



The legislation affecting the discharge of highway runoff into infiltration SuDS devices and the wider environment

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Further to my previous post about the inclusion of manufactured devices in drainage design for highway runoff, I wanted to add some thoughts about the legislation affecting these designs. And I wanted to remind everyone that the CIRIA SuDS Manual Simple Index Approach is NOT appropriate for runoff from trunk roads and motorways. This is quite a long read, but if it is relevant to your work, it's worth it. As always, I welcome your views and amendments.

1. Highway runoff contains hazardous substances. Copper and Zinc are classified as 'Specific Pollutants' which are substances that may have a harmful effect on biological quality and which have been identified by UKTAG (UK Technical Advisory Group) as being discharged to the water environment in significant quantities in the UK. Fluoranthene is a priority substance. Cadmium and Polyaromatic Hydrocarbons are identified as Priority Hazardous Substances under the Water Framework Directive, which identifies them as substances shown to be of major concern for European waters due to their toxicity, bio-accumulating properties and/or persistence in the environment.
2. These pollutants each have published Environmental Quality Standards which are a type of legally binding policy instrument that were imposed to remedy the environmental impact of diffuse emission sources, such as road traffic and agriculture. There are associated groundwater thresholds for these pollutants.
3. The Environment Agency and Natural Resources Wales are statutorily obliged to take all necessary measures to:
 - prevent the input of any hazardous substance to groundwater, and to
 - limit the input of non-hazardous pollutants to groundwater so as to ensure that such inputs do not cause pollution of groundwater.
4. The Environment Agency has a publication setting out their approach to groundwater protection (<https://assets.publishing.service.gov.uk/media/5ab38864e5274a3dc898e29b/Environment-Agency-approach-to-groundwater-protection.pdf>).

In the section on 'Discharge of liquid effluents into the ground' it says that 'You must not cause or knowingly permit the discharge of hazardous substances or non-hazardous pollutants that might lead to an input of that substance into groundwater without an environmental permit unless the discharge qualifies for an exemption (in which case the discharge must meet the conditions relating to that exemption) or

exclusion. If necessary, the Environment Agency may serve a notice to prohibit or bring into control, activities that may result in pollution.

5. By designing a SuDS scheme for highway runoff that includes infiltration devices, the designer is discharging liquid effluents into the ground. Therefore, this activity could be Permitted if it contains hazardous substances, to ensure that the discharge does not lead to a discharge of those substances to groundwater, or pollution of groundwater.
6. Some extremely low-risk discharges are **not** groundwater activities. These are called exclusions and you do not need an environmental permit or exemption for them. There is an exclusion for SuDS and it says 'This exclusion may apply to some sustainable drainage schemes where low concentrations of pollutants are involved.'
7. The concentrations of hazardous substances in highway runoff are **not** low; indeed in the samples we have taken, the levels of PAHs have exceeded the EQS by many hundreds of times on occasions.
8. Vegetative SuDS schemes for the treatment of highway runoff should only be designed in accordance with the CIRIA SuDS Manual Simple Index Approach if the concentrations of pollutants are low and the exclusion applies. This is NOT THE CASE for highway runoff from trunk roads and motorways.
9. Table 4.3 of the CIRIA SuDS Manual allows groundwater risk screening for discharges from low and medium risk surfaces. For all high-risk surfaces, including trunk roads and motorways, a detailed risk assessment is required. This detailed risk assessment should account for the levels of hazardous substances that are in the highway runoff.
10. The risk assessment and its outputs should be agreed with the environmental regulator who should confirm that the design prevents any discharge of hazardous substances to groundwater. They should also confirm that the design prevents pollution of groundwater from non-hazardous pollutants.
11. Remember that sustainable development is development that meets the needs of the present, without compromising the ability of future generations to meet their own needs. So, we cannot design treatment schemes that create toxic environments and contaminated land for future generations to deal with.
12. So vegetative SuDS remain fabulous, but they are not always appropriate and we need to retain robust drainage design and regulatory control for those sites and surfaces that pose a high risk of pollution and harm.

13. The image below is a standard design for a soakaway for highway runoff from the National Highways Design Manual for Roads and Bridges.

