



## CP6 Year 4 - SCM3 - Cowie Embankment

### GPS and UAV Drone LiDAR / Photogrammetry Works

**Location:** SCM3 - Scotland

**Principal Contractor:** QTS Group

**Client:** Network Rail

**Value:** £607k

**Timescale:** 1 Day

#### The Project

As part of our CP6 Year 4 works we were required to carry out a survey at a site called Cowie - SCM3 115 miles 0660 yards to 115 miles 1540 yards. The site is made up of a section of raised track with embankments either side, crossing through fields. The topo spec required a full topo of the above mileage and surrounding infrastructure. A topo this size would require approx. a full week on site with 2 surveyors. Then there is the issue of working on steep slopes to consider.



#### The Solution

It was decided that the best option would be a combination of using a GPS kit and a UAV drone to survey the area. Due to the amount of vegetation on site, the DJI Matrice 300 RTK drone was fitted with the DJI L1 (LiDAR) first of all and a number of flights were carried out over the site. Additional planned flights were then undertaken using the DJI P1 camera fitted to the drone and high accuracy aerial photogrammetry was carried out over the area. The on-site drone works were completed in 1 day. A Leica GS18t GPS kit was used to survey in all boundary detail/ drainage features and any other detailed aspects of the site which the drone may have issues reaching. The GPS works were completed in 2 days on site.

## Final Output

All data was downloaded onto separate software packages and manipulated by the surveyor to produce a final Autocad drawing, which was then sent on to the design team. The GPS data was used to confirm boundary lines and drainage features as described previously. LiDAR data was used alongside the photogrammetry data set, to create a full 3D model of the entire site. Accurate ground levels and features were able to be pulled from areas covered in dense vegetation in a matter of minutes, which would have taken a lot longer to gain out in the field using traditional methods. No surveyors were required to set foot on any steep slopes. Use of the drone on this project resulted in works being completed faster and safer without accuracy being compromised in any way. In addition to this, if any further detail is required in area, there's a good chance this will already have been captured.

