

Background

The Wildfowl & Wetlands Trust (WWT) is a conservation charity that saves wetlands, which are essential for life itself.

In 2012 a sustainable drainage system (SuDS) was installed at Hollickwood Primary School, North London by WWT. This project aimed to solve water quality and flooding issues as well as to enrich the school's natural environment, without reducing the amount of space available for informal play. The project was also designed to provide learning/teaching opportunities for teachers and students to engage with ideas of sustainability and water management.



School planting session

The project

Because the school is located on a moderately steep slope, periods of heavy rainfall often left the playing fields and hardcourt football pitches at the base of the slope flooded and unusable. The aim of the project, as such, was to reduce flooding of the fields, playgrounds and hard court, to improve the quality of the surface water leaving the site, and to introduce visible signs of water management to be used as a learning resource for the children.

WWT, working in partnership with the Environment Agency, selected Hollickwood School (and nine others in the North London area) as sites for the 'SuDS for schools project', designed to protect streams in the Pymmes Brook catchment from pollution, and to ease the strain on existing drainage systems. SuDS mimic natural processes by catching and slowing the flow of rain water to streams and rivers, and filtering it to remove pollution along the way. The project was also designed to show how SuDS can improve river health, and how such technologies can be integrated into a school environment whilst providing opportunities for outdoor learning and natural play.

Design

The main SuDS components used were swales and detention and retention areas, with all of the components being designed with the needs of children and teachers in mind. Rainfall from a portion of the roof space has been diverted to a newly-constructed raised bog garden planted with native wetland plants (and which also doubles as a meeting place with an integrated seating area for parents and children). Overflow from this travels via a short length of a drainage channel into a narrow, tributary grass swale, and then into a larger grass swale which also carries additional surface water flowing off the tarmac playground in the upper school. Overflow from the main swale then

feeds a small retention area and from there it flows into a sinuous, meandering swale and lastly into a small detention area alongside the playing fields.



Detention area with bridges

The scheme uses source control features (rainfall diverted from downpipes into a raised bog garden bio-retention area), site control (small retention areas and a detention area, and conveyance features (swales designed and planted to mimic a natural river system). Infiltration to groundwater also occurs.



The bio retention area

This scheme has been designed to manage all of the run-off from a 1:10 year event and 50% of a 1:100 year event.

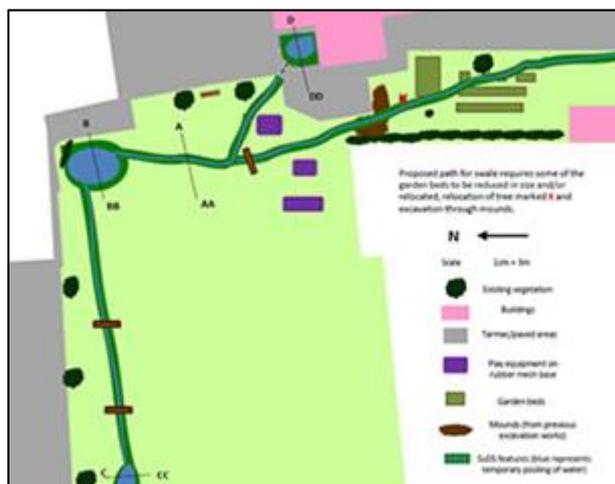
Maintenance

Hollickwood School manages the SuDS using a bespoke management guide supplied by WWT. The school management team includes the Estate Manager, school governors and school children. WWT continues to support the school in maintenance and operation as well as developing learning resources which will help teachers maximise the benefits of these features.

Review

By all accounts the SuDS system is working as promised. A demonstration of its benefits came in June 2013, where, after a period of heavy rainfall that flooded the surrounding streets, the SuDS coped according to the design criteria and the school was able to hold its annual summer fair the following day unhindered. Thames Water are monitoring the system and have produced data which show that retention of surface water on site in the SuDS is up to 3-4 hours after heavy rainfall.

Alongside these ‘water management’ benefits, the SuDS system is providing an ongoing learning resource and a valuable point of contact with a rich natural environment.



The SuDS plan

Positive outcomes

In terms of drainage benefits, water quality improvements have been secured, playground and hardcourt flooding has been alleviated and playing fields dry out more quickly after rainfall as run-off drains into the swales and detention areas. The SuDS also provides a learning resource for the children, and has added to the natural environment of the school.

Lessons Learnt

To ensure all stakeholder concerns/desires are attended to, comprehensive stakeholder consultation in design workshops were of great value, and securing stakeholder approval before continuing with the project proved to be essential. These all contribute greatly to the sustainability of the project ensuring good management and use of the features.

Recommendations

One of the key challenges was to integrate the school’s needs for the project into its design. This potential pitfall was averted by ensuring the school and its various stakeholders were included in initial design workshops etc.

Another concern was how to ensure the project’s ongoing learning/teaching value. This potential worry was averted by the teaching resources provided by the WWT for the teaching staff at the school.

Conclusion

The SuDS system has alleviated flooding risk at the school and introduced an invaluable learning resource for all pupils amongst numerous other benefits.

If you are looking to undertake any water project, WWT are an excellent example to follow.

This case study was compiled in 2016 by George Cusworth and Fit for the Future with assistance from Adam Thomas, Andy Graham and Anne Harrison

Photo credits throughout go to Hollickwood School and WWT Consulting