

M1 Managed Motorways Widening Scheme

M1 Motorway, Junctions 28-31



Client
Costain Environmental

Consulting Engineers
Mouchel Consulting

Solution
52 Boreholes

Duration
20 Weeks

Year
2013

Van Elle was chosen to carry out ground investigation on a 20 mile section of the M1 motorway between J28 and J31 to provide design information for the new structures associated with the 'Managed Motorways' active traffic management scheme. Specifically, the ground investigation was to enable the design of gantry foundations, earthworks structures and to investigate for the presence of former coal mine workings and any issues with ground stability.

The Geotechnical team was on site for 20 weeks and drilled 52 no. boreholes to depths of up to 36m below ground level, using a combination of cable percussion boring extended by rotary coring, or by using a tracked dynamic sampling/rotary coring rig. There were up to 5 drill rigs on site at times which meant that the works had to be carefully managed for maximum efficiency.

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Key Challenges and Solutions

The ground investigation works were carried out on nightshift under Hard Shoulder / Lane 1 closures. The extensive traffic management (TM) required for the ground investigation works needed careful co-ordination with other existing TM bookings to avoid double booking the same road space. Failure to co-ordinate the TM would result in abortive work and unrecoverable costs incurred.

The TM was only available for set periods at certain locations. Programming the works to ensure drilling was completed before the TM notices expired was a major constraint to the programme but the Van Elle team managed it well.

Removal of the Armco safety barriers was required to access several borehole locations. The barriers had to be removed by a specific crew / vehicle which was in high demand and required booking well in advance of the works.

It was common for the planned TM bookings to be changed at short notice by the client due to emergency works, adverse weather or road traffic incidents. Each time the TM bookings were altered, the whole works programme had to be re-arranged.

Several boreholes required drilling with water or air-mist flush which meant that water and slurry was deposited on the ground around the drill rig.

The ground investigation was carried out over winter and several boreholes required drilling with water or air-mist flush. The use of water flush Management of the flush and arisings during freezing weather was challenging as the formation of ice on the carriageway would create a hazardous working environment and would delay the removal of the traffic management and hand back of the carriageway

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