



**THE SIGNATURE TEAM**  
**FOR WATER & FLOOD SERVICES**

**SYSTRA**



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# INTRODUCTION



**SYSTRA is driving bold, sustainable change in water and flood risk management—protecting communities and wildlife while building climate resilience with every pound invested.**

Our specialists bring together many years of experience from across the water sector, spanning both UK and international schemes. We can use all this experience, lessons learned, and knowledge to help deliver our clients' projects and help our clients continue to provide for a stronger, greener, and healthier environment.

We are committed to continuous improvement, health and safety, sustainability, innovation, and continued investment in research and development to meet the water sector's emerging technical needs.

We have significant experience in partnering with our clients and their key suppliers on many of our projects. We truly believe in the strength of deep collaborative relationships.

Through our close working relationships with our clients, we recognise the pressure to deliver value for money and the continued need for the sector to respond to requirements set out in the Environment Act (2021), the Flood and Water Management Act (2010), and the Water Industry Act (1991).

We help our clients deliver sustainable nature-based solutions and to bring new skills and ideas to the sector.

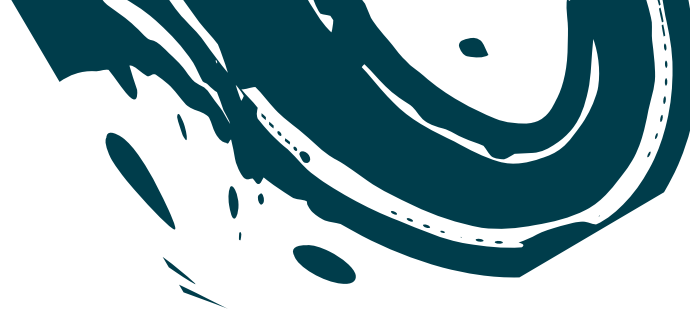
Through our collaborative approach and strong client relationships, we provide outstanding performance to jointly create a better environment for all to benefit from.

**Nick Salt | CEO**



**SYSTRA**

# SYSTRA



## SYSTRA GLOBAL

SYSTRA is one of the world's leading engineering and consulting groups, specialised in public transport and mobility solutions. For more than 65 years, the Group has been involved with cities and regions in order to contribute to their development by creating, improving and modernising their transport infrastructures and systems.



**11,000**  
EMPLOYEES  
WORLDWIDE\*



**MORE THAN  
65 YEARS**  
OF EXPERTISE  
IN TRANSPORT  
ENGINEERING



**1.1 BILLION  
EUROS**  
OF TURNOVER\*\*

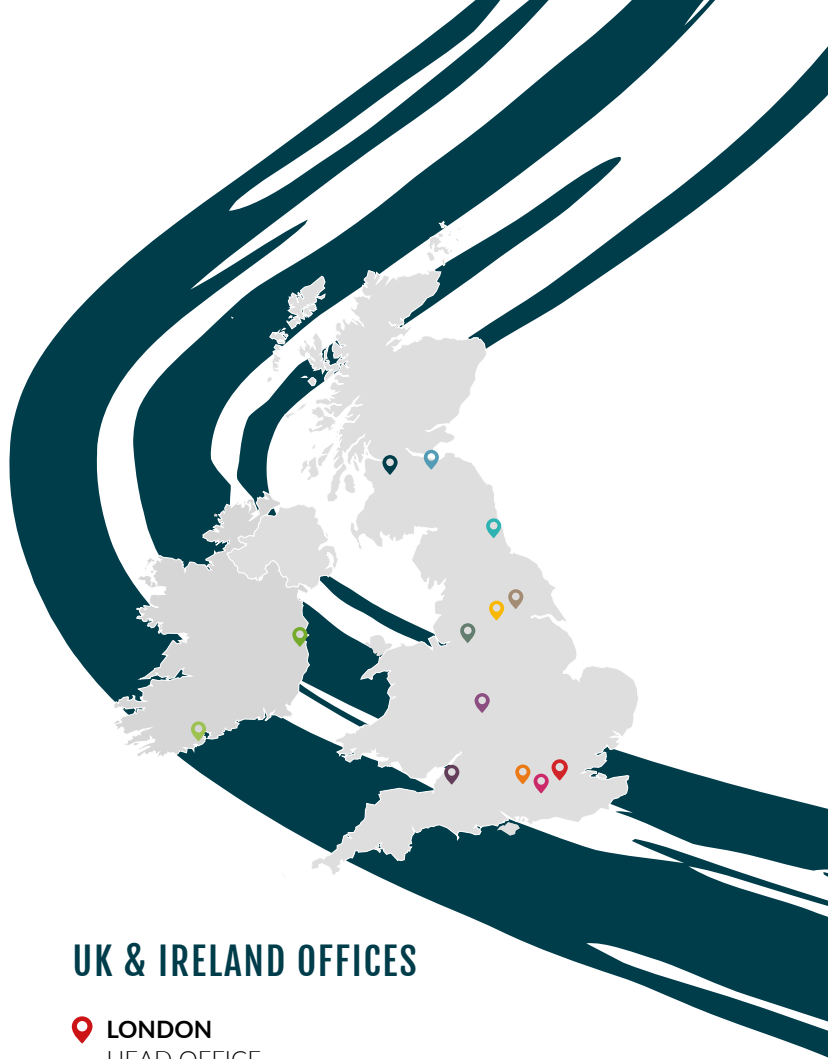
# SYSTRA UK & IRELAND

In the UK and Ireland, SYSTRA has been creating, improving and modernising infrastructure for more than 50 years. We have around 1,000 colleagues based in our 13 offices across the UK and Ireland.



We are the signature team, providing safe and resilient infrastructure solutions; with confidence, we help the world move forward. We combine regional experts in advisory, planning, project management and design, inter-connected with international expertise. The health, safety and security of our staff and our solutions is our number one priority.

**Steve Higham | Managing Director**



## UK & IRELAND OFFICES



**LONDON**  
HEAD OFFICE



BIRMINGHAM



BRISTOL



CORK



DUBLIN



EDINBURGH



GLASGOW



LEEDS



MANCHESTER



NEWCASTLE



READING



WOKING



YORK

# WATER & FLOOD SERVICES

SYSTRA's water and flood risk specialists design efficient and effective water and flood management systems for a wide range of construction and infrastructure projects – safely disposing of water and building long-term flood and environmental resilience for our clients and their communities in a sustainable manner.



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SYSTRA offers the following water and flood risk services:



BUSINESS CASE  
DEVELOPMENT



CLIMATE &  
FLOOD RESILIENCE



COMPLIANCE WITH  
REGULATIONS & DESIGN  
STANDARDS



DRAINAGE  
SERVICES



FLOOD RISK  
ASSESSMENTS



HYDROLOGICAL &  
HYDRAULIC  
MODELLING



LONG-TERM  
FLOOD RESILIENCE



REGULATION &  
ASSURANCE



RIVER  
ENGINEERING



STRATEGIC ASSET  
MANAGEMENT



SUSTAINABLE  
DRAINAGE SYSTEM  
DESIGN



SUSTAINABLE WATER  
ENGINEERING



URBAN  
PLANNING



WATER RESOURCES &  
WATER QUALITY  
PLANNING

## **BUSINESS CASE DEVELOPMENT**

SYSTRA has significant experience in business case development. We understand the requirements of the Government's Green Book and the Multi-Coloured Manual.

We can help our clients work with the five case model, and for Environment Agency led projects, we can assist with partnership funding.

## **CLIMATE AND FLOOD RESILIENCE**

We understand the challenges posed by our changing climate and the need for climate resilience in our activities, studies and designs. We can help with projects involving climate change, including increased flood risk management and dealing with water scarcity.

## **COMPLIANCE WITH REGULATIONS AND DESIGN STANDARDS**

SYSTRA has wide-ranging experience of consulting with drainage and planning authorities on development matters and carrying out technical submissions for formal agreements with sewerage authorities.

Our specialists can advise clients on legal issues relating to land drainage and flood management.

We help clients navigate planning permission requirements and obtain the necessary consents for their development activities. We also advise on how to build flood resilience into proposals to comply with current regulations, design standards and policies.

## **DRAINAGE SERVICES**

SYSTRA can provide services for drainage design from concept to detailed design for developers, utility works contractors, local authorities and water companies.

The management of Combined Sewer Overflows (CSO) are one of the critical issues facing the drainage industry at present. At SYSTRA, we have a team of experts that can help address these issues for our clients and the environment.

## **FLOOD RISK ASSESSMENTS**

Every site has its own specific requirements and poses different challenges for flood risk management and drainage engineering. We offer flood risk assessment and flood risk management services to inform clients' site selection and master-planning processes.

Our water engineering specialists design bespoke drainage and flood management solutions for each site, to achieve the aims of the client and meet the requirements of wider stakeholders.

## **HYDROLOGICAL AND HYDRAULIC MODELLING**

Our rivers and drainage teams have extensive experience in sewer network modelling, MicroDrainage, 1D and 2D river and tidal modelling.

## **LONG-TERM FLOOD RESILIENCE**

Our experience of drainage design and flood risk management means we provide clients with cost-efficient schemes that meet current design standards, while enhancing the environmental impact and long-term climate change resilience of each development.

To ensure the long-term efficacy of our drainage and flood risk schemes, we also advise clients on lifetime management and maintenance procedures so that systems continue to operate effectively and efficiently.

## **REGULATION AND ASSURANCE**

SYSTRA has wide-ranging specialist knowledge of the regulatory requirements concerning planning, works within the floodplain and the river/coastal environment research and development. Our staff have significant experience of research and development including areas such as communities at risk, natural flood management and pollution distribution in a water body.

## **RIVER ENGINEERING**

SYSTRA river engineers provide services including river diversions and river infrastructure design. Much of our river engineering experience is in relation to the study, design and implementation of flood alleviation schemes in fluvial environments. Our river engineers have worked on diversions, scour protection and re-meandering river restoration.

Our team of in-house specialists in hydrology, hydraulic modelling, environmental impact assessment, and landscape design work closely with our hydraulic engineers in developing river engineering works.

## **STRATEGIC ASSET MANAGEMENT**

Our team specialises in providing advice for planning and optimising investment at the greatest point of need over a long-term planning cycle. We can develop capital and operational works programmes, three to five year investment planning cycles and digital twins for predictive maintenance.

## **SUSTAINABLE DRAINAGE SYSTEM DESIGN**

We design a range of Sustainable Drainage Systems (SuDS). We use our expertise to create the most appropriate SuDS solutions for the land use and site constraints of each project, taking into account site topography, history, ground conditions and operation and maintenance. We can provide both outline strategies and detailed designs using modern methods of construction to achieve client objectives.

To assess and design SuDS we use industry-leading software such as MicroDrainage, Hecras or WINFAP-FEH. This technology is also deployed to help us inform development planning and future-proof developments for climate change impacts. We have experts in SuDS who can represent our clients at relevant Sustainable Drainage Approval Body (SAB).

## **SUSTAINABLE WATER ENGINEERING**

At SYSTRA, we take an integrated approach to both drainage strategy and flood risk management – considering both in the context of the local water environment. We have substantial experience of designing drainage systems and flood-risk management measures for a wide variety of project types and sizes.

## **URBAN PLANNING**

Our team has significant capability and experience to help move our urban areas into more sustainable, enjoyable places for people and business through delivering services for blue/green corridors, watercourse rehabilitation, retro-fit SuDS solutions, flood risk assessments, smart water (GIS), public realm/ placemaking, regional and local planning policies.

## **WATER RESOURCES AND WATER QUALITY PLANNING**

Water is humanity and the environment's greatest resource – we understand how to assess and manage water to both improve the quality of life and the environment.



# FURTHER CAPABILITIES



SYSTRA works in partnership with clients to deliver outstanding solutions. We solve challenges with our multi-disciplinary expertise in design, consultancy, project management, engineering and construction supervision – supporting the delivery of major infrastructure projects across the transport, energy, environmental and built-environment sectors.

Our work creates inspirational places and systems that connect people seamlessly, enhance well-being, stimulate economies, and provide a sustainable legacy for future generations.

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As well as specialising in flood and water risk management, SYSTRA can offer these further capabilities:



WASTEWATER  
TREATMENT WORKS



BRIDGES



BUILDINGS &  
STRUCTURES



CIVIL  
ENGINEERING



CONSTRUCTION  
DESIGN MANAGEMENT



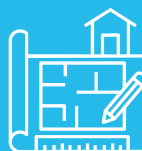
DIGITAL  
ENGINEERING



ECOLOGY



HIGHWAYS



LANDSCAPE  
ARCHIECTURE



PLANNING &  
ENVIRONMENT



PROJECT &  
ENGINEERING  
MANAGEMENT



STAKEHOLDER  
ENGAGEMENT



TUNNELS &  
GROUND ENGINEERING



AND MORE!

## **WASTEWATER TREATMENT WORKS**

SYSTRA designers integrate civil, mechanical, electrical, and environmental engineering to design treatment processes, ensure regulatory compliance, optimise operations, manage project timelines, and address sustainability. We are able to help our clients deliver effective wastewater management.

## **BRIDGES**

The SYSTRA bridges team are specialists in assessing, designing, constructing, managing, and problem-solving within bridge engineering. From new construction projects requiring the design and execution of large-scale infrastructure, through reconstruction projects aimed at revitalising and enhancing existing infrastructure, to inspection and assessment activities that ensure structural integrity and safety – we work across all stages of a bridge's lifecycle.

## **BUILDINGS AND STRUCTURES**

SYSTRA offers expertise across architecture, structural engineering and construction services to provide an integrated approach to developing essential buildings and structures. We create visually appealing structures, designed with purpose in mind to meet our clients' commercial, operational and sustainability objectives.

## **CIVIL ENGINEERING**

Our team of civil engineers covers every discipline, from structural and geotechnical engineering to transport and environmental engineering. We can draw on a global pool of civil engineering expertise and resources to support the most ambitious infrastructure projects, from the feasibility and planning stages through design, construction, testing and commissioning.

## **CONSTRUCTION DESIGN MANAGEMENT**

SYSTRA is accredited to the standards set by the Contractor Health & Safety Assessment Scheme, and we also have the capability to carry out the role of Principal Designer to support our clients' needs. We operate a health and safety system that is certified to ISO45001.

## **DIGITAL ENGINEERING**

Our BIM and 4D modelling services offer significant benefits for utilities modelling throughout the lifecycle of a project by providing a shared, real-time model that ensures consistency and transparency and aids collaboration.



## ECOLOGY

Our ecology team offers a comprehensive suite of ecological services, including ecological appraisals, invasive and protected species surveys, detailed ecological impact assessments, habitat mapping, Biodiversity Net Gain (BNG) assessments and more.

## HIGHWAYS

Our highways team delivers projects for both the public and private sectors, and for a wide range of project sizes from large scale schemes like HS2 to smaller residential schemes and everything in between.

## LANDSCAPE ARCHITECTURE

Our landscape architecture team excels in creating vibrant, sustainable environments through innovative design and master-planning. We conduct Landscape and Visual Impact Assessments for all development types and manage Landscape and Ecological Management Plans, ensuring effective landscape and environmental management, maintenance, and contract implementation.

## PLANNING AND ENVIRONMENT

SYSTRA's town planning and environment team includes specialists chartered with the Royal Town Planning Institute, Institute of Environmental Management and Assessment and CIWEM.

Through our experience, we understand the importance of getting the right permit at the right time. We work with design teams and regulators to provide the right permit submissions to deliver the project.

## PROJECT AND ENGINEERING MANAGEMENT

We offer a range of capabilities to support programme and project management, including commercial and construction management, engineering project planning and controls, quantity surveying and contract risk management.

We manage activities through all stages of a project life cycle, from developing business cases through to design, construction, commissioning and maintenance.

## STAKEHOLDER ENGAGEMENT

SYSTRA's dedicated social and market research team is highly experienced in the management and provision of public and stakeholder consultation and engagement. The team provides expertise in the design, analysis and reporting of consultations for the transport, environment, sustainability, water and energy sectors.

## TUNNELS AND GROUND ENGINEERING

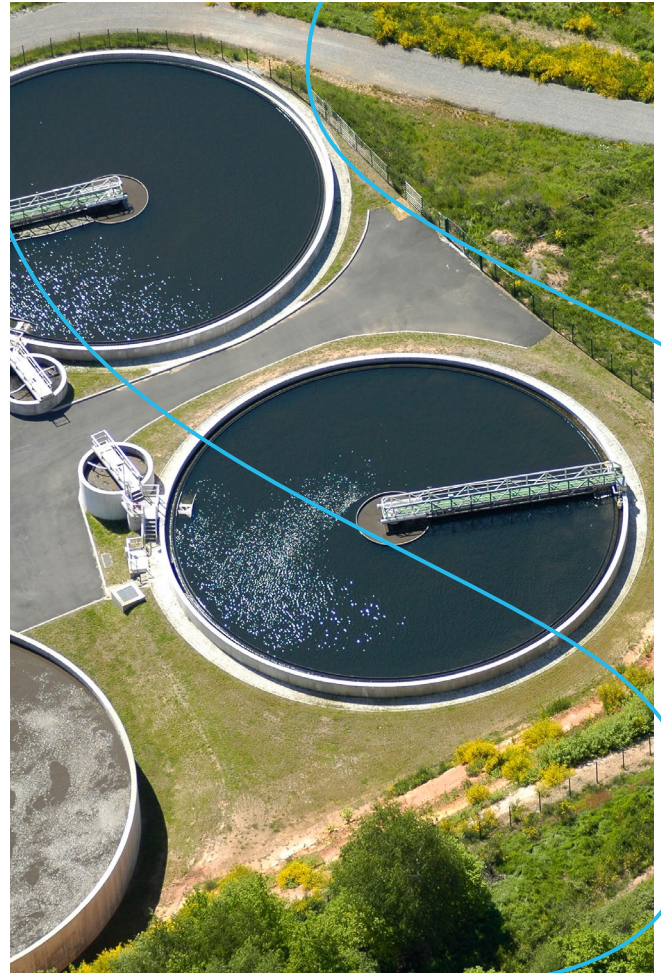
Our team of ground engineers, geologists and scientists focus on the identification and management of ground related risks at all stages of the project lifecycle. They provide a range of services, including ground investigation scoping and coal mining risk assessments, earthworks designs, geotechnical designs and design assurance, geoenvironmental, hydrology and hydrogeological assessments, sustainability reviews, including carbon in design for option selection, project embodied modelling and sustainable design optioneering.



# CASE STUDIES

**SYSTRA specialises in guiding clients and partners through complex water and climate projects, safeguarding communities from floods and climate change impacts. Our expertise ensures efficient and sustainable water resource management.**

- River Cole realignment
- Black Brook fluvial modelling
- Sustainable Drainage Systems (SuDS) design
- Combined Sewer Overflows (CSOs)
- Southern Water Main Framework Agreement



# RIVER COLE REALIGNMENT

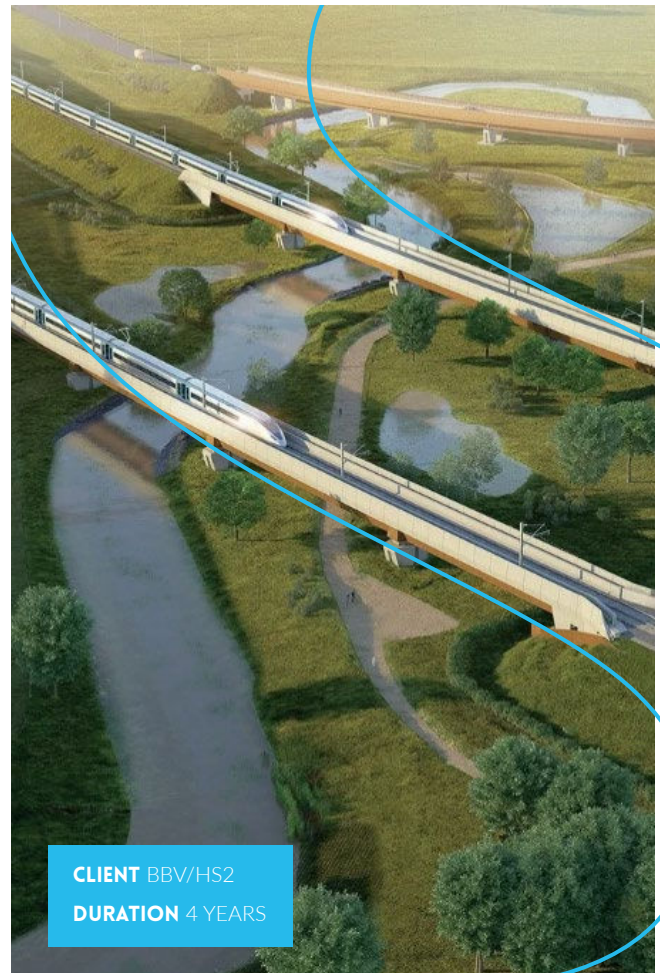
## UTILISING SUSTAINABLE RIVER ENGINEERING TO IMPROVE HS2'S ENVIRONMENTAL IMPACT

SYSTRA optimised the design, assessing over 60 scenarios; leading to a cost-effective widening solution in consultation with HS2 and the Environment Agency.

The River Cole realignment was achieved by a multi-disciplinary team, incorporating ecological improvements to the watercourse, and floodplain and scour protection around the piers. The river was in a poor condition and SYSTRA designed ecological enhancements including riffles, willow revetments and NFM infrastructure alongside hard engineering solutions for scour protection at the piers.

### SERVICES PROVIDED:

- Modelling
- Landscape
- River engineering
- GIS
- Scour
- Mechanical and electrical
- Structural engineering
- Environment
- Ecology



**CLIENT** BBV/HS2

**DURATION** 4 YEARS

# WATER ORTON

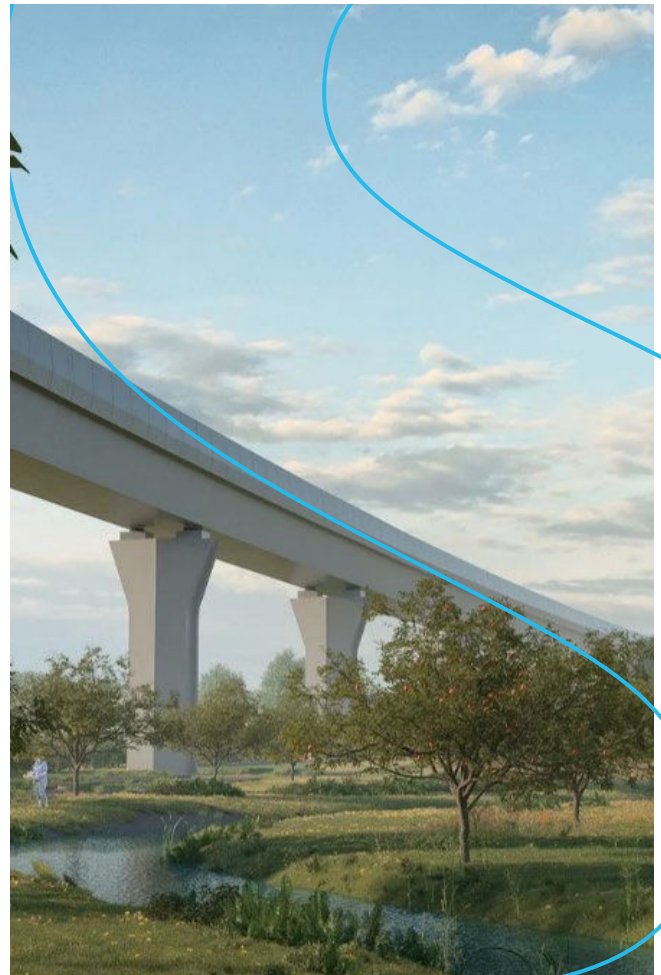
## CONSIDERING FLOOD MANAGEMENT AT AN HS2 VIADUCT

SYSTRA created a 1D hydraulic model to assess floods and designed a watercourse realignment that improved the environment and managed flood risk.

- Hydrological assessments
- Watercourse realignment design
- Flood risk management
- Environmental modelling
- Collaborative approach as a design joint venture with Mott Macdonald

**CLIENT** BBV/HS2

**DURATION** 3 YEARS



# SuDS DESIGN

## STEM OPPORTUNITIES THROUGH SuDS

SYSTRA specialists produced three Sustainable Drainage System (SuDs) designs as part of Yorkshire Water's storm spill reduction programme.

As two of the locations were on primary schools, SYSTRA also undertook STEM engagement at the schools to talk about management of surface water flooding.

### SERVICES PROVIDED:

- Drainage design
- Surface water assessment
- Landscape
- Ecology

**CLIENT** SAPPHIRE UTILITY SOLUTIONS

**DURATION** 1 YEAR



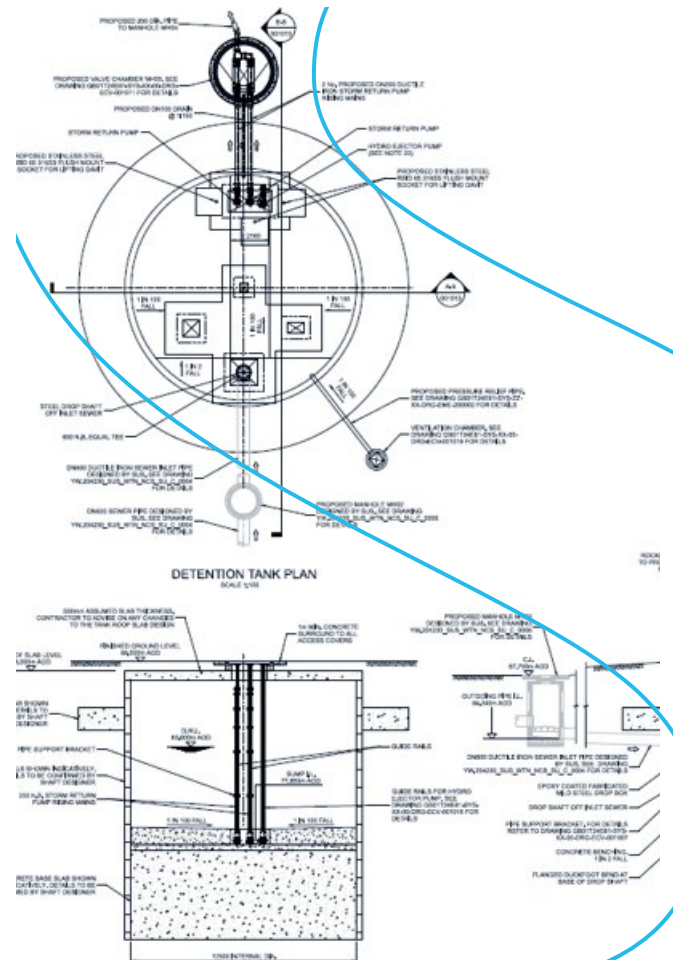
# CSOs

## REDUCING SEWAGE SPILLS

Design of online storage to lower Combined Sewer Overflow (CSO) spills at five locations across Yorkshire. The overflows have been identified on Yorkshire Water's storm spill reduction programme as part of the requirement to meet the targets from the company's DWMP.

**SERVICES PROVIDED:**

- Drainage design
- Mechanical and electrical
- Civils
- CAD



**CLIENT** SAPPHIRE UTILITY SOLUTIONS

**DURATION** 1.5 YEARS

# SOUTHERN WATER MAIN FRAMEWORK AGREEMENT

## SUCCESSFUL DELIVERY FOR WATER COMPANY FRAMEWORK

Delivered 100+ water and wastewater schemes utilising our global expertise. Work included Section 41 - Water Main Requisition, Section 98 - Sewer Requisition, Section 185 - Sewer/Water Mains Diversion, Water Mains Renewal, Capital Delivery Schemes, DG2 - Inadequate Pressure, DG5 - Sewer Flooding, NRSWA Schemes.

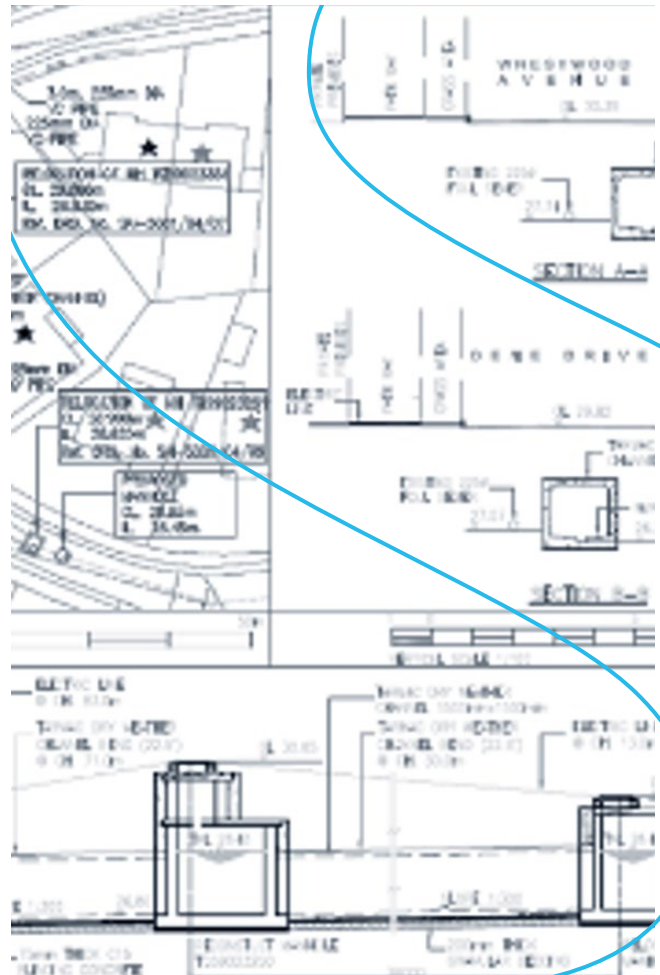
For these works SYSTRA liaised directly with the client teams, delivering to UK standards within the framework agreement.

**SERVICES PROVIDED:**

- Modelling
- Detailed design
- Mechanical and electrical
- Civils
- CAD
- Geotechnical

**CLIENT** SOUTHERN WATER

**DURATION** 5 YEARS





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