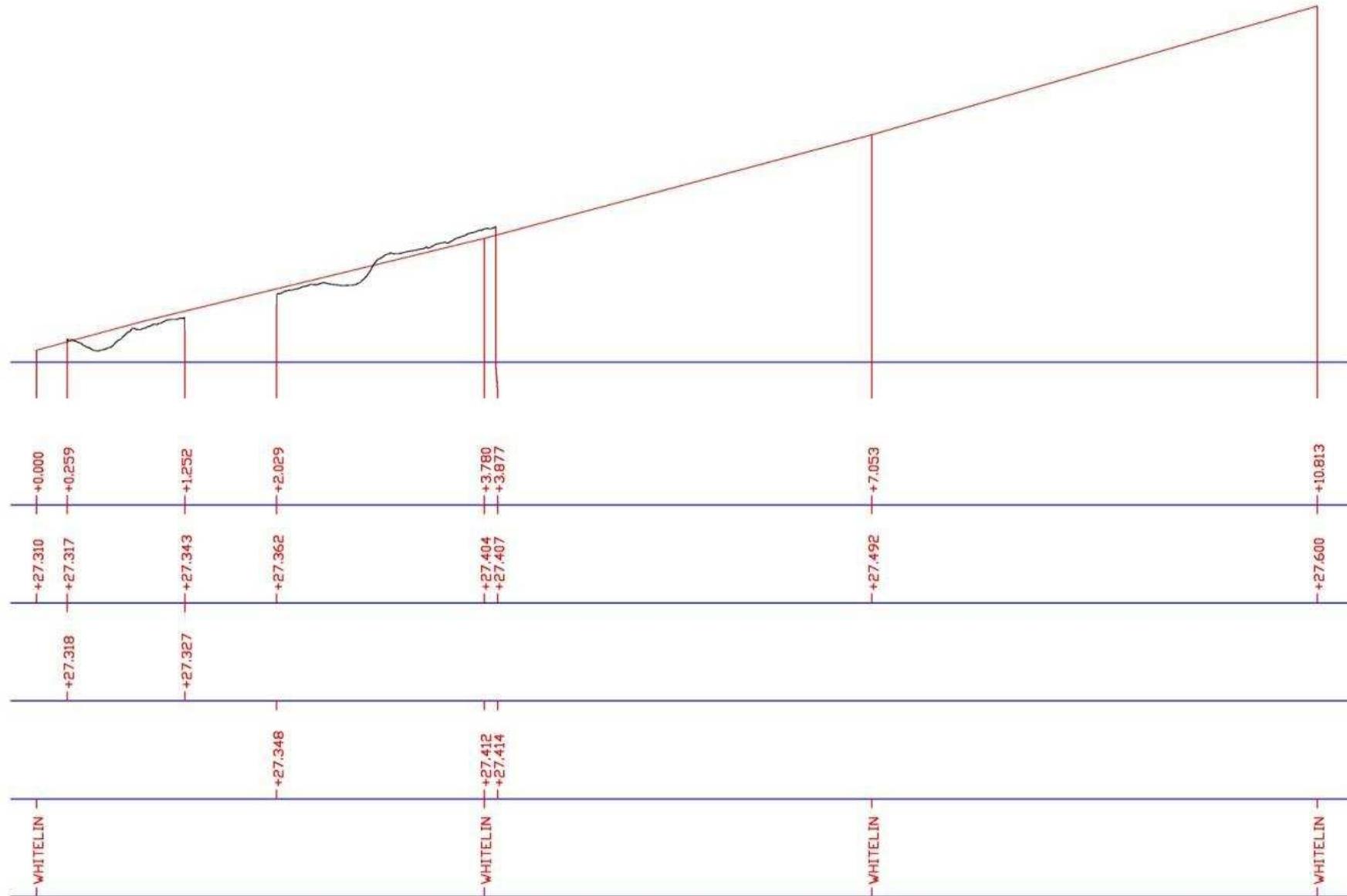
# M25 - Ockendon Railway – deliverables



# 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

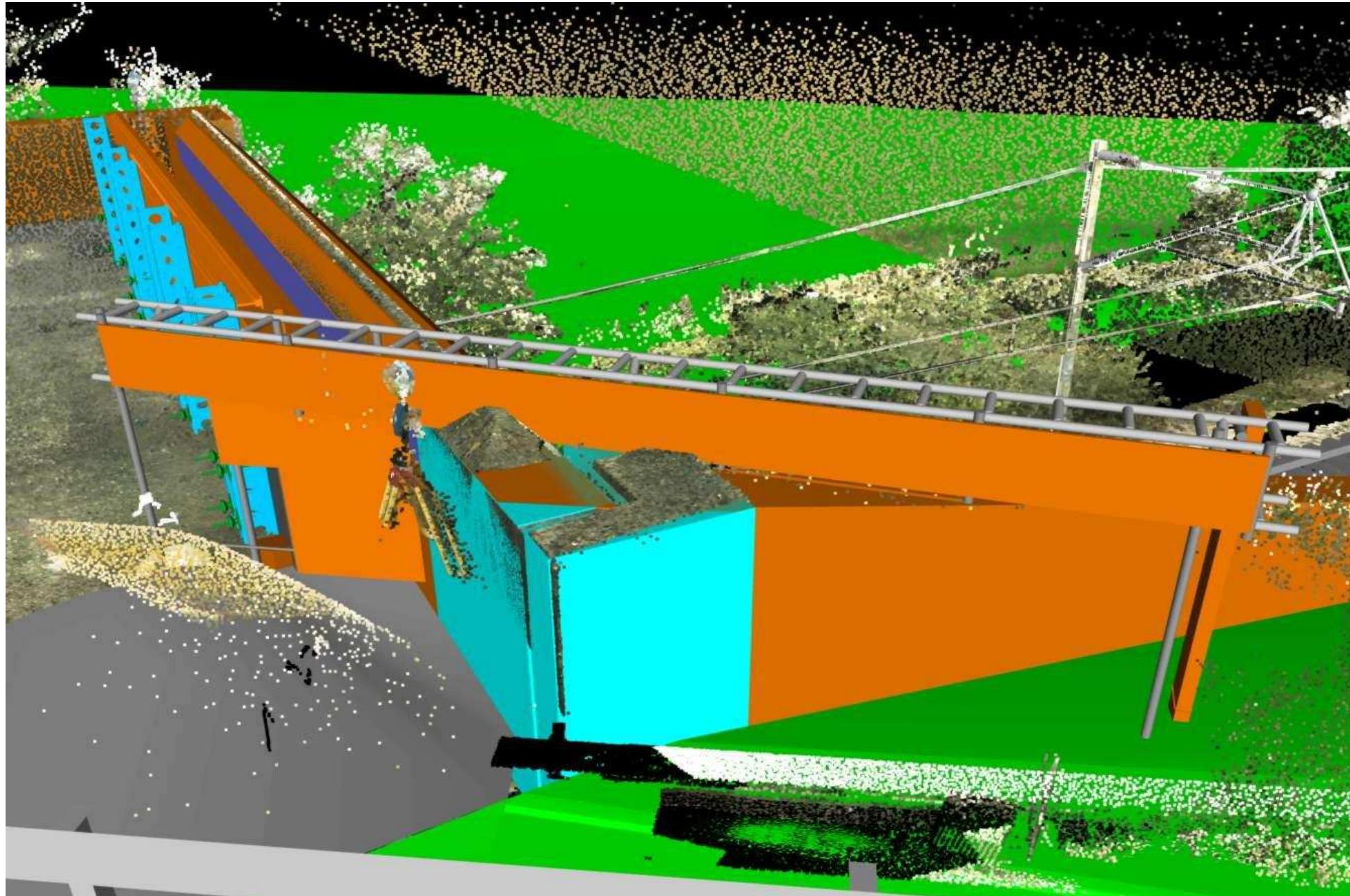
Software used to create the 3D Model:

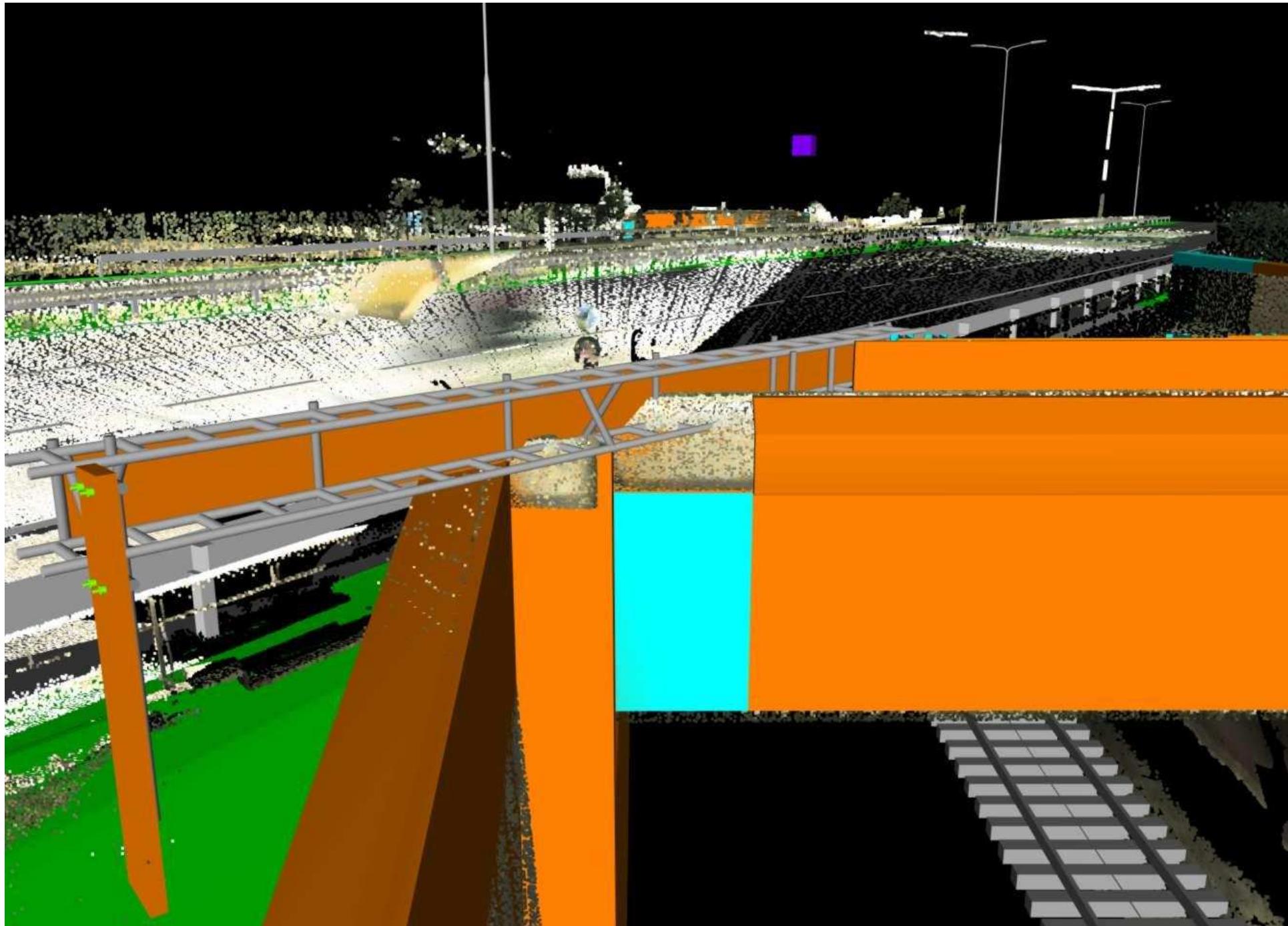
- AutoCAD 2011 Civil 3D
- Navisworks Manage 2011

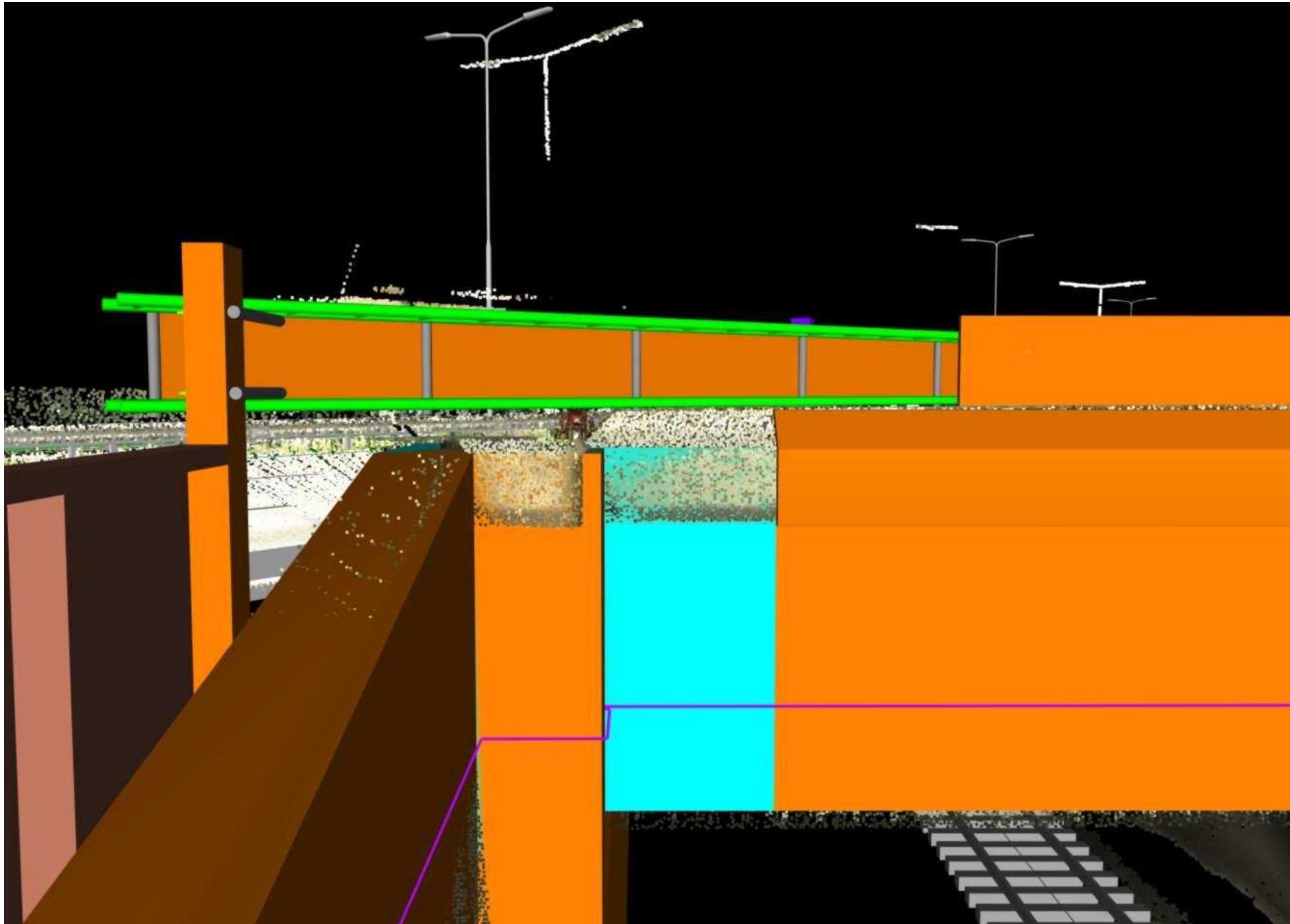
## M25 - Ockendon Railway – laser scan data



# M25 - Ockendon Railway – TW model created



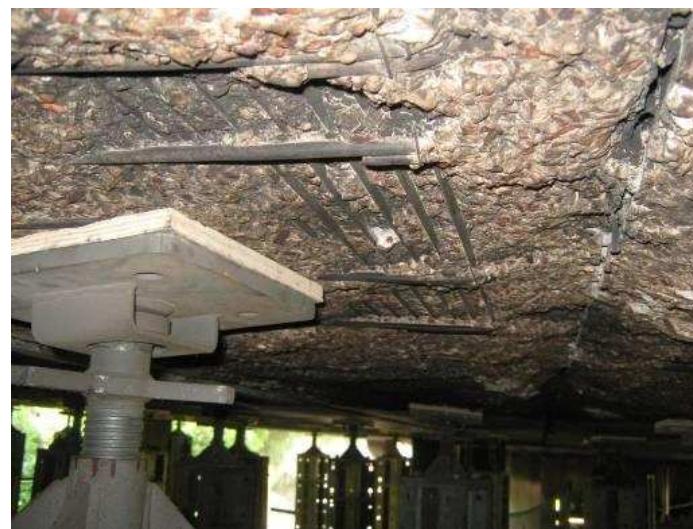




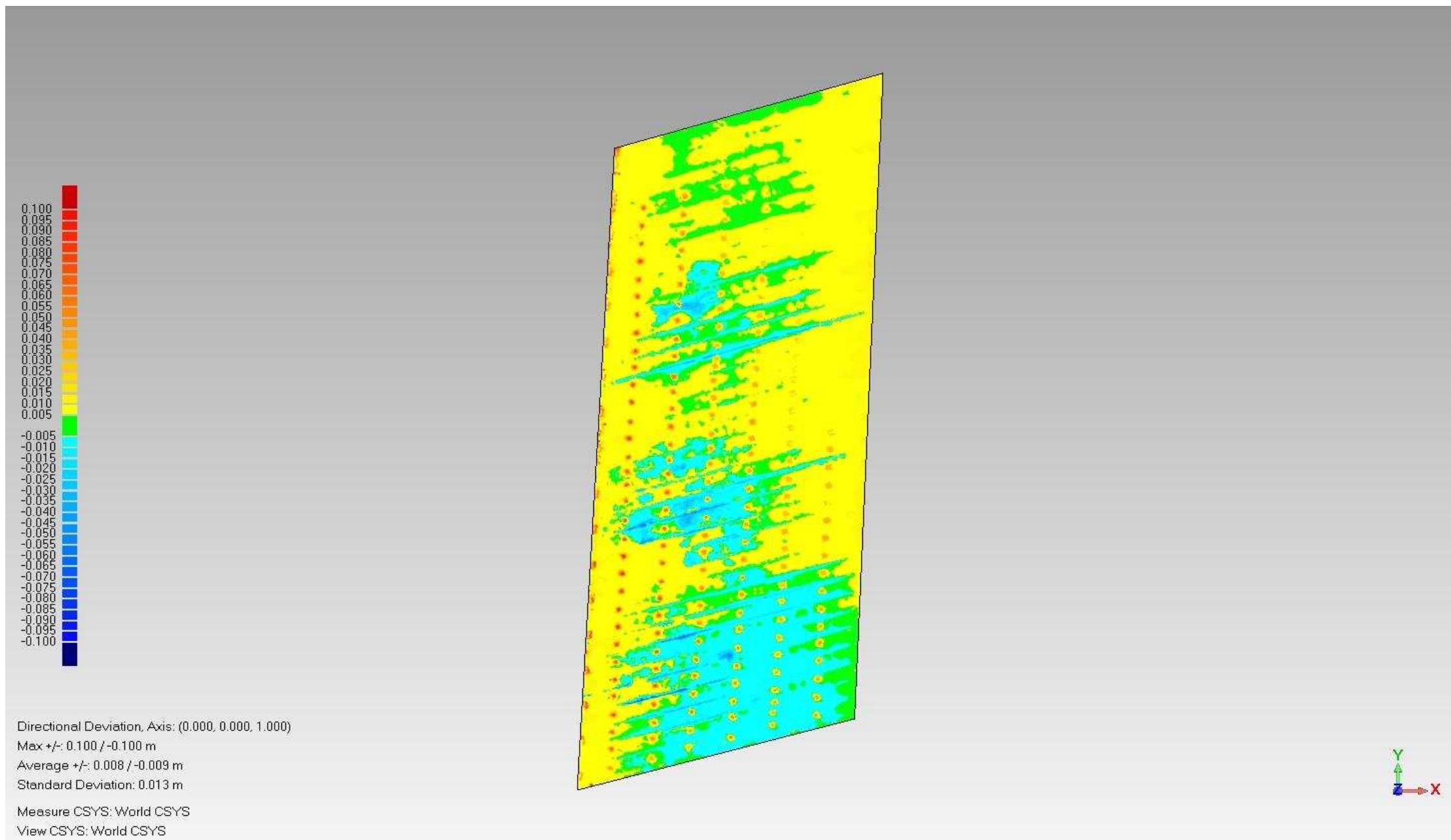
## Actual element of Temporary Works

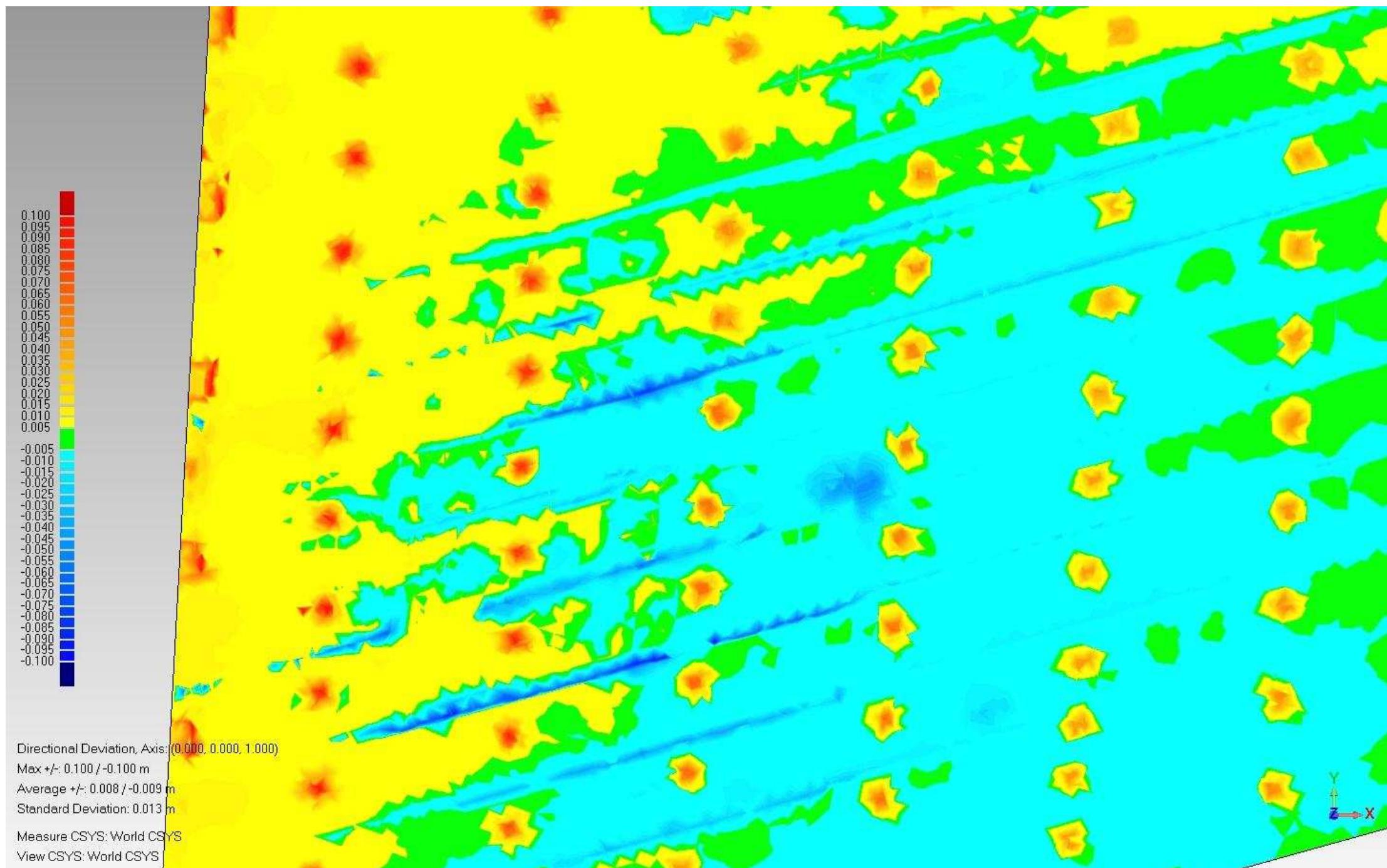


# M1 Deansbrook - 2011

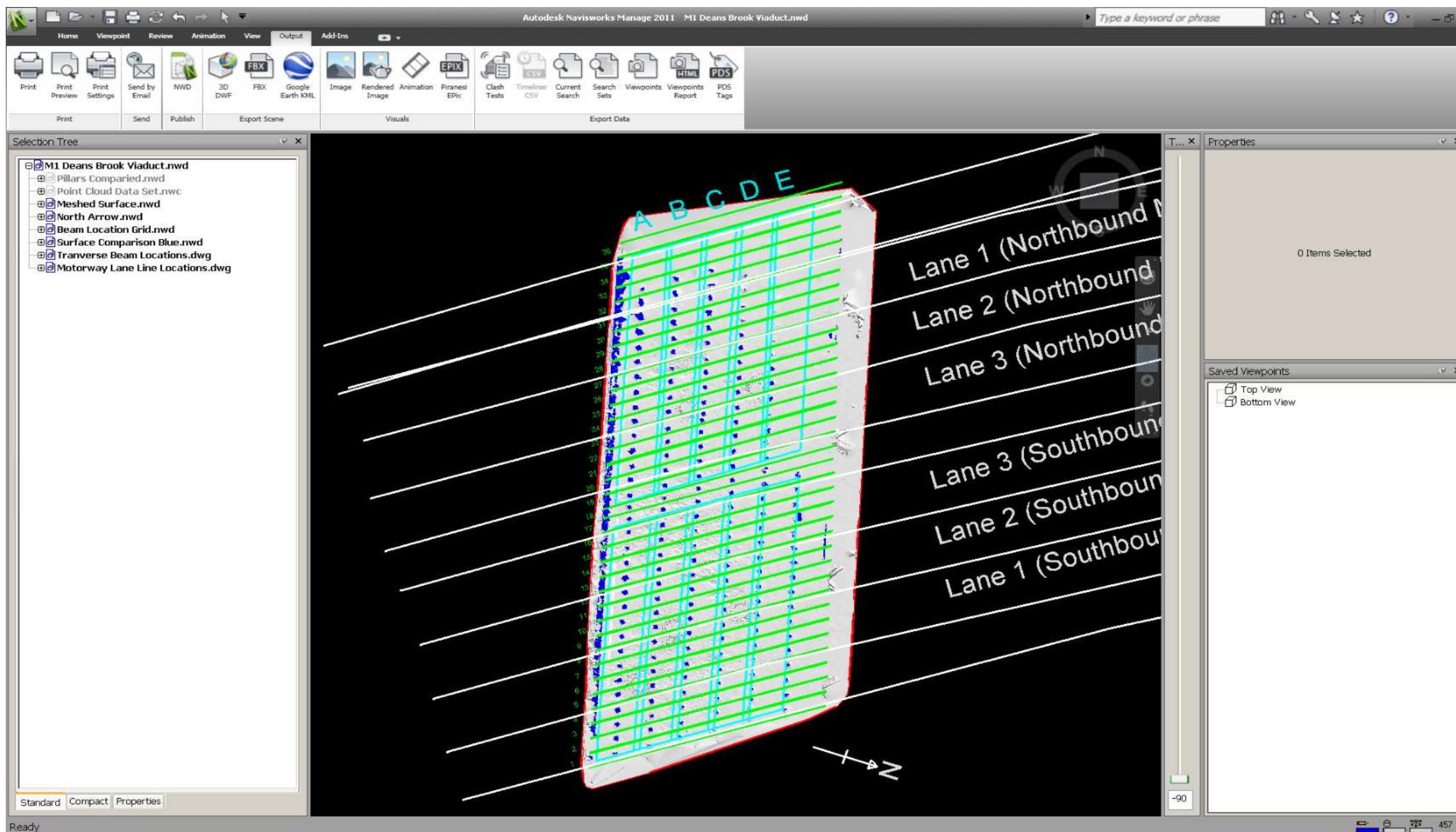


# M1 Deansbrook - 2011

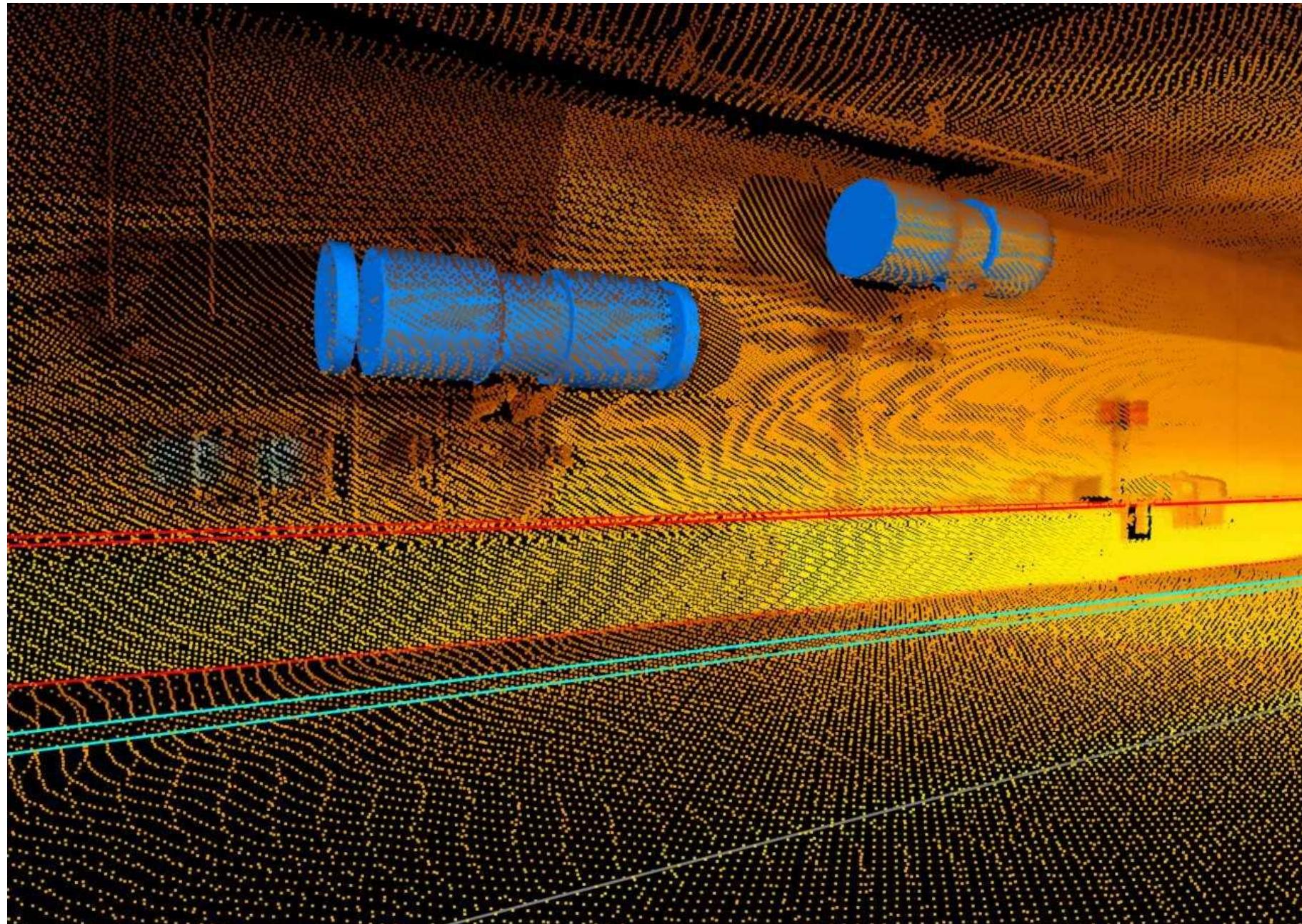




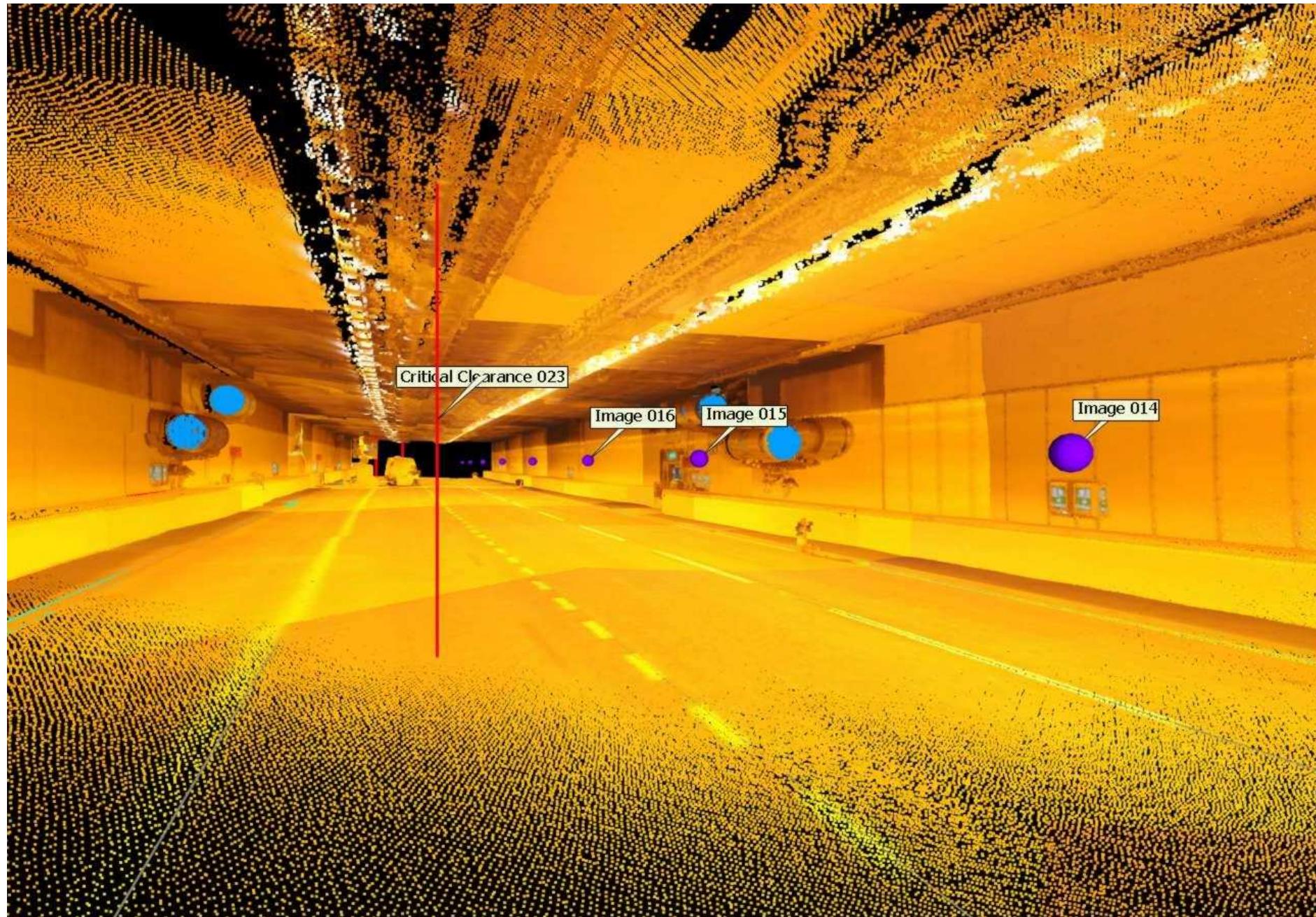
# M1 – Deansbrook – Deliver Interactive Models



# Hatfield Tunnel As Built



# Hatfield Tunnel As Built & Kinematic Envelope



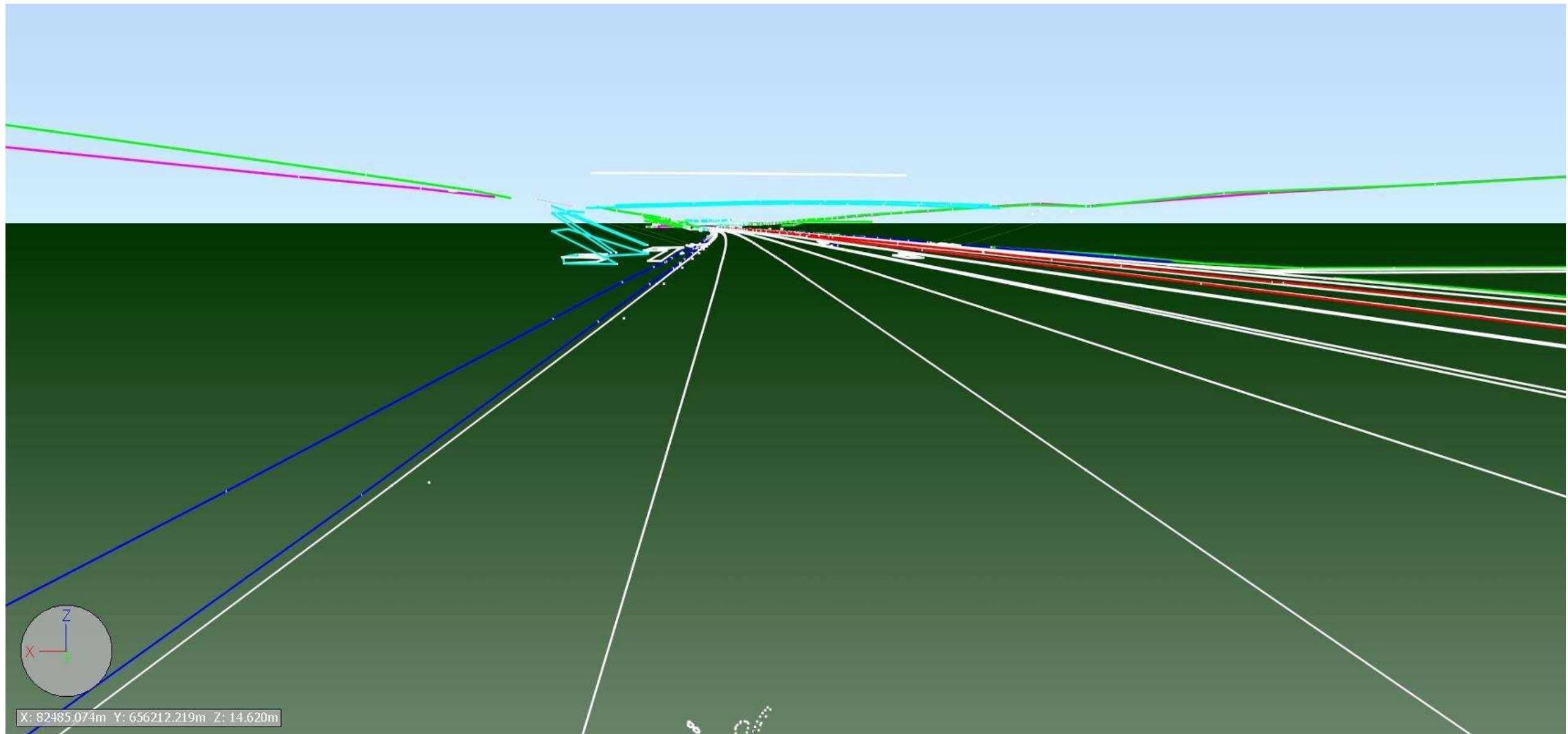
# A421 - Point Cloud Data Collected



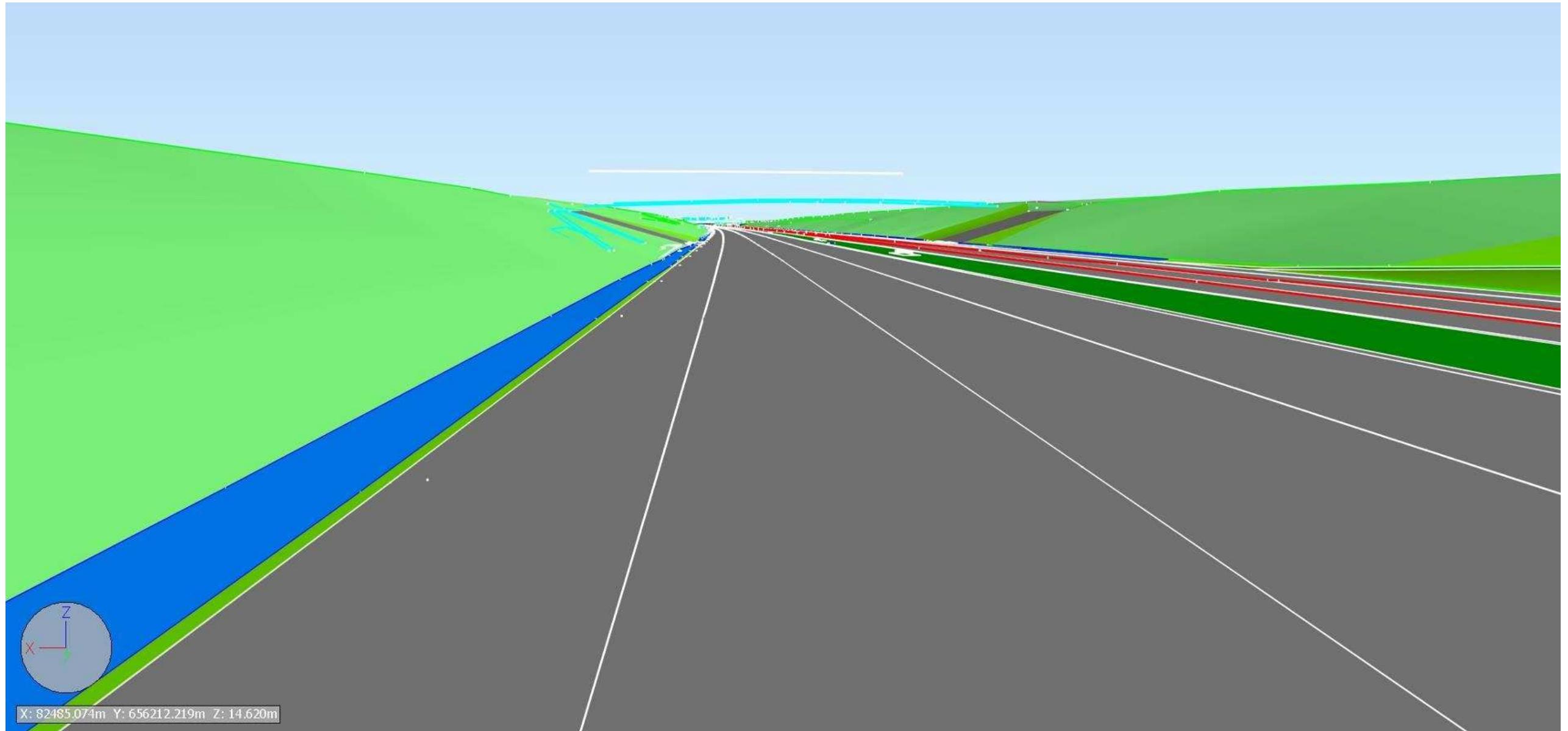
# Large Point Cloud Data sets.... to models



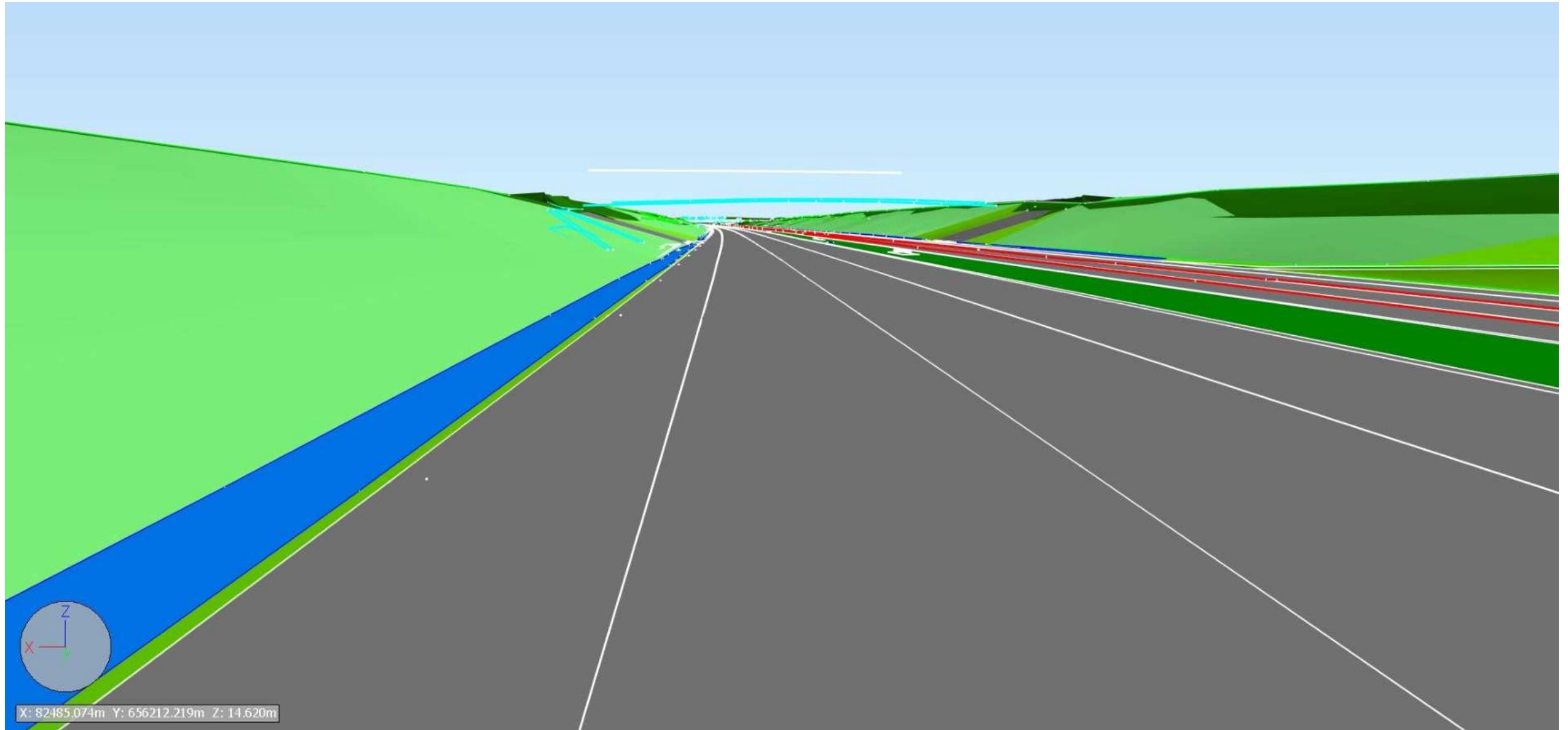
# M25 Section 4 - Topographic Information



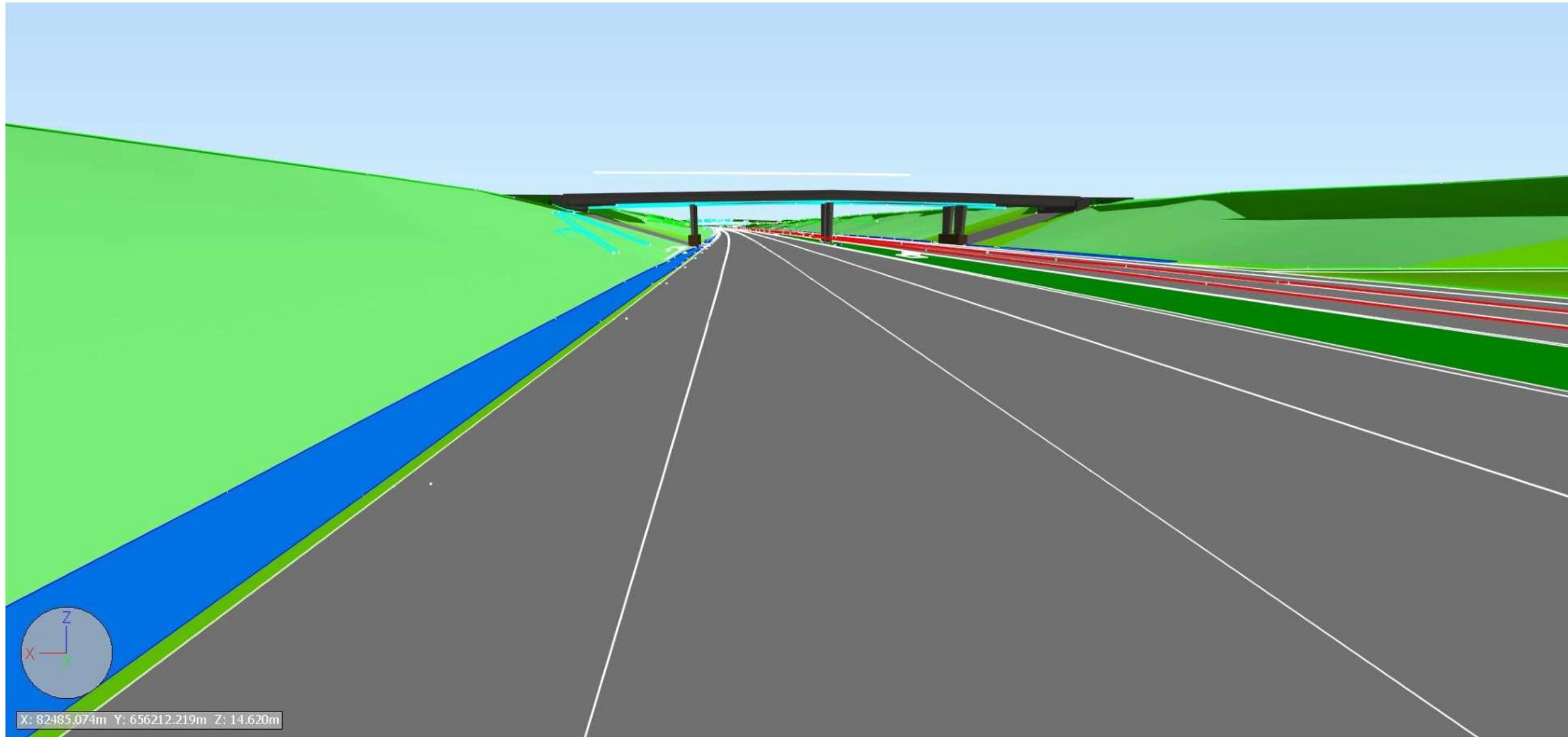
# M25 Section 4 - DTM Information



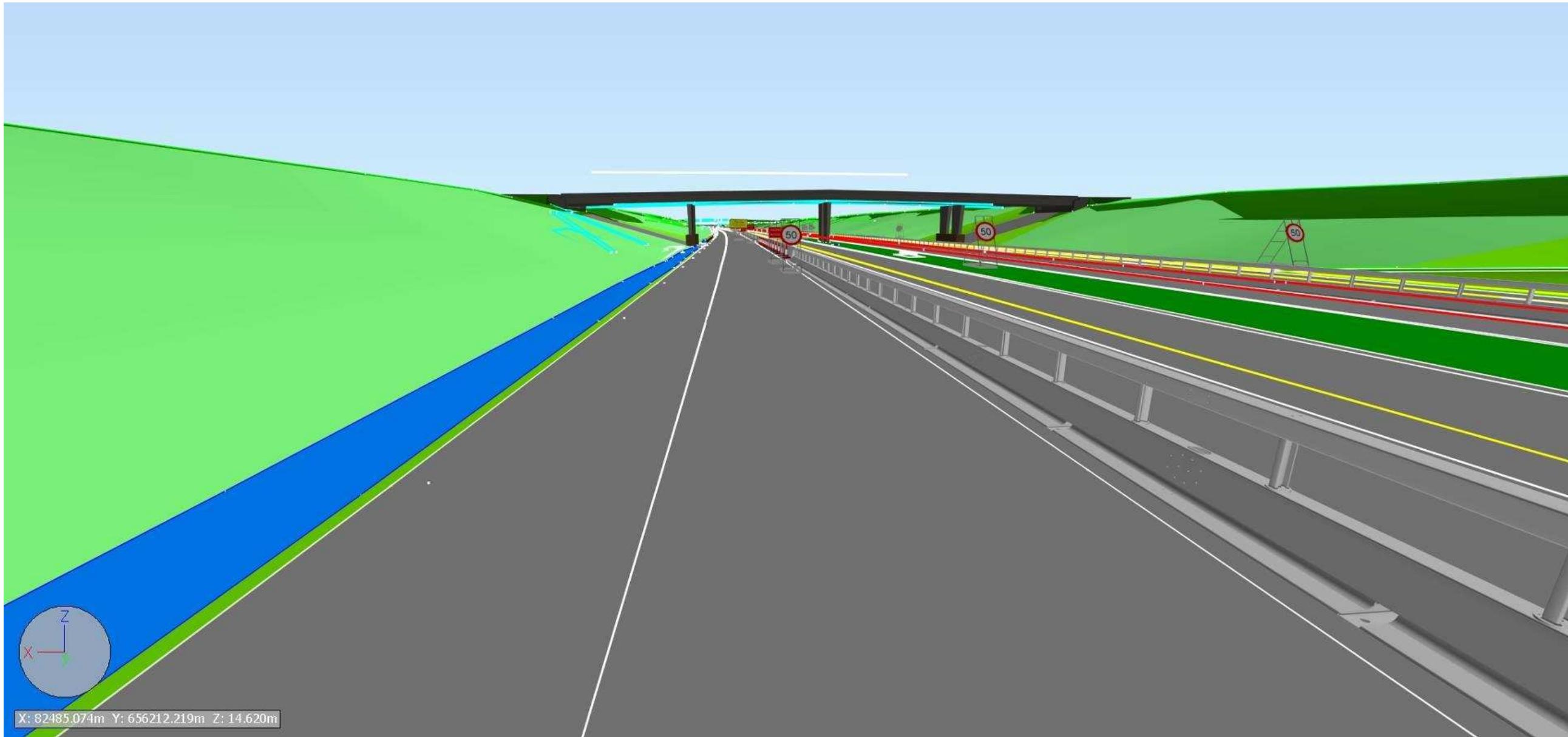
# M25 Section 4 - Lidar Information



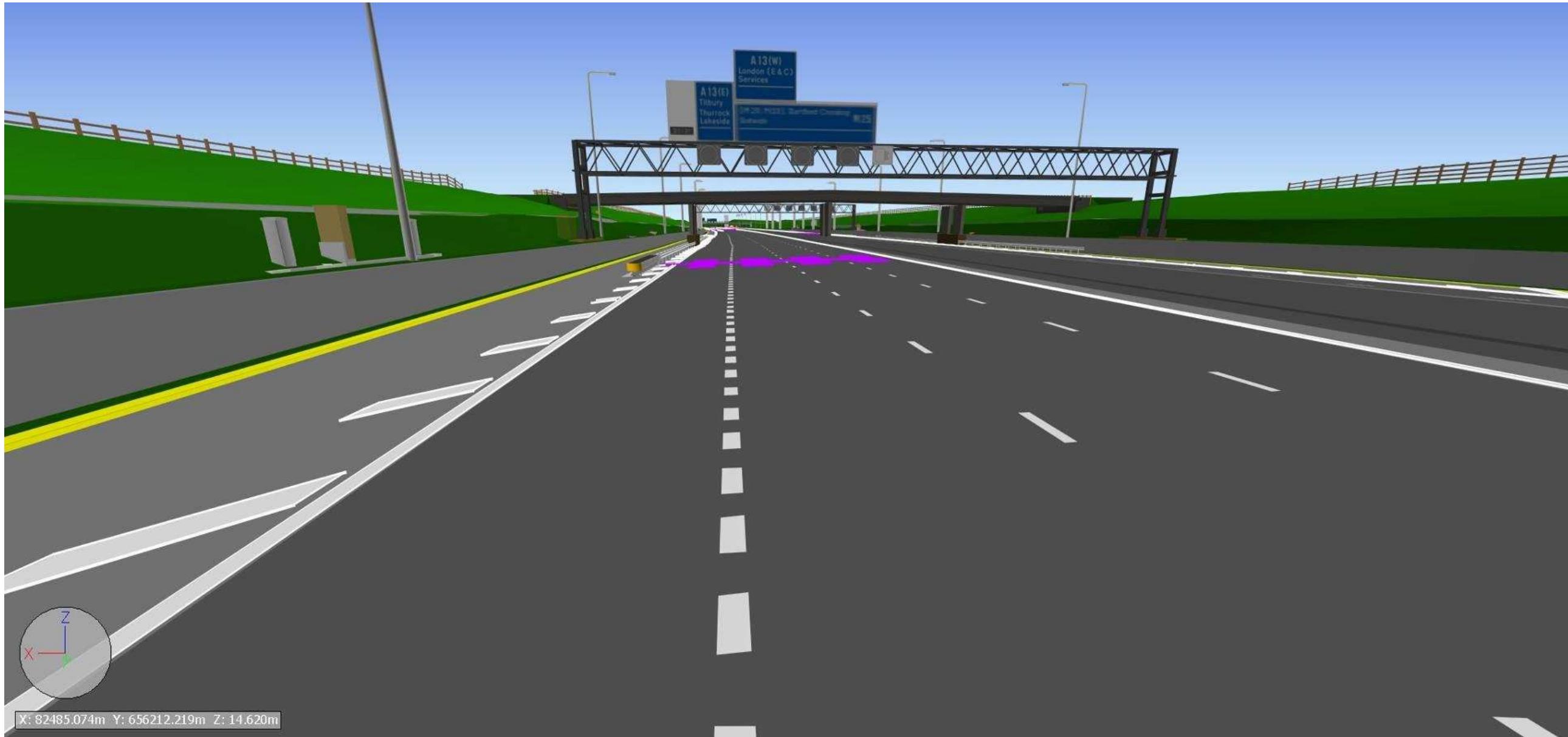
# M25 Section 4 - Existing Bridge structures

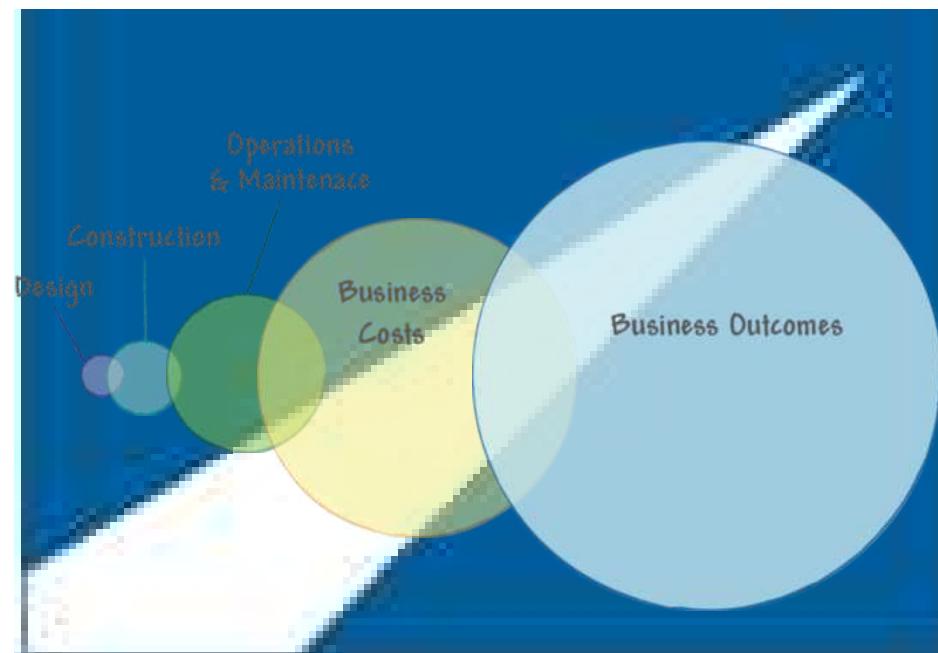


# M25 Section 4 - Traffic Management Design



# Asset Management Model - BIM to AIM?





# BEYOND DELIVERY

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