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SLOW THE FLOW

Rain garden designer and SGD Friend **Wendy Allen** explains how managing rainwater run-off at a domestic level can help reduce flooding, minimise pollution levels, and increase biodiversity

WORDS: Zia Allaway

Wendy Allen Is an award-winning garden designer, educator and SGD Friend who specialises in designing creative surface water management, sustainable drainage and biodiverse rain gardens for private and public spaces. **wendyallendesigns.co.uk**

Flooding events in Britain have been catastrophic over the last few years, for communities, the environment and for local economies. The damage is likely to increase still further in the future, due to a combination of climate change and urban development.

Solving these issues may seem beyond our control, but SGD Friend and award-winning rain garden expert Wendy Allen says that domestic-scale rain gardens can make a real difference.

'A well-designed rain garden is one possible component of a sustainable drainage system, or SuDS, whereby you channel surface water run-off from a roof, patio or driveway into a free-draining, plant-filled depression instead of a drain,' she explains.

'The rainwater is then held in the garden, allowing time for it to infiltrate slowly while the plants and soil filter out excess nutrients. Our existing sewer systems were not designed to cope with the intensity of rain that we are now experiencing so slowing the flow of water within the curtilage of a property helps to prevent localised flooding and sewer overload, which could otherwise lead to raw sewage being discharged into our rivers.'

Managing the risks

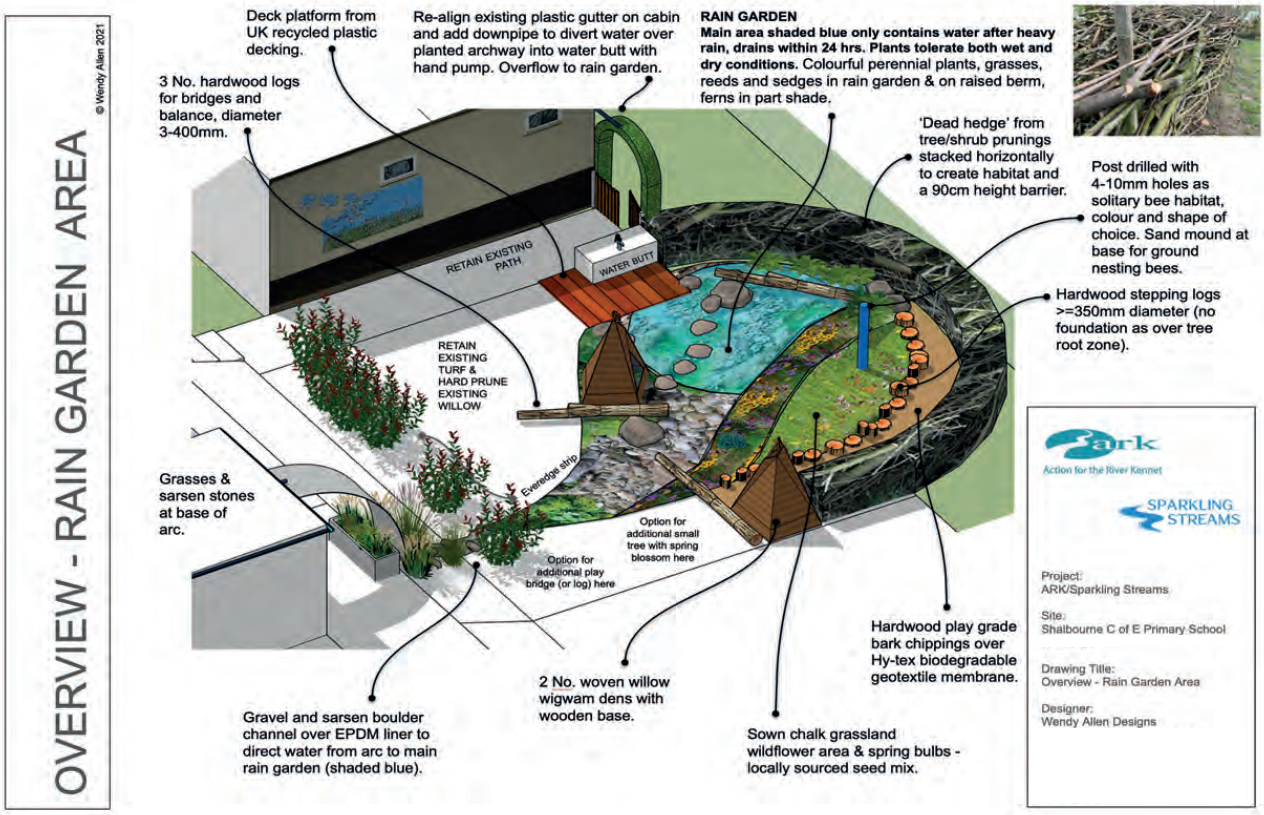
To protect the environment, flood and water management should be a priority for all designers, whether you are retrofitting SuDS in a small urban garden, designing the landscape for a new housing development, or planning a community, school or public outdoor space.

'SuDS is a statutory requirement for some new developments in Britain,' says Wendy. 'But legislation and definitions of a qualifying new development differ across England, Scotland and Wales, so take a look at the Susdrain website (susdrain.org) for an overview of the SuDS policy in your area.

'And for small-scale retrofit rain gardens or rain planters that fall outside the planning requirements, garden →

New planting in Aldbourne Primary School's rain garden, after heavy rain. The Wiltshire garden was an Action for the River Kennet project designed by Wendy Allen.

Images: Opposite page: Elizabeth Watts. This page: Wendy Allen Designs



designers should follow industry and any statutory SuDS standards,' she continues. 'To fulfil the Construction Design Management (CDM) 2015 requirements in the best possible manner, you should use best practice as outlined in the CIRIA *SuDS Manual*. If you're in any doubt, or if works affect a Listed Building or are in a Conservation Area, your Local Planning Authority will be able to give more advice.'

The Shalbourne School garden includes sedges, flowering perennials and ferns that will tolerate both dry conditions and occasional waterlogging after heavy rain. A dead hedge feature adds habitat value.

Image: Wendy Allen Designs

While a drainage engineer has the technical skills to implement SuDS, garden designers can help make the site aesthetically appealing and even more environmentally friendly. 'Including a diverse range of perennial plants that form a complex root network can increase biodiversity above and below the soil surface at the same time as producing a beautiful, practical feature for clients to enjoy,' says Wendy. 'The roots also help to create healthy soil, and healthy soil captures and slows more water and sequesters more carbon.'

Absorbing the facts

So, what exactly is a rain garden and how does it work? Wendy defines it as a shallow, free-draining, planted depression fed by low-contaminant surface water run-off from a hard surface, known as the catchment area. She is keen to stress, however, that a rain garden is not a pond, since the ground drains freely and the depression is dry for most of the time. 'Rainwater only pools in the shallow depression after very heavy rain, and the infiltration process will usually occur within 12 to 24 hours,' she says. 'Any excess water can be directed through an outflow point, on to a lawn or a flowerbed, rather than into a surface drain,' she adds.

The best site for a rain garden is no less than 10 feet or three metres from a building – if you are designing a small feature for a private garden, Wendy suggests downloading the free *Rain Garden Guide* (see below) for more advice. 'The guide suggests that if the infiltration rate is 50mm →

ABOVE: The water wheel, fed by an overflow downpipe, adds an exciting visual feature to a rain planter within an Action for the River Kennet project designed by Wendy Allen. **BELOW:** An eye-catching arrangement of downpipes draws attention to a series of filtration rain planters which Wendy designed to slow the flow of rainwater off the buildings of Preshute School.

COURSES, ADVICE AND FURTHER READING

Susdrain, susdrain.org: outlines SuDS policy nationwide.

Rain Garden UK workshops: Wendy and her colleague Charlotte Hitchmough, from the Rivers Trust for the Kennet Catchment, run practical and online workshops on how to create rain gardens and rain planters, including simple ways to size a retrofit domestic rain garden using infiltration rates and storage volumes. Follow @RainGardenUK on Facebook, Twitter and Instagram for upcoming course dates.

Construction Industry Research and Information Association (CIRIA), ciria.org: research, guidance, support and CPD training for industry SuDS.

The Rivers Trust, theriverstrust.org.

UK Rain Garden Guide, by Bob Bray, Dusty Gedge, Gary Grant and Lani Leuthvilay; includes a list of suitable plants and is free to download from raingardens.info.

Planting in a Post-Wild World, by Thomas Rainer and Claudia West (Timber Press).

Rain Gardens, by Nigel Dunnett and Andy Clayden (Timber Press).

per hour (from a pre-dug test pit), then the area of the rain garden needs to be at least 20 per cent of the catchment area, to cope with a summer storm.'

To create a rain garden on free-draining soil, excavate 100mm down to form a flat depression and use the excavated soil to make a raised, well-compacted bank around the edge; known as a 'berm', this will help to contain the water.

If the soil health is poor, or the infiltration rate from a test pit is only 15 to 25mm per hour, Wendy suggests you improve it with organic matter; dig down to 400mm, mix the excavated soil with added peat-free compost or soil conditioner – approximately 100 litres per cubic metre of soil is ideal – and backfill to 300mm, leaving the 100mm void inside the berm to retain water before infiltration. A wetland or bog garden may be more appropriate for areas where the soil is very poorly drained.

Plant the rain garden with sustainably sourced perennials and shrubs that can cope with both occasional waterlogging and drought. For a garden setting, Wendy advocates a mixture of native and non-native plants and advises a good amount of ground cover and taller plants used in a mixed matrix rather than groupings. 'Planting for aspect and soil moisture levels, with at least 50 per cent evergreen cover, is key.

'It's also a great idea to consult ecologists and Local Biodiversity Action Plans to get the most value from your rain garden,' she concludes. 'Your local Rivers Trust may be able to help with funding for a community or school rain garden project too.' ○

Images: Bottom: Wendy Allen Designs. Top: Elizabeth Watts