East Ordsall Lane, Salford

(Part of Salford City Council's Green City Programme)

Fig 1: East Ordsall Lane - completed scheme with on ground markings

SuDS used

- *7 retrofit SuDS-enabled street trees within 2 bioretention areas*
- *Interpretation to educate and inform*
- *Modular geo-cellular pavement system to enable storage of highway run-off*
- *Permeable pavement*

Benefits

- *Exciting educational resource that uses brightly coloured markings and interpretation to bring to life and share the known benefits of SuDS and Salford City Council's Green City Programme.*
- *Average 40% volume retention by tree pits, 78% storm peak reduction**
- *Storm water slowed by over an hour**

- *Increase in water quality*
- *Water being used as an amenity rather than disposed of as a waste product*
- *Trees improve the street scene, add biodiversity to an urban environment and assist in improving air quality*

**Figures from Howard Street, June 2016, a sister project fitted with measuring equipment to understand the technical benefits of the use of tree pits to manage water entering the sewer system from the highway.*

1. Location

East Ordsall Lane, Salford, Greater Manchester, M3 5HY

2. Description

This project is part of a pioneering network of SuDS schemes being developed in City Centre Salford as part of the Green City Programme. The programme is designed to provide partner organisations the experience and knowledge to provide retrofitted schemes across a very urban neighbourhood.

The project features an innovative use of interpretation, to explain the scheme itself but also to educate, inform and garner support for other SuDS schemes. It can also be used by development control planners to negotiate the inclusion of these types of SuDS within private developments.

The scheme includes the planting of 9 trees of which 5 are SuDS trees within the adopted footway and 2 are SuDS trees within a grassed verge. The scheme builds on the success of a sister scheme at Howard Street delivered in collaboration with Greater Manchester City of Trees, Salford City Council, Manchester University, the Environment Agency, Urban Vision and United Utilities.

3. Main SuDS components used

- 7 retrofit SuDS trees – carefully selected species that maximise opportunities for air pollution improvement and suitability to the urban situation
- Interpretation to allow people to understand in principle what is being done underground. Educational resource to educate and inform
- Geo-cellular system to provide attenuation and support footway surfacing
- Permeable pavement to allow water to drain into root system

4. How it works

There are 2 bioretention features that work in similar ways. Water from the carriageway is conveyed from the kerb drainage collection system and is distributed to the roots of the trees via perforated pipes. The geocellular sytem, filled with suitable well draining soil, prevents compaction of the growing medium, allowing water to be stored in the voids thus providing an abundant source of water for the trees. The system is underdrained which allows any excess water to drain into the existing highway drainage system. The trees and soil process the water along with pollutants carried into the drainage system from the carriageway, cleansing as well as absorbing the water.

5. Specific project details

The main feature is a SuDS system for carriageway drainage with SuDS-enabled trees retrofitted into existing paving. The paving itself has been upgraded with a permeable surface. Pre-formed thermoplastic markings, similar to playground markings, display an abstract working of the SuDS system repeating the words 'Flow' and 'Grow' to illustrate the relationship between the water's movement and the growing trees.

As well as the markings, a lectern-style interpretation panel is included that illustrates what is going on underground, explaining the pavement markings and the scheme's benefits in more detail.

This exciting scheme is part of a series of exemplar works designed to raise the standards and also the profile and understanding of SuDS around the city. It is anticipated that this scheme, in combination with the wider programme, can be the catalyst to fundamentally changing the way surface water is dealt with in Salford.

6. Maintenance & operation

The kerbdrain sump is to be cleansed on a 6 monthly basis to ensure that the distruibution pipe is not silted. Maintenance for the trees has been included within the construction contract and will be handed over to the Council's environment team after 2 years.

7. Monitoring and evaluation

Monitoring and evaluation for this type of approach to SuDS is being undertaken at its sister site at Howard Street by Manchester City of Trees and the University of Manchester. So far, results have been extremely positive and on average a reduction of 78% in the volume of water to the drainage network is achieved. Similarly the peak discharge is delayed by on average 68 minutes.

8. Benefits and achievements

The project has raised the profile of SuDS within the urban environment, showing the benefits schemes of this nature can bring by managing water in a proactive and sustainable way.

The sister project in Howard Street is highly successful and has a series of scientifically sourced measurements that emphasise the scale of that success, however there is nothing to show the casual observer what is actually going on under the surface. East Ordsall Lane builds on the success of Howard Street, in its proven approach and methodology, but adds attractive, eye-catching, informative interpretation to create a valuable case study and educational resource.

Despite only recently being completed, the scheme has already started conversations at a number of different levels about what the city is able to achieve.

The scheme provides all the benefits of SuDS trees in terms of reduced flow to sewers, removal of heavy metals and other contaminants, increased biodiversity and improvement of the streetscene.

The skills developed during the design and delivery phases have been utilised across a number of schemes. Already, the best practice examples developed are bolstering discusions between the local authority and planners to redefine what it is possible to deliver within the city.

9. Lessons learnt

Salford City Council commissioned these schemes to expand the experience and knowedge of the delivery teams in the city. That knowledge, developed during the design of these schemes has been re-applied to further significant schemes. The SuDS approach is now the first port of call for design teams rather than just an add-on.

To further improve cost efficiencies of future projects a suite of standard details is also being developed reducing the unknowns and sharing best practice. This includes design calculation spreadsheets for bioretention features to enable design times to be much reduced.

10. Interaction with local authority

As funders and promoters of this scheme the City Council is enthusiastically supporting new approaches to take an active role in finding solutions for flood risk and climate change. Officers at the council are strongly supported by the elected members who are pushing for new responses to often old problems.

The project is part of Salford City Council's Green City Programme (https://www.salford.gov.uk/media/392096/green-city-programme-vision-document-digital-march-2018-rev-a.pdf) which aims to provide a clear and logical approach to the delivery and management of green and blue infrastructure within Salford, combining and maximising the full range of benefits to be gained from green infrastructure and sustainable drainage systems (SuDS).

Within the Green City Programme, Salford City Council has an ambition that SuDS features like those used in this scheme become the norm rather than the exception and has begun to develop an extensive network of schemes that demonstrate different methods for adapting to climate change.

Schemes being delivered in the current year of the Green City Programme are as follows:

- East Ordsall Lane (constructed) – 7 SuDS enabled trees in 2 Bioretention areas retrofitted into an urban highway environment incorporating features to educate passers-by;
- New Bailey Gateway (constructed) – 7 SuDS trees planted within a rain garden with high quality seating to enhance public places outside a new commercial development and Salford Central train station;
- Carpino Place (Constructed) – 3 SuDS enabled trees and rain gardens planted within the public footway as a frontage to new housing development and as part of new cycling infrastructure;
- William Street (design phase) - 4 trees and an extensive rain garden to be retrofitted within the adopted highway;
- Bloom Street (design phase) - 4 trees and a rain garden that will slow the flow and treat rainwater from the highway and adjacent buildings.

The city council is starting year two of its ambitious programme and is looking at expanding projects across the whole city.

11. Project details

Construction completed: *Works were completed on 26th March 2018. The contract was solely to retrofit SuDS trees and green infrastructure to the existing highway.*

Cost: £65,578

Extent: 340m^2 / 0.034Ha

12. Project team

Funders	• Salford City Council
Clients	• Salford City Council
Designers	• Urban Vision Partnership Ltd (Drainage Engineers, Landscape Architects, Highway Engineers, Quantity Surveyors)
Contractors	• Landscape Engineering Ltd
Suppliers	• Include Deep Root (Silva Cell), Green Blue Urban (tree grilles), RoadCraft (thermoplastic line markings)
Other	• Greater Manchester City of Trees

13. Site images and illustrations

Figs 1-4: Before, mid construction and after photos

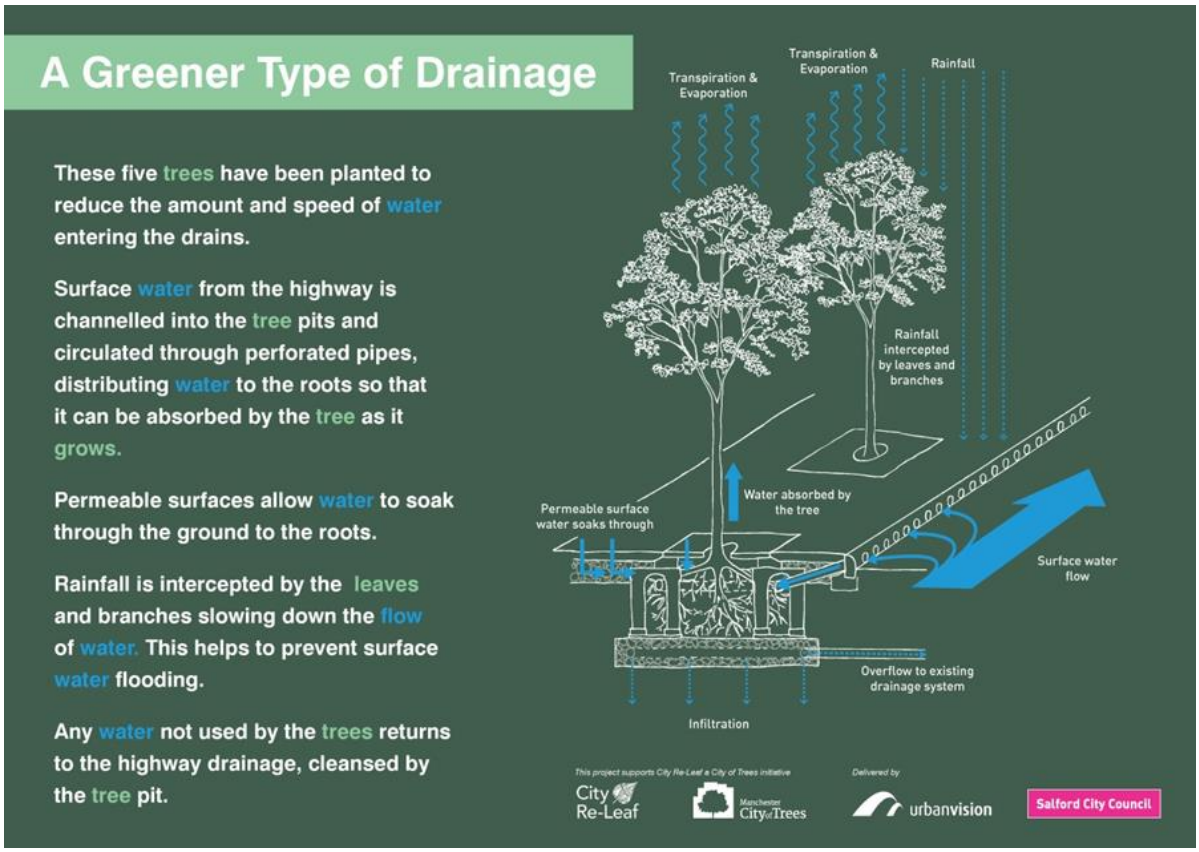

Fig 5: Artwork developed for the interpretation panel

Fig 6: Howard Street, sister scheme delivered by City of Trees, Salford City Council and Urban Vision