Reducing urban diffuse pollution and surface water flooding using retrofit street trees

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Nature-based solutions for the management of urban stormwater have been growing in popularity, but there is a lack of empirical performance data for field-scale installations, especially in a UK context. To address this deficiency, a novel retrofit street tree demonstration project was commissioned in the City of Salford, near Manchester (UK). Three fifteen year-old London Plane trees were planted within a large roadside tree trench on an urban residential street. The DeepRoot Silvia Cell modular suspended pavement system was used to maximise soil volume, avoid compaction and support large tree growth. Road runoff is directed to the tree trench via AKO Slot Kerbs. Water is then distributed evenly throughout the whole system via a perforated pipe. Excess water is conveyed out of the system via an underdrain, which is subsequently connected to the sewer network. The tree trench is lined with an impermeable membrane. Access chambers are positioned on the inflow and outflow of the tree trench to facilitate hydrological and water quality monitoring. Installation was completed in autumn 2015 and monitoring will be conducted over a three year period. This paper will provide an overview of the installation process and present initial results on the pollutant removal performance and hydrological functioning of the system.