

## GREEN INFRASTRUCTURE STREETScape A MULTI-AGENCY EFFORT

### Red Rose Forest and University of Manchester Take on Managing Surface Water

Red Rose Forest is an environmental charity working to transform Greater Manchester into “a greener, healthier and more satisfying place to live, work, and invest.” When Pete Stringer, Special Projects Manager for Red Rose Forest, wanted to deliver a tree plant-



ing project that could demonstrate and quantify how trees could help to managing surface water runoff and improve water quality, he contacted DeepRoot about getting involved.

Red Rose Forest, in partnership with the University of Manchester, wanted to assess how trees and soil under paving could be used as a form of ultra-urban “green infrastructure” to improve water quality and reduce the amount of runoff directed into the sewer.

The selected site for the project site is a footpath in a residential area in Salford near Manchester. This was a challenging environment on a site where trees had previously failed and been removed.

Red Rose Forest installed three trees in a 3-layer Silva Cell system filled with a bioretention soil provided by British Sugar. Water enters the system using slot kerbs, which convey it from around a 50m<sup>2</sup> catchment area into a distribution pipe under the paving, where it is then distributed throughout the whole system. An underdrain sits at the bottom of the system to convey excess water away. Monitoring chambers at either end were installed to make collecting water samples easy; data collection began as soon as the last of the monitoring equipment was installed. Manchester University is responsible for supervising the data collection; the idea is to involve university students and pupils from the local secondary school, the Oasis Academy, to help analyse the data over the coming years.

The project has been funded by Salford City Council, the Environment Agency, and United Utilities, who are all keen to explore real life natural solutions for tackling localized flooding and diffuse pollution, the latter being a key requirement of the European Water Framework Directive. This project would set an important precedent with regards to the management of surface water, and Red Rose Forest hopes that the data will provide a compelling argument that trees and soils are a viable alternative to engineered drainage systems in future iterations of the Local Development Framework.

As of this writing, results are still being gathered, but Pete Stringer is full of enthusiasm for the preliminary results, and surprised and impressed with the clarity of the water exiting the system from the first rainfall event. “The aim of the Howard Street project is to

demonstrate and quantify how, in an urban context, green infrastructure such as street trees can provide a natural solution to managing surface water runoff and addressing diffuse pollution,” he said. “Red Rose Forest had long been aware of the projects that had been delivered in North America using DeepRoot Silva Cells for helping managing water quality and quantity and so was keen to demonstrate this system in a UK setting. It is hoped that the findings from this project can be used to encourage a wider uptake of this natural alternative to engineered drainage systems, in particular for new infrastructure projects.”

Local authorities, utility companies, and SUDS designers are excited to learn the findings from this project,



one of the first of its kind in the United Kingdom. Tony Hothersall, Director of Red Rose Forest, recently used the Howard Street project in a presentation about future proofing Manchester, using the details from this site to demonstrate some forward thinking and innovative tree planting design. Red Rose Forest, the Environment Agency, Salford City Council, United Utilities, and Urban Vision plan to share their findings in videos, conferences, and more.

The first of those is a video produced by Red Rose Forest about the installation that explains why the Silva Cells are being used and demonstrates how trees and

soils, carefully designed and planted, can be used as tools to manage surface water and non-point source pollution. It includes perspectives from the Environment Agency, United Utilities, Salford City Council, University of Manchester, Red Rose Forest, and DeepRoot.

The Salford City Council Development Plan Document (Publication Core Strategy, February 2012) includes a section on “Green infrastructure spatial strategy” that states that a network of green infrastructure will be established throughout the city to, among other things, mitigate the risks and impacts of flooding and air, water, and noise pollution, as well as provide attractive walking routes. We believe Howard Street is one of the first and essential steps toward that goal.



#### **Installation Summary:**

Average soil volume per tree: 15 m<sup>3</sup> (533 ft<sup>3</sup>)

Number of Trees: 3

Tree Species: London Plane

Total Silva Cells: 160 frames, 60 decks

Installation Date: June 2015

Installation type: Integrated – Trees and Stormwater

Project Site: Streetscape

Project Designer: Red Rose Forest Trust

Developers/Contractors: Red Rose Forest Trust/Landscape Engineering

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