Plowman Craven



Battersea Pier UAV Survey

Client:

Network Rail S&C South Alliance

WHAT'S THE STORY?

Conducting a high-accuracy survey of critical rail infrastructure for Network Rail at Battersea Bridge presented a raft of challenges. Our recent involvement at Guildford Station (with three different branches converging) was a difficult project, but with so many elements to consider, Battersea was by far our most challenging Vogel R3D job yet. Here's why... and what we did to overcome it.

Much like at Guildford, we were instructed by Network Rail S&C (switches and crossing) South Alliance to deliver a number of surveying services to facilitate track renewals at a 660-metre section of Battersea Pier. More specifically, the client required a 3D topographical survey, a highly-detailed point cloud and a high-resolution orthophoto covering all 5km of track within that section.

The only track access we needed was to establish survey control, and this was done over several night shifts with a three -man team as soon as a possession was available. With control in place, we were able to start the multi-faceted planning and preparation process.

What did we do?

It goes with saying that drone surveys involve a bit more than turning up with a UAV, flying over the target and then processing the data. Take a look at the information block below for an overview of just some of the elements that required our consideration on this project.

These rigorous processes are also part of the reason why we have the very highest levels of flying permissions from the Civil Aviation Authority and an Operational Safety Case (OSC) that very few companies possess.

AT A GLANCE:

- Full survey for Switches & Crossing replacement
- 5km of tracks covered by Vogel R3D drone
- 3D Topo, Point Cloud & Orthophoto delivered
- Riverside location highly inaccessible & very busy
- UAV survey saved weeks of programme time



Standard possessions and surveys would have been virtually impossible given the multiple lines crossing the river and heading down to Victoria and onto Brighton. So using a UAV was really the only way, and our Vogel R3D is the only drone system proven to be capable of delivering the verified Band-1 P-Way survey required.



Vogel R3D medium zoom

Vogel R3D wide shot

Consult. Trust. Innovate.

Vogel R3D full zoom



How did we do it?

With all the preparations in place we were able to fly the stretch of track in less than a week – capturing data that would have taken months to secure using more traditional methods.

Take-off and landing was performed manually, but once airborne, the drone operated on an automated waypoint flight path that we programmed in as a part of the planning process.

Processing the imagery and data took a further eleven days, with four days to convert to point cloud and a week of CAD work. We delivered to the client a little over three weeks after the first flight, much to their delight. The location made this is an extremely challenging project, but thanks to our detailed processes and meticulous planning we were successfully able to meet the client's needs.

What we delivered

- 3D Topographical Survey: covers all P-Way detail, including all tracks, switches, crossings, ties & ballast.
- Point Cloud: for use in CAD packages by designers, enabling the production of BIM (Building Information Modelling) deliverables.
- Orthophoto: true-to-scale, high-resolution image with all distortions removed so that measurements can be taken and overlaid with CAD drawings.



Preparation Required

Access: Given its location and the requirement for full line-ofsight, finding a take-off/landing area that wasn't too close to surrounding buildings proved a challenge. Network Rail land was overgrown and unsuitable, but after discussions with Battersea Dogs Home (and after allaying concerns about the impact of a drone on their dogs) they kindly agreed to allow us to use an area of their property close to the Network Rail gate.

Proximity: With so many buildings close by, a great deal of time was spent contacting them to secure permission to fly within the CAA-agreed 30m limit. By providing full Risk Assessment (RAMS) and confirmation that the camera was pointed down (thereby not invading privacy) we received full cooperation from both residential and office buildings.

Wildlife: Nearby Battersea Power Station refused permission to fly within 30m but this is consistent with their position to any such requests and is because of the presence of nesting Peregrine Falcons. On the back of this, we pro-actively contacted the London Peregrine Partnership to seek advice. We subsequently engaged the services of a specialist consultant to ensure we did everything we could to avoid disturbing these protected birds of prey.

Security & Risk Assessment: Prior to flying we also informed the Police, securing a CAD reference number that could be presented to any officers who may arrive on site. This project location was also right on the border of EGR187, an area of restricted airspace, requiring us to secure an Enhanced Non-Standard Flying Notification. This was done two weeks before flying and went through the National Air Traffic Service (NATS) and Diplomatic Protection Group for approval.

Network Rail might own the bridge, but the Port of London Authority (PLA) operates the river. The PLA likes to police air traffic above the water, and although we were only flying above the bridge and not the river, we notified them to avoid any unnecessary confusion.

In addition to the above, we also conducted our own Risk Assessments as part of our internal planning process, ensuring that every possible step has been taken to ensure the safety and efficacy of the proposed project.

Link to the web-based version





About Plowman Craven

Plowman Craven provides integrated measurement and consultancy services to the property and infrastructure markets, pioneering the use of technical innovation to deliver proven expertise and trusted results throughout the project lifecycle.

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