SuDS in Schools

Rain Garden Report

south east rivers trust

Contents

Introduction

The SuDS in Sutton's Schools (SiSS) Project is a partnership project between the London Borough of Sutton and the South East Rivers Trust, funded by Thames Rivers Trust and the Environment Agency. The primary aim of the project is to alleviate flood risk within Sutton by retrofitting Sustainable Drainage Solutions (SuDS) on school grounds.

In a series of summative reports, the Trust aims to share the expertise and lessons learnt through the various contributions the organisation made to the project; supporting other SuDS in School initiatives in the future.

1. **SuDS Planter Design**
2. **SuDS Planter Installation**
3. **Rain Garden**
4. **Education & Engagement**
5. **Monitoring**

All reports can be found and downloaded from the South East Rivers Trust website:
www.southeastriverstrust.org/sudsinschools/

Information on the future of the SiSS Project can be found on Sutton Council's website here:
https://www.sutton.gov.uk/info/200670/environmental_sustainability/2028/suds_in_sutton_schools

As part of the SiSS Project, one of the aims for the South East Rivers Trust was to install a simple rain garden in order to develop a methodology that could be applied to future SuDS projects. While a site that could be completed within the timeframe of this project was not found, useful experience was gained. This report outlines the steps undertaken, the different factors that need to be considered when planning a rain garden and the steps that were planned if a viable site had been identified.

Scoping Participating Schools

During site visits for the wider SiSS Project, areas with potential for a rain garden were identified both by the school staff and the Project Team. There were a number of reasons that locations were dismissed at this stage:

1. **Topography**: Green spaces at schools often occur at the peripheries of the playground and are on a higher plane than the surrounding asphalt areas.
2. **Proximity to buildings**: Whilst the Susdrain guidance: 'Using SuDS Close to Buildings' indicates that it is possible in certain circumstances to locate infiltration SuDS within 5 m of a building, some geotechnical input is recommended in such circumstances. With the limited budget, this was considered to be beyond the scope of this project and therefore opportunities where a rain garden could be situated 5 m from any building were preferred.
3. **Tree roots**: To protect trees, digging should be avoided in the root protection area (RPA) of a tree. According to the British Standard 5837, RPA is calculated by multiplying the diameter of the tree at breast height in metres by 12, but is capped as an area with a radius of 15 m. This was used as a general guide.[1]

[1] https://www.woodlandtrust.org.uk/blog/2017/09/root-protection-order/

4. **An obstruction for the school:** Ideal sites for rain gardens were in areas that were being used by the school for other purposes.

Figure 1. A typical green space at the edge of a school playground with no runoff feeding into it.

Figure 2. An area too close to the school building.

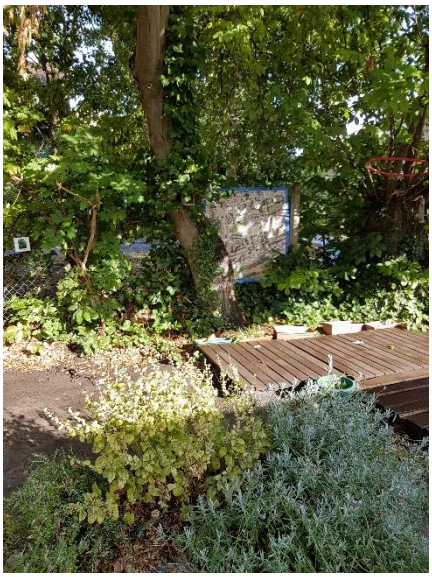

Figure 3. A neglected green space, full of tree roots.

Detailed surveys were carried out on the sites of participating schools – topographical, utilities and drainage revealing further obstacles:

5. **Underground services** within the potential build area.
6. **On site soakaways**: Some schools fed into soakaways and therefore SuDS would not be alleviating pressure on the drainage network to prevent flooding in the target area for our project.

7. **Complications to the build:** Removal of tarmac or complicated underground connections that would have required additional expertise and funding.

Metis, operating on behalf of Sutton Council, were able to provide designs for some of the more challenging locations – so it is possible to find solutions in these circumstances. However, the focus here was on finding a site where a simple design could be employed.

Identifying New Opportunities

Desk-Based Research

The next step was desk-based research to identify open spaces on new school sites or other publicly owned land such as areas within council estates or community centres. Google satellite, Streetview and Bing maps were used to find and determine the potential viability of each site.

Figure 4 and 5. Information gathered by Google streetview and Bing maps bird's eye view.

In addition, a check was done using Thames Water utilities to try to determine how the sites were connected to the sewer network or whether they drained into soakaways. Even though it can be difficult to be certain, sites that appeared to drain into soakaways were dismissed to avoid spending time and money on sites that were not likely to make a direct difference to surface water flooding.

Site Visits

Once potential sites had been found and the list had been narrowed down, site visits were carried out. These involved:

- Identifying trees that could be problematic
- Looking for manholes or other signs of services in the area
- Measuring the distance from buildings
- Checking the level of ground relative to gully
- Noting the downpipe circumference/diameter
- Estimating the area draining to the potential rain garden
- Asking the site manager/landowner about existing drainage and general utilities plan.

Following the site visits, a free utilities search through **LineSearchBeforeUDig** was carried out. While this doesn't provide a comprehensive utilities search to be relied upon for construction, it could identify utilities which may be a barrier and inform whether more detailed searches might be required if the location was progressed.

Next Steps

From the site visits, only two sites were identified as having potential. On one site, there were uncertainties about drainage and utilities and on the other concerns over tree roots.

At this stage, decisions had to made about the level of investment that would be appropriate for this project. Options included:

- Going back to measure levels and scope further technical staff
- Paying for a utilities search or go for a full survey of the area
- Using clever design to avoid utilities/tree roots in respect to the shape, size and depth of the rain garden
- Using hand digging to minimise damage to tree roots
- Getting a CCTV survey done to work out how the rain garden could connect back into a gully or sewer.

For this project, the amount of work needed to proceed would not have fit within the timescale of the project. If the rain garden had progressed, the next steps would have been:

- Produce an outline design
- Get designs approved by relevant parties (including relevant notifications and public consultation)
- Geotechnical input
- Develop detailed designs
- Gain permissions (e.g. connection to Thames Water sewer, if relevant)
- Delivery planning, materials sourcing, services procurement where necessary

Conclusion

While a rain garden was not completed at this stage, valuable expertise was gained. With a clear understanding of what the obstacles may be, what makes a site suitable for a rain garden and what to do if a suitable site is found, acting on future opportunities as they arise will be easier.

Lessons Learnt

- Start the process early – finding a suitable site takes time and time must also be allowed for the design, consultation, approvals and permissions.
- Have a clear set of criteria for identifying a viable site.
- Be prepared to work around barriers – a site that matches all your criteria may not exist so think creatively to work around obstacles.

Acknowledgements

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