

November 2021

Uniclass L534:L217



Landscape
Institute
Awards 2017
Winner

- Innovative permeable overlay on an existing road base
- Permeable paving sustaining trees & green infrastructure
- Project re-visit demonstrates long term performance
- Community driven public realm regeneration with SuDS

BRIDGET JOYCE SQUARE AUSTRALIA ROAD LONDON

EDITION 2



INTRODUCTION

The award-winning Bridget Joyce Square in Australia Road, White City, London, is a sustainable drainage (SuDS) park with community at its heart and an exemplar for future urban landscapes. Its design, by SuDS consultants and landscape architects Robert Bray Associates, in conjunction with McCloy Consulting, introduces the innovative concept of a concrete block permeable paving overlay regenerating existing impermeable surfaces.

This low-intervention, thin overlay technology enables sustainable reuse of conventional road bases and their embodied carbon, creating attractive, safe shared-surfaces, capturing rainwater runoff straight from the surface without gulleys. Permeable paving overlays can then provide a gradual flow of clean water laterally into raingardens or basins, for storage and irrigation.

In addition to exploring the design of this important project, following a site visit some 5-years after completion the second edition of this case study also highlights the impact of concrete block permeable paving overlays as an irrigation source, sustaining street trees and green infrastructure.

The scheme won 'Winner of Winners' (the President's Award) as well as Winner of the 'Adding Value through Landscape' category at the 2017 Landscape Institute Awards, and also an ICE London Civil Engineering Award 2016.



“An exemplary approach to partnership working in delivering solutions to so many problems in a way that can, and should be, replicated nationally”
– The Landscape Institute judges

COMMUNITY DRIVEN REGENERATION

In 2013, the head teacher of Randolph Beresford School and the White City Residents' Association approached the London Borough of Hammersmith & Fulham. They recognised that the road in front of the school was unsafe and unhealthy, and identified the need for a public meeting space where events could be held. Coincidentally, the Borough was looking for a landmark retrofit SuDS project at that time.

Consultation with local people and a realization of the potential for the site led to an integrated design that linked two disconnected spaces and created a social arena celebrating rainfall. Concrete block permeable paving was used to break the existing formal road alignment and introduce a 'piazza' within the Bridget Joyce Square.

The scheme also connected the Randolph Beresford Early Years Centre to an adjacent play area and generated a social hub for parents and children. Local residents were keen to retain memories of the low wall in front of the school, used as a balance beam in their youth. From this the thematic 'Wiggly Wall' was born and became part of a 'ribbon' motif that united the linear spaces and symbolised the bringing together of the community.

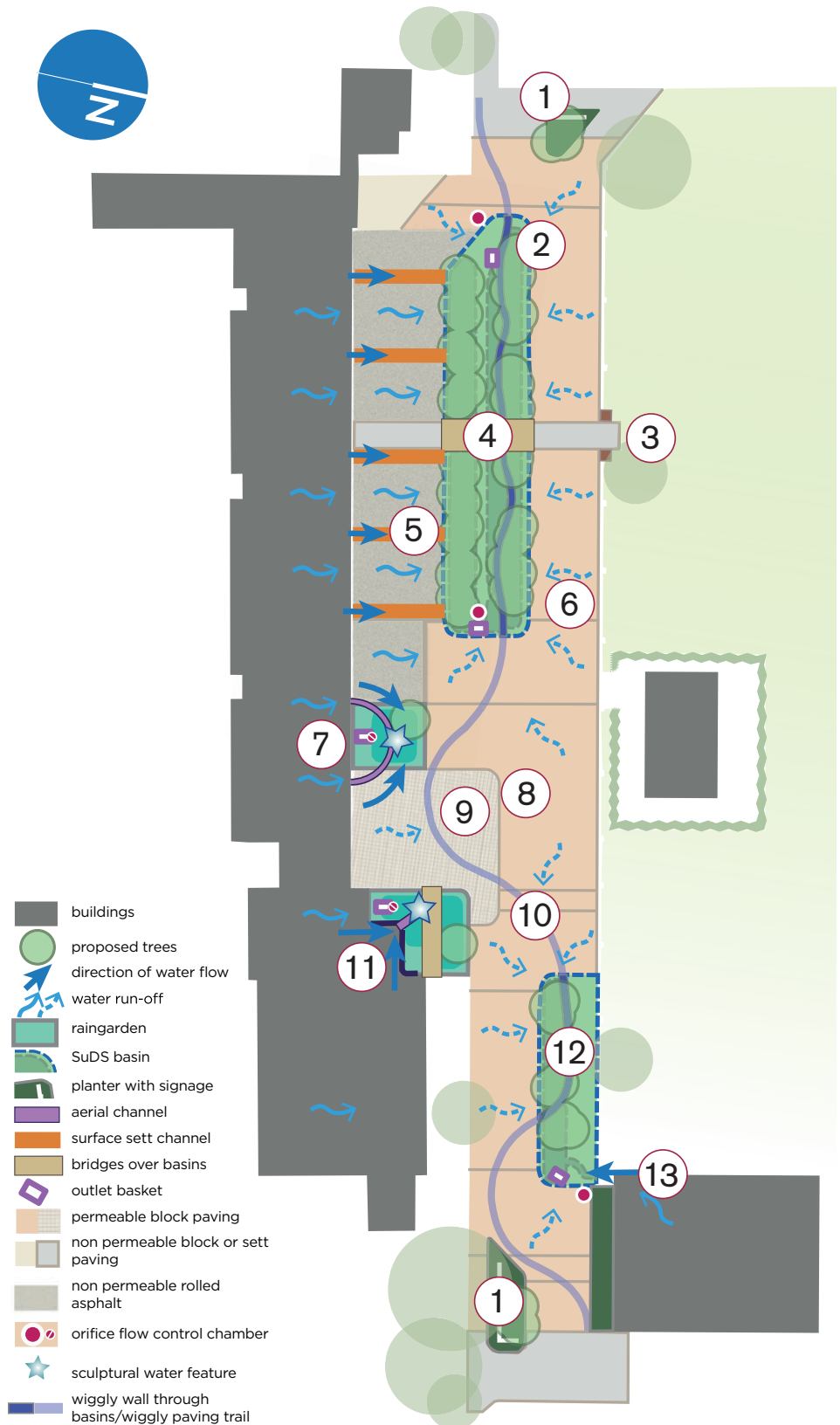
Most importantly, it has been enthusiastically welcomed by local residents, as recognised by a Sustrans community survey. Ben Addy, Head of Collaborative Design, Sustrans, considered the project to be: *"a fantastic example of a Healthy Street. One that encourages walking and cycling, creates opportunities for play and socialising, and tackles a pressing need around water management and urban greening."*



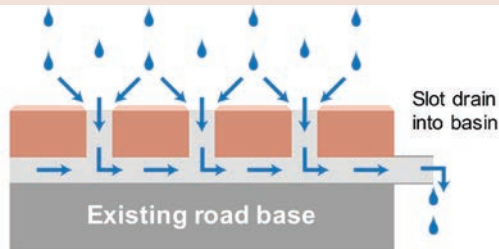
"I can't think of a better example of where a local authority has to do some work and they actually come to a community, learn from the experiences of that community and actually put in place things that are absolutely, directly responsive to the needs of the community"
– Harry Audley, Chairman of the White City Residents' Association

DESIGN STRATEGY LAYOUT PLAN

- 1 Prominent gateway features create a sense of entrance into a new space. A change of paving signals the pedestrian realm.
- 2 The main planted basins feature the 'wiggly wall' weaving between Birch trees and tall grasses. Each of the two basins stores rainwater collected from the surrounding permeable paved areas and the school roof and releases it slowly to the sewer.
- 3 New gateway allowing access directly from the park to the playground.
- 4 SuDS Basin 1.
- 5 Surface sett channels take rainwater from the downpipes and carry it to the main basin.
- 6 Paved areas are permeable, collecting and cleaning rainwater before conveying it to the basins via the sub-base layer.
- 7 Raingarden 1.
- 8 Main plaza.
- 9 The school entrance is more open and welcoming with permeable paved area, bench seating and rain sculptures bringing rainwater down from the school roof to the flowering raingardens
- 10 A natural stone paving feature weaves through the park from one end to the other providing visual interest and a fun trail for children to follow.
- 11 Raingarden 2.
- 12 SuDS Basin 2.
- 13 Adventure playground building.



SUDS DESIGN



Water is transported via the bedding course below the blocks

The SuDS landscape celebrates roof water collection with sculptural gutters, downpipes and twisted steel halyards bringing water into planted raingardens. Some roof water, together with car park runoff, flows along sett channels and through stainless steel letterboxes into planted basins.

The concrete block permeable paving overlay simply replaces a tarmac road surface over the original road base. The same blocks and 2-6mm grit bedding layer and jointing material as used in permeable pavements generally are here installed over a geo-composite conveyance sheet and transport water horizontally, on an impermeable membrane covering the road base. Water is attenuated and treated within the paving, then released horizontally via stainless steel letterbox slots into the planted basins.

The basins provide the required SuDS water storage, to avoid overloading the existing sewer, as well as irrigation. Finally, two flow control chambers on outlets from the basins protect the combined sewer, allowing water to flow from the site at 1 litre/second through 20mm orifices. Thus, rainfall remains within the SuDS landscape until storms have passed and the sewer can deal with water again.





Sculptural metal elements at high level feed roof-water into raingardens.



Water from the permeable paving simply discharges horizontally into the planted basins through slots in the side-walls.

The original road surface has been replaced with attractive, 'self-draining' concrete block permeable paving. Clean water from the permeable paving passes into the planted basins. The 'wiggly wall' feature meanders through both paving and planting.



PERMEABLE PAVING AND STREET TREES



Interpave revisited the project in August 2021, around 5 years after completion, and noted that the permeable paving was performing well and, it is understood from local sources, experienced no problems during recent extreme summer storms, despite extensive flooding nearby. Tests (in accordance with ASTM C1781) were also carried out demonstrating that all the water infiltration rates of the permeable paving were more than double those required by 'The SuDS Manual' (CIRIA, 2015).

The trees and other green infrastructure were healthy, substantial and particularly well-established. Robert Bray Associates founder, SuDS expert and landscape architect Bob Bray commented: *'All the plants have grown really well. Birches are particularly sensitive to drought and urban heat island effect but they have thrived here and the vegetation has remained green all summer. The critical thing seems to be that even small rainfall events are captured by the permeable paving in summer to benefit trees in the basins.'*



Acknowledgements

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Case study prepared by Hodsons.
www.hodsons.com

Photos courtesy of: 46Photography/
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www.paving.org.uk

THE WIDER VIEW

This project has important implications for the delivery of measures to address climate change. The 2021 'National Planning Policy Framework' (NPPF) states: *'Planning policies and decisions should ensure that new streets are tree-lined and that opportunities are taken to incorporate trees elsewhere in developments'*. However, measures are needed to nurture and allow trees to mature and deliver their real potential – including net carbon storage, urban cooling through shading and evapotranspiration, biodiversity and public wellbeing. So, the NPPF also requires that: *'appropriate measures are in place to secure the long-term maintenance of newly-planted trees, and that existing trees are retained wherever possible'*.

Concrete block permeable paving offers unique opportunities to collect, store and treat rainwater runoff, removing pollutants before irrigating green infrastructure. Local planning authorities now need to incorporate long-term tree maintenance measures in their planning consents and, as a straightforward spatial measure, permeable paving providing irrigation, offers a sustainable multifunctional solution.

Interpave is a product association of the British Precast Federation Ltd.



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