Learning legacy

Lessons learned from the London 2012 Games construction project

Restoring the Olympic Park waterways

The location and scale of the Olympic Park provided a unique opportunity to devise a waterways restoration strategy addressing water quality, flood-risk management, navigation, biodiversity and recreation. This micro report describes how these inter-related issues were addressed through an integrated, creative and collaborative approach to strategic and detailed design. Key lessons learnt in the process include the value of preparing a strategic flood risk assessment early to define the design parameters and push for innovation throughout the design process.

Introduction

The years of industrial development and activities on and adjacent to the Olympic Park waterways, and the subsequent neglect and lack of investment had left a legacy of:
– deteriorating river walls;
– inoperable locks and poor navigability;
– poor water quality;
– vacant land uses which backed onto the waterways;
– inaccessibility and steep-sided banks many of which were vegetated with invasive species.

In addition, there was serious risk of flooding. The Park project provided an opportunity to create a new environment, reflecting the natural signature of the Lea Valley while also providing flood risk management, water management and enhanced ecological habitats.

Key challenges

In seeking to regenerate the waterways the Olympic Delivery Authority (ODA) addressed several key challenges:
– The waterways infrastructure of walls and locks particularly in the southern Park had deteriorated badly.
– Navigation to the southern Park was limited to due lack of dredging. Improved navigability would allow the sustainable transport of materials into and out of the Park.
– The above and below ground water quality in the Lea Valley was generally poor, the result of misconnections to the waterway, sewer overflows at Abbey Mills and industrial pollution.
– While there were some good quality ecological habitats at the river margins, they were being out-competed by aggressive invasive species such as Japanese knotweed, giant hogweed and Himalayan balsam.
– The existing towpaths in the area were about 1.8 metres wide with overgrown vegetation, poor surfacing and adjacent land uses which created an unsafe and insecure environment for pedestrians and cyclists.
– There was little access to the river in the north of the Park due to adjacent land uses and steeply sloping banks.
– There was little opportunity for recreational activity.
– Flood risk was a major issue for this area, with a significant number of adjacent properties likely to be affected by a 1-in-100 year flood.
Integrated design
The ODA sought to address these challenges through an integrated and collaborative approach to design. Design teams including landscape architects; geotechnical, structural, civil, drainage and river engineers; planners; ecologists and others were encouraged to consider the challenges above as well as opportunities presented by the water environment.

Flood mitigation
As part of the initial Masterplanning the ODA produced a Strategic Flood Risk Assessment which modelled the tidal and fluvial flows in the area. This set the parameters for the teams to ‘design in’ suitable flood mitigation measures at the strategic scale, and subsequently through more detailed flood-modelling, river edges, wetlands and wet woodlands. Through this early modelling work, the ODA identified several flood mitigation measures including:

– widening the Waterworks River adjacent to the Aquatics venue by 8m. This improved water flow through the area, and allowed the creation of a planted strip of waterside vegetation improving ecological connectivity and visual appeal;
– repairing and replacing much of the river wall infrastructure in the south Park allowed for towpaths 4m wide; safer waterways with ladders, chains and balconades along the Waterworks River, the flood channel;
– the creation of the new Three Mills Lock on the Prescott Channel south of the Park along with dredging, this allowed access for bigger barges and the movement of approximately 15 per cent of all construction waste. It supported flood risk management proposals, allowing for the control of water levels in the Park and creating the environment for the installation of new habitats along the river edges. By installing the lock upstream of the Abbey Mills Sewage Treatment Works, the ODA was able to significantly improve water quality by removing the potential for sewage overflow to move upstream in to the Park with the tide;
– creating a wetland bowl in the North Park to provide additional flood storage in conjunction with the culverting of the Channelsea River, this allowed the recreation of naturalised wetland, wet woodland and other habitats; improved accessibility and recreational potential.

Additionally, the design team integrated a series of swales and frog ponds into the north Park landscape in order to allow a more sustainable urban drainage system to manage rainfall and support the ODAs biodiversity targets.

Recreational uses
The ODA also sought to create a waterway environment to encourage a greater mix of recreational uses. The creation of wider, more extensive towpaths and river walks allows for greater movement along the river corridors, and boat moorings provided in specific areas for navigation during and after the Games, brings greater activity and animation to the waterways.

Contaminated groundwater monitoring
Contaminated groundwater was intercepted and pumped to treatment plants for remediation, before being discharged back into the ground. A series of ‘cut-off’ walls were also installed alongside the waterways, to prevent shallow contaminated groundwater from directly entering the waterways.

Conclusion and lessons learned
– Prepare strategic assessments early on and promote creative, integrated, collaborative solutions to multiple challenges. The ODA recognised early on that the Lea waterways provided a unique opportunity as the setting for Games and legacy development. The Strategic Flood Risk Assessment was key in setting challenging design parameters for the Master planners to solve in a creative and collaborative way.
– Continue to seek better solutions as detailed design progresses. Further detailed flood-risk assessments and design work by the landscape architects, river engineers and ecologists inspired the creation of a complex ‘working’, recreational and biodiverse landscape that addresses multiple technical requirements in an integrated way.

Project
Parklands and Public Realm

Suppliers
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