Mayesbrook Park

Green Infrastructure Case Study

Creating the UK's first climate change park in east London

NATURAL ENGLAND

The Mayesbrook Park project demonstrates how a green infrastructure approach to urban river restoration is a strong alternative to traditional hard engineering. By using green infrastructure to address flood-water management, the project has created an attractive public amenity, while the communities that surround the park and the wildlife within it are now able to cope better with the effects of climate change.

Snapshot

- **New floodplain, wetland and river spaces have provided a multifunctional landscape that is more resilient to climate change for people and wildlife**
- **An ecosystem services assessment helped build the case for investment in an integrated urban river restoration, revealing a long-term return to society of at least £7 for every £1 spent**
- **Creation of 500m of new sinuous water channels help to slow high flows and improve habitat diversity, while 450m of re-graded banks help to increase the capacity of the river and improve the riverside habitat**
- **Extensive public consultation helped the partners address local concerns about the park in the restoration masterplan**

The restored river at Mayesbrook Park

Key facts:

- Size of Mayesbrook Park: 45 ha (111 acres)
- The Mayes Brook runs through the park for 1.6km
- Size of restored natural floodplain: 1.5 ha (3.7 acres)
- Phase one was completed in September 2011 and cost £1,646,000
- Extra flood storage created to retain water and reduce local flood risks totalled 15,800m^3
- Key partners for Mayesbrook Park London Borough of Barking and Dagenham (LBBD), the Environment Agency, Thames River Restoration Trust, Natural England, London Wildlife Trust and the Mayor of London. Significant funding was also provided by the insurance compmay RSA Ltd and the SITA Trust

Key environmental functions:

- Adapting the park and surrounding area to climate change
- Improving flood water management, thereby protecting local homes and businesses
- Enhancing biodiversity through habitat creation and improved water quality
- Creating opportunities for people to engage with the natural environment

Introduction

The restoration of Mayesbrook Park in east London was a project to restore the river that originally gave the park its name. A significant driver of the project was to update the park's 50-year-old flood management infrastructure using a green infrastructure approach that would create natural flood storage at the same time as regenerating the park, increasing urban greening and creating opportunities for natural play and access to nature.

A multi-agency partnership was formed to take this vision forward with the intention that Mayesbrook Park would also demonstrate how practical yet attractive measures can help adapt urban areas to the impacts of climate change. These impacts include increased instances of flooding and drought, significant rises in temperature due to the urban heat island effect and loss of wildlife habitat.

Site boundary and location of Mayesbrook Park

Located in the London Borough of Barking and Dagenham, Mayesbrook Park is a 45 ha park bordered by the Mayes Brook, a tributary of the River Roding, which runs through the park for 1.6km. When the park was built in the 1930s, the Mayes Brook was realigned to the west side of the park and sunk into a deep concrete channel, essentially limiting the river's functions to acting as a road drain and flood water channel. Two lakes, created by extracting aggregate used to build the houses surrounding the park, once proved popular for boating and angling, but suffered from pollution as water from the river was diverted for flood management.

The restored floodplain and wetlands provide a multifunctional landscape

The whole of the park is designated as Metropolitan Open Land and Protected Open Space, with approximately 40 percent, including the Mayes Brook, designated as a Nature Conservation Area and a Site of Borough Importance Grade II. Lake one, which is unofficially used for fishing, and the surrounding acid grassland and scrub habitat was designated as a Local Nature Reserve in 2005. It is largely semi-natural with well-established and diverse marginal vegetation and attractive tree-lined banks, including some notable weeping willows.

Creating a multifunctional landscape to deliver multiple benefits

One of the secrets of Mayesbrook Park's success is that it is a river corridor project designed at the landscape scale. It delivers multiple benefits simultaneously, which helped partners to achieve their individual business objectives while pooling their knowledge and resources. A total of £1.5m was raised to allow phase one of the project, which is the focus of this case study, to begin in 2011.

This included the restoration of 1km of the Mayes Brook river and the creation of a new 1.5 ha floodplain, riverside wetlands and woodland planting, improved park entrances, new furniture and play facilities, and an outdoor gym. Phase two will focus on increasing the resilience of the park's lake systems to climate change, while phase three will establish a green corridor between Mayesbrook Park and Goodmayes Park to enable wildlife migration in response to seasonal changes or climate change pressures.

In 2003, the London Borough of Barking and Dagenham Parks and Green Spaces Strategy had identified Mayesbrook Park as an asset in need of rejuvenation. In 2007, the council with the Thames River Restoration Trust, Environment Agency and Design for London, began preparing a masterplan for improving the whole park. At the same time, a survey of north London rivers by the River Restoration Centre declared the Mayes Brook river as the site with the greatest potential to demonstrate natural flood management processes. This was quickly followed by the Thames Restoration Trust securing a donation of £300,000 from the insurance company RSA Ltd to begin the project.

Creation of 500m of new sinuous water channels help to slow high flows and improve habitat diversity

Additional funding was secured in 2008 through the Mayor of London's Help a London Park scheme to create a multi-use park that would be resilient to climate change and £150,000 support from Natural England's 'Access to Nature' fund. In 2009, the park was recognised as a flagship project in the London Rivers Action Plan and the East London Green Grid. That same year support from Natural England's Natural Connections scheme kickstarted community engagement with with local schools led by London Wildlife Trust, Thames21 and Studio 3 Arts.

Extensive consultation carried out during 2009 reflected the strength of local interest in the park, with a high proportion of 2,000 questionnaires returned. Local concerns about safety within the park were incorporated into the design, which proposed a more welcoming and inclusive park to attract a wider group of people through engagement activities, renewed facilities and keeping sight lines open.

An Ecosystem Services Assessment conducted by the Environment Agency in cooperation with Queen Mary University of London quantified the benefits from all of the proposed restoration work. This value-based approach to urban green infrastructure demonstrated that the restoration of the park was a cost-effective way of improving

the wellbeing of the local community and proved influential in convincing funders to contribute to the project. The report, which was published in 2010, found that the uplift in the value of the ecosystem services gained through the whole Mayesbrook Park restoration project estimated a long-term return to society of at least £7 for every £1 spent on the project.

The report also found that more than 88 percent of the total ecosystem service benefits assessed for the park were benefits to health (such as improving air quality), risk (such as reducing potential flood damage) and cultural value (such as providing opportunities for education). The report concluded that the Mayesbrook Park assessment supported the results of four other ecosystem services assessments in showing that "by restoring ecosystem vitality and functioning, beneficial services are either boosted or maintained across all ecosystem-service categories". This contrasts markedly with traditional 'hard engineering' solutions, the report said, which "tend to maximise single services (flood risk etc), while generally having unintended consequences for a range of other interconnected services".

Training facility for London 2012 Olympic Games

In 2011, the London Borough of Barking and Dagenham signed an agreement with the London Organising Committee of the Olympic Games (LOCOG) for the construction of a £10m training facility for London 2012 athletes in the park. LOCOG also provided £120,000 funding for the construction of a series of ponds to channel clean rainwater run-off from the roof into the restored Mayes Brook to maintain flows, improve habitat diversity and water quality as part of the green legacy of the Games.

Using the river restoration as a catalyst for restructuring the whole park

The restoration of the Mayes Brook river provided a catalyst for changing the static and neglected feel of the park landscape. It kickstarted a new vision to restructure the park with a more intuitive and balanced layout that re-established the brook as an asset rather than a fenced-off hazard.

The river itself has been restored with 500m of new sinuous water channels to help slow high flows and create habitat diversity, and 450m of re-graded banks to increase the capacity of the river and improve the riverside habitat. At the heart of the redesigned park is a new 1.5 ha floodplain that will safely store floodwater and slowy release it. The floodplain has been designed as a complex patchwork of gravel riffles, runs, seasonal ponds, reed beds, acid grassland and scrub vegetation, and now provides home for a range of wildlife rarely seen in one of the most deprived boroughs in London. Freshwater fish, water birds, amphibians and bats call the park home, while the new visually attractive meandering channel slows water down during high flows and allows for safer access to the park for visitors who want to enjoy the waterside. The floodplain is a key feature in making the park and its surrounding area adaptable to the challenges it is likely to face a result of climate change. It has created an additional 15,800m^3 in flood storage capacity (equivalent to six Olympic-size swimming pools) that will reduce the flood risk to neighbouring residents. As the aquatic vegetation and reedbeds become established, wetland ponds and backwaters will provide refuges for wildlife, helping them to survive in extreme conditions. The new swales and 1,000m^2 of reedbeds also act as natural filters, helping to purify contaminated run off from neighbouring estates before it enters the river channel itself.

Where once there was flat, soulless patches of green, rolling terrain has been integrated into the park and riverside woodlands and acid grassland planted by the local community now reconnects the river to its natural floodplain. This woodland provides new habitat for London Biodiversity Action Plan bird species, including the House Sparrow, Mistle Thrush and Linnet, while a 1 ha increase in woodland and tree cover will also provide shading for people during the hot summer months.

Securing the future of the park by involving the community from the start

Prior to the restoration, the Mayesbrook Park was unloved and underused, so for the project to be a success, it was important to reconnect the neighbouring communities with the park and its planned refurbishment. To help achieve this, Studio 3 Arts were commissioned to work with the three primary schools nearby – Manor Junior, Eastbury and Dorothy Barley – and children created artworks based on visits to the park. Despite being only five minutes walk away, many of the children and teachers were unaware of the park until these sessions took place. The children's artworks were then used in the consultation exercise with the wider community and to help publicise the changes taking place at Mayesbrook to a wider audience.

Extensive consultation reflected the strength of local interest in the park

Engagement encouraged local people to better understand and care for the new park

In addition, Natural England also worked with the schools to see how the park could be most relevant to their needs. This led to development of a suite of projects: London Wildlife Trust worked with Eastbury to develop an after-school club that brought the children closer to the wildlife at the park and worked to improve biodiversity within the school grounds; and Thames 21, Trees for Cities and Studio 3 Arts ran five sessions at Manor Junior, with each organisation delivering a different part of the curriculum based around the park. In both cases, resources were developed to ensure that there was a lasting legacy within the schools.

Ongoing consultation has been important in establishing links with the wider community and new natural play facilities and trail markers in the park are based on designs by local children. Outdoor activities delivered by the new Mayesbrook Park ranger and the London Wildlife Trust through the 'Wild at Heart' programme continue to engage local people with opportunities to better understand and care for the new integrated river and park landscape.

Just as important has been to help local people understand the natural services provided by the river and make small changes in their own lives to ensure the continued health of the river channel. By linking up the local council's environmental health officers and Thames Water's Misconnections Project, which is part of the national Connect Right Campaign, people are more informed about making sure their home plumbing isn't discharging into the Mayes Brook.

Lessons learnt from restoring an urban river park to a multifunctional landscape

In creating a thriving, multifunctional landscape, the Mayesbrook Climate Change Park demonstrates how an urban river park restoration can succesfully deliver public, private and voluntary sector objectives simultaneously. Furthermore, it shows how by combining knowledge, data and resources, different sectors can deliver large projects that provide a wide range of benefits that no single organisation could afford to fund alone.

The Mayesbrook Park restoration would not have been possible without this successful partnership approach. As landowners and lead partners, local councils are in a good position to maximise the benefits to local communities and their public spaces by linking together a variety projects. So the benefits of improving the environmental services of the urban river, such as increased biodiversity, can be linked with improvements in the park users' experience.

The creation of natural flood storage with resilient planting and habitat features has made the park landscape adaptable to climate change in the future, which will help local wildlife and people cope with future wetter, hotter and drier and more extreme weather. These physical improvements to the park went hand in hand with addressing water quality issues and the Mayes Brook today shows that it is possible to restore even the worst London rivers to meet the 'Good Ecological Potential' standard of the EU Water Framework Directive.

Combining social and environmental regeneration goals also increased the financial and human resources available from a wider range of sources. The case for investment was made stronger by carrying out an ecosystem services assessment and the ecologically-fcoused masterplan for the park also demonstrated how large-scale improvements could be made but with a non-intensive management strategy and lower ongoing maintence costs.

The second phase of the project, which began in 2012, will focus on restoring the two lakes, which will help to better cool the area and see boating and angling reintroduced to the park. It will also continue to strive to inspire and engage the community. The plans include a café surrounded by a garden of drought-resistant plants and a display offering advice to people about how they can change their own lives to better cope with the impact of climate change.

For further information

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