

**The Lamb Drove SuDS in
Cambourne, Cambridgeshire**


Water Quality Evidence

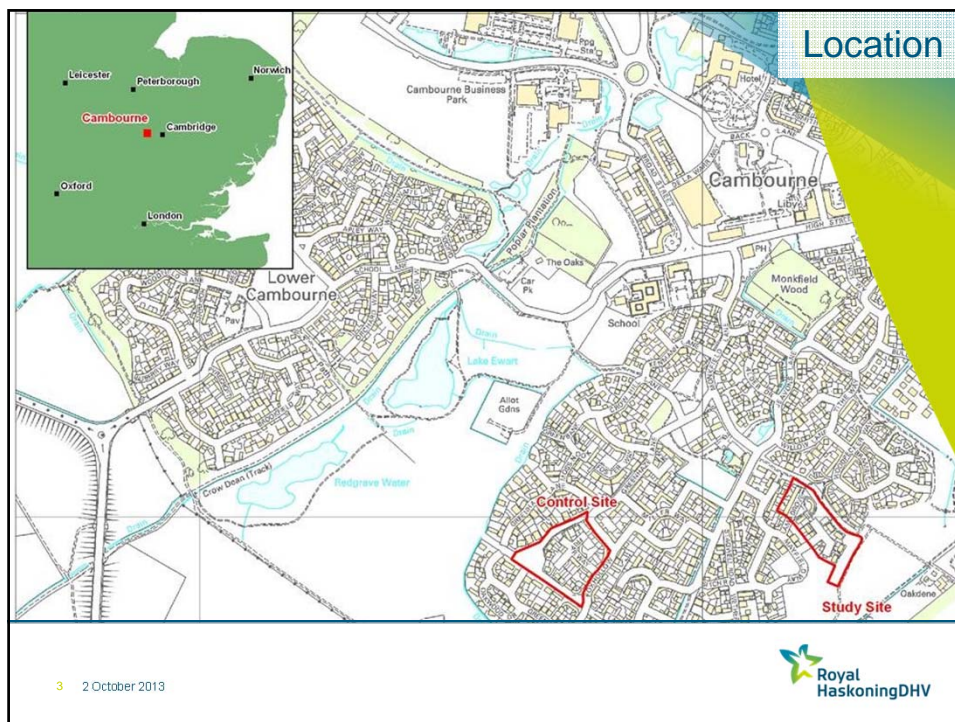
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Introduction

- Built 2005-2006 (European Funding, FLOWS Programme).
- Monitoring from October 2008 – November 2011.
- On-going programme of monitoring of a Sustainable Drainage System scheme in a residential development (Cambourne, Cambridgeshire).
- Final monitoring report published March 2012.

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Lamb Drove Site Characteristics

- 1 hectare site area
- 35 residential dwellings, social housing.
- Sub-soil is predominantly clay and generally impermeable.
- Relatively low rainfall volumes, average annual rainfall of 530mm

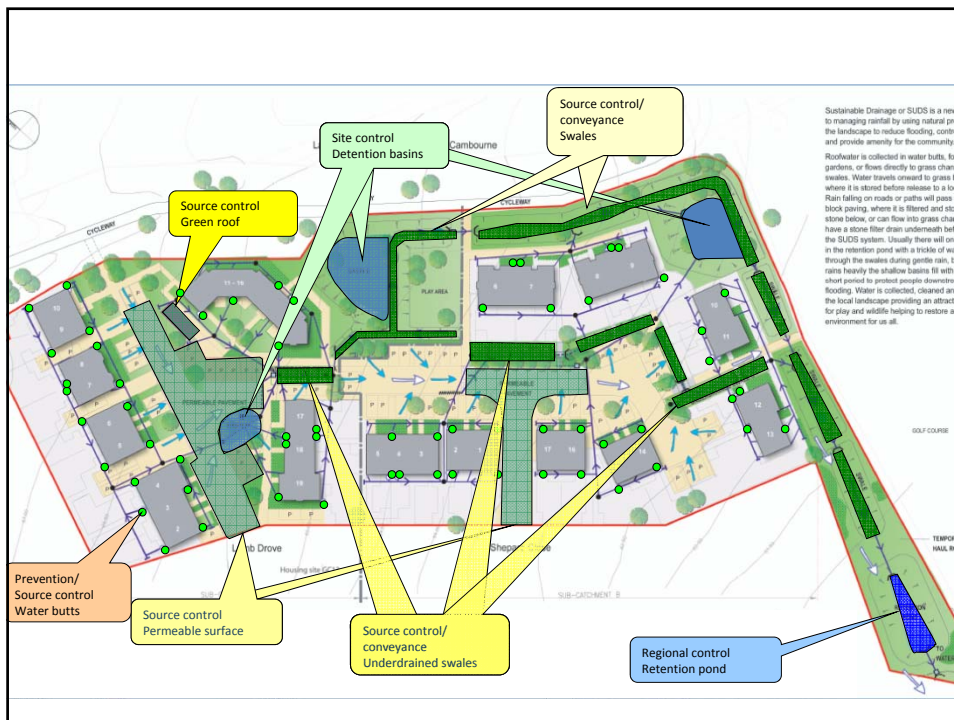
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The Lamb Drove SuDS System

- SuDS solution retrofitted to an existing design for a small residential development.
- Wide range of SuDS measures used:
 - permeable paving
 - Swales
 - Under-drained swales
 - Detention basins
 - Demonstration green roof
 - Pond
- Infiltration measures not used.

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Parameter	Units
Total Suspended Solids	mg/l
Total Phosphorus	mg/l
Total Carbon	mg/l
Total Organic Carbon	mg/l
Total Nitrogen	mg/l
Total pH	pH units
Ammonia-Nitrogen	mg/l
Biological Oxygen Demand	mg/l
Chemical Oxygen Demand	mg/l
Total Chromium	mg/l
Total Copper	mg/l
Total Zinc	mg/l
Total Lead	mg/l
Benzo(ghi)perylene	µg/l
Benzo(a)pyrene	µg/l
Benzo(b)fluoranthene	µg/l
Benzo(k)fluoranthene	µg/l
Indeno(1,2,3-CD)pyrene	µg/l

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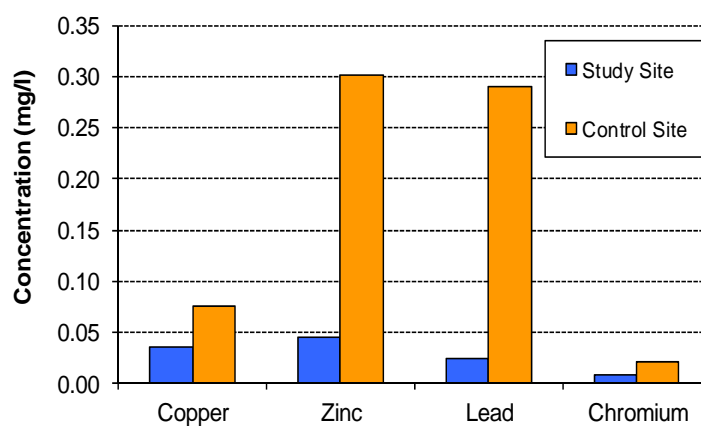
Monitoring Results – Water Quality

- SuDS treatment chain of the Study Site is acting to improve water quality when compared to the Control Site.
- Significantly higher concentrations of hydrocarbons, heavy metals, Organic Carbon and Total Suspended Solids were observed at the Control Site when compared to the Study Site.
- Pollutant concentrations progressively reduce through the treatment train illustrating how successive, linked SuDS measures act in combination to improve water quality.

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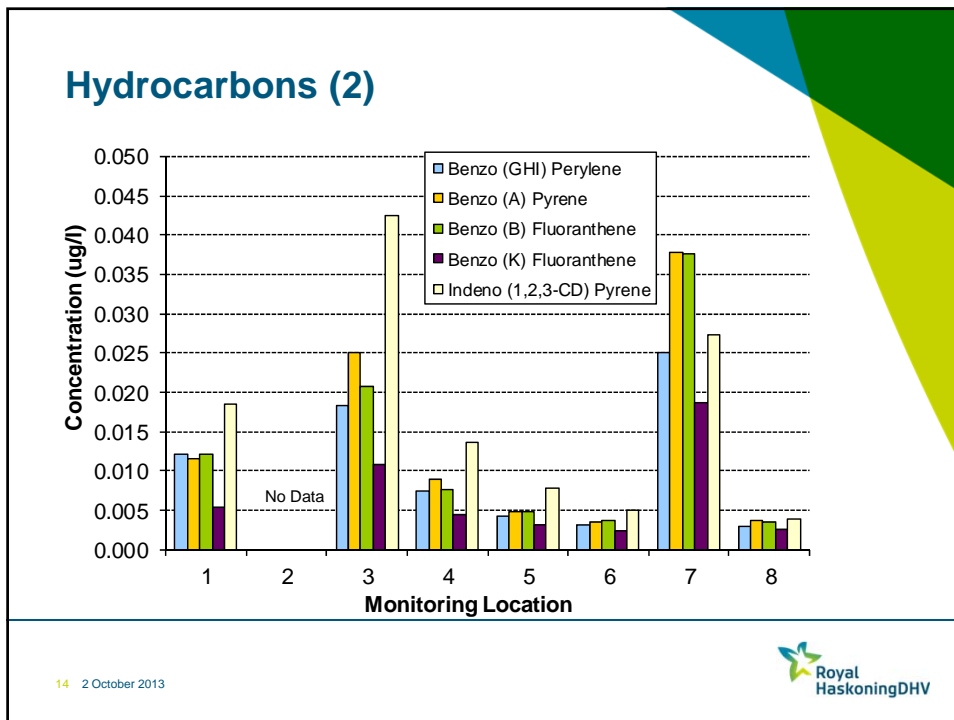
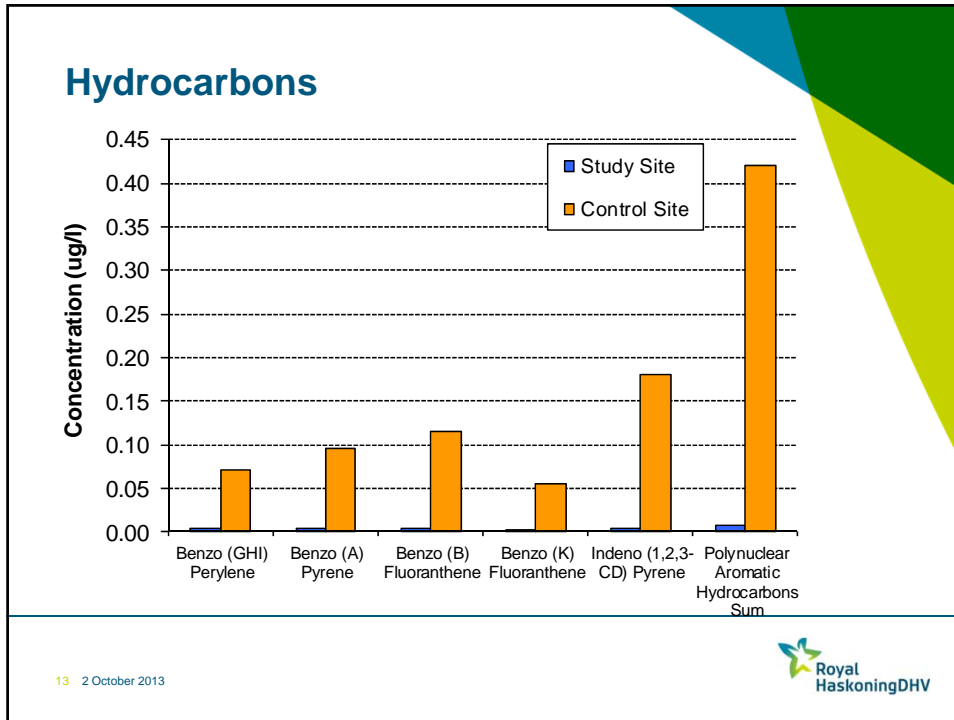


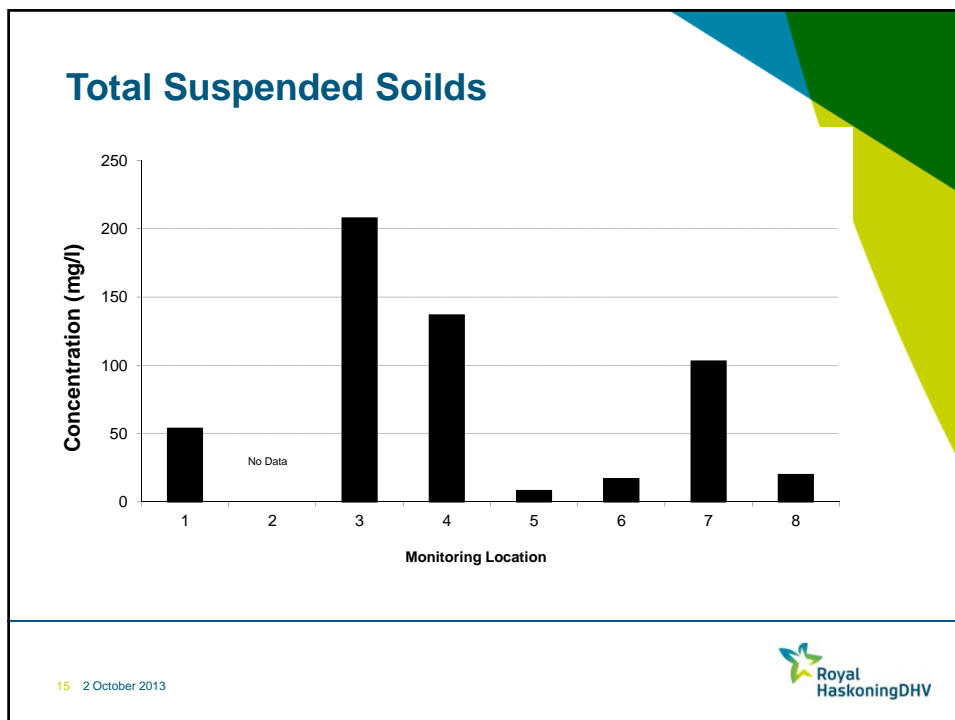
Heavy Metals



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Common Issues – Localised Erosion



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Conclusions

- The monitoring programme has documented and quantified the benefits of SuDS to a residential development.
- A treatment train of SuDS can effectively improve water quality.
- In comparison to the control site significant reductions in Heavy Metals and Hydrocarbons have been observed
- Pollutants do reduce across the site as a whole as a result of the SuDS treatment train

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Conclusions (2)

But...

- Point sources of certain pollutants are evident
- A treatment train with multiple features gives the greatest benefits.
- Poor maintenance can limit these benefits, but also the unexpected.

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Questions

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