Case Study

Nenthead Car Park, Cumbria, England

The Nenthead car park is located in Cumbria. Nenthead is one of the highest villages in the UK – approximately 457 m above sea level. Nenthead was built in the middle of the 18th century and became one of the earliest purpose-built industrial villages in Britain – it was a mining hub for lead and silver ore across the North Pennines region. The mines closed down back in 1961 but a heritage centre now exists within the village to attract tourists throughout the year. Nenthead features some of the most aesthetically pleasing mines in the UK, with several miles of underground mines still accessible to explore today.

However, the effects of metal mining have taken its toll on the surrounding landscape in Nenthead; high hydraulic flows from the River Nent led to erosion of the spoil heaps, causing contamination to the water. The high levels of pollution had a significant impact on the habitat within the river. The Coal Authority needed to urgently stabilise a riverbank of the River Nent to prevent further erosion adjacent to the car park site. Gripple was approached to provide an alternative solution to the cost and labour intensive traditional methods of stabilising riverbanks. A Gripple engineer visited the site to perform pull-out testing, and to survey the conditions on site. Based on core civil engineering principles and the ascertained soil conditions of the site, Gripple was able to propose a value-engineered solution to stabilise the riverbank.

The Coal Authority wanted a solution that would cause minimal disturbance to the environment. The use of Gripple products on the project minimised civil engineering works associated with alternative methods. The Terra-Lock™ system also meant main contractor, JN Bentley, did not have to install as many gabions to reinforce the riverbank - thus saving tonnes of additional imported rock from being delivered, handled and installed.

Gripple's Terra-Lock™ system is an innovative method of geotechnical engineering for heavy erosion and slope stability – the system delivers significant time and labour savings, provides immediate security to the ground structure while also facilitating vegetation growth. The GMAT-350 is a long lasting, environmentally friendly erosion control mat which provides an effective erosion control surface and a vegetative root reinforcement layer, while the TL-100 and TL-A4 ground anchors are designed to provide efficiency, maximise load capacity and allow vegetation establishment through perforations.

Once installed, the GMAT-350 was hydra-seeded and top soiled - perforations in the TL-100 top plate are designed to facilitate vegetation regrowth, delivering a system that blends in well with the natural environment. The completed project prevents around 1 tonne of lead, cadmium and zinc from entering the river, and contributing to 60 km of polluted river. Throughout the project, Gripple provided ongoing technical onsite support, as well as a post-project delivery service that included pull-out testing to varying loads, training and sign-off.

Client	Coal Authority as part of the Water and Abandoned Metal Mines Programme, funded by Defra and North East Local Enterprise Fund
Main Contractor	JN Bentley
Gripple Terra-Lock™ System	TL-100, TL-A4, GMAT-350 and TLP-2 installed with Gripple Petrol Driver and JackJaw®
Application	Riverbank Stabilisation

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