



Geotechnical Division Case Study Wyndcliff Rock Face

Bulk rock removal and rockfall protection system installation

Located 1km North-East of St Arvans near Chepstow, Wyndcliff Wood is part of the Wye Valley woodlands, a special area of conservation (SAC) situated in the picturesque Wye Valley, Monmouthshire.

The woodlands are home to one of the best viewpoints in the Wye Valley known as the Eagle's Nest and very popular with walkers and tourists coming from far a field to take in the breathtaking scenery overlooking the river wye towards the seven estuary and on a clear day as far as the Cotswold and Mendip hills.

Situated 200 meters from the main parking area and adjacent to the A466 carriageway, the rock cutting known locally as Wyndcliff rock face has caused major disruption for road users, local authority, local economy and tourists when sections of the fragmented cutting broke away blocking the carriageway.

In March 2021 Griffiths Geotechnical were appointed by Monmouthshire County Council to remediate the 40m length of rock cutting which broadly consisted of reprofiling the rock face and installation of timber fencing around the perimeter. All works were required to alleviate congestion and ultimately maintain safety for road users from falling rock hazards.

Located in a SAC inevitably meant the likelihood of protected species using the multiple fissures in the limestone rock face to live. Griffiths in house rope access technicians worked with the client's environmental clerk of works to undertake an intrusive survey of the rock face which confirmed the presence of bats previously recorded as part of the initial preliminary environmental survey.

With temperatures reaching a maximum of 6 degrees overnight, excavation works were postponed to eliminate disrupting the hibernating bats. Griffiths worked in collaboration with the client's environmental specialist recording temperatures over a 24hr period until a consecutive period of 7-days with temperatures reaching 8 degrees and rising.



Pictured above: Rock Face adjacent to the A466 St Arvans-Tintern prior to re-profiling works.

To undertake the works safely, a significant diversionary route for road traffic needed implementing. Griffiths employed Quantum Traffic Management to establish and maintain the route for the duration of the contract.

Implementing a lengthy diversionary route for traffic is typically straight forward, however, not so for the many walkers and cyclists who use the roadside footpath and carriageway to navigate their way around the many rural walks and cycle routes. Taking cognisance of this, Griffiths implemented a system to manage cyclists and walkers through the worksite by strategically locating signs and watchmen, ensuring excavation works were halted allowing safe passage when required.

Works commenced by removing sections of the rock using a long reach excavator to create a platform high enough for the excavator to safely remove the 1000m³ material from the 18m high rock outcrop.

Working at Height presents safety issues in many sectors of the construction industry, but not for Griffiths who are members of the Industrial Rope Access Trade Association (IRATA) and directly employ some 30 rope access technicians with competencies varying from Level 3 supervisor to level 1 technicians. Utilising our rope access technicians alongside the long reach excavator ensured clear and concise communication at the top of the rock face, and all loose material being hand scaled as works progressed, thus eliminating future risk for road users and the general public.

During the excavation it became obvious the clients' requirements to create benches in the rock face to prevent further rockfall wouldn't be possible due to the fragmented nature of the rock. Griffiths geotechnical design engineers worked with the client's principal designer to develop a simple solution by installing a passive rock netting system covering the feature from crest to toe.

Utilising the long reach excavator complete with a hydraulic rock drill attached, Griffiths were able to install 75% of the two-and four-meter-long rock bolts without compromising the health and wellbeing of its workforce. The remaining 25% were out of reach for the excavator. Utilising lightweight rock drills bolted onto aluminium frames, Griffiths were able to winch the drills into inaccessible positions removing the need for hand drilling, often employed by comparable companies.

Griffiths focus on mechanising operations so far as reasonably practicable to ensure the health and wellbeing of our staff is given due consideration when undertaking any activity. By utilising innovative methods to deliver the works, Griffiths were able to eliminate HAVS, reduce fatigue and minimise manual handling.

Griffiths recognise the impact our projects have on the local environment and the benefit of circular economy. Utilising our own recycling division in Cardiff, all 1000m³ of rock arisings were crushed, screened and re-used as fill on local projects which exceeded the client's KPI expectations of 95% diversion of waste from landfill.



Project details at a glance

Client: **Monmouthshire County Council**

Location: **Wyndcliff, near St Arvans**

Completed: **May 2021**

Value: **£200,000**

Contract: **NEC4 Option B**

Pictured above:

TOP: Long reach excavator removing material from rock face

CENTRE: Griffiths rope access technicians hand scaling loose material

BOTTOM : Mechanical installation of rock bolts using excavator and skid mounted drills.

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