

## **An evaluation of historical approaches to uncertainty in water infrastructure provision and the implications for future planning and design**

Victorian infrastructure is vital in maintaining an adequate water supply to the West Midlands. Some of these infrastructure assets have lasted well beyond their anticipated design lives and have also adapted to the considerable changes that have been experienced over the last 150 years. Consequently, these systems can be considered as having made very efficient use of resources and have provided a potentially sustainable solution to the development of water infrastructure. Today, society faces a very uncertain future in terms of water supply and demand as well as increasing pressure to ensure resources are used in the most efficient and sustainable fashion.

Through an analysis of Victorian approaches to infrastructure provision, this project seeks to understand how such historical approaches accounted for uncertainty, whether they continue to influence current approaches to design, and whether they offer the most appropriate way in which to deal with future uncertainty, particularly in terms of sustainable water resource and energy use, and sustainable infrastructure development.

The project will deliver the following benefits:

1. A clear understanding of historical approaches to uncertainty and how these approaches have influenced the development of water infrastructure up to the present day.
2. An analysis of whether these historical approaches offer the most appropriate way of dealing with future uncertainty.
3. Recommendations regarding the delivery of sustainable future infrastructure that ensures the most efficient use of resources.

This work will assist our understanding of the legacy and relevance of the work of the civil engineering profession and the role that it plays in shaping society; in particular, the development of sustainable infrastructure and communities.

This project is partially funded by the Institution of Civil Engineers R&D Enabling Fund.

Researcher: Will Bradford

Supervisors: Dr John Bridgeman and Dr Mark Gaterell

Contact: [j.bridgeman@bham.ac.uk](mailto:j.bridgeman@bham.ac.uk)