

Sustainable River and Floodplain Management



New wetland habitat created as part of the Exeter Flood Defence

Water is essential to human life and societies draw heavily on rivers, lakes, wetlands and underground aquifers to supply water for drinking, irrigating crops, and running industrial processes. However beyond these extractive water uses, healthy aquatic environments provide much more value to our society.

The services supplied by our aquatic ecosystems include: flood management, water purification, recreation, transport, climate regulation, aesthetic amenity, habitats for wildlife and production of fish and other foods and products. These societal benefits are what we call 'ecosystem services'. The maintenance of healthy, functioning aquatic ecosystems is likely to become a vital aspect of ensuring resilience to the effects of climate change.

Jacobs have extensive experience of sustainable water management, including working on numerous policy-informing, strategic and practical projects relating to catchment-scale

land management and working with natural processes to reduce flood risk (Natural Flood Management, NFM). A number of these projects, undertaken for the Environment Agency, Natural England and Defra, were developed in response to the Pitt Review Recommendation 27, to achieve greater working with natural processes. By moving towards a more naturally functioning and less constrained river and floodplain, we can reduce the level of intervention needed to manage issues like flooding and maintaining habitats.

Our approach

To mitigate the increasing pressure on the water environment, from many sources, we bring together our understanding of how the water sector works with the expertise of our technical teams to deliver outcome-driven measures that demonstrably improve the environmental performance of your projects.

Our team applies its considerable experience in all aspects of river and wetland management and restoration, from policy development and strategic planning to project implementation. We have a reputation for developing innovative, robust and pragmatic solutions by combining experience in environmental engineering with expertise in river and wetland processes.

Our award-winning work has gained industry recognition for multi-disciplinary capability, positive relationships and exceptional projects that offer real value to our clients.

Our Service

Our experts provide a comprehensive range of skills and through integrated teams comprising civil engineers, ecologists, hydromorphologists, hydrologists and landscape architects, covering all aspects of sustainable water management including:

- Natural flood management (NFM)
- River and wetland restoration
- Carbon, energy, waste and resource efficiency studies
- Water Framework Directive assessment
- Heritage and landscape assessment
- Habitats Regulation assessment
- Environmental impact assessment
- Land-use planning, social and economic appraisal
- Flood-risk planning and sustainability
- Ecosystem Services Assessments
- Water resources planning and low flow studies
- Restoring sustainable abstraction



A pristine chalk stream (River Itchen)



Pre-feasibility study – habitat creation on flood storage areas



Greatham pond and scrape construction



Silt control at Morpeth

Delivering value – project examples

Responding to the Water Framework Directive

We helped Natural England and the UK's Environment Agency to develop responses to the Water Framework Directive. Feedback from the Environment Agency included, "I have really enjoyed working with you again on protected areas and the Water Framework Directive and I think that the work you have been doing with Jacobs support has been visionary and exemplary. Really impressive."

Working with natural processes

We have worked on a number of projects for the Environment Agency, Natural England and Defra, which were developed in response to the Pitt Review Recommendation 27, to achieve greater working with natural processes. For example, we undertook research into flood storage areas, their operational requirements and biodiversity value, which culminated in a design guide to incorporate biodiversity enhancements into existing and new flood storage schemes. A follow-on project applied this research and identified flood storage areas in England with the best potential for large-scale wetland habitat creation.

Broadland flood alleviation project

Since 2001 Jacobs has been working on the Broadland flood alleviation project, a 20-year programme of flood defence improvement and maintenance services. The project area is located wholly within the Norfolk and Suffolk Broads, an extensive area of wetland that has a status equivalent to that of a National Park. In partnership with the Environment Agency as client and contractors BAM Nuttall Limited, Jacobs is delivering protection to over 22,000ha of land. Over 20% of the project area is designated for its nature conservation value – 28 SSSIs combine to form the Broads Special Area of Conservation, Broadland Special Protection Area and Broadland Ramsar Sites.

Exeter Flood Defence Scheme

This multi award-winning scheme incorporates habitat creation and restoration as an integrated part of the engineering design. To deliver the vision of creating a better place and maximising environmental outcomes for people and wildlife, a close-knit team of Environment Agency and Jacobs specialists worked together to developed designs that would deliver their primary purpose of protecting Exeter from flooding, whilst securing new areas of wetland and river habitat. Exeter FDS has provided a model of how flood risk management and habitat restoration project partnerships can be successful in the UK, and other schemes are already in development using a similar approach (for example, Oxford FAS).

About Jacobs

Jacobs leads the global professional services sector delivering solutions for a more connected, sustainable world. With \$15 billion in fiscal 2017 revenue when combined with full-year CH2M revenues and a talent force of more than 74,000, Jacobs provides a full spectrum of services including scientific, technical, professional and construction and programme management for business, industrial, commercial, government and infrastructure sectors.

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