



BUILDING A BIGGER AND BETTER PRE-CONSTRUCTION PICTURE

Richard Pidcock, technical director at Central Alliance, explains the importance of drawing on innovative technologies that offer vast improvements in data capture to provide intelligent pre-construction services. With ageing assets becoming increasingly inefficient with time, this data allows clients to understand the way their assets are performing, enabling better decision-making around how they design, operate and maintain for maximum effect.

Data acquisition at the pre-construction stage is playing an increasingly important role in the rail sector. The need for innovative technology to improve the quality and quantity of data capture is essential, but more importantly new technology is enabling us to reduce the exposure and risk to personnel working in the railway environment.

Increasingly problematic emergency works on the rail network, including landslides and structure failures, emphasise the need for high-quality data captured quickly. In recent years, earthworks failures in particular have resulted in significant (unforeseen) cost to Network Rail and stakeholders. Disruption is often far-reaching and difficult to fully quantify.

Central Alliance has invested heavily in new technology and equipment to enable high-quality data to be captured on restricted access sites, such as railway earthworks, in a much safer way. Alongside our terrestrial and airborne technology, we are closely involved in the commercial use of spaceborne technology for civil engineering, utilising satellites previously used in the oil and gas industry. These commercial applications of satellite technologies are available now, the data from which can be used to solve problems, warn against failures, change the

use of resources and add value.

Bespoke drilling rigs to tackle problematic sites

Our commitment to finding solutions for acquiring high-quality ground investigation data on restricted access sites has resulted in the introduction of a range of bespoke drilling rigs, including modular dynamic sampling and rotary rigs, long reach excavator and telehandler mounted platform rigs. Our new specialist slope climbing rigs enable us to carry out ground investigation on slopes in the same orientation, location and angle as proposed remedial works, such as soil nailing or electrokinetic slope stabilisation techniques, significantly minimising the risk of unforeseen ground conditions. They also enable us to undertake trial construction techniques as part of the ground investigation to inform more accurate pricing and methodology for construction.

LiDAR Mobile Mapping and UAV photogrammetry

Our geo department works closely with our survey department providing a more integrated approach to projects. Our recent acquisition of the ROBIN multi-platform mobile mapping system, the only one in the UK, enables us to access slopes and earth-

works to provide survey grade accuracy point clouds and 3D ground models. Similarly, the use of unmanned aerial vehicles (UAVs) to provide photogrammetry, point cloud data, aerial imagery and HD video prove useful for assessing geomorphology.

Eden Brows landslide

Central Alliance provided a variety of specialist pre-construction services to Story Contracting in this difficult-to-access location. Our geotechnical department carried out detailed ground investigations including rotary boreholes using a special platform drilling rig mounted on a long reach excavator that safely carried out investigations on the steep upper slope. In addition, our survey department carried out topographical surveys of the slope and adjacent land, including a bathymetric/river bed survey using a remotely-controlled sonar boat. Laser scanning was used to capture detailed information around the scour area where direct access was not possible, and UAVs were used for aerial imagery and video footage that clearly showed detail of the slope failure.

FOR MORE INFORMATION

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