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London Climate Action Week

How schools can adapt to climate change

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Outline

- Climate context
- How London Schools and Early Years Settings Can Adapt to Climate Change Guidance
- SuDS Sector Guidance: Reimagining Rainwater in Schools

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London's Climate Context

- Warmer wetter winters and hot drier summers are predicted, with more intense rainfall which will increase the risk of both winter and summer flooding
- Average temperatures in London are already getting higher. Projected increases in average monthly temperatures to 2050 show a 5 – 6°C increase in summer and winter averages. This will have an impact on critical infrastructure such as schools
- London Plan (London's spatial plan for housing growth) Flood Risk Appraisal: 643 of London's 2,895 schools (22 per cent) are either wholly or partially at risk of fluvial/tidal and/or surface water flooding

**How London Schools and Early Years
Settings Can Adapt to Climate Change
Guidance**

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Why?

- Climate Change will cause more frequent and widespread flooding, water scarcity and increased heat risk
- Impacts- disproportionate and unequal in London
- Children, one of the at-risk groups, are particularly vulnerable. Their lack of experience and knowledge can hamper their ability to adjust behaviours and leave them dependent on teachers and other adults for guidance
- London Environment Strategy – evidenced policy- seeks to build resilience to climate impacts for people and environments throughout the city, and is the key driver for this guidance targeted to schools and early years settings
- The GLA Guidance is the first of its kind and we hope to see other cities follow in these footsteps.

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Data

- In the summer of 2007, flooding in England resulted in widespread school closures that amounted to 400,000 lost pupil school days, at an estimated economic cost of £12 million, excluding damage to property
- During 2006, when temperatures reached a record high 36C in the UK, teachers began to send pupils home on health and safety grounds.

COVID -19

- Impacts from Covid-19 and recovery, this guidance is an important piece of work which highlights the need for green policies to build stronger communities and more resilient critical infrastructure that can prepare for, respond to and recover from and adapt both to an extreme weather event as well as other events such as a pandemic.
- Looking Forward - London's Recovery and Missions- Challenges and Opportunity
- The [Green New Deal Mission](#) aims to tackle the climate and ecological emergencies and improve air quality by doubling the size of London's green economy by 2030 to accelerate job creation for all. Green and Resilient Fund projects should help deliver the Missions four overarching objectives:
 - improve London's natural environment, improve air quality and tackle the climate and ecological emergency
 - promote and incentivise activities that sustain and grow London's green economy
 - prioritise interventions reducing health inequalities and social injustices
 - engage Londoners and businesses in the journey to become a zero pollution and greener city.

What?

- This guidance is aimed at the whole school community and Early Years setting , (physical and leadership).
- Stakeholder engagement with schools and Early Years Settings
- Focus on heat risk, flood risk and water scarcity
- Six steps towards a clear School Climate Adaptation Plan:
 - Understanding the risks and setting priorities (section 4) • Preparing your school for climate change (section 5) • Responding to and recovering from severe weather events – for each of the 3 risks- (section 6) • Learning and awareness raising (section 7) • Delivery and funding (section 8) • Monitoring and evaluation (section 9)
- Appendix A includes an easy-to-use checklist to help schools think through the most important questions in each of the above steps, and how they apply to a school’s particular context:-
- Planning your adaptation approach; Understanding climate risks; your school site; establishing priorities; funding and delivery aspects; making it happen

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Measures

School Grounds

Rain Planter

Rain Garden

Planting Trees

Shaded Structures

Permeable hard surfaces

Pond

Wetland

Building Measures

Green/Blue walls/roofs

Cool Roof

Dual Flush loo

Hybrid natural/mechanical
ventilation

Mechanical cooling and air
movement

Other Measures

- Learning and Raising Awareness – lesson plans/behaviour change
- Climate change covers a wide range of issues that provide a wealth of opportunities for learning across almost any subject, including sciences, geography, maths, economics, business, art, history, philosophy, Personal, Social & Health Education (PSHE) and more

“We touch on climate change in different parts of the curriculum, for example in ‘philosophy for children’, which we use to develop children’s critical thinking skills.” – Headteacher, anonymous, South West London

- Table 3 in the Guidance summarises a selection of free online educational resources to support teaching across a wide range of subjects and educational stages, helping to build awareness and therefore resilience against the climate impacts felt within and beyond London schools
- Case examples run throughout the Guidance.

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Holistic Approach Mobilisation

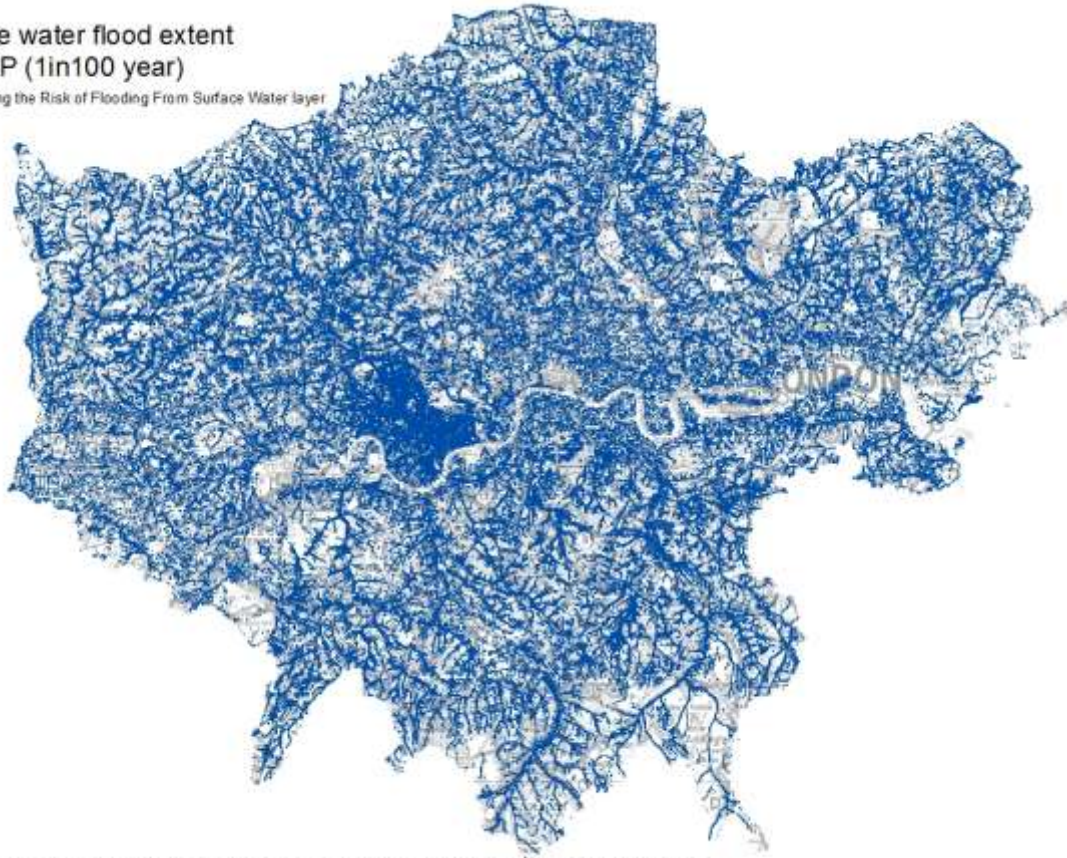


SuDS Guidance for sectors: Reimagining Rainwater in Schools

Surface Water Flood Risk

Surface water flood extent
1% AEP (1in100 year)

Created using the Risk of Flooding From Surface Water layer



Residential Properties

High (1 in 30 year event)

68,499

Medium (1 in 100 year event)

164,546



Commercial Properties

High (1 in 30 year event)

12,148

Medium (1 in 100 year event)

25,623

Numbers likely to significantly increase with climate change

What are SuDS?

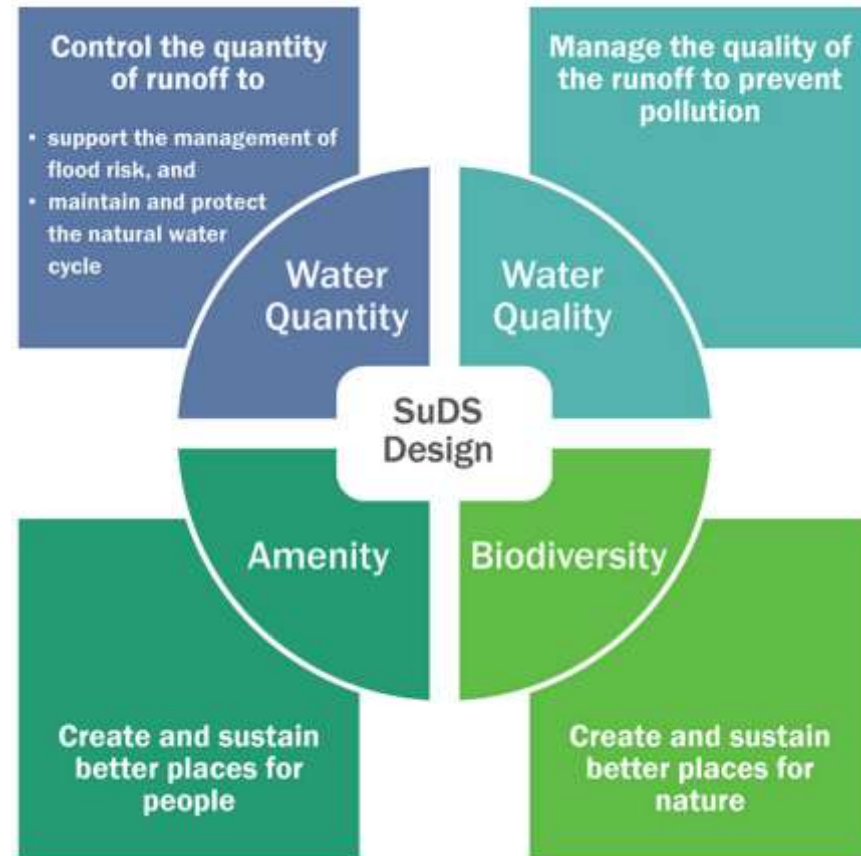
Sustainable Drainage Systems (SuDS) manage surface water runoff (the flow of rainwater across the surface)

capturing, using, absorbing, storing and transporting rainfall in a way that mimics nature

SuDS slow the flow and reduce the amount of rainfall that drains into sewers, streams and rivers

can also treat and reduce pollutants in runoff

SuDS help us adapt and respond to the challenges posed by climate change, urbanisation and water pollution.



An aerial photograph of a modern residential development. The buildings are multi-story, with light-colored facades and large windows. Many of the buildings feature green roofs with various plants and structures. The development includes several courtyards with green lawns and paved walkways. In the background, there is a body of water and a line of trees with autumn foliage. A semi-transparent text box is overlaid on the upper part of the image.

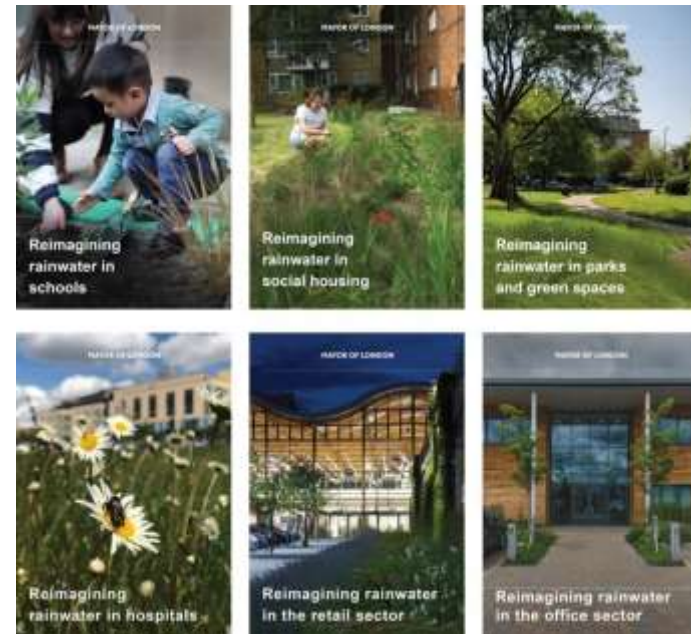
***Strong planning policies but
what about retrofit (99%)?***

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SuDS Sector Guidance

- [Parks & Green Spaces](#)
- [Housing](#)
- [Schools](#)
- [Hospitals](#)
- [Offices](#)
- [Retail](#)

Focus on retrofit rather than new build



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The Prince's
Responsible
Business Network

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Why use SuDS to manage rainwater in schools?

Designed for those managing schools and making decisions on the quality and upkeep of premises and surrounding estate

SuDS also offer a fantastic opportunity to connect children to nature and water which improves wellbeing.

Schools tend to have large roofs and extensive areas of hard impermeable surfaces that all lead to significant amounts of surface water runoff.

SuDS for schools are easy to maintain, often requiring nothing more than standard landscape maintenance which in most instances can be undertaken by students and community members.



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Learning & play

SuDS provide an attractive, stimulating and sensory learning environment.

SuDS features can be creatively used in all Key Stages and most subjects of the curriculum

Students, their parents and the local community have learnt about SuDS and helped to design and plant them

Used to:

- Demonstrate the water cycle
- New educational resources
- Student eco-councils



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Spaces and places for people and amenity

SuDS features that manage rainfall on the surface provide attractive opportunities to learn, play and mingle (at drop-off and pick-up times).

In some schools SuDS features have added to the local sense of community

SuDS can also cool neighbouring buildings. Trees shade from the sun, green roofs, or rain gardens help cool through evaporation (from surface water) and transpiration (from plants and soil).

Can help provide a more comfortable learning environment

SuDS can also improve local air quality by absorbing, filtering and diverting harmful airborne pollutants from vehicles



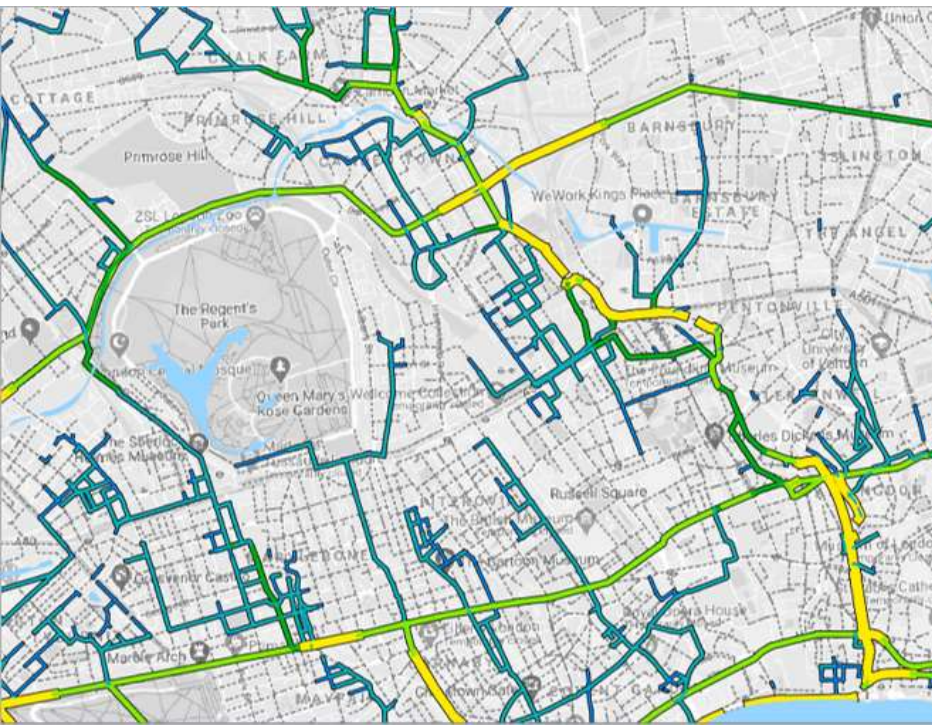
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Spaces for nature, biodiversity, managing water quality and flooding

Attractive and lush green places for biodiversity - creating new habitats (and an educational resource!)

SuDS slow the flow and reduce the amount of surface water runoff – e.g. a once waterlogged garden, playground, field or car park can be used more often – but also helps protect the drainage network both at, and beyond school

Most of London's rivers or streams are polluted to some degree. SuDS help improve water quality, cleaning surface water as it passes through green features



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Including SuDS in around Schools

Guidance includes SuDS ‘toolkit’ for schools

Opportunities for SuDS differ from school to school depending upon budget and site opportunities and constraints (densely urban, semi-rural etc.)

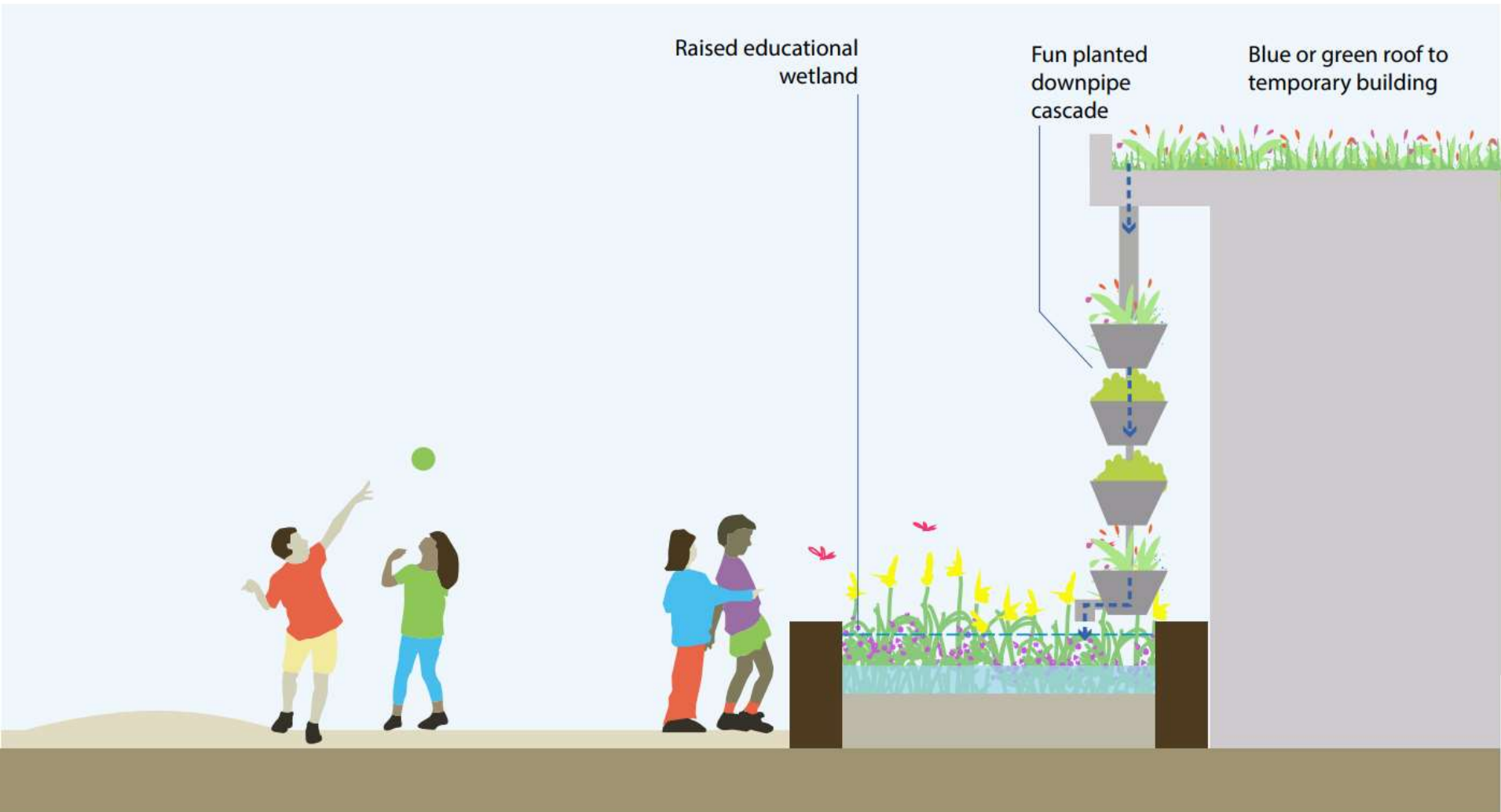
In existing schools most SuDS features that can be introduced will have a benefit for the school and local environment. The more features that can be created, the better, but this may be limited by budgets and space.

Guidance explores how SuDS features can be used in and around schools and how children and teachers may interact with them

	SuDS Feature	Benefits
 <p>Vegetated swale</p>	<p>Swale</p> <p>This is a shallow ditch with a flat base and gently sloping sides.</p> <p>They can be planted with grasses or more attractive vegetation.</p>	<ul style="list-style-type: none"> • Can form a wildlife corridor. • Can be visually appealing. • Effectively cleans runoff. • Connects people to water on the surface and is simple to maintain. • Reduces runoff for day-to-day rainfall. • Collects, cleans and transports runoff to other parts of the site.
 <p>Grassed swales with tree planting</p>		
 <p>Filter drain at the foot of a gabion wall, taking runoff from the asphalt playground</p>	<p>Filter drain</p> <p>A stone-filled trench that collects runoff from hard surfaces (road or car park) to clean and transport it.</p> <p>It can include a perforated pipe to slow the flow and enable runoff to soak into the ground.</p>	<ul style="list-style-type: none"> • Effective where space is limited. • Collects, cleans and transports runoff to other parts of the site.
 <p>Brick rain planter by a school entrance</p>	<p>Rain planter</p> <p>A raised planter with the ability to collect and percolate roof runoff into soil and layers in the planter.</p> <p>An overflow into a drain or another SuDS feature is recommended as it's rare it will cope with the runoff from a heavy storm</p>	<ul style="list-style-type: none"> • An attractive and educational display of sustainable rainwater management. • Enables SuDS where space is limited, or is only available close to buildings. • Can be integrated with outdoor seating.
 <p>Rain garden visible through stairwell window</p>	<p>Rain garden</p> <p>A small planted basin, typically designed to receive runoff from roofs or hard surfaces.</p> <p>The water can be directed to the rain garden using pipes or risers.</p>	<ul style="list-style-type: none"> • Highly visual and attractive feature. • Easily incorporated into small green spaces close to buildings. • With appropriate planting supports biodiversity. • Effectively cleans runoff. • Reduces runoff for day-to-day rainfall.

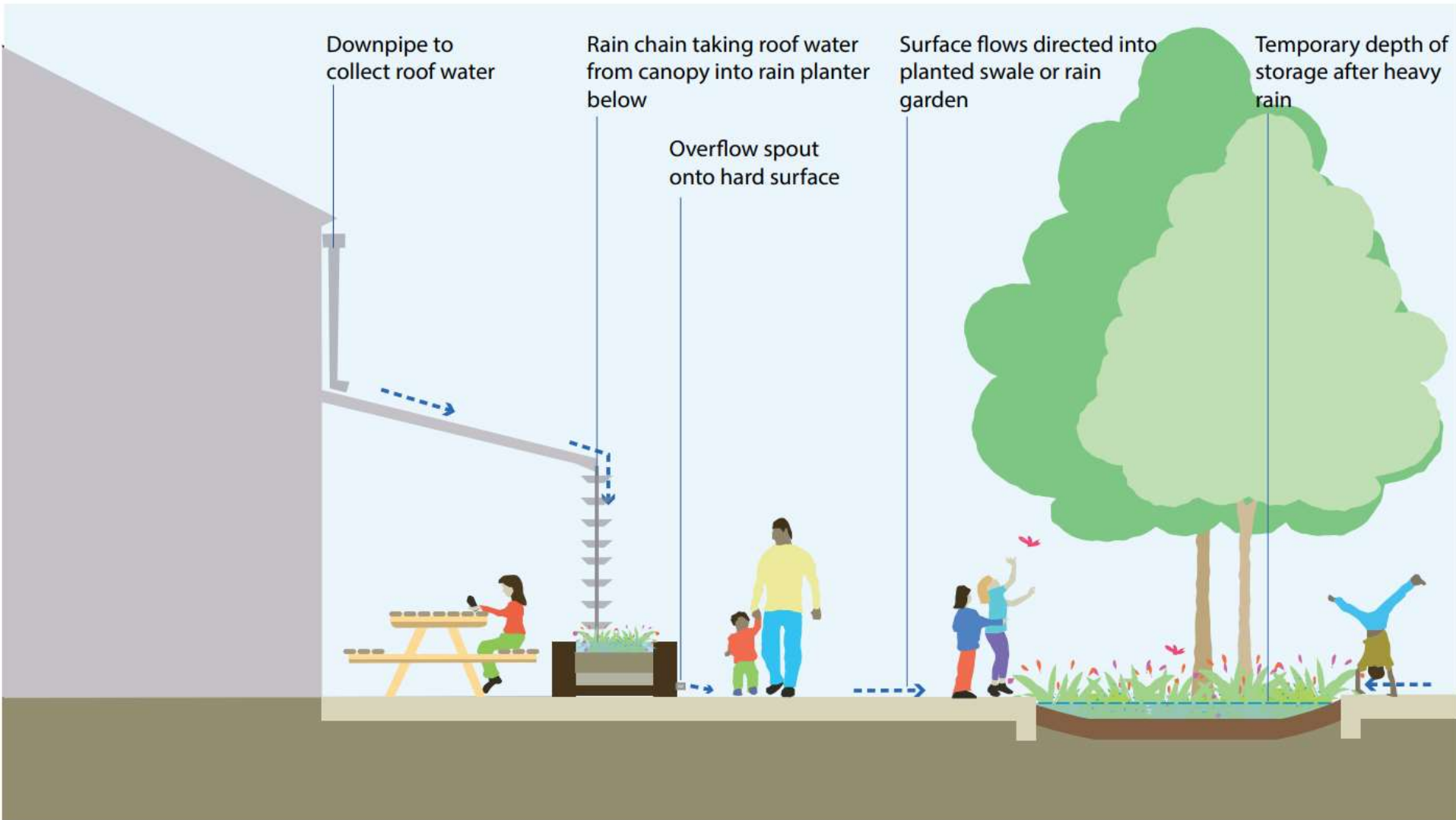
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Potential for an outdoor classroom



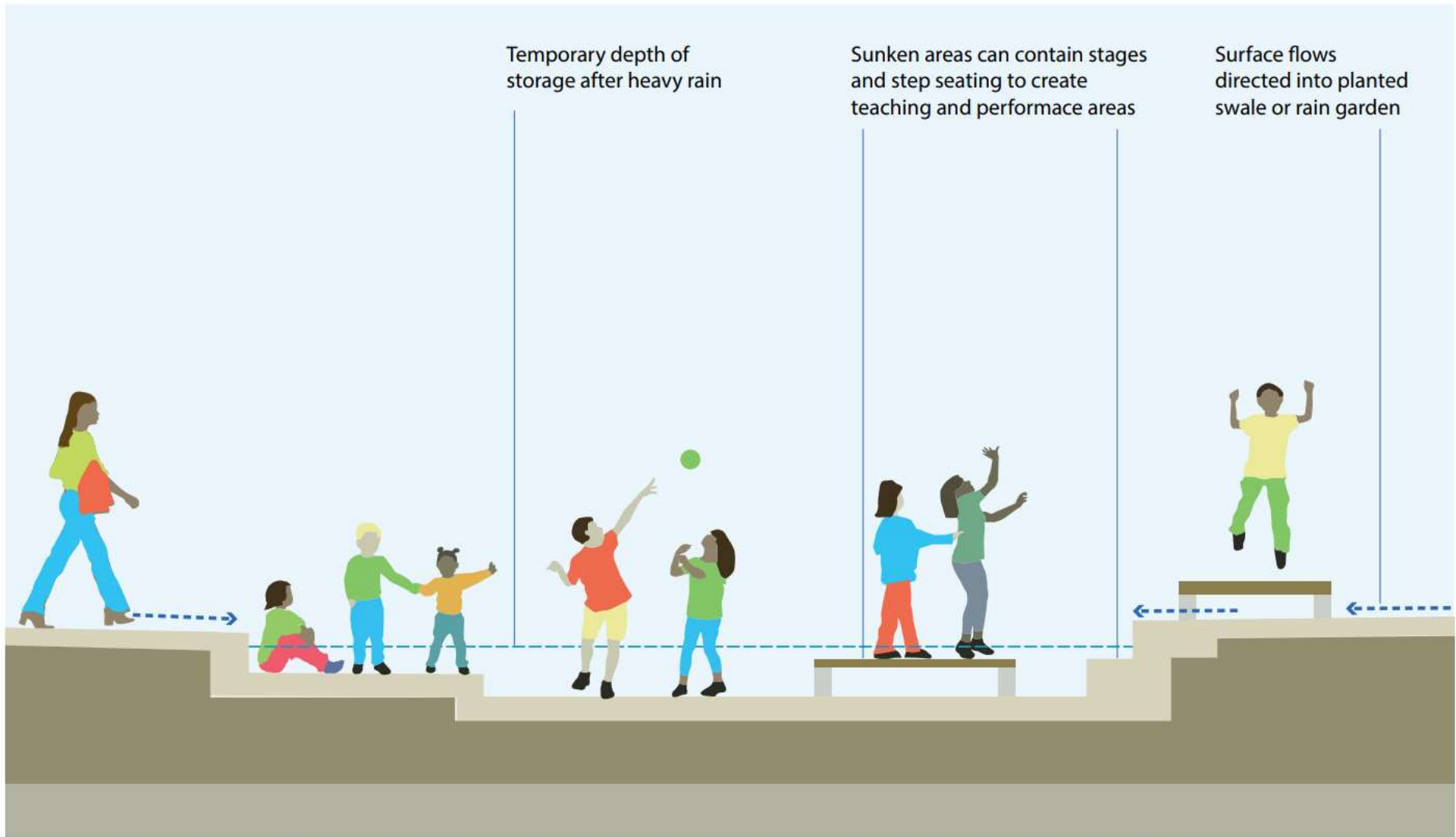
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Link a planter to a swale



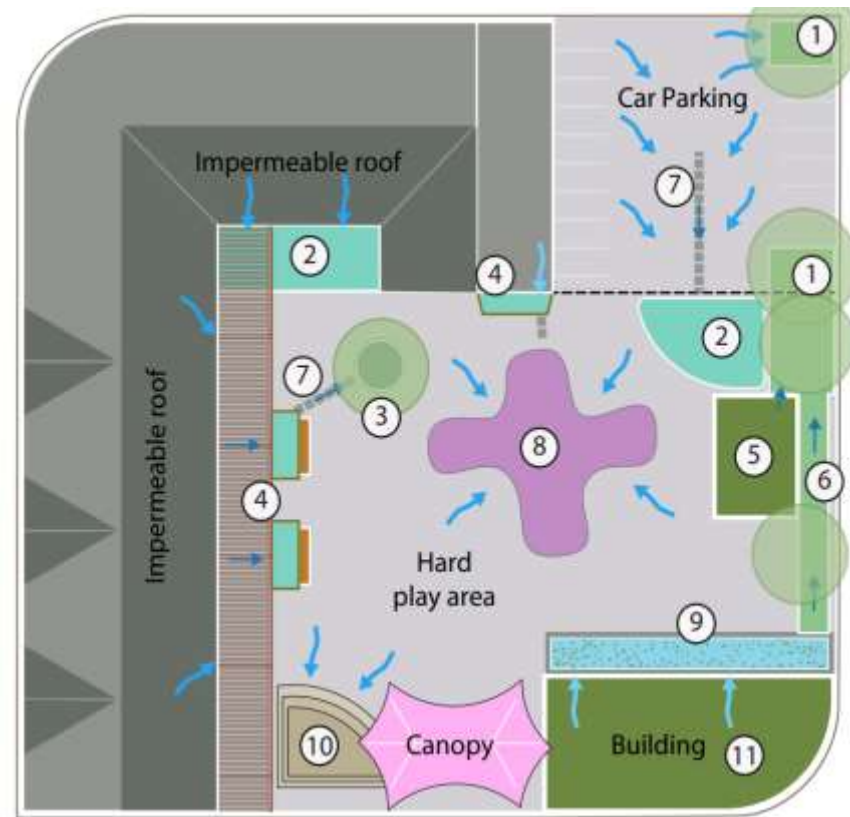
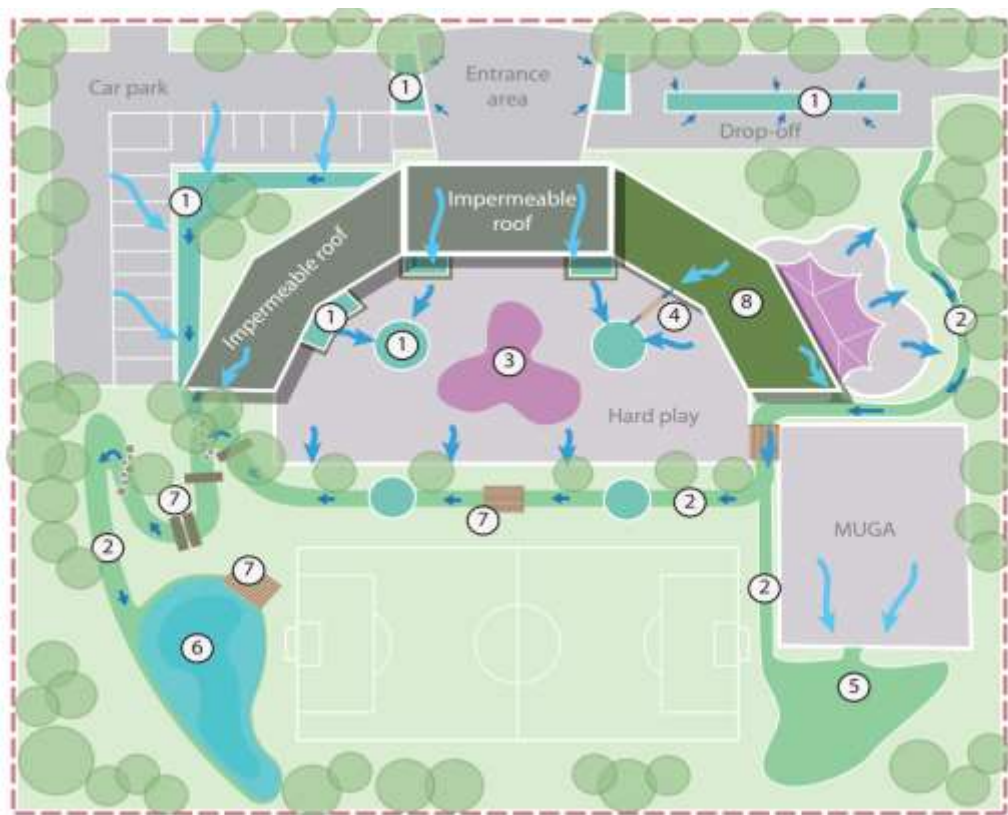
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Hard detention basin



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Concept for retrofitting SuDS (including a constrained site – right)



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Getting the best outcomes

Engagement and buy-in - students, parents, colleagues and governors AND future maintainer!

Maximising the value from SuDS –

Discuss context, drivers and potential funders for the SuDS scheme with designers

Manage water on the surface as much as possible. This makes SuDS easier and cheaper to construct and maintain

Manage rainfall close to where it falls. This ensures flows through features are treated, safe and beneficial for the children and wildlife.

Ensure that appropriate safety is considered as part of the design process (including as part of education sessions)

Guidance lists detailed approaches across categories 'learning', 'amenity', 'biodiversity', water quality & quantity/availability

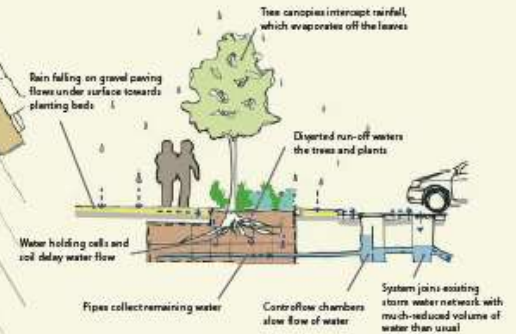


Kenmont Rain Garden

Managing water run-off through tree pits

- Slows water flow to existing drains
- Prevents flooding
- Cleans water
- Protects biodiversity
- Helps tree/plants

- Surface water flow
- Underground water-holding cells
- Underground pipe
- Flow control chamber
- Connecting manhole
- Deep combined sewer
- Largest extent of temporary basin
- Exceedance routes
- Gully drain



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THANK YOU

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