



EUROPEAN UNION



EU MISSIONS

ADAPTATION TO CLIMATE CHANGE



April 2025

Improving Water Resilience in Manchester, UK

Creating a community park with cost-effective Sustainable Urban Drainage Systems to reduce flood risk using natural water processes, supporting a larger Green Infrastructure Strategy

Manchester has a long history of flooding. An ageing sewer system, channelled rivers, and impermeable surfaces have aggravated the problem. A response is a community park in the West Gorton area with various water retention features forming a sustainable urban drainage system.

Key Learnings

- **Enhancing resilience and monitoring:** Creating a park in a formerly heavily industrialised area has improved climate and water resilience in the district and delivers co-benefits to local residents. Early-on monitoring combined with site surveys, questionnaires and interviews provide a full picture of the park's impact on flood risk reduction.
- **Flood prevention through smart design:** Several design elements, such as tree planters, specially designed to collect runoff from roads and sidewalks and filter pollutants, drainage ditches, rain gardens, permeable paving and an irrigation rill, effectively absorb excess water.
- **Stakeholder engagement and effective frameworks:** Collaborating with a diverse range of organisations working in the local area facilitates stakeholder engagement to receive local input and benefits. Consulting the local community has resulted in broad participation. A clear project scope enables acquiring relevant knowledge and skills to implement Sustainable Urban Drainage Systems, supported by material specifications and procedural frameworks.

About the region

West Gorton, a heavily industrialised suburb of Manchester in northwest England, has lost about 10% of its green space since 2000, mainly due to housing developments. Manchester City Council manages the site, located in a rapidly redeveloping area with new housing and improved infrastructure projects. Originally, the site was an unappealing park with outdated play equipment and an overgrown brownfield left behind after housing demolition.

Climate Hazards

Flooding, Hot Temperatures

Sector

Water Management, Biodiversity, Urban

Key system

Water Management, Ecosystems and Nature Based Solutions,
Critical Infrastructure



Climate Threats

Manchester's three main rivers pose a significant flood risk, especially during intense rainfall. While the UK's [Environment Agency](#) has reported no record of previous flooding in West Gorton, their flood map shows that a large part of West Gorton faces a moderate to high flood risk.

In the last fifty years, Manchester has experienced increasingly high temperatures within the city compared to its surroundings due to a rise in annual maximum temperatures. This, combined with other environmental impacts, such as a reduced cooling effect of vegetation in urban areas, makes people living in the area more vulnerable to heat-related events.

Easy-to-use and Replicable Framework for Implementing Nature-based Solutions in Cities

Investing in Nature-based Solutions in urban areas creates climate and water-resilient cities. Developing an easy-to-use and replicable framework for implementing Nature-based Solutions in cities must align with existing city priorities and facilitate awareness-raising about local climate threats. The [GrowGreen](#) project team developed a dynamic adaptive planning tool, the [Flexible Adaptation Pathway](#), to support decision-making by comparing various planning scenarios and assessing the potential effectiveness of combining different. This tool is a starting point for future Nature-based Solution projects in West Gorton and is scalable to other areas of Manchester. Additionally, the project team used the [Green City Framework](#) to evaluate whether the action plan for West Gorton incorporates key elements such as co-designing, planning and evaluating the strategy. This framework guides cities through the various stages of developing a successful Nature-Based Solutions strategy, ensuring that the final plan is evidence-based, co-developed with stakeholders, and practical to implement.

The GrowGreen project in Manchester required significant technical expertise to achieve the best possible outcome, particularly in water management and landscape design. Engaging a specialist drainage engineer and technical experts was crucial to ensure that the design meets the Sustainable Urban Drainage System requirements and health and safety standards. Supervision provided by the University of Manchester further ensured that the Nature-based Solution features were installed correctly.

The West Gorton Community Park

The West Gorton Park is a climate change adaptation response that also tackles social improvements in a deprived area. Redeveloping the former industrial site enabled the co-design of Nature-based Solutions with Sustainable Urban Drainage Systems while offering a range of social and economic benefits, such as improved climate and water resilience, biodiversity and community building. The park design is inspired by the "park that drinks water" concept from Wuhan, China, the Manchester project's twin city.

In 2017, participatory planning began for three interconnected areas – woodland, meadow, and community plaza garden:

- Community Plaza Garden (1, 2, 3) – sensory planting, a flexible event space, community spaces and seating
- Meadow (4, 5) – meadow planting, orchard trees, picnic tables, edible hedgerows, exploration play and contact with nature through mounds and a stepping-stone trail
- Woodland (6, 7) – a picnic and seating area, an informal play area with a climbing wall, timber play features, a basketball court

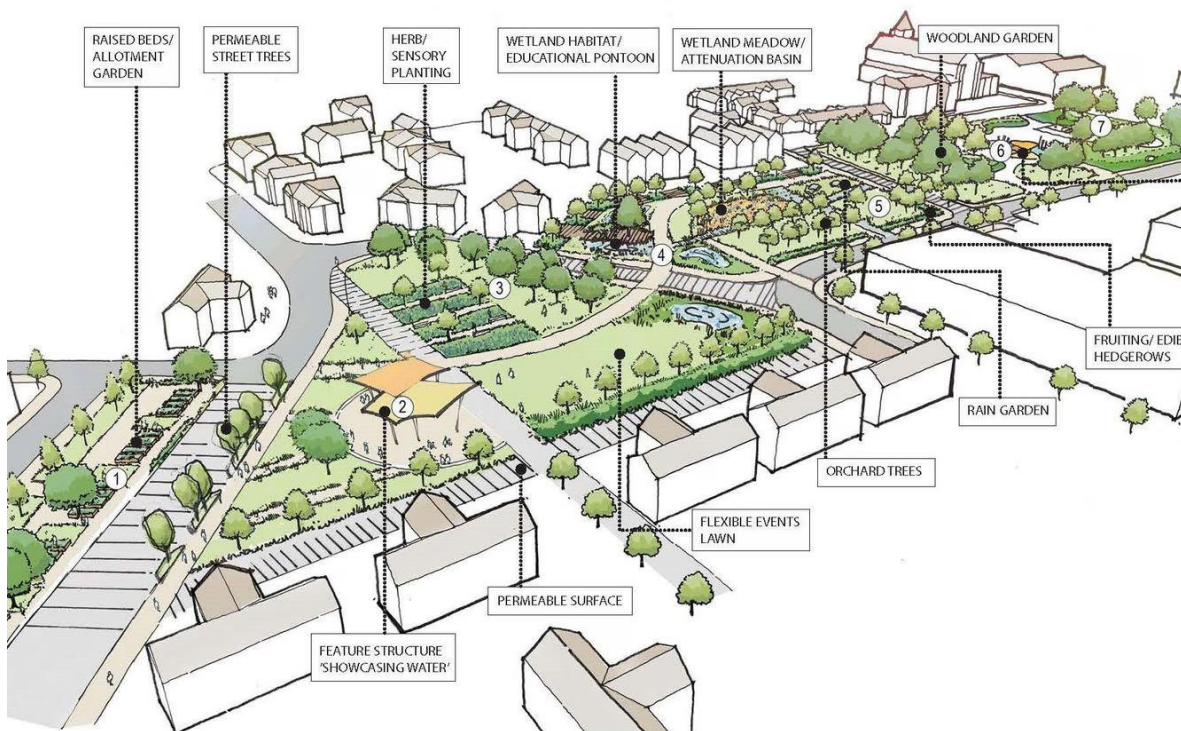


Figure 1: West Gorton Community Park feature overview. Image Credit: [BDP](#).



Figure 2: West Gorton Community Park plan view. Image Credit: [BDP](#).

The park spans across 0.7 hectares – about the size of three football pitches. Alongside the old park trees, the project team added a diverse mix of native and ornamental flowering plants and trees to enhance biodiversity. Each of the three areas incorporates distinct Sustainable Urban Drainage elements:

- Drainage ditches or swales (in all three areas): shallow trenches with aquatic vegetation store and absorb excess surface water
- Raingardens (meadow and community plaza garden): attractive wildlife-friendly spaces filled with water-loving plants that infiltrate stormwater
- Special tree planters or bioretention tree pits (woodland and community plaza garden): absorb stormwater and store it for gradual release through the root system
- Permeable paving (community plaza garden): filters rainwater into a sunken garden to water the plants

The Sustainable Urban Drainage System connects the swales, rain gardens and tree pits to the local sewer network and only operates in extreme storm conditions. The City Council opened the West Gorton Community Park in July 2020. The project team and the Manchester City Council involved many stakeholders in the co-design process. The University of Manchester, together with other partners, provided guidance for the co-design process. The design was developed in consultation with residents, politicians, schools, private companies, an environmental charity, a housing association, academics, and a range of Manchester City Council services, recognising that local community engagement is key to ongoing project success.



Figure 3: Gorton Climate Resilient Park meadow. Image Credit: [BDP and Groundwork Greater Manchester](#).

Community Engagement

The Guinness Partnership Ltd, the social housing provider and core partner, collaborated with Groundwork, an environmental charity, to conduct the community consultation. The initiative's first phase (from Spring 2017 to June 2020) raised awareness, explored perceptions of nature, and gathered aspirations for new green spaces. This process included visiting all 612 properties near the park, holding youth club sessions, setting up consultation boards outside the local health centre and primary school, and hosting various events. Residents wanted more community gardens, sports facilities, gathering spaces, children's play areas, and attractive green spaces with plants and flowers. The project team held 81 meetings, allowing citizens to engage in co-design activities at different project stages (Baseline, Concept Design, Sketch Design, Construction, and Post-Construction). Engaging diverse age groups, ethnicities, and genders assured broad inclusion.

The project contracted the environmental charity Groundwork to establish a "Friends of West Gorton Park" group, further promoting community engagement and raising awareness about climate change, biodiversity, and Nature-based Solutions at the park. They organised several events for all age groups and knowledge levels with up to 150 participants. From July 2021 to May 2022, Groundwork hosted 32 events at the park, including winter wellbeing sessions, Easter and Christmas fun days and a community "BioBlitz" – an event where residents and experts team up to identify and document local plant and animal species.

Groundwork has secured funding from the UK Lottery Fund to continue supporting the park for another 18 months. The park will be incorporated into Groundwork's Green Community Hubs network, which involves local communities taking responsibility for managing these spaces. The council's neighbourhood team will also provide ongoing support.

Measuring Climate Resilience of Nature-based Solutions

The University of Manchester undertook monitoring before (2018-2019) and after the intervention (2020-2022) to assess the impact of the Nature-based Solutions in West Gorton. The project has been a massive success in benefitting the whole area and its residents. The Nature-based Solutions and Sustainable Urban Drainage System effectively reduce runoff during heavy rain events and reduce the average ground temperature by 5°C. Fifty new floral species and 13 new tree species enhance biodiversity and improve water quality.

In two data collection phases, researchers approached over 640 residents in public outdoor spaces, asking them to complete a brief questionnaire about their physical activity levels and other well-being behaviours. The researchers conducted the survey close to community hubs like local newsagents or health centres to ensure broad participation. West Gorton residents reported greater awareness of their local environment. The number of people walking or interacting with each other in the outdoor space is now twice as high compared to before the interventions.

From a financial perspective, the benefits of the whole project outweigh the costs (1.4 million EUR) two and a half times (3.5 million EUR), calculated over a 25-year timeframe. The benefits include avoided costs for rainwater treatment and reduced healthcare costs due to mental and physical health benefits. The total financial benefits are likely even higher as the project team did not calculate many additional advantages such as carbon sequestration, biodiversity benefits or heat and air quality improvements.

Management and Maintenance

Sustainable Urban Drainage Systems require a bespoke maintenance plan with consequent maintenance overheads. Maintenance differs from a traditional park maintenance approach, as it requires cutting back vegetation, collecting debris, weeding and collecting litter. The water pipe system must remain debris-free to ensure rainwater can flow freely. Securing budgets for ongoing maintenance is challenging across the public sector, and Manchester City Council is no different. Therefore, the project team arranged to fund five-year maintenance contracts with Manchester City Council, which require renewal.

Living Lab Creation and the Impact on Manchester

Since opening in 2020, the West Gorton Community Park has become a Living Lab, offering students opportunities for dissertations and coursework on Nature-based Solutions and associated knowledge gaps. This, in turn, can close gaps when the students derive recommendations for further Nature-based Solution developments.

The project team and the Manchester City Council incorporated learnings from the GrowGreen project into the [“Green and Blue Infrastructure Strategy Implementation Plan”](#) and the first [“Strategy for Revitalising Manchester’s River Valleys and Urban Waters”](#). Both documents provide a significant step towards understanding the value of green infrastructure and rivers while highlighting the importance of well-planned Nature-based Solutions as a vital response to climate challenges.

Manchester’s City Council has appointed a Highways Sustainability Officer to develop Sustainable Urban Drainage System standards and enforce stricter planning and implementation of Nature-based Solutions and Sustainable Urban Drainage Systems in new developments.

"Not just a fun place to play, and relax, but a working network of subtle interventions that will reduce flooding and improve biodiversity over the coming years."

*Angeliki Stogia, past Lead Member for Environment, Transport and Planning,
Councillor*

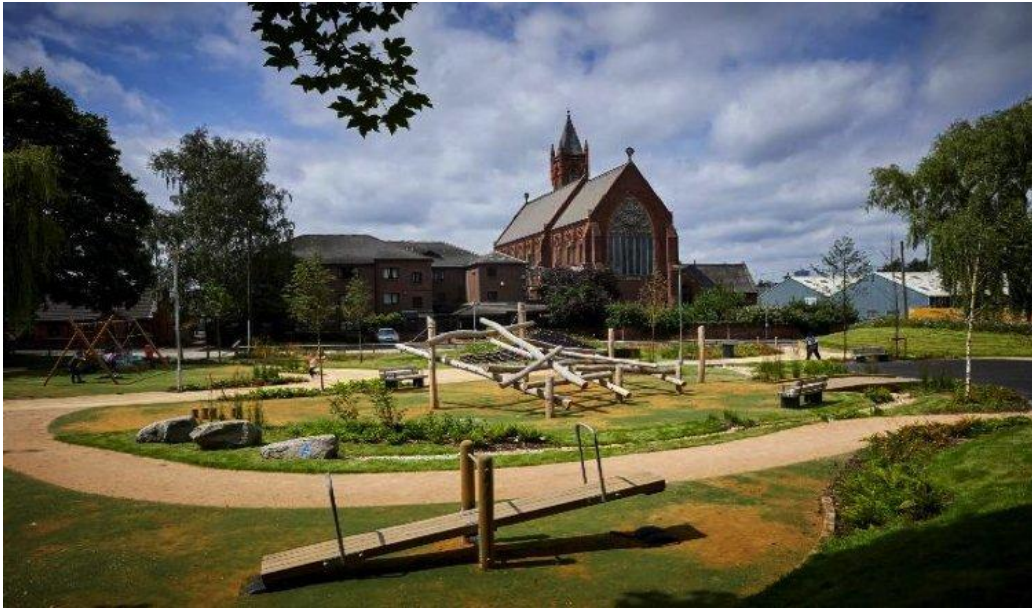


Figure 4: Gorton Climate Resilient Park, interactive facilities. Image Credit: [BDP and Groundwork Greater Manchester](#).

Summary

The West Gorton Community Park in Manchester, UK, demonstrates how Nature-based Solutions combined with Sustainable Urban Drainage Systems provide a wide range of benefits to residents while reducing the flood risk in the area. Stakeholder engagement and participatory planning involving the local community are key to ongoing project success, increasing knowledge and raising awareness about Nature-based Solutions. The Living Lab enables the incorporation of lessons learned into Nature-based Solutions and Sustainable Urban Drainage System frameworks in response to different urban challenges.

Further information

The work presented in this adaptation story is part of the [GrowGreen](#) project and written as part of the [Invest4Nature](#) project.

This project has received funding from the European Union's Horizon 2020 programme under grant agreement 730283.

Building the West Gorton Community Park cost 1.4 million EUR.

- <https://growgreenproject.eu/wp-content/uploads/2022/12/D1.4-Intervention-conclusions-Manchester.pdf>
- https://growgreenproject.eu/wp-content/uploads/2021/12/Our-Rivers-Our-City-Strategy_Final.pdf
- https://growgreenproject.eu/wp-content/uploads/2022/12/GrowGreen_GCF_handbook_Final-version-Nov22_v3.pdf
- <https://growgreenproject.eu/flexible-adaptation-pathway-approach-application-west-gorton-manchester/>
- <https://www.manchesterclimateready.com/growgreen/>
- <https://www.manchesterclimateready.com/mcr-initiatives/gorton-climate-resilient-sponge-park>
- https://static1.squarespace.com/static/62176088210b8463b5c795cb/t/63a1b7428602361734231f6e/1671542603938/GrowGreen_Manchester.pdf

Contact

Name: Michelle Oddy

Organisation: Manchester City Council

E-Mail: michelle.oddy@manchester.gov.uk



**Funded by
the European Union**

Disclaimer

This document reflects only the author's view and the European Commission is not responsible for any use that may be made of the information it contains.

Acknowledgement of previously published material and of the work of others has been made through appropriate citation, quotation or both.

Reuse is authorised provided the source is acknowledged and the original meaning or message of the document is not distorted.

The European Commission shall not be liable for any consequence stemming from the reuse. The reuse policy of the European Commission documents is implemented by Commission Decision 2011/833/EU of 12 December 2011 on the reuse of Commission documents (OJ L 330, 14.12.2011, p. 39).

All images © European Union, unless otherwise stated. Image sources: © goodluz, # 25227000, 2021. Source: Stock.Adobe.com. Icons © Flaticon – all rights reserved