

HARRINGWORTH TOPOGRAPHICAL AND LASER SCANNING SURVEYS AND 3D MODEL



Above – The Leica P20 scanner used to capture the top and bottom of the Viaduct
Middle - The Harringworth Viaduct – 82 arches and crossing two roads and a river



Donaldson Associates who we have worked with for many years asked us to carry out a topographical survey of the Harringworth Viaduct and additionally to produce a 3D model.

The Harringworth Viaduct crosses the River Welland on the Rutland and Northamptonshire border, and is a grade II listed structure. It comprises 82 arches, each with a 42ft span. 71 of the supporting piers are 6ft thick, with a further 10 being double thickness and spaced evenly along its length.

We set out control points at the top and bottom of the viaduct and coordinated these with the EDM and subsequently orientated them to OS using RTK GPS.

We utilised our laser scanner to capture the topside during a rail possession and this captured all of the required topographical features. For the rails we used a rail shoe and EDM in line with NwRs specification.

At the bottom we scanned at every pier from alternate sides and linked these scans with targets. We also captured all of the control points and used this information to produce an overall pointcloud of the viaduct. After each scan on the bottom we used our iSTAR camera to take panoramic images from each scan position and these were used to colourise the scans.

Detailed notes and photographs were taken to assist in the production of the 3D model in Microstation.

Once all the scanning was completed the individual scans were registered together to produce an overall pointcloud of the Viaduct referenced to OS coordinates. From this overall pointcloud we produced a 3D model and 2D topographical drawing in Microstation.

The traditional topo survey of the area around the viaduct picked up roads, pavements, trees, gullies, manholes etc