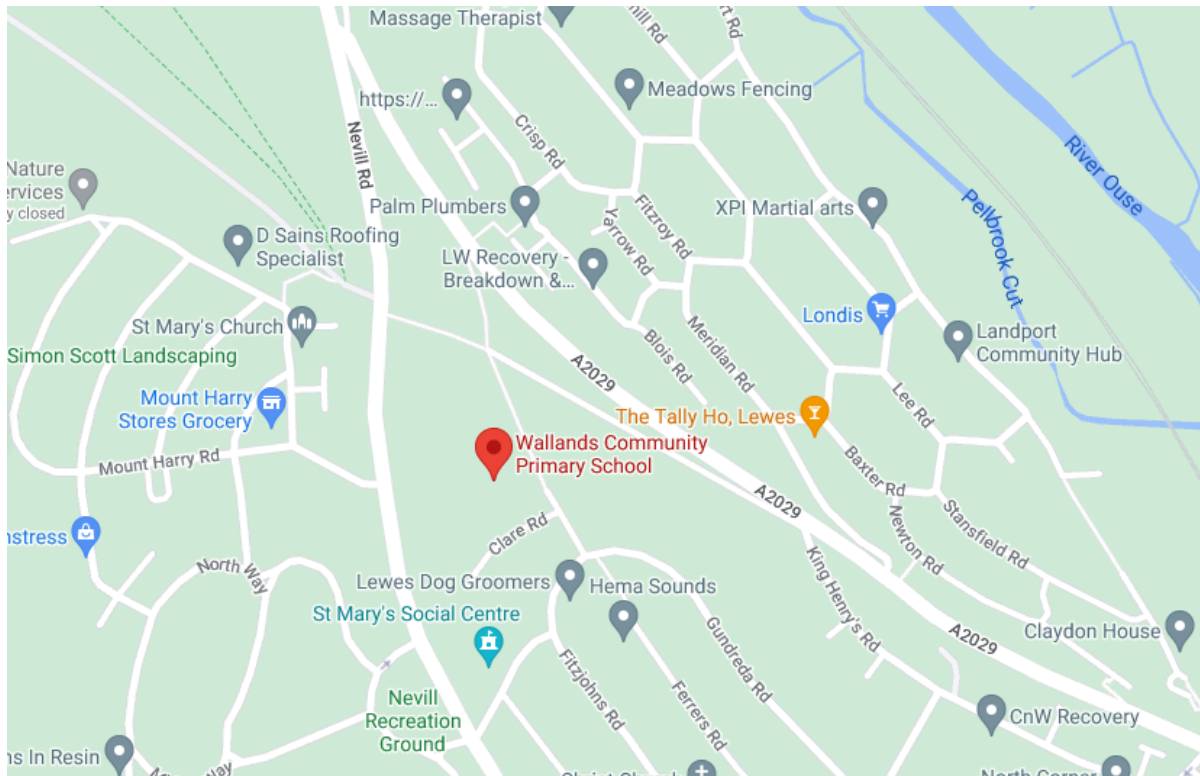


Where



Gundreda Rd, Lewes, BN7 1PU

Description

The playground at Wallands Primary School was of a typical design with a large flat area of hard, impermeable surfacing. There were high laurel hedges around the edge which provided some shelter but blocked beautiful far-reaching views. Good for playing football and other sports, there was not much of interest for children who have other styles of play. During moderate rainfall large puddles sat on the surface and water eroded down a grassy bank, ultimately heading off site and increasing volumes of run-off flowing down roads through the urban catchment.

The Aquifer Partnership (TAP) partnered with Wallands Primary School to renovate the playground creating an inspirational rainscape with emphasis on education and play opportunities. Rainscapes, also known as Sustainable Drainage Systems (SuDS) are a way of managing water close to where it falls, keeping it largely at the surface rather than piping it into drains and sewers. SuDS mimic natural drainage and are able to hold volumes of stormwater, slowing the flow, encouraging infiltration and naturally treating polluted water.

TAP was established to protect and improve the quality of groundwater in the Brighton Chalk Block as a valuable natural resource. See wearetap.org.uk for more information.

Wallands Primary School was chosen to be part of TAP's SuDS in Schools programme as it is in a source protection zone (an area safeguarded to provide additional protection to drinking water quality), and high in the catchment of an area prone to flooding.



Figure 1: Site pre-construction



Figure 2: Site pre-construction

Main SuDS components used

Downpipe disconnection

Rain planters

Channels and rills

Cascade

Swales

Permeable paving

Meadow basins

Extent

Total site area –1458.84m²

Permeable block paving –108.74m²

Resin bound surface (permeable)- 22.77m²

Decking surface (permeable)- 63.64m²

Rain planters –39.10m²

Meadow basins – 150.63m²

Objectives

- Showcase SuDS in order to promote greater take-up
- Promote sustainable water management to protect the Brighton chalk block aquifer
- Reduce flood risk
- Create a high quality and beautiful outdoor space in the school
- Involve pupils in designing and implementing changes within their school
- Increase opportunities for cross-curricular outdoor education and outdoor play
- Increase biodiversity
- Educate pupils and the wider community about water issues



Figure 3: Concept (credit Robert Bray Associates)

How it works

Downpipes draining a large area of roof space were disconnected and directed through a playful rainscape. Three downpipes convey the water into rain planters with letterbox outlets which overflow onto permeable paving.



Figure 4: Rain planters

A surface-level channel conveys water through the centre of the sports court to a central rain planter.



Figure 5: Central rain planter with disconnected downpipes and surface-level channel seen behind (photo by Sam Moore)

From the central planter the rain passes through permeable paving into a 'dry river' meandering through the playground.



Figure 6: Dry river

Flow continues into meadow basins via grass swales and a cascade.



Figure 7: The dry river joins the cascade

A fourth downpipe flows into a rain planter which overflows to a larger planter/rain garden.



Figure 8: Large rain planter and rain garden

From here overflow passes into a swale and on to the meadow basins. Once in the meadow basins water will be taken up by plants, evaporate or infiltrate.

The planters and rain garden are filled with wildlife-attracting perennials, with extra perennial beds separating the hard and soft rainscape and playground features. These plants have also been chosen for their sensory features.

The meadow basins are seeded with locally-sourced wildflower mix. Boulders add extra seating and play features and create micro-habitats as the planting establishes and biodiversity increases. Minibeast hotel gabions have been added which are part filled with stones and tiles with the remaining space to be filled by the children with materials sourced in the school's woodland area.



Figure 9: Minibeast hotel gabions

In total hundreds of wildlife-attracting plants of 25 species have been incorporated in the rainscape.

The total catchment of the rainscape is 1304m² and total attenuation is 31.66m³. Attenuation describes the volume of water held and slowly released. Around the 1 in 80 rainfall event is managed in the system. A 1 in 80 rainfall event would occur on average once in every 80 years.



Figure 10: The finished rainscape

Benefits

- Attenuation during rainfall reduces flood risk to school buildings and surrounding area
- Provision of an important educational and play resource for the school
- Increase in biodiversity
- An inspirational experience for pupils who were involved in the development of the garden from feasibility stage to planting
- Improved access to the playground for a range of abilities
- Creation of an exemplar rainscape which is used to encourage SuDS take-up in other schools and across the region as part of the climate emergency response
- Elevating the quality of the space for the school including opening up far reaching views

Lessons learned

- Delays in supply chains likely to impact on construction timescales - ordering of materials should take place early to reduce risk
- Hedge planting needs careful timing and management with increasing risk of drought and particularly in schools with overstretched staff resources
- Wildflower seeding may need repeating if there is too much rainfall after seeding
- Additional resource may be needed (staff, external providers etc.) to maximise pupils' interaction with school SuDS

Costs

Construction cost - £184,605

Total cost including contract management, photography and filming etc. - £189,734

Date of completion

November 2022

Project partners

Client – The Aquifer Partnership and Wallands Primary School

Designers – Robert Bray Associates

Contractors – Vu Garden and Landscaping

Funders – Community Infrastructure Levy from South Downs National Park Authority, Southern Water, Environment Agency, The Aquifer Partnership