

SECTION 8 | LEARNING FROM OTHERS AROUND THE WORLD

1

Development of Critical Success Factors

A series of Critical Success Factors (CSFs) were developed by the coalition to define the requirements that any shortlisted option must satisfy. The CSFs reflect the environmental, technical, social and delivery outcomes sought by ORiW and provide a consistent basis for developing, refining and assessing potential solutions. They help focus a broad range of ideas into a robust shortlist of options for further appraisal. The CSFs used in this study are presented below.

2

Longlisting of interventions

A broad longlist of potential interventions was identified, spanning policy, behavioural, regulatory and engineering measures to ensure all viable approaches were considered. Interventions outside programme scope or delivery control were subsequently filtered out, with those retained focusing on reducing nutrients and bacteria entering the lake, alongside opportunities to address a wider range of emerging contaminants associated with wastewater discharges and urban run-off.

3

Shortlisting of interventions

The longlist was then assessed against the CSFs, so that the list could be refined further into a shortlist of interventions, with less suitable or non-viable interventions removed.

Critical Success Factors		What this means in practice
①	Run-off and discharges eliminated	Design and implement feasible solutions to achieve zero identified point-source sewage and highway-run-off entry into the lake and its tributaries, with robust monitoring to verify success.
②	Minimal construction impact	Maintain access for businesses and visitors during works. Reduce noise, disruption and visual impact.
③	Maintain water supply	Safeguard both the capacity and quality of drinking-water abstraction from the lake throughout delivery and beyond.
④	Stakeholder alignment	Secure and maintain documented support from key stakeholders, incorporating their requirements into design and delivery decisions.
⑤	Environmental protection and enhancement	Prevent avoidable harm, mitigate unavoidable impacts, and leave biodiversity and habitat in a better state than before.
⑥	Long-term resilience	Solutions remain effective to 2100 under a range of plausible future scenarios.
⑦	Early intervention	Deliver at least one interim intervention by 2028 to demonstrate early progress and maintain stakeholder confidence.

4

Option development

The remaining interventions were then grouped into a smaller number of coherent options each representing a different way of meeting the programme objective. A high-level engineering solution was then scoped and developed in preparation for assessment through a international engineering review.

5

International engineering review

The shortlisted options were independently challenged through a global workshop, bringing together leading wastewater, engineering and infrastructure specialists from the UK and overseas. Drawing on experience from major programmes around the world, participants tested assumptions, scrutinised evidence, explored alternative approaches and shared lessons learned from comparable schemes.



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GLOBAL WORKSHOP CASE STUDY

LAKE ANNECY

The project team also considered the transformation of Lake Annecy in France, widely recognised as one of Europe's cleanest lakes and an important international precedent for the ORiW vision.

By intercepting and transferring wastewater away from the lake for treatment, Annecy demonstrated how long-term investment in strategic wastewater infrastructure can help protect a nationally important freshwater environment while delivering environmental betterment and supporting local communities.

The experience of Annecy provides confidence that the long-term protection and recovery of sensitive lake environments can be achieved through a coordinated catchment-wide approach, helping to safeguard these nationally important natural assets for future generations.

GLOBAL WORKSHOP CASE STUDY

PITTSBURGH REGIONAL WET-WEATHER INTERCEPTOR

As part of a global challenge workshop, which brought together an international panel of practitioners and subject matter experts, the project team reviewed the Pittsburgh Regional Wet-Weather Interceptor Programme in the United States. The scheme comprises the Ohio River Tunnel, Allegheny River Tunnel and Monongahela River Tunnel, providing approximately 24.6km of tunnel infrastructure with up to 5.5-metre internal diameter.

PHOTO: The Ohio River Tunnel.

The project was considered particularly relevant to ORiW because it demonstrates how large-scale conveyance tunnels can be used to reduce combined and sanitary-sewer overflows, transfer wastewater flows across catchments, and manage multiple flow inputs within a complex network. The example provided valuable international insight into the potential role of strategic tunnelling as part of an integrated approach to reducing wastewater discharges and improving environmental outcomes.



GLOBAL WORKSHOP CASE STUDY

NEW YORK CITY GREEN INFRASTRUCTURE PROGRAM

During the global challenge workshop, the team reviewed the New York City Green Infrastructure Program, which has been delivering sustainable drainage solutions since 2011.

The programme has implemented more than 16,000 green infrastructure assets, managing run-off across over 1,000 hectares and aims to reduce combined sewer overflow (CSO) discharges by approximately 2.5 million m³ annually.

The programme demonstrated the potential for large-scale deployment of nature-based

and sustainable drainage measures to reduce pressures on wastewater networks and improve receiving water quality. Key lessons for the ORiW study included approaches to prioritising catchment interventions, scaling up sustainable drainage systems (SuDS) delivery, and establishing effective catchment partnerships to coordinate action across multiple stakeholders.

The example highlighted how sustained, collaborative investment in green infrastructure can contribute to long-term reductions in wastewater discharges and environmental improvement.

