

Thames Tideway project

Safe ventilation during excavation of a sewer tunnel shaft

October 2018

Thames Tideway tunnel

- 25 kilometres long
- Up to 66 metres deep
- More than 7 metres wide
- The largest infrastructure project ever undertaken by the UK water industry

The Carnwath Road shaft

- 26 metres in diameter
- 47 metres deep
- From here, a tunnel boring machine will dig the western section of the tunnel

The Challenge

Maintaining good air quality for operatives working within the shaft during its construction



Most of London's sewage system dates back to the nineteenth century when, with typical foresight, the Victorians built it to handle the waste from a city twice as big as London then was. These days, though, London has grown to four times the size, and the system often cannot cope with the amounts of waste being produced. As a result, large amounts of untreated sewage frequently end up in the River Thames.

Tideway is a consortium of several construction groups set up specifically to deliver a new, upgraded sewage system for London. At the heart of the system will be the 25km Thames Tideway tunnel, which will reduce the amount of sewage waste entering the River Thames by 95 per cent.

Work on the tunnel will be carried out at 24 separate sites across London. Carnwath Road Riverside is the main site for the development of the western section of the tunnel. During excavation of the vertical shaft from which the TBM (tunnel boring machine) will be launched, it was vital to maintain good air quality within the shaft as it got deeper. RVT was asked to provide a safe ventilation solution.



Ventex Centrifugal Fan 800S

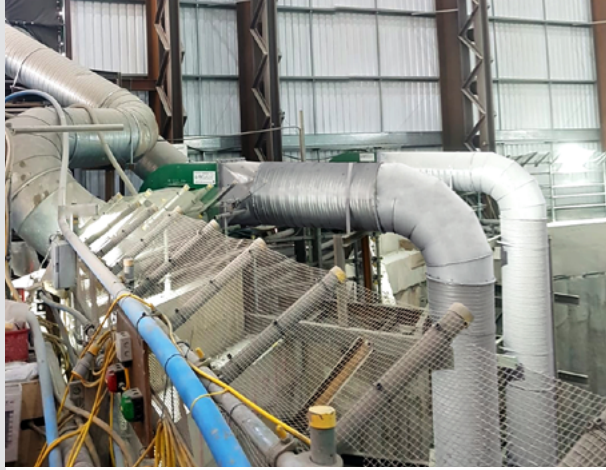
- Skid Mounted 415v Centrifugal Fan
- Airflow rating of 50,400m³/hr
- Can be used with long lengths of flexible or rigid ducting
- Ideal for providing ventilation during boring and tunnelling

“We called in RVT Group to ensure we are protecting the health and wellbeing of the personnel working down the shaft. Given the challenging spacial restraints, RVT Group provided the best possible solution. We are very pleased with the service provided.”

Phillip Neech
Site Manager

Further information
[About the project](#)

© Copyright 2018 RVT Group.
All rights reserved.



The Solution - Shaft Ventilation

The entire shaft construction took place within a 23m high acoustic 'head house', minimising noise and light pollution. Taking into account the diesel plant operating inside the shaft, personnel working within the shaft, and possible gasses that could be present both in the ground and the total area of the shaft, the following system was designed:

- Two Ventex 800CF units, each providing 50,400m³/h of airflow
- With the fans to be positioned inside the head house, intake ducting was fitted to ensure fresh air was drawn in and to prevent stale air from being recirculated
- Rigid 800mm ducting to be run down the side of the shaft, and for this to be extended as the dig progressed
- 800mm flexible ducting to be added to the bottom of the rigid ducting to direct the airflow to follow the tunnelling works, as Tideway constructed the launch tunnels for the main Tunnel Boring Machine
- RVT fans to be fitted with attenuators to reduce their impact on overall noise levels both inside and outside the shaft
- Manual extraction of dust and fumes to be provided to the entire area, given that the shaft head was enclosed, to prevent hazards building up inside

The shaft has since reached its final depth, ready for the TBM to be lowered down it and begin tunnelling. By tradition, TBMs are given female names, in this instance 'Rachel' after Rachel Parsons, an engineer and advocate for women's employment rights, who set up a women-only engineering company, Atalanta Ltd, after the First World War.

Work on the Tideway Tunnel is scheduled for completion in 2022.