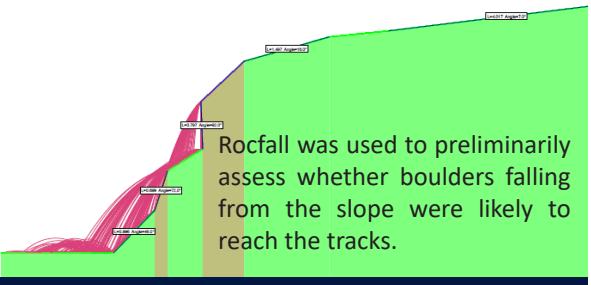
Geo-Environmental

# Berkswell Cutting| Case Study

## Services Supplied on these Projects:

- The site works were undertaken by means of rope access inspection over a period of five day shifts between 23rd January and 27th January 2017.
- To facilitate the inspection, vegetation was cleared from the slope by a rope access de-vegetation team from SCA Group.
- De-vegetation was kept to a minimum so as to minimise the risk of root mass degradation which might reduce the binding effect of the root-mass and promote slope instability.
- A visual inspection of any rock exposures was made which included recording joint or discontinuity spacing, bedding, rock exposure shape and structure.
- A series of vertical traverses were made along the length of the embankment to measure slope length and angle, so as to record slope cross section.



Rocfall was used to preliminarily assess whether boulders falling from the slope were likely to reach the tracks.

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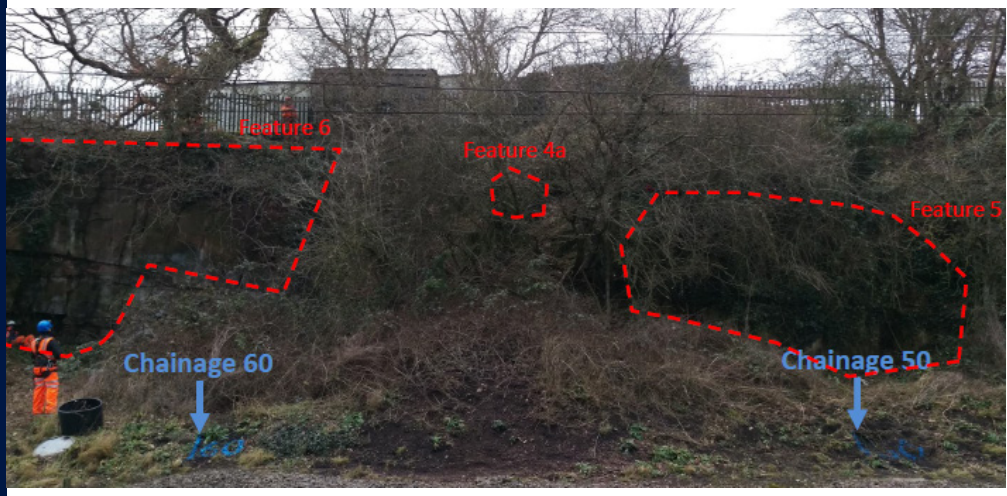
Geo-Environmental Services Limited was instructed by SCA Group on behalf of J. Murphy & Sons Limited to undertake a Geotechnical Assessment on a cutting (approximately 110m in length) on the northern side of the track situated approximately 560m to the south-east of Berkswell Station near Coventry.

It was understood that on 7th January 2017 near Berkswell Station, Coventry, a rock fall occurred within a railway cutting and sandstone blocks came to rest on the up main cess rail.

As such, the objectives were to undertake a geotechnical preliminary risk assessment of the existing cutting.




The inspection had identified that roots from trees and ivy had penetrated discontinuities causing root jacking of joints. An area of displaced blocks were observed angling downslope. In addition, rock falls were noted along the entire length of the embankment. There was evidence of spalling by freeze-thaw action due to saturated soil packing in discontinuities.

It was considered that applicable remedial techniques are likely to comprise dentition of rock overhangs, de-vegetation and draped rock netting over rock exposures to safely contain any rock falls. An urgent recommendation was made for preliminary action (scaling) on the rock face, in two areas to be undertaken.

To determine drilling conditions within the existing soil slope and underlying sandstone bedrock for anchoring draped rock netting, it would be necessary to undertake intrusive followed by detailed slope stability analysis, modelling and design.

# About the project:

# Applicability of the project:

Across the UK Network Rail manage a portfolio of over 190,000 earthwork assets that includes:

- Embankments – a construction that allows railway lines to pass at an acceptable level and gradient over low lying ground.
- Soil cuttings – an excavation that allows railway lines to pass at an acceptable level and gradient through the surrounding ground that is composed entirely or predominantly of soil.
- Rock cuttings – an excavation that allows railway lines to pass at an acceptable level and gradient through the surrounding ground that is composed entirely or predominantly of rock.

As most of the rail infrastructure slopes are in excess of 150 years old and do not offer comparable levels of capability and resilience to modern engineered slopes. These can fail if not maintained and therefore rock slope stability assessments play a key role in maintaining rail infrastructure.

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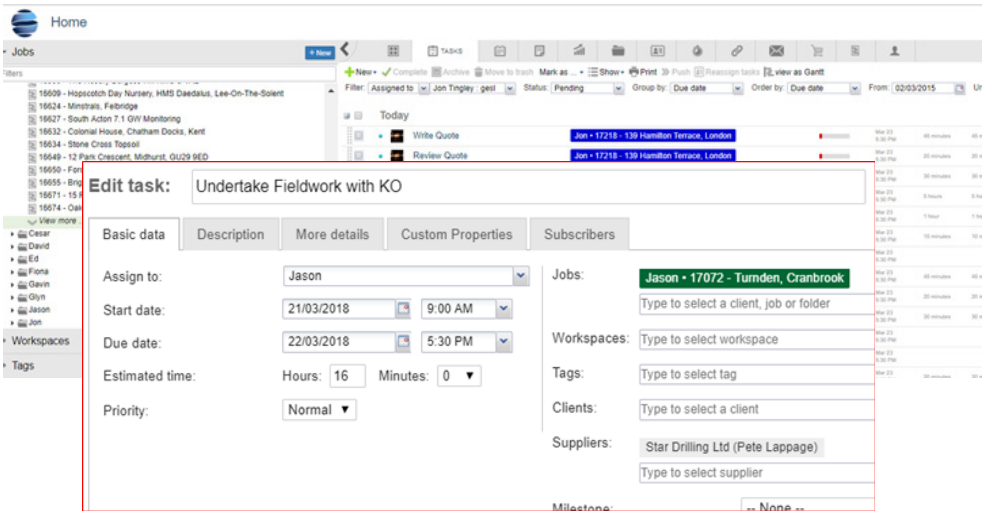
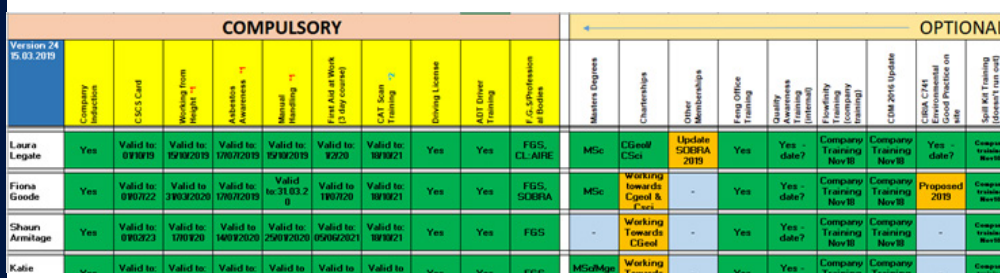
A risk on any project such as this, is co-ordinating resources to ensure that the sequencing of works is done in such a way that there are no clashes of resource with other parallel projects and delays on the project itself. Inevitably you also have to be able to react to life events such as staff sickness, equipment failure etc, that require quick resolution. On this project we initially lost 2 track days due to an audit by Murphy Group and then Network Rail.

This risk was mitigated by our use of on-line project management software to co-ordinate all activity in terms of both staff and suppliers, across all of our sites. Because the solution is cloud based it is available to all staff in the field and offices. This allows managers to easily see which staff and suppliers are working on jobs and even individual tasks, and when they are undertaking them – in real time. This allows us to quickly reassign work to other available staff in order to meet the needs of projects with a fast turnaround.




Maintaining quality of deliverables on projects is always a key issue, but we manage this risk in a number of ways.

No technical or client document is produced by Geo-Environmental that is not peer reviewed by two senior members of staff. The policies and processes for ensuring that quality of deliverables is achieved are available to all members of staff on-line and can be viewed in the field on a mobile device. These are continually reviewed throughout the year by internal audit, our professional advisors and accreditation bodies such as RISQS, UVDB and our UKAS accredited ISO Auditors DAS. Examples of audit reports will be provided on request.

To ensure that all staff remain up to date, improve their capabilities and provide the best services and advice to our clients, we have a structured training plan, a copy can be provided on request. These are regularly reviewed and augmented with our own in-house training days and tool box talks.