

# Retrofit SuDS: Evaluating a potential SuDS material to mitigate road runoff

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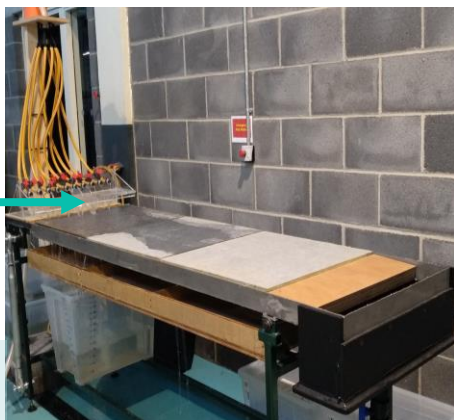


**Fig 1.** Contaminants from road surfaces get washed into drains and end up in waterbodies

- During rainfall, contaminants deposited on roads enter stormwater drains and are conveyed to waterbodies (**Fig 1**).
- Conventional road drainage systems are designed to mitigate flood risk [1,2], but not water pollution.
- Urban transport runoff contributes to approx. 13% of water pollution [3].
- Sustainable drainage systems (SuDS) can manage both quality and quantity of runoff, while maximizing biodiversity opportunities [4]. However, they can be difficult to retrofit into existing infrastructure [5].
- A new material (BlueLay) is evaluated as a SuDS material to mitigate road runoff, assessing viability for retrofitting.
- BlueLay will be tested for hydraulic (**Fig. 2**) and water quality performance (**Fig. 3**) under varying rainfall intensity, pollutant loads, material saturation and surface gradients, and compared with road surface slabs.

## Hydraulic performance

- Rainfall intensities (73 –178mm/hr)
- Gradients (0.5 – 5°)



**Fig.2.** Sheet-flow test rig for hydraulic performance

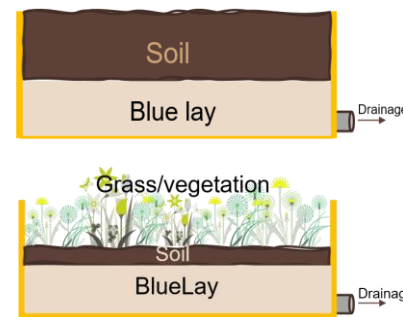
## Pollutant removal

- **Cadmium (Cd)** : <0.3 ug/L
- **Copper (Cu)** : 0 – 136 ug/L
- **Lead (Pb)** : 0 – 179 ug/L
- **Zinc (Zn)** : 34 – 497 ug/L
- **Sum PAHs** : 2 – 19 ug/L
- **TSS** : 75 – 774 mg/L



**Fig.3.** Test rig for pollutant load

## Future work



## Summary

- BlueLay is tested under high intensity rainfall conditions to evaluate ability to mitigate flood risk.
- BlueLay is subjected to various pollutant loads to assess-attenuation of PAHs, TSS, and heavy metals.
- BlueLay is interfaced with other materials to determine viability as a retrofit SuDS material.