

WATERPROOFING THE BRITISH MUSEUM, LONDON

Installing a Fire Resistant Tunnel Waterproofing System

THE BRITISH MUSEUM

The King Edward VII Galleries is a Grade 1 listed structure and part of the the iconic British Museum complex in London.

Constructed between 1907 and 1914, the building sits above a series of tunnels and ventilation shafts, which serve to supply air to the gallery via an external ventilation unit.

Due to severe water ingress in the tunnels, there was serious concern as to the quality of air supplied to the gallery, and the impact that this might have on the artefacts kept there.

PROJECT SCOPE

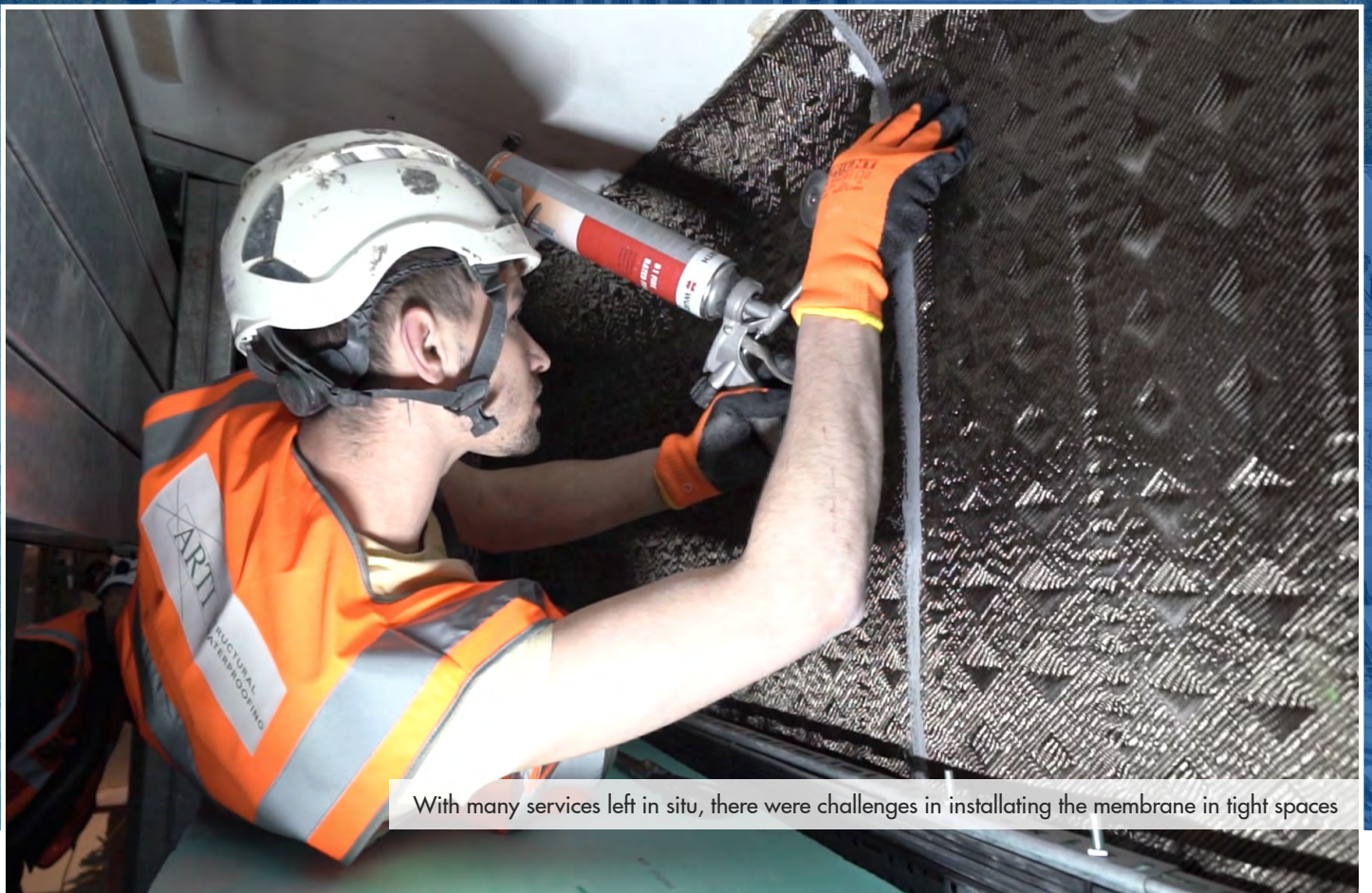
Newton worked directly with [Arti Structural Waterproofing](#) and [Oldroyd](#) to provide a solution that would protect the tunnels against water ingress and fire, and allow the tunnels to be re-instated as the primary air supply to the galleries above.

This involved cleaning and repairing the tunnel walls and floors, then installing a permanent waterproofing and fire-rated solution to achieve a Grade 2 environment as per [BS 8102:2022](#) and also meet the British Museum's fire strategy.





The old tunnels were experiencing significant water ingress, and had extremely limited access



With many services left in situ, there were challenges in installing the membrane in tight spaces

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THE SOLUTION

[Arti Structural Waterproofing](#) and Newton worked with the British Museum, main contractor and [Nex Architecture](#) to propose a system that met all of the requirements for waterproofing and fireproofing a Grade 1 listed building.

After ensuring that the walls and floors were clean and well prepared, [HydroCoat 107 Elastic 2K](#) was installed as the primary Type A barrier waterproofing. The flexible, cement-based membrane provided a robust coating to seal existing leaks in places where a Type C system was not feasible.

Next, [Oldroyd Xif membrane](#) provided a full Type C cavity drain membrane system to the walls and floor of the tunnels. Type C systems are widely accepted in listed structures as they are reversible and require minimal fixings to the substrate.

[CDM 520 eco Floor](#) was also used beneath the floor build up to deliver maximum drainage capacity to the [pump system](#).

OLDROYD FIREPROOF MEMBRANE

[Oldroyd Xif](#) is the number one sustainable fireproof and waterproof solution for underground projects. Produced in Norway by specialist manufacturer Oldroyd, it contains only environmentally friendly raw materials and is thoroughly tested in challenging Norwegian and Faroese tunnels.

Oldroyd Xif membrane is tested according to the EN 13501 standard for 'Fire classification of construction products and building elements - Part 1: Classification using data from reaction to fire tests'.

As a result, the membrane is classified to B-s2.d0, meaning it completely prevents burning droplets when exposed to fire. Watch our [Xif fire testing videos](#) for more information.

Oldroyd are specialist UK product partners with Newton Waterproofing Systems, and the Oldroyd Xif membrane is distributed exclusively in the UK via Newton.

CHALLENGING CONDITIONS

The trained installers from Arti Structural Waterproofing dealt with many challenges on this complex project.

High humidity levels, coupled with the challenge of fitting a fire-rated membrane to a high standard in a very constrained space made it a physical challenge as well as a technical one.

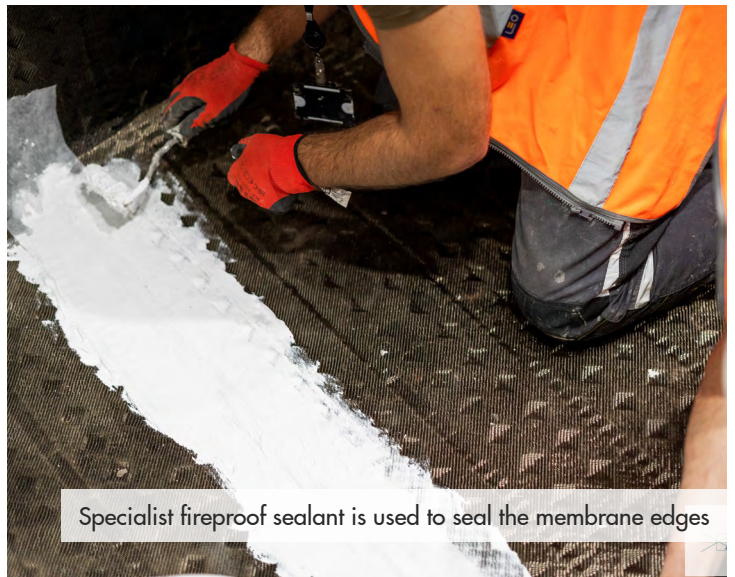
Many of the existing services could also not be removed, so a significant effort was required to ensure that the membrane was effectively installed to all tunnel walls.

THE RESULT

The project was successfully completed over 10 weeks, with Newton and Arti delivering a solution that is waterproof, fireproof, maintainable and reversible. As a result, the happy client has a system that meets all of their requirements, and will be regularly serviced by Arti Structural Waterproofing.



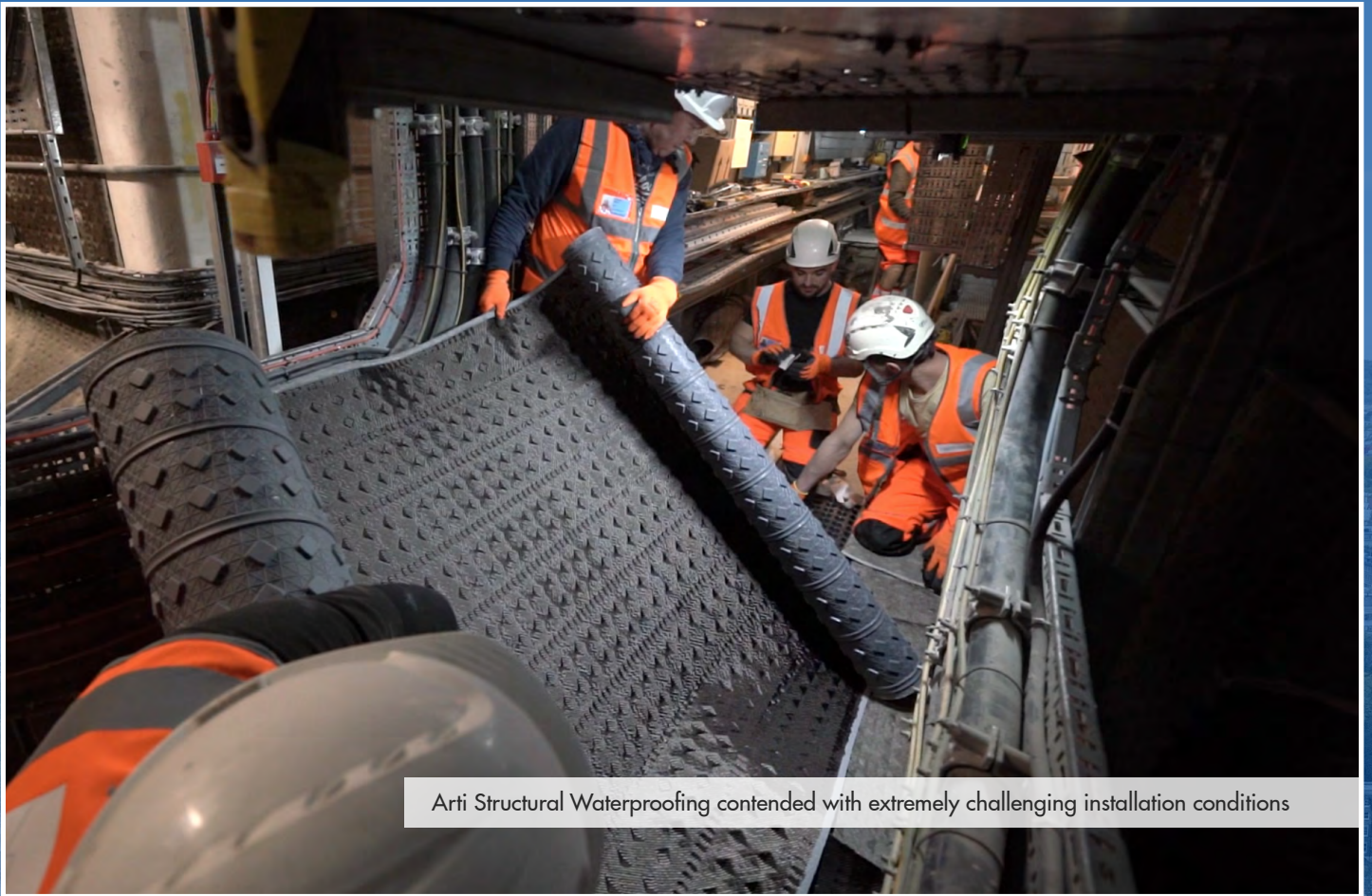
The reversible system causes minimal damage to the structure



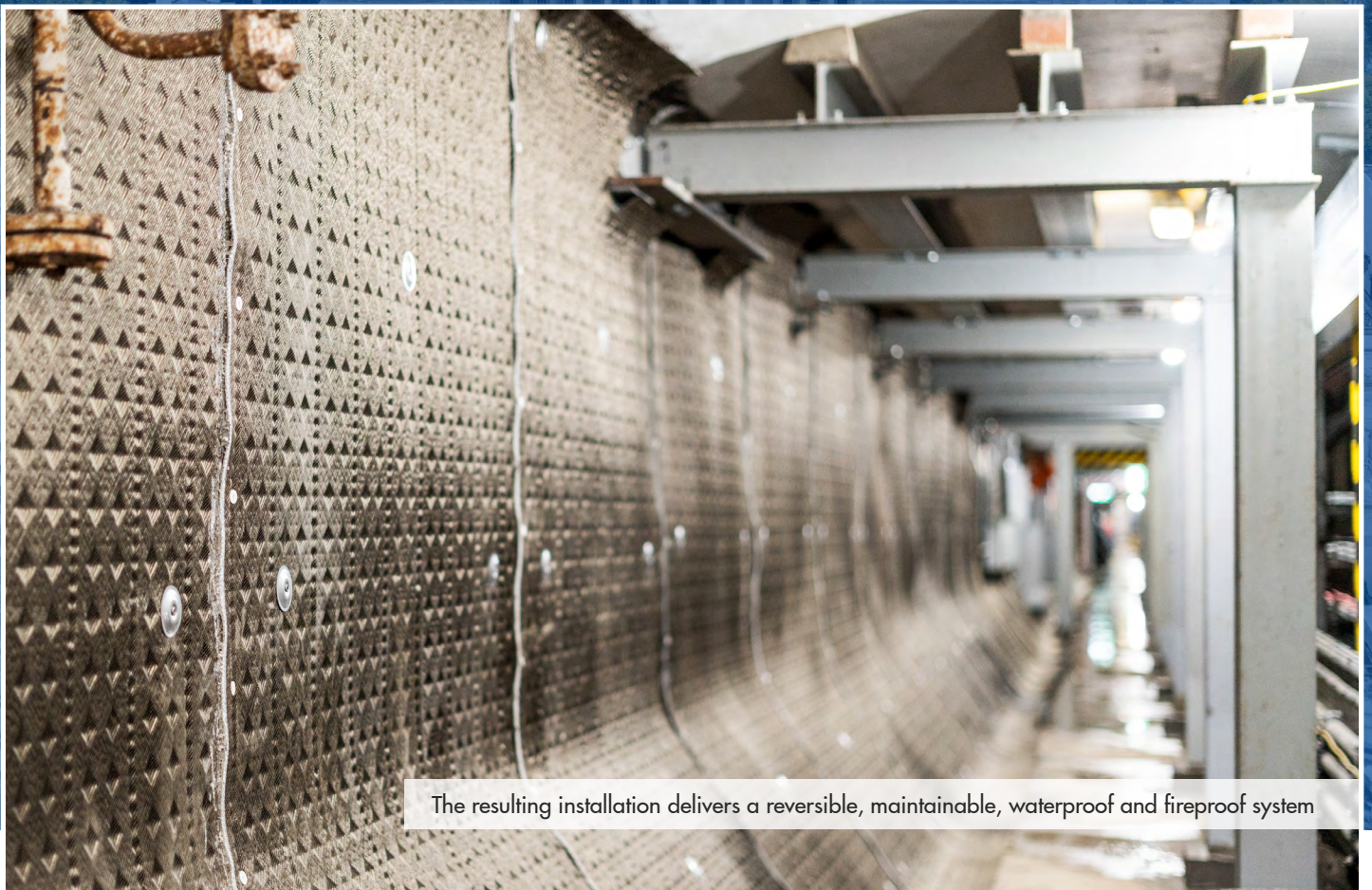
Specialist fireproof sealant is used to seal the membrane edges



The specialist watertight fixings also have a fireproof cover



Arti Structural Waterproofing contended with extremely challenging installation conditions



The resulting installation delivers a reversible, maintainable, waterproof and fireproof system

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THE PRODUCTS

- [Oldroyd Xtf](#) - Fire Resistant Tunnel Waterproofing Membrane
- [HydroCoat 107 Elastic 2K](#) - Cementitious Flexible Waterproofing Membrane
- [CDM 520 eco Floor](#) - 20mm Recycled Cavity Drain Basement Floor Membrane
- [Pumping Systems](#) - Extensive range of submersible pumps and ancillaries for the control of water

THE COMPANIES

Arti Structural Waterproofing



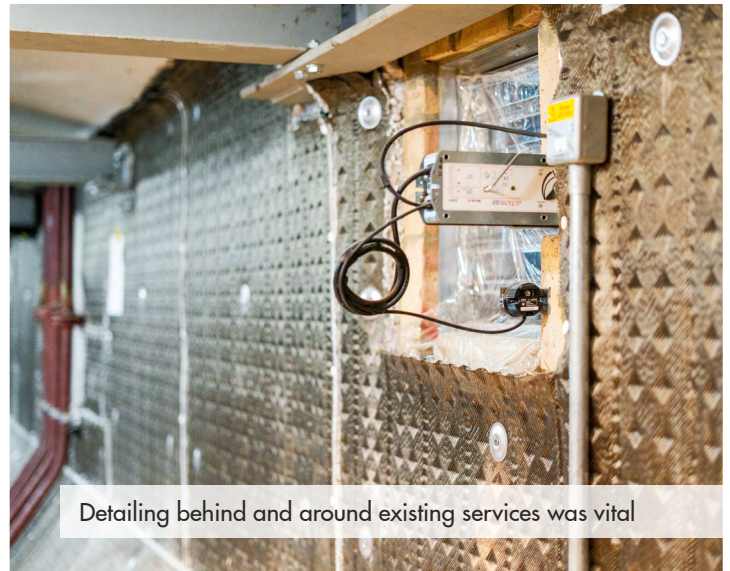
Oldroyd®



Nex Architecture



Existing services were left in-situ during installation



Detailing behind and around existing services was vital



The finished system will be serviced and maintained by Arti

Newton Specialist Contractors

We recommend that our systems are installed by one of our nationwide network of Specialist Basement Contractors (NSBCs). Trained by us, NSBCs offer a full guarantee on the design and installation, and can act as Waterproofing Design Specialists.



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