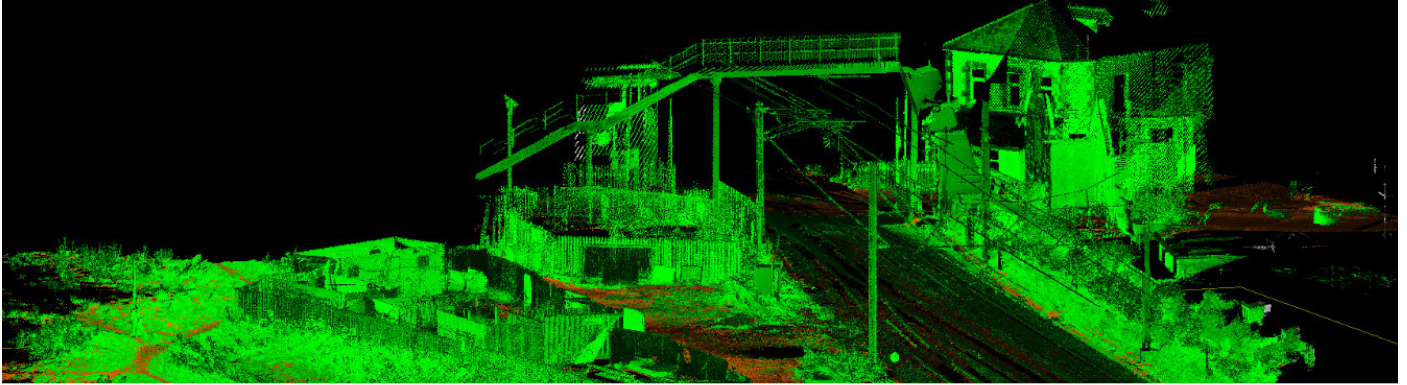


## CASE STUDY

# Hest Bank Station, Lancaster Network Rail/ Story Contracting / Central Alliance

ROBIN Mobile Mapping technology minimises cost, health and safety risks and maximises programme value.  
February 2017



### Project Background

Story Contracting required data acquisition on a coastal rail project in Cumbria. The fundamental constraints of this project were the considerable overall site size and track access limitations which required coordination with tidal peaks.

### Project Scope

Access on Network Rail infrastructure was limited to one cess only under a site warden warning safe system of work. Conventionally surveying the rail corridor under these restrictions would have been extremely time consuming with potentially large amounts of missing data due to access problems. Central Alliance had originally considered acquiring the data with GNSS systems for general topography and total stations for reflector-less running edge (where possible) rail measurements. This would have meant installing permanent control for use with the total station, increasing time and labour required within the rail corridor. Outside of the corridor our concern was safe, accurate and efficient capture of information of the rock formations, embankments and tidal flats without prolonged direct contact using instruments like a total station or GPS system.

### Project Deliverables

The ROBIN provided the surveying solution as we could traverse the whole area (approx 225,000m<sup>2</sup>) along safe routes, capturing data on the rock formations, slopes and tidal flats without direct access on hazardous surfaces. In addition, to complete the works conventionally using total stations, site time would have been 4 days with further allowances being made for poor rail access and infill of details in areas not within the line of sight of total stations. Our staff would have been exposed to both on/off track site hazards for greater periods of time with a least 2 x 2 man team being present.



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SURVEY

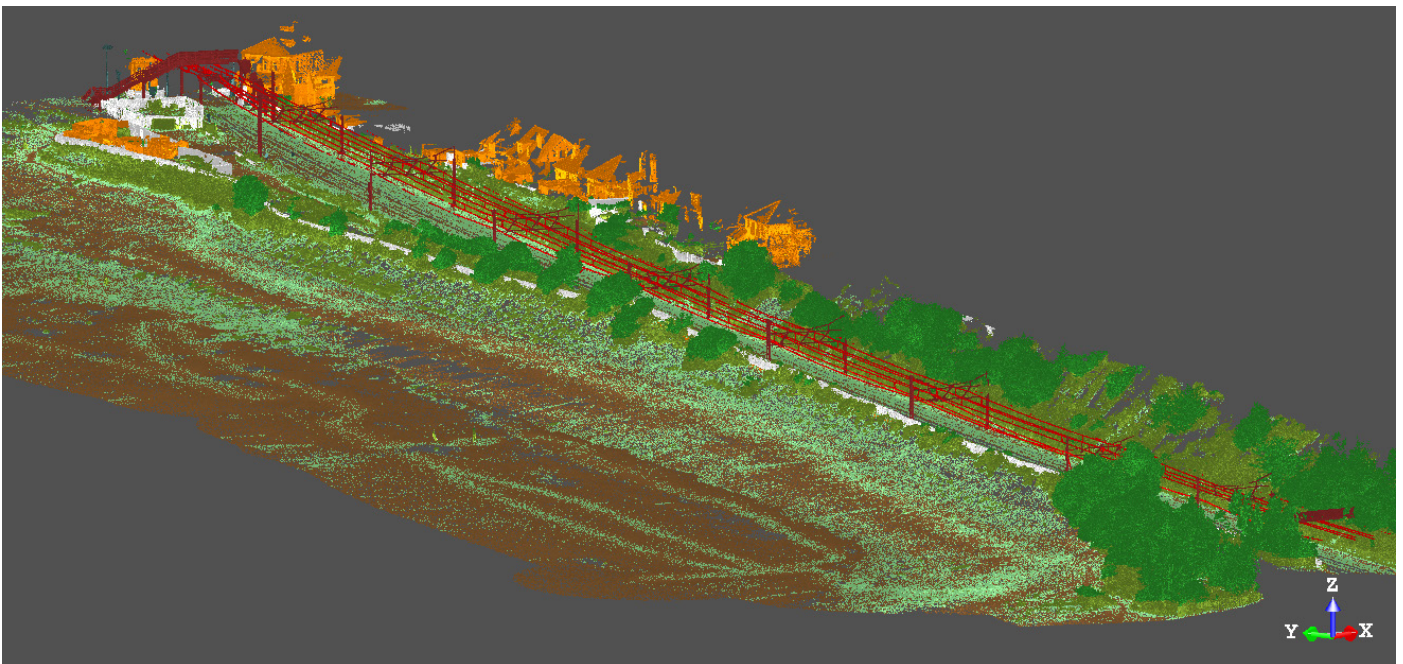
## Project Benefits

**Reduction in time required on site means project cost savings** - due to the lack of track access required (i.e. no possession time needed), from Network Rail award to survey start was around 3 weeks as opposed to approximately 10 weeks if track access had been required. Upon arrival, Central Alliance only required 3 hours of total on-site time including just 1 hour of ROBIN survey data capture, in comparison to 4 days using traditional methods.

**Vast improvement in data capture and modelling capability** - In just a short period, the ROBIN was able to collate 1.1 billion points of data that time, including detailed profiles of tidal flats, channels and rock formations along the beach, providing a true depiction of the ground model as opposed to conventional spot level grids. Using conventional methods on a project of this size, over 4 days, around 10,000 points of data would have been captured so an exponential increase in data capture!

**Less manpower required means safer working practice** - the team consisted of only 2 surveyors, one for coordinating ground control with GNSS (to increase the accuracy of the point cloud) and one operating the ROBIN in back-pack mode. A total site time reduction of over 90%. The reduction of physical access requirements to areas such as track, failing embankments and steep, uneven rock faces and the reduction in the H&S considerations of the project were appreciated.

**Data provided offers valuable information for other project requirements** - captured data on site provided many other uses for Story Contracting in addition to the final survey data (conventional string model). Point cloud data is being considered for design collaboration/update meetings, site inductions and assistance with enabling works phase planning, i.e. position of site cabins and access routes. Conventionally captured data would have had minimal information to support this.



“With the challenges of acquiring data in often difficult to access locations that pose a severe safety risk, gathering LiDAR data quickly and accurately becomes invaluable where an accurate representation of geomorphological features is required. Central Alliance were able to deploy the ROBIN quickly to site and we have been very impressed with the quality of the data gathered in such a small amount of time - we'll definitely be using the ROBIN again”

**Marc Armstrong, Project Agent, Story Contracting**



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# About Central Alliance Mobile Mapping capability - the ROBIN

Central Alliance's unique multi-platform mobile mapping system exceeds the performance of other leading survey tools, capable of being back-pack, vehicle or UAV/Drone mounted, the ROBIN is the UK's only truly multi-platform system. Central Alliance are the first and only survey contractor with this capability.

Approved up to band 2D of the Network Rail accuracy table and suitable for the acquisition of soft details and earthworks, the ROBIN integrates 2GNSS antennas (for accurate positioning), an IMU and a Reigl precision laser scanner. Combining the GNSS readings with an IMU flightpath will provide an accurate geospatial base for the points collected by the laser scanner.

The ROBIN system will most frequently be utilised in two modes for efficient data capture. Initially in back pack mode when in pedestrian only areas, or mounted to a vehicle when operating in the highways environment. This data has comparable accuracy to that captured by terrestrial laser scanning, whilst being far more productive in reducing site time and improving aspects of site safety.

## About Story Contracting

Story Contracting Limited is a growing, family owned, highly successful and award winning Civil Engineering Infrastructure Company based in the North of England and Scotland.

Story Contracting pride themselves in working collaboratively with their clients to provide value adding solutions across Property, Civils, Track, Earthworks and Drainage projects throughout the UK. With an impressive portfolio of projects showcasing their capabilities, Story Contracting are focussed on **exceeding client expectations**.

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