A scenic view of a river flowing through a forest. The river is surrounded by large, moss-covered rocks, creating a natural barrier for fish passage. The water is clear and flows over the rocks, creating small rapids. The forest is lush with green trees and foliage, and the overall atmosphere is serene and natural.

Ecosystems Services: River Restoration, Natural Flood Management and Fish Passage



Who we are

STANTEC IS A TOP TIER GLOBAL CONSULTANCY. WE HAVE BEEN WORKING WITH OUR CLIENTS AND COMMUNITIES IN THE UK FOR OVER 150 YEARS.

Stantec is a global consultancy made up of passionate ecologists, environmentalists, hydrologists, hydrogeologists and engineers. With extensive experience of the planning, development, appraisal and design of large and complex water supply schemes across the UK, Stantec has worked with water companies including Anglia Water, Yorkshire Water, Thames Water and Southern Water.

We provide river restoration, Natural Flood Management (NFM) and fish pass design services and have developed tools and methods to advance ecosystem protection, restoration, management and monitoring.

We bring our depth of knowledge to the entire restoration process; from feasibility, assessment and planning, to outline and detailed design, construction support, monitoring and adaptive management.



Stantec in the UK & Ireland

OUR PEOPLE IN NUMBERS

1700
INFRASTRUCTURE, BUILDINGS,
WATER and ENERGY

250
ENVIRONMENT and
SUSTAINABILITY SERVICES

160
TRANSPORT PLANNING

40
PLANNING SERVICES

200
CIVIL ENGINEERING

95
BUILDING STRUCTURES
and UTILITY SERVICES



How can we help

STANTEC PROVIDE RIVER RESTORATION, NATURAL FLOOD MANAGEMENT (NFM), HABITAT CREATION AND FISH PASSAGE DESIGN SERVICES AND HAS LONGSTANDING RELATIONSHIPS WITH THE ENVIRONMENT AGENCY, SCOTTISH ENVIRONMENT PROTECTION AGENCY, LOCAL AUTHORITIES, WATER COMPANIES AND PRIVATE DEVELOPERS FOR WHOM WE DELIVER A MULTITUDE OF PROJECTS.

Our longstanding experience and knowledge across a range of services, creates an exceptional team skilled in all required disciplines of this service.

Stantec believes in understanding the local environment and having the right multi-disciplinary team to address the needs of each site, watercourse or catchment to establish a healthy, resilient ecosystem and habitat. We design with community in mind and this underpins every Stantec scheme.

Stantec's team has an exceptional portfolio of successfully delivering restoration projects in the UK and across the globe. We work with clients across a broad range of sectors including regulatory bodies, conservation organisations, councils, river/ fishery trusts, water/ energy suppliers and engineering companies.

Our team is led by highly experienced engineers, ecologists and project managers, bringing knowledge and experience from both industry and academic research.



↑ Nuns Walk Stream Restoration, Winchester,



How can we help

SERVICES WE OFFER INCLUDE:

- River Restoration Design supported by fluvial audits and geomorphic assessment
- Natural Flood Management (NFM)
- Fish passage assessment and design
- Wetland Design and Nutrient Assessments
- Sustainable ('Green') river engineering
- Freshwater and terrestrial ecology services
- Hydraulic modelling
- Hydrological and Hydrogeological Analysis
- Stakeholder and Public consultation
- Feasibility, Outline and Detailed design
- Landscape Visualisation and Technical Design Drawings
- Business case and funding advice
- Project Management Services
- Planning and consenting services
- Construction support/supervision





Project Experience

DUNSBURY PARK, HERMITAGE STREAM: RIVER RESTORATION



Shortlisted for the ICE South East England Award for Sustainability and Resilience

CLIENT: Portsmouth City Council

Dunsbury Park was a greenfield featuring open ground and ancient woodland with the Hermitage Stream running through it, however over time the site was developed and the watercourse heavily modified into a reinforced concrete channel with very low levels of biodiversity.

Stantec was appointed by Portsmouth City Council to review the next phase of the business park and new link road design. Associated with this our client was looking to take the opportunity to restore a 135-metre reach of the stream.

Our team reviewed the potential to restore previous links between zones of woodland and enhance the stream's ecological diversity. To respond to environmental sensitivity and space-related constraints, we recommended the use of marginal planting, erosion protection matting, and stainless steel anchored gabion wall.

We designed a reinforced vegetated geomodular retaining wall which allowed the engineering structure to blend into its surroundings and form a fully vegetated face. Early engagement with the Environment Agency was essential to demonstrate that the proposed improvements were compatible with the stream's wider ecological enhancement strategy.

Through collaboration, we were able to finalise the design promptly and secure the required consents.

The re-invigorated Hermitage Stream serves as a wildlife corridor bridging the two sides of Dunsbury Park to establish a diverse habitat sympathetic to native flora and fauna.





LUKELY BROOK: RESTORATION OF A HEAVILY MODIFIED WATER BODY

CLIENT: Southern Water

The Lukely Brook is located on the Isle of Wight and is designated a 'Heavily Modified Water Body' (HMWB) under the Water Framework Directive (WFD). Whilst the upper part of its catchment is rural, the lower section is more urbanised due to the historical use of these sections to support industry and to provide potable supply. The brook therefore flows through a series of Mill ponds, leats and fords which all cause a barrier to fish movement and limit the hydromorphology of the watercourse.

Stantec completed a cost-benefit analysis as part of the AMP5 WFD investigation, concluding that hydromorphological improvements would be most cost effective in contributing towards returning the ecological status of the Lukely Brook to Good.

We considered four morphological enhancement sites, each of which contained existing structures that represented barriers to upstream fish migration.

ENHANCEMENTS DELIVERED: Stantec delivered and secured the Environment Agency National Fish Pass Panel approval, Environment Agency Flood Risk Activity Permits, and landowner consents for the following enhancement works at the four sites.

ENHANCEMENT SITE 1: CARISBROOKE MILL POND

The Carisbrooke Mill Pond site contained an historical sluice structure that created a ca. 1m drop in water level downstream of the pond. The barrier to fish movement was managed through the provision of a Larinier Fish Pass.





ENHANCEMENT SITE 2: CARISBROOKE WATERWORKS POND

The Carisbrooke Waterworks contained historical sluice and weir structures that created a ca. 1m drop in water level downstream of the pond. To overcome the drop structure we designed and installed a Larinier Fish Pass.



ENHANCEMENT SITE 3: WELLINGTON ROAD CULVERT

The Wellington Road culvert contained a concrete lip at its outfall that created a ca. 0.6m drop in water level. Through the use of fish friendly "pre-barrages" we provided a passable structure in a constrained site.



ENHANCEMENT SITE 3: WELLINGTON ROAD CULVERT

This historical weir was located within a private garden and created a ca. 0.5m drop in water level. Our approach for this site was to fully remove the barrier and reprofile the channel.



The Lukely Brook NEP scheme received regulatory approval from the Environment Agency in April 2021. Upon reviewing the completed works, the Environment Agency issued the following statement:



“We know that barriers to fish movement and fragmentation of fish populations can be very damaging. The project delivers a significant outcome for the environment.”



SEACOURT STREAM: NATURAL FISH BYPASS

CLIENT: Thames Water and The Environment Agency

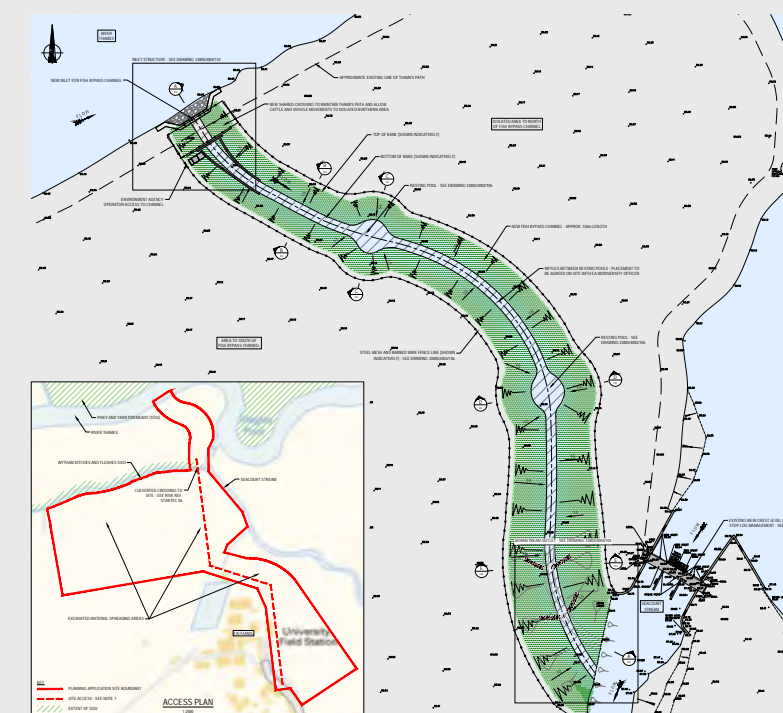


↑ Seacourt Stream Offtake from River Thames – Barrier to Fish Movement

A bypass channel to improve fish passage and habitat along the River Thames.

Our services included:

- Natural Fish Pass Design
- Sustainable River Engineering
- Optioneering and Detailed Design
- Stakeholder and Landowner Support
- Environmental / Ecological Review
- Flood Risk Analysis
- Geotechnical Analysis
- Permit and consenting services
- Planning & Approval in Principle Support
- Contract administration



Historically, fish passage through Oxford, England, has been impeded by the presence of several structures and locks. The Seacourt Stream runs parallel to the River Thames, bypassing four of the Thames locks Iffley, Osney, Godstow and Kings; however, the offtake from The Thames is a barrier to fish movement.

The Environment Agency and Thames Water were looking to create a natural fish pass bypass channel—the first unobstructed channel past Oxford for more than four centuries.

Stantec was engaged to develop a solution that would meet the requirements for fish passage, deliver the required velocities and flows, while also maintaining water levels in the River Thames. Throughout the scheme, we provided services from inception to the current tendering and approval stages. The scheme delivers a sympathetic design that takes the local Sites of Special Scientific Interest, archaeology, geotechnical constraints, landowner requirements, the Thames Path, and the future Oxford Flood Alleviation Scheme into consideration.

In addition to the provision of fish pass for all species of course fish, the project will provide spawning habitat for rheophilic species in the form of locally sourced gravels.

Throughout the scheme Stantec has provided the services from inception to construction stage of the works.

This has included; outline and detailed design; stakeholder liaison; hydraulic, ecological and engineering design of the channel, access bridge and inlet structure design and approvals; Flood Risk Activity Permits; preparation of tender documents and input into the tender appraisal. Stantec are also acting as Principal Designer under the CDM Regulations 2015.

The final design will create a new channel that fits into the local environment and delivers ecological enhancement to the area. As a result, the scheme has gained the approval from the fish pass panel and has been recommended for approval by the Local Planning Authority.



BRINGING BACK "THE BACK", ST MARY'S DUNDEE

CLIENT: Scottish Water

St Marys, Dundee is a large housing estate that has several properties affected by ongoing flood problems. Scottish Water are under increasing pressure from the Scottish Government to address such sewer incapacities in the most feasible and sustainable approach. To this end an ambitious initiative has been established involving Scottish Water, consultants M2 (M squared - a joint venture between Stantec and Mott Macdonald), Dundee City Council, Nature Scotland and landscape architects OP-EN.

In St Marys, water gravitates towards St Leonard Place which runs alongside St Leonard Park; an expanse of under-used open grass, which previously included the route of the Back Burn. This historic watercourse has long since been culverted and overcome by the combined sewer network. The intention is to use the space within the park to house attenuation areas all connected by a re-introduced Back Burn – **"Bringing back the Back"**.

The upper sub-catchments of this now urbanised area includes useful areas of open space which may also be used to convey flows towards the new watercourse – this is an additional exercise also being considered within the initiative. These upper catchment areas will convey flow using a new surface water system that will offer generally above-ground runoff measures to supply the Back Burn and re-establish the watercourse.

The route of the watercourse must consider different aspects and, inevitably, the existing utilities are a key consideration.

It is envisioned that a cascade feature, wetland/s, pond/s and basin/s, boardwalk and natural, meandering stream can be brought into the park to provide a pleasant amenity and useful habitat to this somewhat deprived area.





ANGLIAN WATER RIVER RESTORATION FRAMEWORK: OPTIONEERING AND DESIGN SERVICES ON THE LARK CATCHMENT

CLIENT: Anglian Water Services

Stantec and Jacksons Civil Engineering Ltd (JCE) are supporting Anglian Water Services (AWS) to deliver their river restoration aspirations in the River Lark catchment, a chalk stream catchment that has been heavily modified for navigation and draining of the Fens. The works are focussed on four water bodies located in the area between Mildenhall, Newmarket and Bury St Edmunds, West Suffolk, England. This project will promote interconnectivity with the floodplain, improve channel characteristics and in turn, enhance biodiversity, ecology and low flow river conditions. We have developed options to address the following issues that are present across the reaches:

- Heavily modified and over-straightened / over-widened channels;
- Poached banks, owing to adjacent agricultural land use;
- Lack of connectivity with the adjacent floodplain;
- Overshading to watercourse;
- Excessive fine sediment deposition, and;
- Uniform, low energy flow conditions.

Our geomorphological and ecological site walkovers established the pressures and constraints on each reach to inform the technically feasible options that would improve the low flow conditions and biodiversity. The range of restoration options for each reach will enhance the in-channel conditions and habitats as well as the riparian banks and floodplain biodiversity and have included:

- Bank regrading to stabilise and improve vegetation and habitat quality;
- Gravel berms to narrow the over-wide channels and introduce sinuosity;
- Woody material to encourage fine sediment deposition on the channel margins;
- Tree thinning to reduce overshading, and;
- Riparian planting, both on the banks and in-channel to increase habitat variety, refuge areas and biodiversity with the reach.

Through continued liaison with AWS, EA, river partners and landowners, the detailed designs will be completed to facilitate construction in advance of December 2024.



Example of over-straightened watercourse



Example of urban, overshadowed watercourse



NATURALISING EXETER'S WATERWAYS

CLIENT: Devon Wildlife Trust

Stantec have developed the outline design utilising topographic survey of the watercourse and floodplain and a geotechnical assessment to establish the constraints and impacts of the historic landfills located at the site. This will then allow the ICM hydraulic model to be updated and to test the options.

The final designs will be informed by a review of local 'reference-stream'-geomorphology, landownership and ecology. The storage area will be connected into a 1 in 100-year event, whilst the channel realignment will be designed to improve the low flow channel conditions, creating geomorphological characteristics and variance.

The proposals are expected to be implemented in 2023 and will benefit biodiversity and improve floodplain storage to reduce flood risk downstream.

The Northbrook watercourse is a tributary of the River Exe and flows through Exeter City, it is classified as heavily modified under the Water Framework Directive. Therefore, this watercourse and its tributary (Mincinglake Stream) have been selected for catchment wide restoration.

Previous stages of the project have highlighted potential options to improve the ecology, geomorphology, and water quality within the catchment, as well as reducing flood risk to Exeter City.

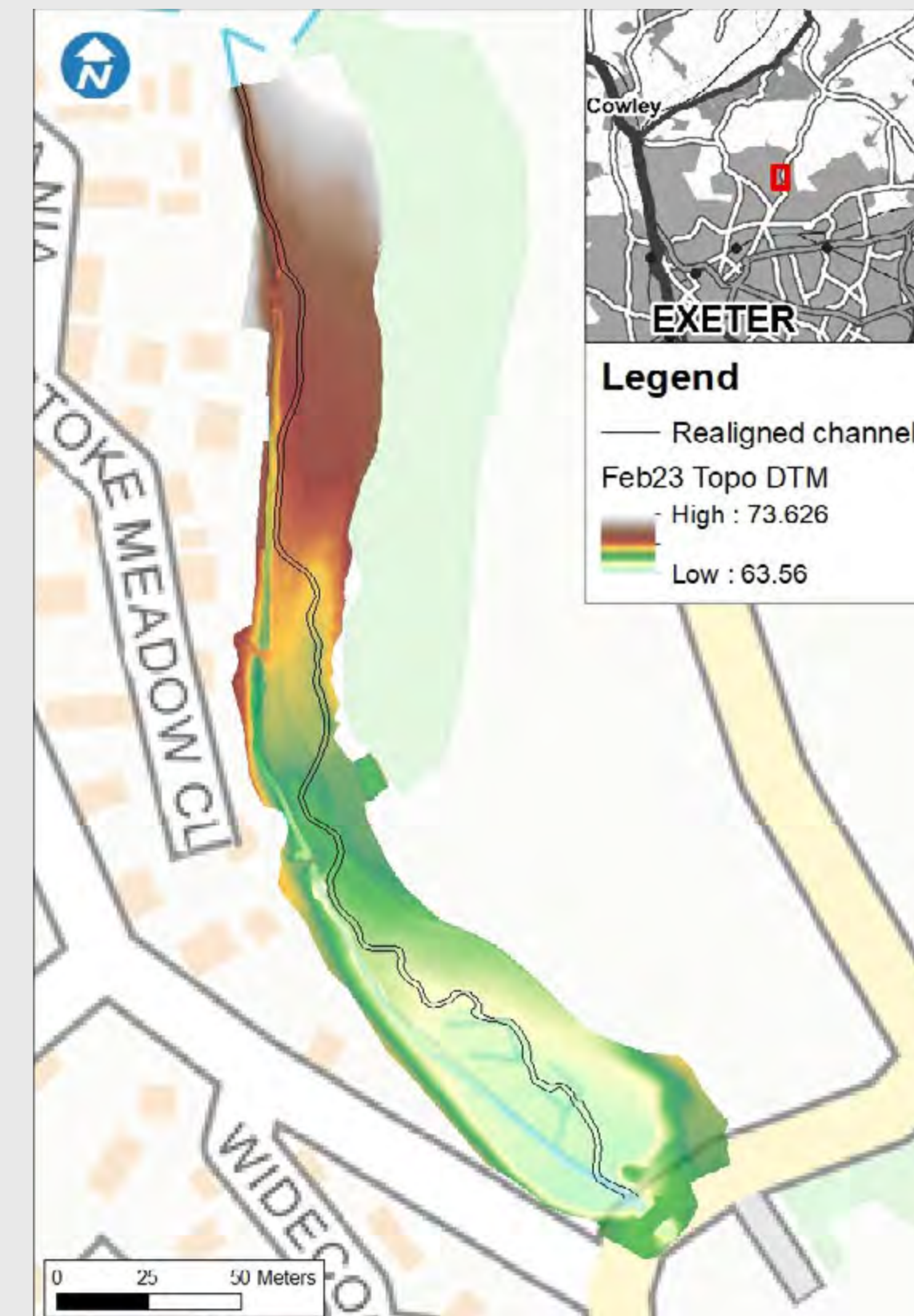
A feasibility study identified the following improvement options, in the upper catchment of the Mincinglake Stream, were to be taken to detailed design.

1. Storage areas, and;
2. Channel realignment.

We developed the outline design utilising a topographic survey of the watercourse and floodplain and a geotechnical assessment to establish the constraints and impacts of the historic landfills located at the site. This will then allow the ICM hydraulic model to be updated and to test the options.

The final designs will be informed by a review of local 'reference stream' geomorphology, landownership and ecology. The storage area will be connected into a 1 in 100 year event, whilst the channel realignment will be designed to improve the low flow channel conditions, creating geomorphological characteristics and variance.

The proposals are expected to be implemented in 2023 and will benefit biodiversity and improve floodplain storage to reduce flood risk downstream.





WATER STORAGE OPTIONS IN THE TWEED AND TILL CATCHMENT

CLIENT: Environment Agency

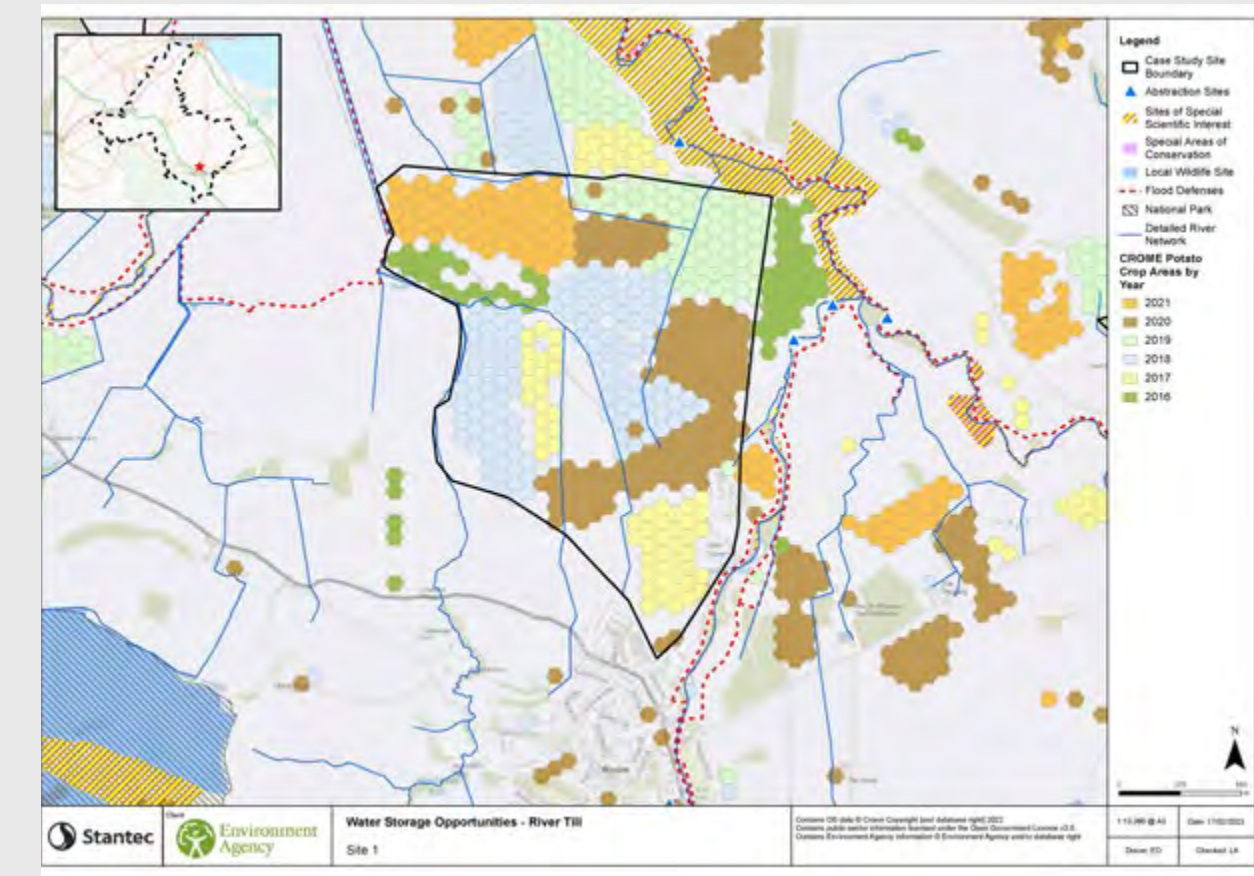
The catchment of the English Till and Tweed Rivers has a well-established agricultural sector historically exempt from the Environment Agency (EA) regulatory regime. Through the EA led New Authorisations Project the exemptions have been removed. Stantec carried out a study to enable a better understanding of the opportunities and constraints for additional surface water storage.

To choose the storage basin locations, we carried out the following:

- GIS Screening Assessment and a Multi-Criteria Analysis to establish suitable spatial locations for surface water storage;
- Case Study development – working with stakeholders, including Natural England and the Tweed Forum, to combine local knowledge with GIS outputs and develop a high-level concept of surface water storage at ten sites within the catchment.

Those ten potential sites identified for storage areas could be filled from existing surface water licensed abstractions in the area, diversion and/or blockage of small watercourses and surface water runoff. The benefits of these areas consist of

- Biodiversity enhancement;
- Refurbishment of disused assets;
- Drought and climate change resilience;
- Natural Flood Management, and,
- Commercial incentives via water trading.





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- Communities are fundamental. Whether around the corner or across the globe, they provide a foundation, a sense of place and of belonging. That’s why at Stantec, we always design with community in mind.

We care about the communities we serve—because they’re our communities too. This allows us to assess what’s needed and connect our expertise, to appreciate nuances and envision what’s never been considered, to bring together diverse perspectives so we can collaborate toward a shared success.

We’re designers, engineers, scientists, and project managers, innovating together at the intersection of community, creativity, and client relationships. Balancing these priorities results in projects that advance the quality of life in communities across the globe.

Stantec trades on the TSX and the NYSE under the symbol STN. Visit us at stantec.com or find us on social media.

Design with community in mind