



THE ENVIRONMENTAL LEGACY OF THE THAMES TIDEWAY TUNNEL

The Thames Tideway Tunnel is a new major piece of infrastructure for London, capturing an average of 39 million tonnes of untreated sewage which currently enters the tidal River Thames every year. If no action is taken, this is anticipated to reach 70 million tonnes by 2020.

THE CHALLENGE

The city of London currently relies on a 150-year old sewer system that was designed for a population less than half its current size. The resulting pressure on the system sees millions of tonnes of raw sewage overflow into the River Thames each year. Controlled sewage discharges into the river have increased from two times a year in Victorian times to around one per week in recent times. →

AT A GLANCE

WHO:

Tideway

WHAT:

Modernised super sewer

WHERE:

London

WHY:

Reduce pollution of the River Thames

WHEN:

Mainworks and financing contract awarded 2015

THE SOLUTION

Tideway is building a new tunnel that aims to address the challenges for the next 100 years, while simultaneously enabling the area to meet European environmental standards.

At 25km in length, the Thames Tideway Tunnel will prevent sewage from polluting the river, delivering improved water quality across London.

HOW IT WORKS

Starting in Acton, West London, the Thames Tideway Tunnel will travel through the city at depths of between 30 and 60 metres to transfer waste eastwards. The tunnel intercepts untreated sewage and prevents it from entering and polluting the River Thames.

The Thames Tideway Tunnel will connect to the Lee Tunnel which will transfer sewage to the Beckton Sewage Treatment Works.

The main construction of the project will utilise boring machines in four drives from three main sites in Fulham,

Battersea and Bermondsey. Additional work will also intercept flows from 30 existing combined sewer overflows (CSOs) – designed to release excess sewage flows into the river during heavy storms – and connect them to the main tunnel to further reduce sewage discharge.

Construction tasks include excavating deep shafts for the drive sites, as well as each CSO interception shaft.

While the excavating works are a main focal point for the construction of the tunnel, Tideway has focused on regeneration above ground, including the implementation of green areas along the river.

All works are expected to be completed by 2023, and the tunnel's design will make it self-cleaning and minimise maintenance and operational check-ups and requirements.

The Thames Tideway Tunnel has an expected operational lifetime of at least 120 years.

ODOUR CONTROL

Odour control, to minimise nuisance odour from the foul air in the tunnel, is required at each of 20 shafts along the length of the tunnel, as they are all located in public spaces in central London.

ERG is supplying twenty odour control systems for the Tideway Tunnel project, treating a combined total of up to 230,000 m³/hr air. These comprise modular carbon filter units located below street level. During periods of CSO overflow, odorous air is displaced from the tunnel and vented through the odour control systems.

At three sites, fans continuously draw air from the tunnel and blow it through the carbon filter for odour treatment and tunnel ventilation. At the rest of the sites, the odour control unit treats displaced air from the tunnel as the waste water level rises.



THE FINANCIAL COSTS, AND SAVINGS

The Thames Tideway Tunnel will cost £4.2bn to construct and has been part funded through the issuance of £775m in green bonds, an externally verified financial instrument for raising capital under agreed 'green growth' metrics.

An independent social return on investment assessment of the legacy strategy indicates a £3.19 return for every pound spent on the project.

BUSINESS BENEFITS

Currently, sewer discharge and non-degradable single-use plastics can stay in the river for up to three months before ebbing out to sea; the project aims to significantly reduce discharges from fifty to four or fewer annually.

Tideway's sustainability commitments were updated in June 2016 and have been mapped against the Sustainable Development Goals (SDGs), including targets related to sourcing

building materials, gender equality and empowerment and using acoustic sheds to reduce tunnelling noise. Innovation from the project will be shared with the industry to benefit future projects, while new public places will be created to attract more visitors to the river.

TIDEWAY TUNNEL: IN NUMBERS



95%

decrease in amount of sewage discharged



150

year-old sewer system



25

kilometres in length



200,000

HGV movements off London's roads



£4.2bn

cost of the project



£775m

issued in green bonds

ERG (AIR POLLUTION CONTROL) LTD: MEETING TIDEWAY'S UNIQUE ODOUR CHALLENGE



Richard Hanson
Managing Director
ERG (Air Pollution Control) Ltd

The requirements for Tideway's odour control are quite unlike any other specification we've seen. On the face of it, the odour control is straight-forward enough - carbon filters to provide 95% odour removal, 99% H₂S removal and

36 months bedlife based on a relatively low inlet concentration. But then the complexity of the project kicks in. Long-term sustainable odour control needs success in all these areas.

The Odour Control Unit has to have a standardised design approach across all 20 sites and three separate Joint Ventures. The kit has a 15-20-year design life in a tunnel with 120 years design life - so will be rebuilt and reinstalled multiple times. Although the technology is straightforward, the BIM requirements, process and mechanical engineering rigour, and programme and project management control are more akin to the highest standards encountered in oil & gas, mining and pharmaceutical industries - far beyond what the water industry typically expects.

The commercial requirements also exceed normal water industry expectations too - large negative cash flow for sustained periods, inflation risk sitting with the supply chain for up to 6 years and £10M Professional Indemnity cover. ERG is uniquely positioned among UK odour control suppliers to meet all these criteria.

We are a Thames Water framework contractor; operate successfully in a variety of industries, including those listed above; employ a team of talented and experienced designers and project managers; and have the financial stability and business longevity needed to be credible for this prestigious contract - our largest this AMP period. We are delighted to be involved.

To find out more about how odour control solutions can benefit your business,
email info@ergapc.co.uk or visit ergapc.co.uk/odour-control