SuDS in Schools – William Austin Junior School, Luton
Submitted by Luton Borough Council

Award category
Regeneration and retrofit – public buildings

Lead or collaborating organisation(s)	Luton Borough Council, Thames Water, Department for Education, Environment Agency, William Austin Junior School
Location of SuDS	William Austin Junior School Austin Road Luton Bedfordshire LU3 1UA

1. SuDS overview

SuDS components used	Rainwater harvesting, tree pits, rain planters.
Size of the scheme and its local context	2,500m2 of impermeable area managed through multiple SuDS components at a junior school in Luton.
Approximate age of scheme (years)	1
Benefits of the scheme	Rainwater harvesting, flood risk management, biodiversity, sewer capacity, education.
Briefly describe the scheme	This is a retrofit scheme at William Austin Junior School, Luton, to help them harvest rainwater in clever new ways. The project includes SuDS planters that redirect rain from roof downpipes and through the bedding soil to help plants flourish. Tree pits in the playground capture rain run-off in a storage tank buried nearby. A 12,000 litre rainwater harvesting system collects rainwater from the roofs of the school and uses this to flush toilets in one of the blocks. This is estimated to save over 300,000 litres of fresh water every year and if there's ever any overflow, it's redirected to the surface water sewer. A crucial part of this project was to resolve flooding issues at the school, reduce flood risk from more frequent storm events (1 in 10 year) and to improve the project's chances of securing Thames Water funding by incorporating rainwater reuse to boost it scoring against Thames Waters publicised funding criteria.

2. SuDS details

No.	Question	Answer
1	What difference has this scheme made to the local community or area?	The scheme has improved the look and feel of the outdoor play areas for children and staff at the school to enjoy. As well as being a new outdoor educational resource. Storing rainwater has reduced water demand in a water-stressed area. The project has reduced the school ground's surface water flood risk in the playground area and water no longer pools at the entrance. And whereas before the downstream catchment was prone to flooding from surface water and overloaded sewers, the project has made a real difference there too.
2	What is exceptional about this scheme beyond a standard approach?	Although SuDS in schools is not unusual, what stands this project apart is the reuse of rainwater in-situ – that often under-utilised first step of the SuDS hierarchy. The retrofitted rainwater harvesting system alongside green SuDS allow rainwater to be reused for the school's toilet flushing. It's estimated to save up to 306,000 litres of potable water annually, an estimated saving of £600 per year on the water bill. This project had an educational aspect to children and parents. A presentation was delivered in an assembly to educate on the project and a newsletter helped raise awareness about flooding and water-usage.

3	How much work went into getting this scheme realised?	There are almost 100 schools in Luton. The flood-risk team undertook a screening exercise to ascertain which schools are at risk of fluvial, pluvial flooding or fall into critical drainage areas. Contacted around a dozen schools at high risk of flooding for evidence of flooding on or near site. Consulted with Thames Water to establish which schools would be eligible for funding. Tendering concept design for two schools – Employed a local charity Groundwork East to complete. Funding applications to TW, DfE and engagement with EA. Exploring funding opportunities at nation and local level. Close work with contractor(s)/supplier(s) and school management.
4	Is this scheme part of a masterplan or integrated into other initiatives?	Luton Council engages with schools under the climate change programme, Climate Action Teacher Champions. Looking at schools grounds, water usage, biodiversity, energy, transport and student engagement. Part of Thames Water's Surface Water Management Programme, providing £3M for projects across the Thames region with the most LLFA's (54 no.) compared to other water companies. The aim of the SWMP is to build capacity and establish working relationships with LLFA's in delivering SuDS, in addition to delivering a range of multi-beneficial SuDS that reduce demand on sewers and create public value. Part of the DfE's Schools Water Strategy, an invest-to-save strategy, by DfE's risk protection arrangement.

5	What value does this scheme provide to the local area and beyond?	Having the systems in place to recycle rainwater is an invaluable way to engage children's imaginations, inspire a new generation to think about the environment and how we can tackle climate using natural resources. The school has shared these messages through assemblies and newsletters to parents, also including the importance of saving water and the benefits from the trees and planters, providing green spaces, enhancing mental health and encouraging biodiversity by attracting insects and birds. The presentations and information boards leave the opportunity for ongoing discussions and classroom activities that are relevant to the school.
6	What challenges/problems needed to be addressed to realise this scheme?	Short timescales of delivery were faced as this project needed to be delivered in the summer holiday period as the playground was being dug-up for the rainwater harvesting tank and network of tree pits. Finding competent contractors and liaising with suppliers took up more time than anticipated due to the complexities of the type of contract and time constraint. Changes in initial design due to insufficient grant funding. The plants needed to be non-poisonous meaning the specification needed to be altered.
7	How does the scheme address related issues such as water scarcity, nutrient neutrality, or biodiversity net gain?	The rainwater harvesting system helps reduce the school's demand for water in an area of high-water stress. The tree pits and rain planters represent a significant biodiversity net gain since these have replaced the existing concrete/tarmac surfaces. The plants and trees will attract insects to the school grounds that didn't have many plants before this project.

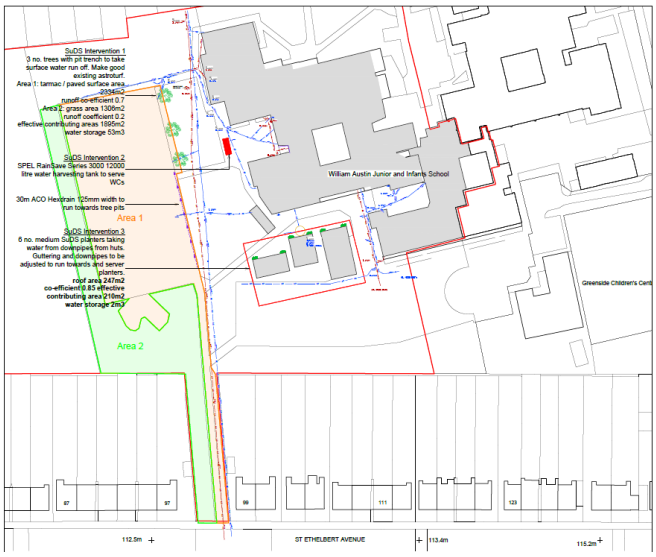
8	Is learning from the scheme continually captured and communicated? Please give examples.	Thames Water's SWMP is capturing learnings to increase the scale of SuDS delivery in AMP8. The SWMP sought to understand how to mainstream SuDS with local authorities and other partners, following three principles; Need for capacity in sewers, Collaboration, and generating public value. A key learning point from this project is how it is possible to easily incorporate rainwater reuse, an often overlooked element of the SuDS hierarchy. Flow monitoring has been installed on the reuse system to measure how the system performs and overtime how much water/money it saves. The school is able share readings periodically via Luton Council.
9	What approaches/measures are taken to ensure the scheme is properly managed and maintained?	Maintenance of the features will be delivered by the schools caretaker. Rainwater harvesting maintenance training is being provided to the school caretaker explaining how to drain down the system for the summer holidays, what to look for and how to clear blockages, and provide a step-by-step guide to ensure continuous maintenance for the projects lifetime regardless of staff turnover. The supplier has provided guidance on the maintenance requirements for the tree pits and rain planters.
10	Have you collected any feedback on your scheme? What do people say about it? Can you provide any quotes?	The head teacher commented: *"The improved drainage is having a positive impact on the amount of surface water in the area at the back of the school.* *The trees are a welcome feature on the playground and will provide shade in the summer when they grow and also opportunities for science work looking at seasons and minibeasts."* We have seen a reduced amount of water on the footpath outside the classroom facing the playground. The water does not seem to run down the path from the playground as it used to and pool near the canopy area.

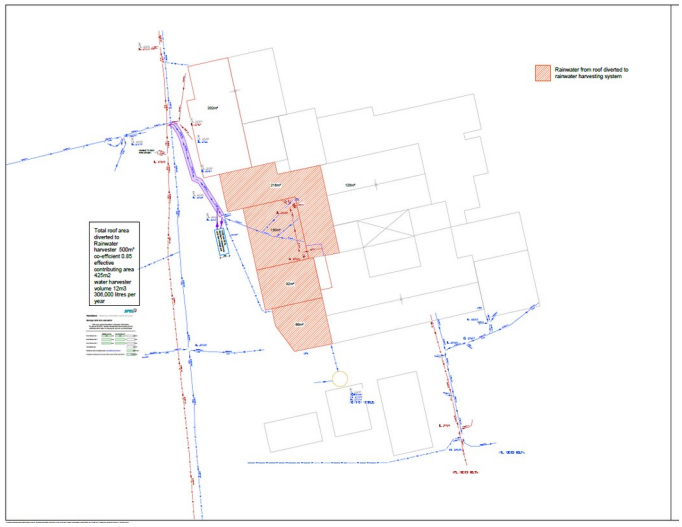
3. **Supporting materials**

Image (low resolution)	Caption	Image credit
	One of the rainwater planters attached to one of the rainwater downpipes that comes off of the roof. Planted up with non-poisonous plants if ingested by pupils. This had to include several varieties of herbs. The planting boxes combined can store 2,000 litres of water. SuDS planters – 4 medium sized planters incorporated into the courtyard area. Each planter has a storage capacity of 400 litres, which is provided by a combination of the high volume storage layer in the base plus some storage in the soil/growing media layer above.	Stephen Henry

	One of the completed tree pits post installation on the playground. Beneath the trees there is storage for over 50,000 litres of water. Tree pits - 1 row of tree pits at 5.0m wide x 27.5m long containing 3 trees. Green Blue Urban Limited has provided the following detail: • Freeboard volume (within ArborCells – immediate volume available for attenuation) - 28,500 litres • Pore space within ArborSoil Hydro (worked on 20% of soil volume as minimum – can be up to 30%). Soil will percolate at 90mm per hour - 16,500 litres • Void space within drainage gravel to base (worked on 30% of stone volume) - 8,250 litres	Stephen Henry

	Soakaway crates being laid to create the storage system for rainwater underneath the playground.	Stephen Henry
	Rainwater harvesting tank during installation. Sitting in the excavated hole that now sits underneath the playground at William Austin Junior School. This is before the whole system was connected up and after the tank had been lifted into place. [Water harvesting - SPEL RainSave underground rainwater storage tank in glass reinforced plastic Series: 300 with a gross capacity of 12,000 litres.]	Stephen Henry

	William Austin School playground before construction. The land slopes down from the south and west so there are overland flows across the school grounds. The entrance into the school is a 'low' point on the western side of the school building. Surface water run-off accumulation at this point is an ongoing issue and the main entrance is typically affected several times a year. The school connects to the Thames Water sewer network and there is a network of surface water sewers across the school grounds that convey run-off from paved and roof areas to the Thames Water surface water sewer network.	Stephen Henry
	Indicative plan of SuDS interventions	Stephen Henry

	Roof area serving water harvesting system	Stephen Henry