

## Geotechnical Division Case Study

### Commins Coch

**Working in collaboration with Network Rail, Griffiths delivered rock cutting remediation works to mitigate significant safety and performance risks along the bi-directional railway between Machynlleth-Shrewsbury.**

Commins Coch rock cutting is located 10km east of Machynlleth where the bi-directional SBA2 railway crosses under the A470 trunk road via the Aberystwyth Road Over bridge.

The works comprised of 220m linear of active rock netting, pattern and spot bolting to prevent potential failure features compromising the operational performance of the railway, enhanced by a single line in rural Mid Wales with limited access to alternative modes of transport.

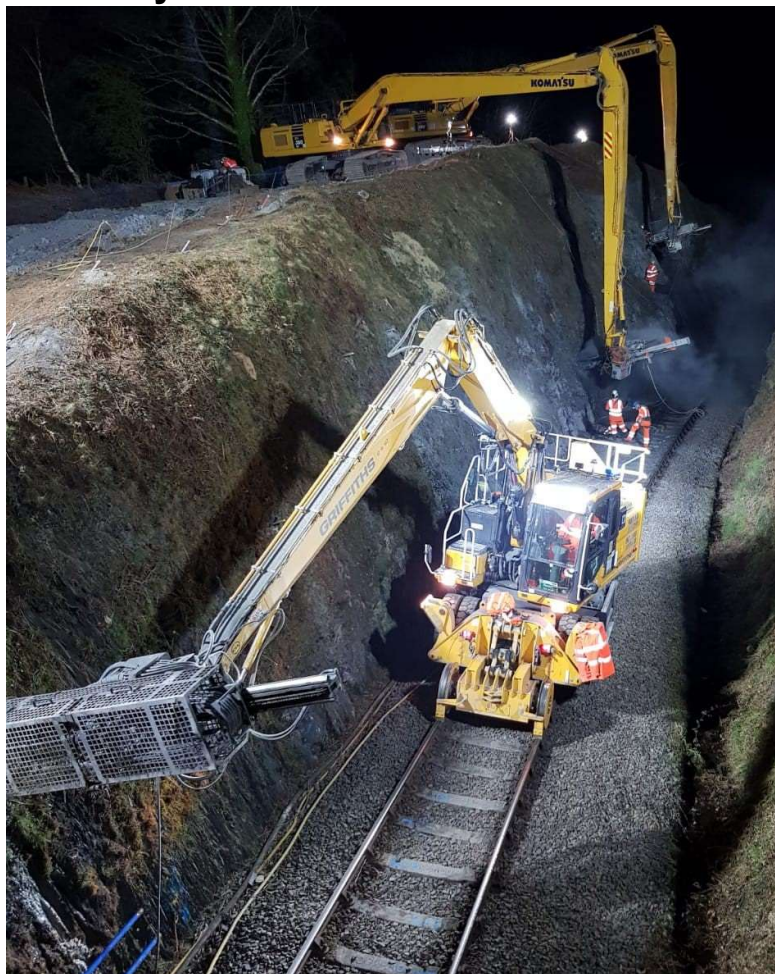
Griffiths delivered phase 1 of the works between July-August 2016 by completing several thousand m<sup>2</sup> of dense mature vegetation clearance using safeguarded rail possessions. The works took approximately 6-weeks to complete including supervising Network Rail (NR) Designers when undertaking intrusive inspections using rope access techniques.

Prior to site clearance works commencing, Griffiths employed environmental specialists, Ecovigour to undertake desk top studies and on-site inspections to review the likelihood of European Protected Species (EPS), Badgers and invasive plant species being present in the vicinity of the worksite.

Site investigations provided evidence of Badger setts on the cutting crest and Dormice activity throughout; therefore, all works would require specialist species licenses granted by Natural Resources Wales (NRW) and the Welsh Government (WG) before works could commence.

Acting on our behalf, Ecovigour liaised directly with relevant statutory bodies, meeting representatives from each on site to agree the methodology required to complete the works safely without compromising the safety of protected species and the operational railway.

Agreeing to use vegetation cleared during the works provided positive connectivity for Dormice to familiar habitats, therefore supporting the future of the protected species.



Pictured above: RRV and long reach excavators installing rock bolts

Using advice from WG representatives, Network Rail agreed to close off the Badger setts completely by installing a series of gates to exclude Badgers from re-entering. Following the exclusion period, excavation works determined the Badgers to be a contributing factor to several of the historical rock falls due to water ingress undermining the competent rock.

Griffiths operational leads continued working with Network Rail Design Delivery and the IP Wales project management team following the site clearance phase to develop the design, methodology and price to complete the main works which commenced in April 2019.

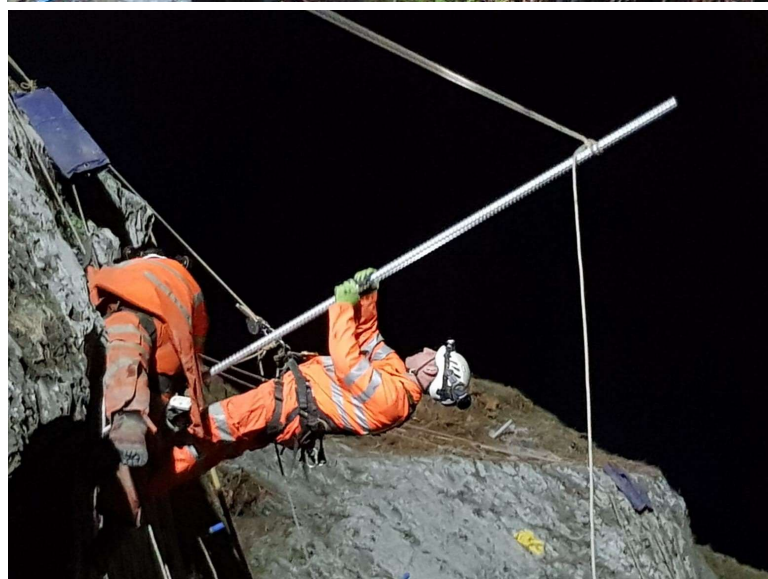
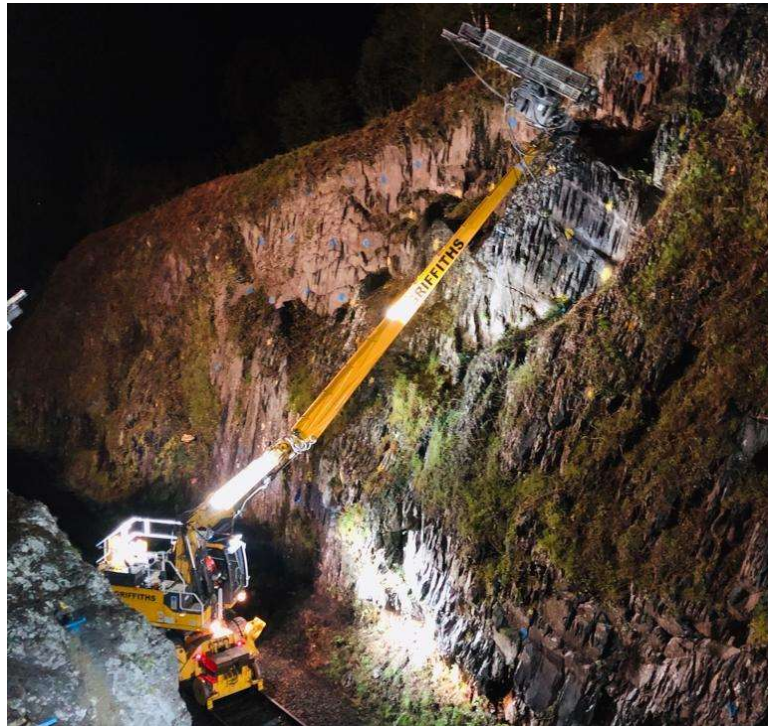
Comprising of a rock cuttings up to 19m in height requiring 2500m<sup>2</sup> of G65/3 Tecco and spider mesh all secured in place by 660No rock bolts varying in length between 4-6m and 32-40mm in diameter, Griffiths and Network rail made a commitment to eliminate any form of hand drilling and reduce manual handling so far as reasonably practicable.

Working with our supply chain, Griffiths developed a unique 10m dipper arm to fit on our Road Rail Excavator (RRV) enabling all bolts to be installed mechanically, usually undertaken with drills attached to acrobatic frames or traditionally by hand in in-accessible locations.

Mobilising the main compound in the NR maintenance yard near Talerddig and the nearest RRAP at Cemmaes road to mobilise the RRV, Griffiths utilised assets owned and managed by NR, therefore reducing costs borne by the client to rent land adjacent to the works and more importantly allowing mobile plant to move freely around the cutting crest without potential conflict with pedestrians and site vehicles.

Using three of our hydraulic rock drills fitted to 2No 36t long reach excavators and our own RRV, works were completed using safeguarded possessions planned and managed by our in-house safety critical rail staff.

Utilising our in-house rope access technicians alongside items of innovative equipment, Griffiths managed to self-deliver all works within the 12-week programme duration, without exceeding the client's budget, with no accidents or incidents, without compromising the health and well-being of our workforce, and exceeding the clients KPI's.



Pictured above: Commins Coch-July 2021- 12 months after works were completed.

Pictured above:

Fig 1) Rock bolts being installed by Griffiths rope access technician

Fig 2) RRV complete with 10m dipper arm installing rock bolts.

Fig 3) Griffiths rope access technicians installing 6m long 40mm rock bolt.

## Project details at a glance

Client:	<b>Network Rail</b>
Location:	<b>Commins Coch, Powys, Mid Wales</b>
Completed:	<b>July 2020</b>
Value:	<b>£1.33m</b>
Contract:	<b>NR9</b>