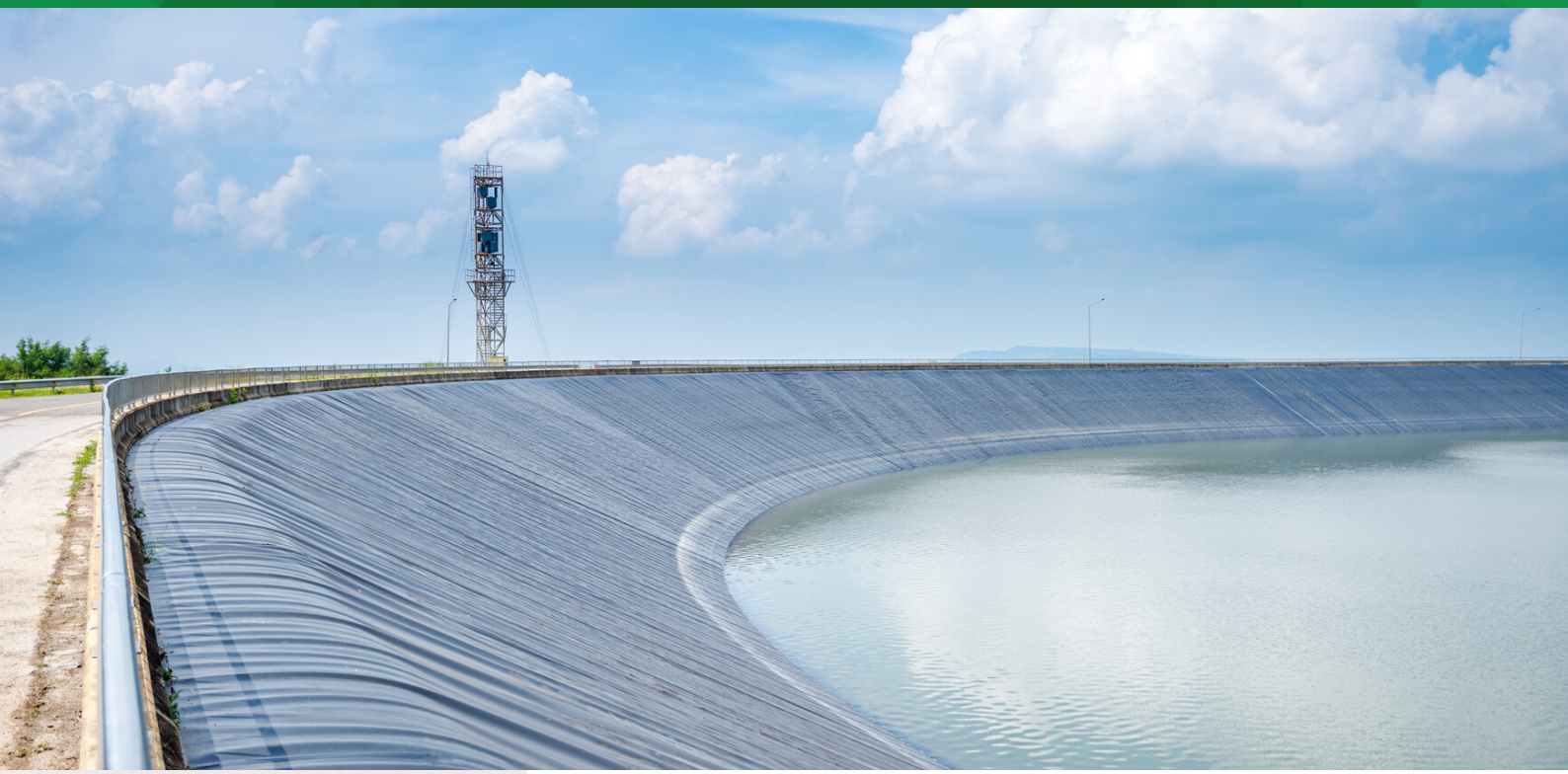
Effective Tunnel Ventilation Supplied at the King George V Reservoir

RVT provides fresh air for site operatives working on the Thames Water AMP6 programme

July 2020



Client:

Barhale

Location:
King George V Reservoir, Enfield

Featured Product Range:

Ventex® Ventilation Solutions

Assisting on the project to provide clean airflow and keep site operatives safe

The Thames Water AMP6 Framework was a design and construct programme that had been in place since 2015 and was made up of world class contractors, including the Skanska, MWH and Balfour Beatty (SMB) Joint Venture. The programme comprised of multidisciplinary activities, including the maintenance of water & wastewater treatment works, pipelines, pumping stations, and reservoirs. Under this programme, maintenance at the King George V reservoir was necessary, and ventilation was required whilst site operatives cleaned out two of the reservoir's underground tunnels. Barhale (working for the SMB joint venture) approached RVT for a solution.

The Challenge

Dangerous levels of Ammonia were present within the tunnels that required cleaning. Exposure to this dangerous gas can cause severe

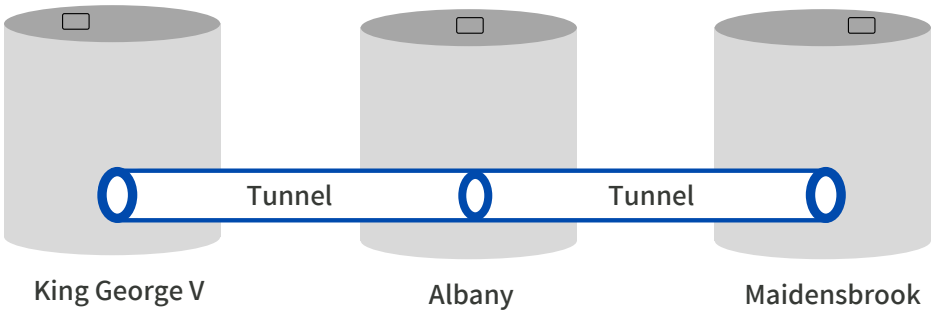
Case Study Key Facts

- The Thames Water AMP6 (Asset Management Programme) spanned 2015-2020.
- The eight20 alliance working with Thames Water to achieve their AMP6 goals was the largest alliance in the water sector. It comprised Skanska, MWH and Balfour Beatty (SMB) and Costain, Atkins, Black & Veatch (CABV).
- Thames Water invested £2billion to £3billion into the AMP6 programme.
- Dangerous levels of Ammonia were present in the tunnels where cleaning was required.
- 2 Ventex® 450S centrifugal fans were sited at the end shafts to supply fresh air to the tunnels.
- An additional Ventex® 450S centrifugal fan aided the extraction of contaminated air through the restricted opening at the top of the central shaft.

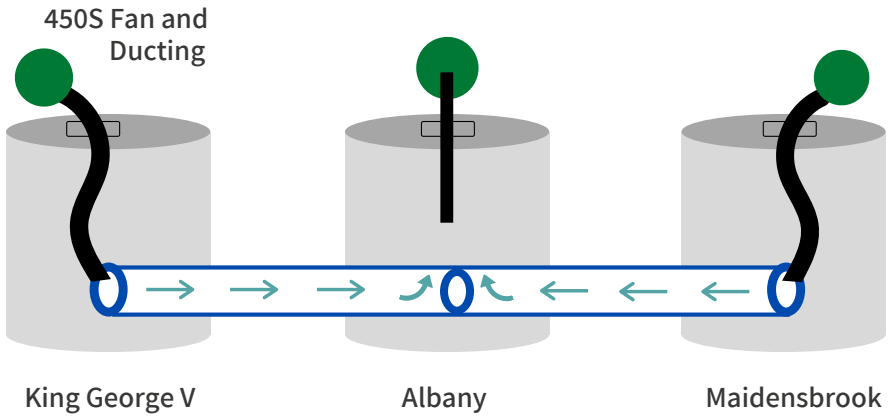
burns if it comes into contact with your eyes and skin, even causing burns to your respiratory tract and lungs if inhaled.Therefore, it was vital that the gas was effectively controlled and a level of clean airflow through the tunnels was provided whilst the cleaning took place.

The Solution

The tunnels that required cleaning ran from the King George V Reservoir to Albany and from Albany to Maidensbrook. At all three locations are large underground shafts leading down into the tunnels, accessible via manholes.



To achieve effective ventilation of the tunnels, a 450S Ventex® centrifugal fan was placed at the shafts of both the King George V Reservoir and Maidensbrook. Flexible duct runs were then fed through the manholes of the shafts, allowing these fans to vent in fresh air at each end of the tunnels. The contaminated air then exited through the manhole at the top of the Albany central shaft. As all the shafts are covered (to stop people falling in) and these small manholes are the only entrance and exit points, an additional 450S was sited at Albany to aid extraction through this restricted space.

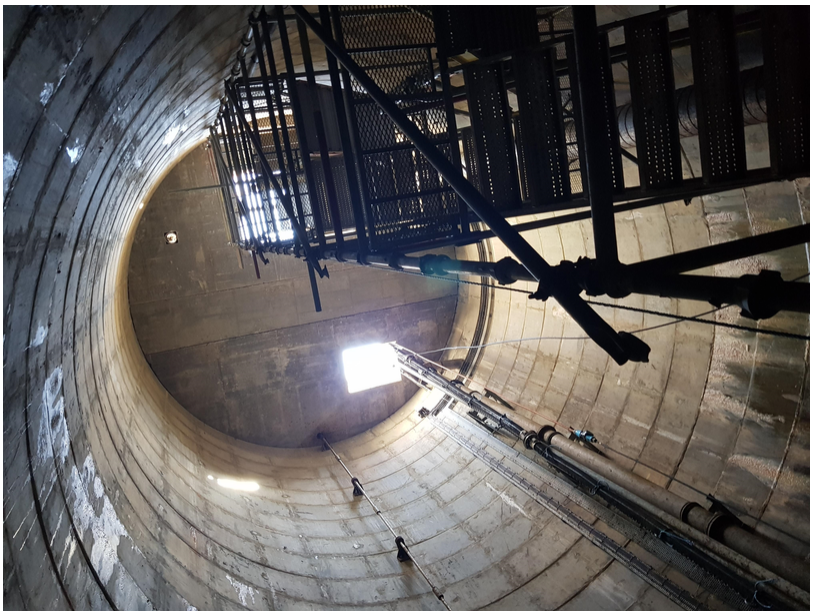


Ventex® Centrifugal Fan 450S

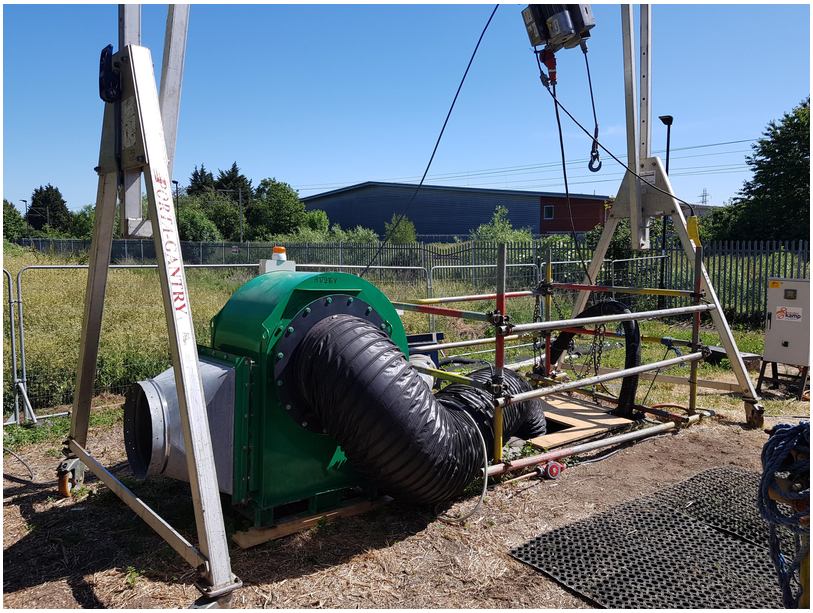
The 3 C's Method:

- **Capture the hazard** Extract contaminated air out of the work space.
- **Contain the hazard** Ensure that the work area remains under pressure as this will help to control air movement (either positive or negative pressure depending on the application).
- **Control the hazard** Force in clean air to dilute the hazard.

With this ventilation system in place, an effective level of airflow was present within the tunnels throughout the cleaning process, keeping the site operatives safe.



A view of one of the underground shafts.



A Ventex® 450s centrifugal fan extracting contaminated air at the Albany central shaft.

"With RVT's ventilation solution, excellent and effective airflow was achieved. The air flow was notable and members of the team even commented on the nice cool breeze coming towards us!"

Steve Best, Project Manager Barhale