

# Haweswater Aqueduct



## MGS Rhino Corebox helps ground investigation for the Haweswater Aqueduct Resilience Programme

A major infrastructure project by United Utilities made plans to assess and renovate a historic aqueduct in the North West of England. The Haweswater Aqueduct Resilience Programme (HARP), focused on restoring six vital tunnel sections to prevent any future risks.

United Utilities decided to specify the use of MGS's durable Rhino® Coreboxes to transport and store core samples that then could be used for laboratory testing.

By safely and cost-effectively transporting the core samples, the engineering contractors were able to make data-driven decisions in their aqueduct renovations.

## Challenge

The Haweswater aqueduct is a historic feat of engineering and has served 2.5 million people in Cumbria, Lancashire and Greater Manchester for over sixty years. However, due to the aqueduct's old age, the pipelines were in need of modern inspections to find any potential issues that could pose future risk to both water quality and supply.

Prioritising the worst affected areas, six tunnel sections along the length of the aqueduct needed immediate ground investigation and would pose operational challenges due to their size, totalling 52km in length.

To find out how these vast networks of tunnels would need to be renovated, ground investigation contractors would need to drill core samples and transport them back for analysis.



Given the scale of the project, the core samples would need to be transported in safe, spacious and durable corebox containers.

Furthermore, United Utilities and their ground engineering partners needed to deliver high quality ground investigations under a limited time and budget to keep the HARP project on track.

## Solution

As a leading specialist in geotechnical products, MGS supplied over 1000 Rhino® Coreboxes as a safer and more secure alternative to industry standard wood coreboxes.

With standard boxes being more susceptible to damage and deterioration, the robust Rhino® Coreboxes were the ideal solution for the long-term and environmentally demanding HARP project.

United Utilities' ground investigation contractors drilled over 12km of boreholes using a variety of techniques tailored to the complex and variable ground conditions.

After the samples were collected, the core samples were stored and transported in coloured-coded Rhino® Coreboxes which separated them according to each section of the vast aqueduct. This created a more streamlined and organised operation for the extensive rock laboratory testing.

## Products used

Over 1000 2 Channel x 1m Rhino® Coreboxes

## Results

The HARP ground engineering team designed, procured, managed and delivered two phases of high-quality ground investigations for the 20th century aqueduct.

By running the ground investigations concurrently across the six tunnel sections and incorporating innovative geotechnical products - such as the Rhino® Coreboxes - the investigation was successfully delivered in just 18 months.

Now the ground investigation has finished, United Utilities was able to begin renovating the six tunnels and their then associated shafts. Using the core samples results, ageing assets in the aqueduct were replaced, ensuring clean water remains to over one million people across the North West of England.

**The landmark Haweswater Aqueduct Resilience Programme (HARP) has won the Ground Investigation Project of the Year at the 2021 Ground Engineering Awards. The project won the award for its credentials in innovation, quality, sustainability, health and safety and value engineering.**

UNITED UTILITIES