Manchester's 'sponge park'

Manchester City Council
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Summary

The community 'sponge park' in West Gorton has been designed to demonstrate how green infrastructure can reduce flood risk. The new park opened in June 2020 and includes a number of sustainable urban drainage features such as swales, rain gardens, permeable paving and bio-retention tree pits to reduce the amount of rainwater entering the sewer system. The park also aims to improve local biodiversity and provide a much-needed green space for local residents to exercise, socialise and relax.

Councillor Tracey Rawlins, Executive Member for Environment and Transport, says:

“The West Gorton 'sponge park' is a perfect example of the sort of innovation required to achieve Manchester’s ambitious climate targets and build resilience against the risk of flooding. It represents a whole new way of thinking about how we cope with excess water, something we have plenty of in Manchester, by capturing, controlling, and reusing it.

“The park is both an imaginative response to this challenge and a fantastic new green community space for West Gorton in its own right. Since it opened in 2020, the park has been a success in building both climate resilience and community cohesion. It forms a crucial part of the creative, radical action we are undertaking to achieve our goal of becoming a zero-carbon city.”

The problem

Urban flooding caused by intense or prolonged rainfall which exceeds the capacity of the drainage system is a major challenge in towns and cities across Europe. There has been a shift in how urban areas perceive and manage surface water, moving from one of engineered ‘flood defence’ to one of ‘flood resilience’. At the heart of the flood resilience approach is the use of Nature-based Solutions (NbS) and associated sustainable drainage principles. These are deployed to attenuate, infiltrate, store and re-use surface water - replicating natural hydrological processes.

Manchester, as the UK’s second biggest city and with some of the heaviest rainfall, is often referred to as the “rainy city”. Surface water flooding has increased tenfold between 1945 and 2008, and is predicted to increase further with the acceleration of climate change. The GrowGreen project in Manchester looked to address some of these flooding issues, with the creation of the city’s first ‘park that drinks water’.

Our green spaces have a vital role to play in global efforts to mitigate climate change and help us adapt to the effects of extreme events, reducing flood risk, and cooling our neighbourhoods in times of heat stress. The January 2021 floods in Manchester again evidenced the need for climate-change prevention measures. Accelerating these measures will not only help to offset the damage already caused to the climate and natural environment but will also help future-proof communities to ensure that the effects of climate change are lessened.

As the climate begins to warm, higher rainfall intensities and longer storm durations increasingly challenge the flood-prevention infrastructure put in place across the city. As Manchester continues to grow as a city it is important that new infrastructure is delivered in response to the risks associated with climate change – and it is from this thinking that the Gorton 'sponge park' emerged as a viable project.

The solution

West Gorton's 'sponge park' is a park designed to 'drink water' and therefore aims to tackle the problem of flooding and build climate resilience.

The park includes Meadow, Woodland and Community areas, and has been designed in consultation with local residents. The NbS design features in the park include bioretention tree pits, swales, rain gardens, permeable paving and an irrigation rill. Existing trees were pruned to provide more attractive tree cover, framing the park and contributing to its water retention functionality.

The project received funding from the EU's Horizon 2020 Research and Innovation programme, alongside two partner areas in Europe (Valencia and Wroclaw), as 'pilots' of different climate adaptation measures.

Three KPIs were selected to assess the role of the NbS demonstration projects in reducing runoff in the three frontrunner cities. These were: reduction in peak water flows, reduction in total volumes, and the rainfall-runoff coefficient.

The hydrological monitoring carried out in Manchester, Wroclaw and Valencia has provided strong evidence for the ability of NbS features to reduce urban runoff. In addition to flood protection, the project also provides other benefits, including improving air and water quality, increasing biodiversity and enhancing community cohesion and active lifestyles.

Located in the neighbourhood of West Gorton, the park was the culmination of a ten-year, multi-million-pound regeneration programme for this area and provides a much-needed green space in an area bounded between two main arterial routes around Manchester, and a railway line.

The 'sponge park' aligns directly with the high-level 'Our Manchester' city vision, which includes that Manchester should be 'a liveable and zero carbon city'. It also delivers a key objective of the City's Green Infrastructure Plan – to deliver high-quality, functional green spaces.

Timeline

The project commenced in Spring 2017 as part of the EU's GrowGreen project, Following the project kick-off, Manchester City Council began two procurement processes; partnering with BDP as the Landscape Architect, and with Groundwork leading on community engagement. Facilitated by Groundwork, the co-creation process commenced in autumn 2017, with final designs completed in 2018. MCC then procured ID-Verde as the construction partner. There was some delay during this period, as some contractors were unable to provide the specialist SUDs installation skills required. The build aspect of the project took seven months to complete, with around a month's delay due to the onset of Covid-19 in March 2020.

Whilst on site, the project required close supervision by the University of Manchester to ensure that the SUDs features and associated monitoring equipment, were correctly installed.

Following completion on site, the University of Manchester commenced a two-year monitoring period, before presenting results to the EU at the culmination of the GrowGreen project in 2022.

Stakeholders

The park was funded by the GrowGreen EU Horizon 2020 Research and Innovation project. The EU project consortium consisted of two other 'pilot' cities in Valencia and Wroclaw, alongside three 'follower cities' –

Modena, Zadar and Brest, as well as technical consultancy Technalia, international nature conservancy body IUCN and environmental economists Trinomics.

In Manchester, the project team consisted of Manchester City Council, Manchester Climate Change Agency, Guinness Housing Group, Greater Manchester Combined Authority and the University of Manchester. The park was designed by BDP and Arup, with the community engagement led by Groundwork. This role was key, to ensure the involvement in co-design by local people. Several consultation sessions were held before and during the design process, with residents able to comment on each design iteration.

The construction was carried out by ID Verde, whilst the monitoring and impact evaluation was done by The University of Manchester, GMCA and Trinomics.

Within the City Council, numerous departments were involved. The park construction was led by the team responsible for the wider West Gorton programme of regeneration, with Capital Programmes supporting project management. Also vital to the design and implementation process were Parks, Highways and Neighbourhood teams, alongside local Members and the Executive Member for Climate and Environment.

The park has been formally adopted by Manchester City Council and is maintained by the City Council's Parks Department. Following the completion of the GrowGreen project Groundwork were successful in securing funding to continue to work with the people of West Gorton, via a 'community hubs' approach. This continued engagement is supporting the 'Friends of West Gorton Park' group established during the project, who now hold regular well-attended events at the park and have taken full ownership of the community planters located on site.

Since the park opened in 2020, visits to the Park have provided inspiration for organisations such as DEFRA and the Environment Agency, as well as for visitors from beyond the UK.

Impact

Monitoring and impact evaluation for the park has been undertaken by the University of Manchester. Data shows that the park's NbS solutions have been successful, with average water volumes entering nearby drains reducing by 97.6% and average peak flow reductions of 98.1%.

There has also been a quantifiable Biodiversity net gain, with significant increases in species numbers of trees, shrubs and ground-level vegetation.

However, perhaps the most marked impact has been on health and wellbeing. Since its opening, the park has seen a significant increase in the number of people (of all ages) observed walking in the outdoor space. There is also a significant increase in the percentage of adults interacting with each other in the outdoor space. Studies show that exposure to nature for as little as 15 minutes per day can have a positive impact on mental wellbeing, as well as encouraging physical activity.

Community development work facilitated through the park project helped to bring together a 'Friends of West Gorton Community Park' Group, who are now utilising it for numerous organised events such as a Christmas tree light switch-on. They also carry out low-level maintenance such as regular litter picking.

A survey undertaken by the University of Manchester found that levels of community interaction improved in West Gorton from 27.6% pre-greening to 49.1% in 2021. They also identified an increase in the percentage of people who reported opportunities to socialise locally, good organisation of local events and who believe the local community can influence local issues.

Lessons learned

As both a test-bed for flood mitigation measures and as a high-quality, biodiverse, green space which attracts the community to exercise and socialise in nature the park has been a huge success.

Engagement of stakeholders throughout has been essential. Community members have been engaged from the initial co-design stages and have been supported to form a 'Friends group', and host events attended by over 100

people. This momentum has been retained by the continued commitment of Groundwork and MCC's Neighbourhoods team, with the latter securing further funding to work with residents, utilising the newly created community asset.

The engagement of Local Authority stakeholders has also been key to not only the continued success of the park itself but to the implementation of similar measures across the city. The Highways team for example are now looking more actively at integrating SUDs into their schemes, and the Parks team are seeking to identify smaller-scale SUDs.

The park has been an excellent tool for education around climate mitigation measures, particularly SUDs. Members, Directors and Senior Managers from MCC have been inspired by their visits to the park. It has hosted delegations not only from DEFRA and the Environment Agency but also internationally.

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The project cost a total of £1.2 million (€1.4 million). This included landscape design as well as construction. The majority of this was funded by the EU Horizon 2020 GrowGreen project, with a contribution from Manchester City Council.

Whilst not providing direct income to the Council, the park will provide many indirect financial benefits. MCC and United Utilities (the water network provider) will save on costs associated with surface water flooding. Research undertaken by economists Trinomics suggest that residents will see an increase in the value of their homes. Additionally, SME Groundwork have secured further funding to continue their activities in the area, not only empowering and energising the community but retaining employment in their organisation.

Next steps

The park has been adopted by the Council's Parks Department and demonstrates that well-designed and well-delivered NbS interventions are effective in reducing the frequency, rate and volumes of run-off. Integrating hydrological monitoring requirements within the design and construction of NbS features needs careful planning and supervision but does require some elements of specialist maintenance which cannot currently be delivered in-house.

This park has sparked interest from within MCC and beyond to replicate the SUDs concept elsewhere across the authority and is an award-winning example of how Nbs can be integrated into our cities in a way that adds significant social and environmental value to local communities.

Links, contacts, and credits

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