



## Storing the Storm! at King's Academy Ringmer Project Report for Lewes District Council 2023-2024

### Storing the Storm!

Storing the Storm! is an initiative enabling local communities to take action to reduce localised urban flooding and play an active part in responding to the climate emergency through the installation of low-cost, low risk sustainable urban drainage (SuDS) measures, such as rain gardens and rain-planters. Storing the Storm! is a collaboration between the Ouse & Adur Rivers Trust (OART), supported and funded by Lewes District Council (LDC), as part of its Ouse valley flood risk management work.

### Storing the Storm! at King's Academy

King's Academy suffers from nuisance volumes of surface water, which accumulate on hard surfaces around the buildings and classrooms and on the sports pitches. In the last year over 10 weeks of sports usage were lost due to standing water. Storing the Storm! aims to retro-fit SuDS to the school buildings and create a series of natural flood management (NFM) wetlands to collect and attenuate surface flows. This report covers the first phase of the works – installing SuDS rain-planters.

### Background - surface water flood risk in Ringmer:

During heavy rainfall the capacity of the drainage system in Ringmer and the surrounding area of Broyleside is regularly exceeded and the area has a history of surface water flooding impacting domestic properties and commercial buildings. The likelihood of flooding is anticipated to increase as climate change increases the likelihood of extreme weather events. Current issues with drainage exceedance also impacts the local sewage treatment works (WwTW Neaves Lane) where CSO's discharge untreated sewage into the river (10%+ of the time during 2021).

Lewes District Council (LDC) have identified Ringmer as a key 'wet spot' where measures such as NFM and SuDS may offer alternative, low cost ways to manage surface water within the sub-catchment, and provide a suite of additional benefits, including enhanced aesthetics and amenity, enhanced biodiversity and improvements to water quality. The Ouse & Adur Rivers Trust has been working with Lewes District Council to promote sustainable rainfall to communities and deliver surface water management works to help manage flood risk since 2017.



Extent of flooding from surface water

● High ● Medium ● Low ○ Very Low 📍 Location you selected

Fig. 1. Surface water flood risk King's Academy & Ringmer Primary School (accessed <https://check-long-term-flood-risk.service.gov.uk>)

### **Project Delivery**

The Ouse & Adur Rives Trust worked with staff, pupils and families from King's Academy to install SuDS rain-planters to divert and attenuate water from the school roof and reduce the risk of exceedance in the drainage system. The location of the rain-planters within the school site were chosen to maximise daily contact with students and staff who can see the measures working during storm events and other rainfall conditions.

The rain-planters were designed to meet the four objectives of SuDS, where surface water run-off is managed for quantity, water quality, amenity and biodiversity. Three of the rain-planters were built with low-level seating to provide additional space for pupils to sit during break periods. All the rain-planters were planted with wide range of suitable woody and herbaceous plants to create new habitats and improve the appearance of the outside space. Interpretation on the rain-planters, created by EcoClub, will increase understanding of the value of SuDS.



Fig. 2: Location of 7 rain-planters installed by OART & surface water pathways at Kings Academy (Scalco 40mm rainfall)

### **Build Sustainability**

To build the SuDS planters, we purchased timber from Mid Sussex Wood Recycling to help support waste material salvage, the reuse of timber, and the local business economy. Over 200m of wood was diverted from landfill and given a second life as a valuable and useful product, saving energy and minimising greenhouse gas emissions. We selected timber for quality and longevity, and we are confident that the build will last 10+ years.



Fig. 3. Images show timber being sourced from wood recycling yard (a) preparation (b) and painting (c)

#### Involvement of Wider Community

A weekend community construction day was organised for students, their families and members of the wider community. Although the day was extremely wet, in addition to students, 9 adult volunteers from local families came along and helped build and install three SuDS planters, giving a total of 45 adult volunteer hours (value £4,68.9 based minimum living wage) and 20 under 18's volunteer hours. Messages shared via school newsletters and social media have spread information about the project to all parents, which we hope will help to grow community capacity to support future SuDS in the village.



Fig. 4. Images show community construction day on 18<sup>th</sup> November 2023

#### Involvement of School Pupils - education and learning opportunities

Members of Eco-Club gained an in-depth experience and understanding of principles and benefits of SuDS through, their involvement in the construction and fitting of the rain -planters to the school buildings. The rain-planters offer long-term environmental learning opportunities for pupils of Kings Academy (11-16 years) where the rain-planters are located and can be visited/used as part of sustainability teaching.



Fig. 5. Images shown pupils helping with filling and planting up the rain-planters during November and December 2023



Fig. 7. Images shown pupils helping install liner and fill (a) & the new pupil seating (b)

Eco Club members produced artwork which was incorporated into exterior signage for the first SuDS planter at reception. Many cohorts of pupils, their parents/carers and school visitors will benefit from increased awareness about SuDS through the interpretation. Further interpretation will be produced for the other rain-planters when the school's replacement Eco-Co-ordinator starts later in the spring.



Fig. 7. Signage on the rain-planters provides on-going opportunities to engage and educate

**Project Outputs & Impact:**

Installation of six SuDS measures to attenuate rainfall and raise awareness of flooding, and the role that SuDS can play in managing surface water. The project has been designed for scalability and we hope the demonstration rain-planters will encourage acceptance of new ideas for managing water and will inspire similar actions at home making the community as a whole more resilient to flooding.



Fig.8. Images show SuDS rain -planters 1. & 2.fitted to playground shelter with seating for pupils.



Fig. 9. Images show SuDS rain -planters 3. & 4. on main classrooms.



Fig. 10. Images show rain-planter 5. fitted to corner classroom



Fig.11. Images show SuDS rain -planter 6. fitted at exit route

### Attenuation Volumes of SuDS Measures under different Rainfall Events

Approx. storage capacity of SuDS measures 1. & 2. fitted to playground shelter:

Run off area (m <sup>2</sup> )	Rainfall event (mm/hr)	Volume water from roof (l)	Total volume stored (l)	Delay (mins)	Water stored (%)
10.39m <sup>2</sup>	10	103.9	320	184	308 %
	20	207.8	320	92	154 %
	30	311.7	320	61	102 %
	40	415.6	320	46	77 %
	50	519.5	320	37	62 %
	60	623.4	320	30	51%

Approx. storage capacity of SuDS measures 3. & 4. fitted to main classrooms:

Run off area (m <sup>2</sup> )	Rainfall event (mm/hr)	Volume water from roof (l)	Total volume stored (l)	Delay (mins)	Water stored (%)
60m <sup>2</sup>	10	440	800	80	133 %
	20	1200	800	40	67 %
	30	1800	800	27	44 %
	40	2400	800	20	33 %
	50	3000	800	16	26 %
	60	3600	800	13	22 %

Approx. Storage capacity of SuDS measures 5. fitted to corner classroom:

Run off area (m <sup>2</sup> )	Rainfall event (mm/hr)	Volume water from roof (l)	Total volume stored (l)	Delay (mins)	Water stored (%)
44m <sup>2</sup>	10	440	296	40	67 %
	20	880	296	20	33 %
	30	311.7	296	13	22 %
	40	1760	296	10	17 %
	50	2200	296	8	13 %
	60	2640	296	6	11 %

Approx. Storage capacity of SuDS measures 6. fitted at exit doors:

Run off area (m <sup>2</sup> )	Rainfall event (mm/hr)	Volume water from roof (l)	Total volume stored (l)	Delay (mins)	Water stored (%)
29m <sup>2</sup>	10	290	264	54	91 %
	20	580	264	27	45 %
	30	870	264	18	30 %
	40	1160	264	14	22 %
	50	1450	264	11	18 %
	60	1740	264	9	15 %

Note: Figures are based on CIRIA SuDS Calculation: Assumption 20 litres of water stored per m<sup>2</sup> per 100mm depth of soil

### Maintenance

Kings Academy is well placed for the long-term stewardship of the SuDS measures post project. The school has a long track record of environmental action, winning the Department for Education's Sustainability Award in 2022 and have held a Eco Schools status for 20 years. The school has a dedicated Eco-Co-ordinator and prides itself on teaching the school community to "think like environmentalists" (Liz Teague Environmental Project Manager 2023). The SuDS rain-planters will be looked after by Eco Club members in the coming years, extending understanding from one year group to the next. Maintenance requirements are minimal and will involve occasional litter picking and vegetation management, and a yearly inspection of the overflow pipe to check for blockages.

### **Benefits of the SuDs Rain-Planters at King's Academy**

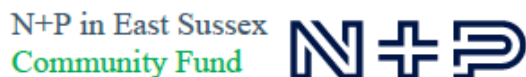
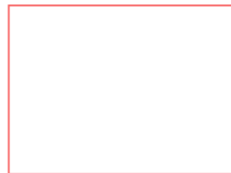
- Store water and releases it slowly reducing the flood peak on downstream properties.
- Manage flood risk by diverting water from drains and sewers, helps reduce sewer discharges.
- Raised awareness of flood risk and value of SuDS within the community.
- Filter water and remove pollutants preventing them from entering local rivers.
- Repurposes and recycles local waste materials and prevents them from entering landfill
- Increases biodiversity, particularly for pollinators.
- Planting helps cool the surrounding space and school buildings during hot weather.
- Improved aesthetics and enriches the environment through attractive new planting.
- Additional seating and provision of new spaces for student wellbeing.

### **Project Risks & Next Steps**

During phase 1 of the project two major staff changes occurred at the school - a new school principal and the resignation of the school Environmental Project Manager. An ex-staff member has taken on the role of school liaison for the project.

### **Funding**

We would like to thank all the funders who have made this work possible.



**Rachel Paget**  
**Ouse & Adur Rivers Trust**