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We are a not-for-profit organisation intent on reducing pollution from urban surfaces, including microplastics and plastic litter

Zero Pollution Ambassadors

Act | Educate | Advocate

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SuDS & Water Quality

1. Use the SuDS Manual to design good water quality treatment elements for your SuDS scheme
2. Make it big enough
3. Design & build it well
4. Maintain it

faces

- u are planning,
- l car parks,
  equent change
- parking with
  s and trunk
- els are used,
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- Each type of urban surface is assigned a Pollution Hazard Index in the SuDS Manual.

TABLE 26.2 Pollution hazard indices for different land use classifications

Land use	Pollution hazard level	Total suspended solids (TSS)	Metals	Hydro-carbons
Residential roofs	Very low	0.2	0.2	0.05
Other roofs (typically commercial/ industrial roofs)	Low	0.3	0.2 (up to 0.8 where there is potential for metals to leach from the roof)	0.05
Individual property driveways, residential car parks, low traffic roads (eg cul de sacs, homezones and general access roads) and non-residential car parking with infrequent change (eg schools, offices) ie < 300 traffic movements/day	Low	0.5	0.4	0.4
Commercial yard and delivery areas, non-residential car parking with frequent change (eg hospitals, retail), all roads except low traffic roads and trunk roads/motorways[1]	Medium	0.7	0.6	0.7
Sites with heavy pollution (eg haulage yards, lorry parks, highly frequented lorry approaches to industrial estates, waste sites), sites where chemicals and fuels (other than domestic fuel oil) are to be delivered, handled, stored, used or manufactured; industrial sites; trunk roads and motorways[1]	High	0.8[2]	0.8[2]	0.9[2]

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Pollution Mitigation Indices

TABLE 26.3 Indicative SuDS mitigation indices for discharges to surface waters

	Mitigation indices[1]		
Type of SuDS component	**TSS**	**Metals**	**Hydrocarbons**
Filter strip	0.4	0.4	0.5
Filter drain	0.4[2]	0.4	0.4
Swale	0.5	0.6	0.6
Bioretention system	0.8	0.8	0.8
Permeable pavement	0.7	0.6	0.7
Detention basin	0.5	0.5	0.6
Pond[4]	0.7[3]	0.7	0.5
Wetland	0.8[3]	0.8	0.8
Proprietary treatment systems[5,6]	These must demonstrate that they can address each of the contaminant types to acceptable levels for frequent events up to approximately the 1 in 1 year return period event, for inflow concentrations relevant to the contributing drainage area.		

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Simple Index Approach

- Use for all low risk sites and medium risk sites discharging to surface waters. For medium risk sites discharging to groundwater, consult with Environment Agency.
- Compare the Pollution Hazard Index with the Pollution Mitigation Index. As long as the mitigation is equal to, or greater than, the pollution index, the design should be OK.
- The Simple Index approach is not appropriate to use on High Risk surfaces on its own. You must also complete a comprehensive risk assessment, including groundwater risk.

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Groundwater protection

- Always consider the risk of pollution of groundwater.
- If in doubt, do a risk assessment.
- Infiltration of runoff is a great way to reduce flood risk but not if it causes pollution of groundwater.

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Get the water quantity
right, using infiltration
and attenuation and
the water quality will
fall into place with ver
little additional
thought. Take the
opportunity to
maximise biodiversity
& amenity

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Get the water quantity right
using infiltration and attenu
but also focus on the water
quality elements to make su
that the level of pollution is
properly mitigated. Take the
opportunity to do all you ca
deliver biodiversity & amen
the context of a
commercial/retail developm

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Focus on water quality to make sure that you do all yo must do to control pollution **before** you start to consider water quantity. And be honest about biodiversity & amenity provision; if residua pollution is unavoidable, don't try to share the space with wildlife & people.

This concrete drainage channel is designed with too much focus on water quantity and not enough attention to water quality. It isn't appropriate to deliver biodiversity & amenity in the middle of a motorway.

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Make it big enough

- The SuDS manual dictates that treatment must be provided for a 1 in 1yr 15 minute storm event so work out what that flow rate is, and how long the water needs to be in the treatment device to receive enough treatment and that will tell you how big the device needs to be.
- If necessary, bypass higher flows round the treatment device to prevent the pollution from being washed out.
- For high risk surfaces we need to treat higher flows, maybe up to a 1 in 5 yr rainfall event?

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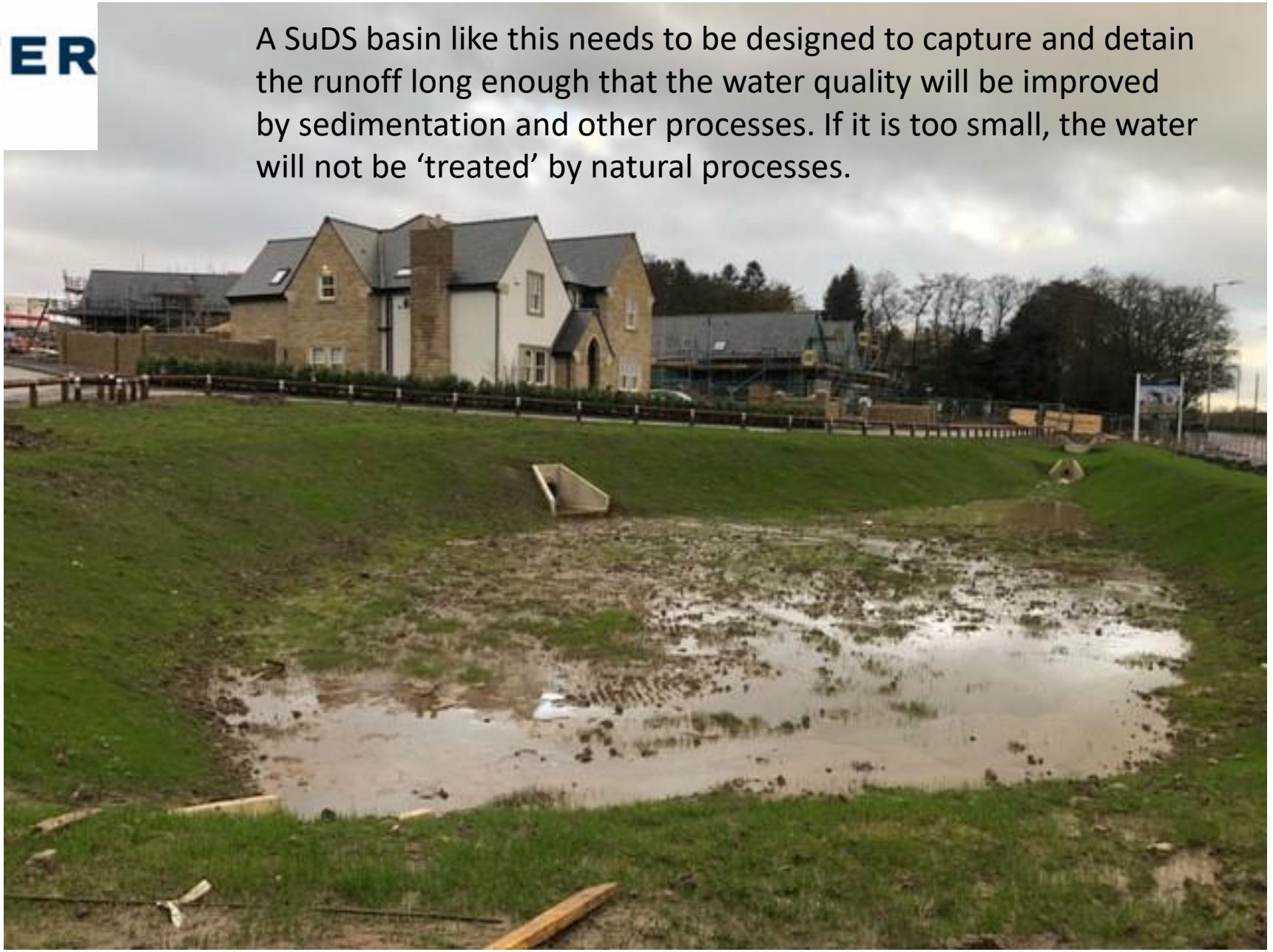
Make it big enough



A SuDS basin like this needs to be designed to capture and detain the runoff long enough that the water quality will be improved by sedimentation and other processes. If it is too small, the water will not be ‘treated’ by natural processes.

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Design & build it well

If possible, the runoff should enter a swale by ‘over the edge’ drainage along its entire length. By concentrating the inlet to one place, it simply concentrates the pollution and wastes the treatment capacity of the rest of the soil.

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Maintain it forever

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Protect your capacity

Remember:

If you design a device to provide attenuation of stormwater for flood risk management, it is unacceptable to allow that device to fill up with sediment and to compromise its capacity. Use upstream sediment removal for all attenuation devices.

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SuDS & Water Quality

Summary

1. Use the SuDS Manual to size the treatment device
2. Make it big enough
3. Design & build it well
4. Maintain it

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