

## Biodiversity Challenge Awards 2025

### *Mansfield Sustainable Flood Resilience Scheme* **Severn Trent and Partners** Mansfield, Nottinghamshire *Retrofit*

#### **Entry 42**

**Award category:**

7. Biodiversity Feature Award: Water Management

#### **1. Project overview:**

Mansfield Sustainable Flood Resilience is the largest Sustainable Drainage System (SuDS) retrofit programme in the UK, led by Severn Trent working alongside partners Mansfield District Council (MDC) and Nottinghamshire County Council (NCC) between 2022-2025. This saw the investment of £76m in climate resilient infrastructure including raingardens, bioswales and detention basins, providing over 31 million litres of surface water storage across 343 separate interventions and turning Mansfield green again! Over 2,500m<sup>2</sup> of previously impermeable surfaces have been replaced alongside over 4ha of amenity grassland and scrub transformed into wildflower meadows within the blue-green infrastructure, significantly enhancing regional biodiversity across the town.



Street Raingarden – Severn Trent



Bioswale Coming into Bloom – Severn Trent

**2. Please provide an explanation of the planning stages and how this project was set up for success.**

The primary metric for this project was volume of surface water management in accordance with the funding allowance from OFWAT. However, wider benefits such as Biodiversity Net Gain were also factored into project decision making at the earliest stages, ensuring that interventions proposed could maximise these wider benefits delivered alongside the volumetric requirement.

Early stages of the project planning involved significant desktop 'opportunity area identification' using existing data sets to identify potential areas for SuDS installations. Ecological data and existing land use/type were two key data sets feeding this process, ensuring that interventions were not proposed within areas of existing high ecological value or with distinct habitats and ensuring appropriate exclusion zones around these to avoid negative impact. Impact on existing mature and semi-mature trees was also minimised, either avoiding working within exclusion zones or, in some cases, incorporating existing trees within interventions.

For some of the larger detention basin interventions, areas of existing scrub and immature self-seeded trees were cleared to facilitate intervention construction, however these were all determined to be low value habitats and replacing them with wildflower meadow and species rich planting was deemed to be beneficial to the local environment.

Significant research was conducted into the plant species specified for each intervention type and location, ensuring suitability not only for drought and waterlogged conditions but also to complement the existing local area and any areas of vegetation. Landscaping experts were engaged from the start of the project to produce this landscaping specification and schedule and subsequently refine it as the project progressed.

Due to the permanent changes being made to the townscape of Mansfield with our SuDS interventions, extensive customer and community engagement was undertaken in various forms, including letter drops, in person workshops and a virtual room to convey relevant information throughout the project duration and ensure everyone's views and feedback was accounted for.

The spatial scattering of the 343 interventions delivered across Mansfield have significantly contributed to regional biodiversity, connecting habitats across the town and bringing thriving green infrastructure back into an otherwise 'grey' and urbanised environment.

**3. Please provide an explanation of what has been delivered as a result of the project.**

Over 2,500m<sup>2</sup> of pre-existing tarmac/concrete impermeable surfaces have been replaced with 70 raingardens and tree-pits. These interventions intercept nearly 1 million litres of surface water that previously drained directly into Mansfield's sewer network, thereby reducing downstream flooding and sewer overflow impact. In addition, they break up the previously urbanised townscape and bring significant colour and wildlife back into the heart of the town, introducing diverse plant species with long-lasting growth throughout the year.

Alongside this, over 4 hectares of previous low distinctiveness and poor condition amenity grassland and scrub has been transformed into thriving ecosystems within the 143 bioswales and 12 detention basins delivered, whilst also providing over 27 million litres of surface water storage. Of the detention basins, whilst two were submitted for Planning Permission after BNG was mandated in early 2024, we undertook baseline assessments and implemented net-gain landscaping schemes at every one to ensure the full impact and benefit of our works are understood and maximised within the scope of the project.

Alongside delivering significant BNG across Mansfield, 96 households at risk of flooding today are better protected as a result of the interventions delivered, 34 houses of which are at "very significant risk". A further 128 households assessed to be at risk of flooding in 2040 are also moved to a lower risk category, 31 of which are at "very significant risk". This has been achieved through the targeting of interventions within areas of known historic flood risk with the aim of reducing this using sustainable measures rather than traditional drainage solutions. These have additional benefits of, in some cases, completely removing the surface water from the sewer network where ground infiltration is feasible along with naturally cleaning the polluted surface water runoff from highways before returning it to the ground or watercourses.

The project is expected to achieve National Flood and Coastal Erosion Risk Management (FCERM) related economic benefits of approximately £34m, including approximately £2.4m of people related benefits. The Social Value TOM system calculated £38m of Social Value Benefits and the ciriabest tool calculated £14.5m of economic benefit across Air Quality, Education and Health & Wellbeing, all showing the vast array and magnitude of wider benefits delivered.



Memorial Gardens 'Before' – Google Street View



Memorial Gardens 'After' – Severn Trent

**4. Please provide an explanation of how on-going benefits are being monitored and maintained.**

Initial baseline assessments were undertaken by our framework consultants for the larger interventions proposed as part of the Preliminary Ecological Appraisals undertaken for all sites to ensure ecological impacts are fully understood and works safely undertaken. Net-gain plans and proposals were produced for all detention basins, whether required by mandatory BNG through the Planning process or not, with these updated post-construction to ensure they are representative of what has been installed. We have also partnered with AiDASH and their BNGAi service to trial their Earth Observation Technology, an innovative approach to long term monitoring of the interventions.

Alongside this, the University of Nottingham and University of Sheffield are currently undertaking post-project studies to ascertain social benefits and public perception, social value for the elderly, recreational impact, measure of attractiveness and desirability of Mansfield's urban areas. The findings from these studies will further inform industry tools used to calculate wider benefits from SuDS interventions to enhance future business cases for the use of Nature Based Solutions for flood and sewer overflow management.

We have entered into contract for the initial establishment of interventions with an annual regime to guarantee the initial development of the landscaping, which will be followed by a long term maintenance contract to ensure the species planted survive and thrive into the future, providing long term benefits and change for Mansfield – all funded by Severn Trent.

Several interventions were also installed within or adjacent to schools in Mansfield. As a result, we took the opportunity to deliver educational engagement sessions with the pupils, covering the water cycle and how SuDS work along with discussing the wider environmental benefits, with the pupils now able to get involved in looking after the interventions on their premises.



Detention Basin – Severn Trent



Example Detention Basin Landscaping Plan – Severn Trent