



## Climate Ready School Grounds Technical Area: Water Management

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A warming climate will put more water into the atmosphere which will then fall back as rain. In the north and west of the UK, we are expected to see increases in general rainfall, with more days that are rainy. This will require our school grounds to adapt to cope, ensuring that spaces dry out quicker without contributing to flooding.

It is also predicted that the whole of the UK will experience increased storm rainfall events, which in turn pose a threat of flooding and damage to buildings. Many schools already face these issues and should be aware if they are a site already prone to or at risk of flooding in future. In addition, larger school sites will also contribute to flooding downstream. Therefore, consideration of how water is slowed from leaving a site is important.

For schools in some areas of the east and south of the UK, there is a likelihood of significant dry spells in the summer. When combined with increasing temperature, this will lead to drought and a need to manage and conserve what little water there is. Drought has significant impacts on the plants, trees, and soil within a school ground, and will become more extreme over time.

### Why would you prioritise water management?

The motivation for this area is very variable, and so it is important for learners to consider what the water issues are on site. They typically fall under these four categories:

**Increased rainfall** – leading to restricted access to some areas of the site. You may have puddles or muddy areas, which can persist after the rain has stopped falling.

**Flooding on-site** – the flooding may be water flowing into the site from elsewhere, but can also be the water falling on site having nowhere to go.

**Flooding off-site** – this can be harder to judge, but you may be aware that your site sheds water very quickly into streams, rivers, or drains, and that you regularly see flooding issues downstream.

**Drought** – you regularly have grass, plants, and trees struggling through lack of water, and you may even have cracking in the soil below. You likely have drying streams and rivers locally, and likely in the midlands, south, and east of the UK.



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### Solutions

The solutions are divided up into sections to help learners decide on the most appropriate solutions. If you have significant flooding on site or are aware you are at risk of flooding, it may be best to engage pupils in speaking to the site owners and managers about larger scale solutions, with a view to lobbying for changes.

For example images to inspire changes in your own school grounds, [visit our technical areas page](#).

|  | Cost | Benefit |
|--|------|---------|
| <p><b>Water butt:</b> Fitted to a roof downpipe, these water storage devices slow run-off and provide a water source for plants.</p> <p>Be aware that water butts are a source of legionella bacteria. Consider carefully where it is sited and how it is managed. They can be fitted with 'drip-drains' straight into a garden feature, requiring very little management.</p> | £    | **      |
| <p><b>Bog garden:</b> A shallow dip designed to stay wet and boggy <i>permanently</i>, planted with bog loving plants. Can work well alongside a pond or in an area that stays wet already. but likely needs to be fenced in some way to prevent damage.</p>   | £    | **      |
| <p><b>Raingarden planter:</b> This raised planter catches rainwater from a downpipe. The water flows through the vegetation, soil, and gravel in the planter, then out into another raingarden feature or drains away.</p>   | ££   | ***     |
| <p><b>In-ground raingarden:</b> A depression or sunken area which can hold rainwater <i>temporarily</i> and then slowly let it back into the ground. These should be planted with carefully chosen native plants. Likely needs to be fenced off in some way to prevent damage or overuse.</p>  | £    | ****    |
| <p><b>Swale:</b> A shallow ditch with flat base and sloping sides, designed to catch, store temporarily, and slowly release water. They can be planted with vegetation right up to trees, and can provide excellent play and learning opportunities.</p>   | £££  | ****    |



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|   | Cost  | Benefit |
|---|-------|---------|
| <p><b>Wetland:</b> These are larger and a mixture of small ponds, bog gardens, and in-ground raingarden. They are excellent at slowing water run-off and holding water on-site. They also offer many other co-benefits such as carbon sequestration, biodiversity, and reducing heat buildup.</p>   | £££   | *****   |
| <p><b>Plant trees:</b> Trees can help intercept and slow rain down from reaching the ground. In addition, they improve the soil's ability to retain water underground and facilitate transpiration (evaporation from the leaves). In summer, the shade of a tree prevents evaporation from the soil.</p> <p>Some trees, such as aspen, willow, (some) birch, and alder, are water loving and excellent at helping manage water.</p> | £     | ***     |
| <p><b>Plant shrubs and hedges:</b> Like trees, these can intercept water and improve the water-holding ability of the soil. In summer, they also provide shade to reduce evaporation from the soil.</p>   | ££    | **      |
| <p><b>Plant herb or flower meadows:</b> These areas of longer grass, herbs, and flowers are excellent at improving soil's ability to retain water. In addition, the longer grass slows run-off into the ground and reduces evaporation in the summer.</p>   | £     | **      |
| <p><b>Living/green roof:</b> Although difficult to retrofit on many existing buildings, smaller green roofs such as on garden sheds or bike shelters are very manageable and effective. Most are planted to slow rainfall into the soil and grit underneath, and to slow evaporation in the summer.</p>   | £££££ | ***     |
| <p><b>Downpipe cascade garden:</b> These vertical gardens take some of the flow of downpipes and route them through planters. These can be quite small and built vertically around the downpipe, or some use horizontal zig-zags of gutter pipe to plant into.</p>  | ££    | *       |



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|  | Cost  | Benefit |
|--|-------|---------|
| <b>Green walls:</b> These vertical gardens can collect gutter water, slowing it down from reaching ground level. They have multiple other benefits such as reducing heat build-up, improving biodiversity, and cleaning air, but are expensive and may only be retrofittable on a small scale. | £££££ | *       |
| <b>Permeable surfaces:</b> If your school is undergoing renovation, it may be appropriate to consider replacing hard impermeable surfaces with permeable surfaces, encouraging water into the soil and slowing run-off.  | ££££  | **      |

### More resources and information

[School Raingardens \(10,000 Raingardens for Scotland\)](#)

[Reimagining Rainwater in Schools](#)

[Water Butts: The Ultimate Guide \(Envii\)](#)