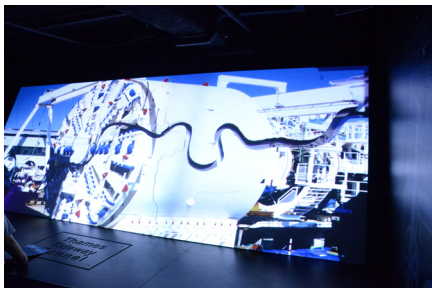


## Case Study

### SEA LIFE makes Thames Tideway Gallery accessible and fun



**Industry:** Tourism

**Region:** London, UK

**Type of Solution:** 2 x EH415ST,  
Ai S4 media server

**immersive** ///

Now in its tenth year, Immersive is a world-leading multidisciplinary design firm working on projects across the globe for leading cultural institutions, artists, events, agencies and iconic brands.

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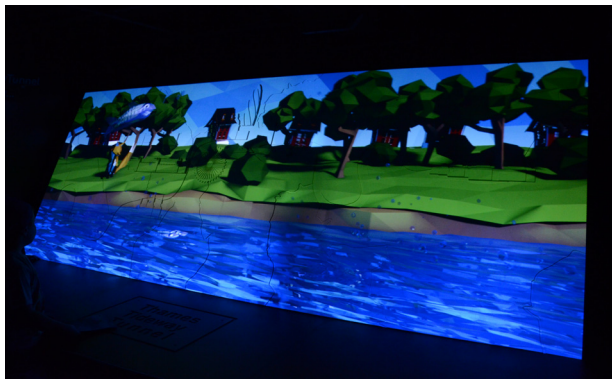
**Challenge:** SEA LIFE London Aquarium wanted to refurbish its River Thames zone to create a projection mapping spectacle with a detailed and strong narrative on the Thames Tideway Tunnel project. The gallery has a very low ceiling with limited space available so it was important the display was not obscured by visitors standing in front of the projection.

**Solution:** As part of the wider exhibition, two Optoma EH415ST projectors were installed and edge blended with Avolites Ai S4 media server to create a four-metre wide image onto a 3D map of London. This shows a four-minute film with 3D projection mapped animated content telling a tale that spans 100 years, with multiple characters, sub plots and most importantly - humour.

**Results:** The exhibition captivates visitors of all ages and from countries around the world using 3D mapping and illusion based graphics. It conveys, in a simple and fun way, the serious subject of sewage in the city and this complex infrastructure project.

## Challenge

SEA LIFE London Aquarium wanted to refurbish its River Thames zone and create a new exhibition on the Thames Tideway Tunnel.



This exhibition would explain how the city's amazing existing Victorian sewerage system has become overloaded due to a combination of a considerable population increase and lots more rainwater entering the drains as London has been concreted over. During some rainstorms millions of tonnes of sewage spill into the River Thames, polluting the river and killing fish.

The Thames Tideway Tunnel is a major infrastructure project designed to protect the river from this increasing pollution for many years to come. The proposed 25km (16-mile) tunnel will run mostly under the River Thames through central London to provide storage and conveyance of combined raw sewage and rainwater discharges that currently overflow into the river. It will be 7.2 metres in diameter and have a capacity of 1.6 million cubic metres. Starting in 2016, construction of the Thames Tideway Tunnel would take seven to eight years, with completion planned for 2023.

The aquarium brought in Set Designer, Riette Hayes-Davies, to create an engaging exhibition that would entertain visitors while also conveying the importance of this project to London and the environment.

Riette said: "It is an amazing tribute to the Victorian engineers that this problem has only surfaced badly in recent years. Within the exhibition I wanted to convey what a real feat of engineering the original system was as well as explaining the equally clever proposed solution for the 21st Century."

SEA LIFE London Aquarium's visitors come from all over the world and most are families with small children. The exhibition needed to inform and educate while also being easily understood and entertaining for all age groups and nationalities.

The gallery has a very low ceiling with limited space available so it was important the display was not obscured by visitors standing in front of the projection.

## Solution

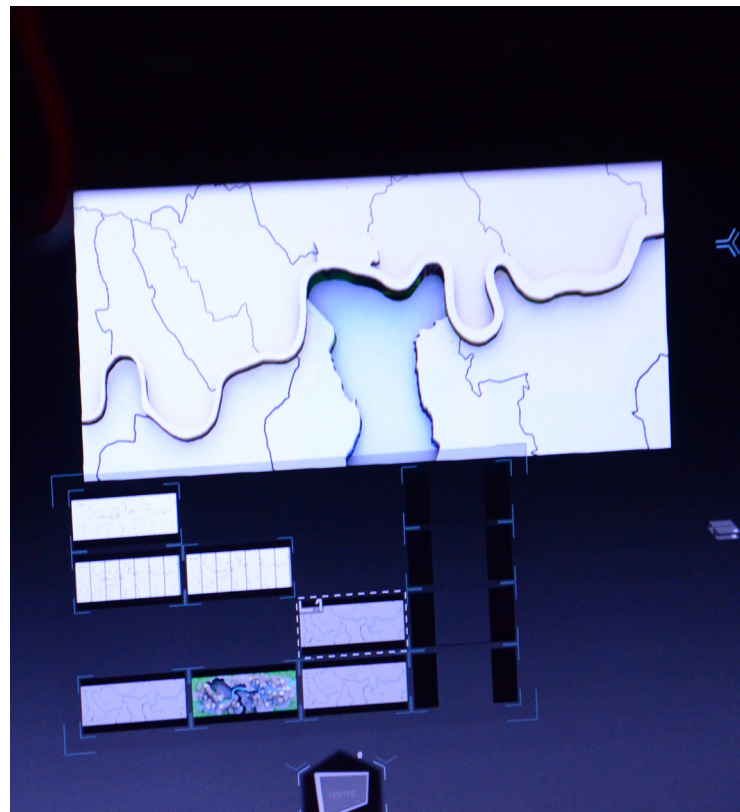
Riette's design included a 3D map of London and the river with key landmarks in relief onto which a film would be projected using 3D mapping. This would be the focal point in the Thames Walk area.

The 4-metre wide model had to be accurately built, to the millimetre, to match the 3D CAD file so the animations would be perfectly mapped. The scenic construction house, Scott Fleary, built the model to exactly match the animation template.

London-based designers, Immersive, were commissioned to animate the content with projection mapping, and undertake the installation of the AV equipment.

To make the story accessible to everyone, Riette created a script with very little dialogue and the story is told by animation and sound. Immersive then turned this four-minute script into the film with 3D projection mapped animated content.

Immersive's Creative Director John Munro said: "We often work in projection mapping, and we push our clients to use interesting narrative structures rather than rely on visual cliché."

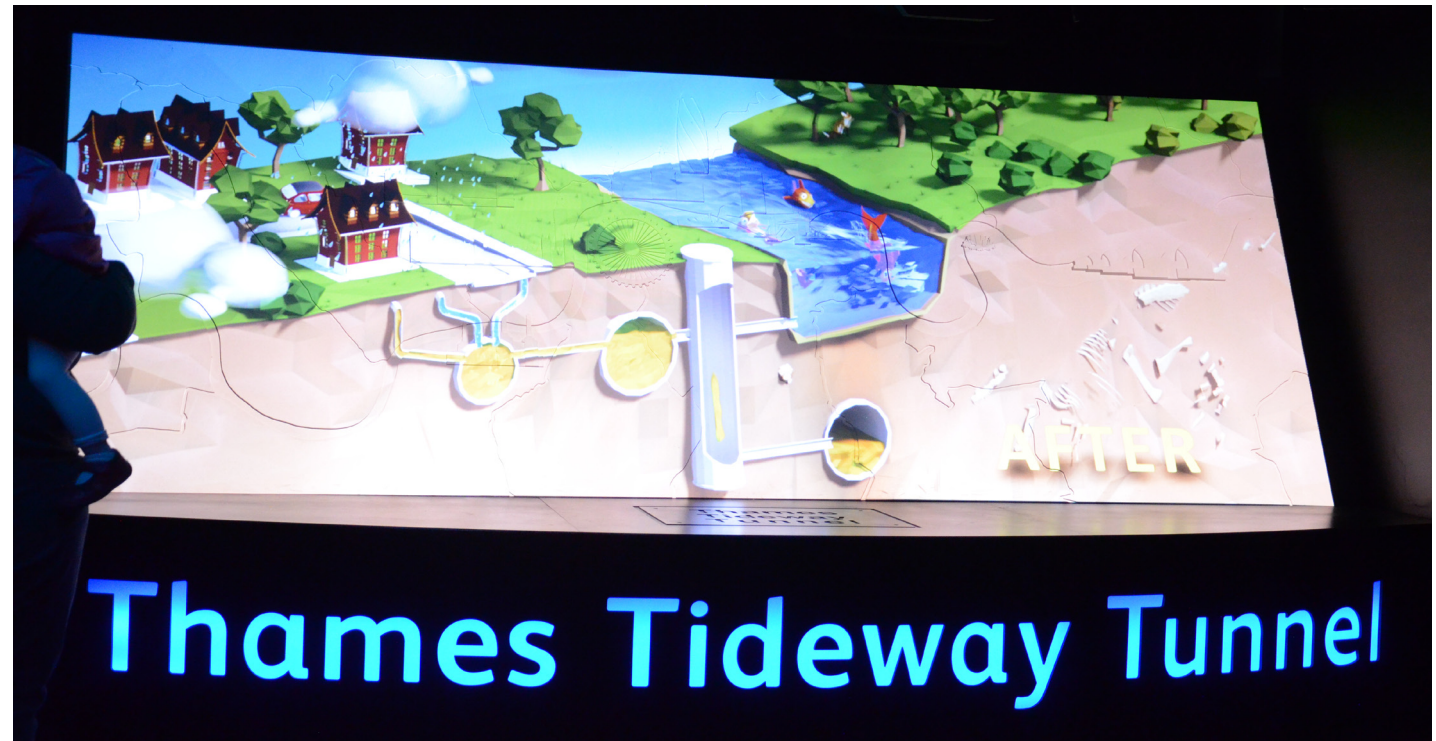




John added:

*"We designed our overall look in a way that brought very disparate elements together, and we also used expert timing to ensure that the flow of the piece made sense while still keeping a light-hearted humorous element to it. Four minutes of content with such a detailed narrative is actually quite a challenge in itself, so we are proud of the depth of storytelling within the dwell time."*

Two Optoma EH415ST projectors were installed and edge blended with Avolites Ai S4 media server to create the extra wide image needed. This server was used because of its versatility, power, reliability and highly competitive price. Ai Media Servers are tailored for professional show designers, content producers and artists. They deliver the crucial tools for sculpting the most elaborate composition multi-media inputs, outputs and triggers.



As visitors could stand close very close to the projection, it was important that the projectors were a high resolution. It was also imperative to have short throw lenses so there would be no shadows from visitors.

Ralph Lambert, Director at Immersive, said: "The ability for visitors to get so close to the install without casting their shadow across the image was only possible by using extreme short throw lenses which were available on the Optoma EH415ST projectors.

"These projectors are bright and have a resolution output of 1920x1080p, which enabled us to create our video at a combined resolution of 2832x1080. PJLink control was a must-have for automated on/off control."

The video uses sound effects, illustrations and original photographs including some from the building of the original C19th sewers, the construction of Tower Bridge and images from World War II. Audio is fed through to three speakers over three separate channels which fills the gallery with the sights and sounds from those eras.



#### Equipment list:

2 x EH415ST  
Ai S4 media server

Ralph added: “The video is four minutes long showing London’s history and development and how and why the Thames Tideway project is going ahead. It captures the audience’s attention using immersive 3D mapping illusion based graphics to entertain as well as inform.”

The corridor leading up to the main projection illustrates ‘The Great Stink’ of 1858 and the outbreak of Cholera that was the impetus for the original Victorian sewerage system to be built. Even the lift doors have been illustrated to give the impression that visitors are walking through the old sewers. A huge mural demonstrates the increase in London’s population with which the current sewer system has to cope.

The EH415ST Full HD projector beams a 100-inch picture on a screen or wall from just over a metre away. It boasts a brightness rating of 3,500 ANSI lumens and is lightweight (3.4kg), making it extremely flexible for installation. This Full 3D projector has a powerful built-in speaker as well as an audio output, enabling connection to external sound systems.

It has an Eco+ mode for energy saving which includes standby mode and auto power off. The dust-sealed, filter free design prevents dust and dirt from affecting the system ensuring optimal image quality with minimal maintenance. It features DLP® technology pioneered by Texas Instruments, which uses millions of mirrors to produce higher quality imagery which does not suffer colour degradation over time, as sometimes experienced in other projector technologies.

The projector can be managed and monitored remotely with Crestron RoomView®, Telnet, Extron IP Link, AMX and PJ-Link, which allow almost all aspects of the EH415ST to be controlled across a network. It has extensive connectivity supporting a wide number of computer and video inputs including VGA and two HDMI ports.



## The Results

The projection provides a focal point for the Thames Tideway exhibition at SEA LIFE London Aquarium.

Riette said: “When the installation was assembled for the first time on site, the registration on the map with the animation template was perfect and the projection quality was stunning. It competes successfully among the other wonderful attractions at SEA LIFE with whole families stopping to watch the film all the way through.”

The film captivates visitors using 3D mapping and conveys, in a simple and fun way, the serious subject of sewage in the city and this complex infrastructure project.



Ralph Lambert, Director at Immersive, said: “Content was absolutely key for this installation. We had some fundamental messages to communicate that had to resonate across all age groups. I think this works incredibly well and we are delighted with how it looks. The reaction from visitors has been brilliant. It makes them stop in their tracks to listen and find out more.”

Riette added: “This has been one of the most fascinating and rewarding projects I have worked on. I think we have managed that balance between accessible and engaging, but not too child-orientated to keep interest in the adult audience. I really hope it helps people appreciate their environment, all the work that goes into keeping it safe, and all aspects of what goes on under Londoners’ feet.”



**Riette Hayes-Davies** has worked extensively in set design for TV, live events, theme parks, museums, theatre and film for many years. [riette@hayesdavies.co.uk](mailto:riette@hayesdavies.co.uk) | [hayesdavies.co.uk](http://hayesdavies.co.uk)

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Set on London’s popular South Bank, SEA LIFE London Aquarium is home to one of Europe’s largest collections of global marine life.

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