

Upminster Bridge Swale
District Line , Upminster Bridge Station, London
Environment Agency & London Underground

BIG Biodiversity Challenge Award category: Maintenance and Management Award

Project overview

A retrofitted swale has been constructed next to the operational railway , London Underground, District Line in order to ascertain feasibility of SUDS and monitor improvements on track drainage water quality, manage volume of water discharge, reduce soil saturation and study biodiversity improvements by crating a brownfield habitat.

What were the biodiversity conditions on site, prior to the enhancement?

The swale has been constructed on the footprint of an old electrical substation. According to an Ecological assessment carried out before the construction works on behalf of LU, “ ground vegetation to contain negligible potential for reptile and amphibian species, due to lack of suitable features”.By replacing a building with the swales, a net gain in biodiversity is assured.

Were there any specific conditions that led to you carrying out this work?

An opportunity arose by another project in the area due to severe soil saturation. Drainage improvements by a SUDS scheme with the additional opportunity for research by monitoring performance of swales and monitoring water quality and biodiversity has been seized.



Swales with monitoring system

What were the biodiversity measures taken?

The surface of the swales is comprised of crushed brick substrate created as the building was demolished. This low nutrient substrate forms an ideal substrate for wild plants of dry grassland and pioneer habitats of high ecological value to become established. The loose material in the rubble is ideal for burrowing (mining) bees. The area was seeded with native dry grassland wildflowers. There are changes in surface topography, which will diversify the conditions and ultimately the sward that becomes established. In addition dead wood in the form of hardwood logs has been left on the swale to provide habitat for beetles and other invertebrates. The adjacent slope has also been re-seeded with general purpose wildflower mix, which will ensure the establishment of wildflowers to benefit pollinators (like wild bees) and food plants and nectar for butterflies.



Reinstatement of slope after construction of an outfall to River Ingrebourne

What were the biodiversity measures taken?

Prior to the works an intensive hand search of the vegetation and log piles was undertaken in order to record all/ any protected or notable species and a full report was compiled. After one year of the plants' establishment (September 2016) a new site investigation will be carried out and an ecological assessment report will be produced comparing and evaluate the improvements in the area.

How would you best describe the project?

Adaptation to Climate Change, an enhancement

Further information

The two swales operate exceedingly well and so far no water has been found to the outlet chambers, nor discharging to the River Ingrebourne.

Location of the existing drainage and connection levels was challenging as two different established drainage systems had to discharge to the swales and sometimes as built drawings with the existing on site levels differ.

A successful environmental improvement as in the place of a derelict building a SUDS scheme and biodiversity improvements are monthly monitored.

Logistics and accommodating works on the side of a bigger project is always challenging.

The best long term benefit is communicating the feasibility of retrofitting SUDS to other railway stakeholders, encourage similar projects and disseminate information and experience.



Spring 2016 : plants' establishment

What was your personal motivation for carrying out the enhancement?

London Underground Infrastructure Protection has identified the risk from lack of adaptation to Climate Change. As an ongoing process we are chasing opportunities to carry out feasibility studies in order to introduce alternative ways of dealing with this risk: In this case retrofitting SUDS. Encourage biodiversity for LU IP, is about improving resilience of its system.