

Urban Green DaMS

Industrial/Academic Partnerships for
Blue/Green Infrastructure

Simon De-Ville, Jill Edmondson, Virginia Stovin (Sheffield)
Daniel Green, Ross Stirling, Richard Dawson (Newcastle)



Aim of Urban Green DaMS

“ Our aim is to provide the required **modelling tools** and **parameter values**, and develop the **robust design guidance** - equivalent in quality to that for pipes and other hard engineering interventions - that is necessary to enable the widespread implementation of vegetated **bioretention cells for stormwater management**. ”

This is not something we could have achieved in isolation.



Charter Square
Sheffield, UK

📷 @SallyOHa



Industry Partners

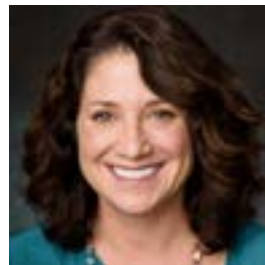
ARUP



Academic Partners



Jean Luc
Bertrand-Krajewski
INSA, Lyon, France



Elizabeth
Fassman-Beck
SCCWRP, CA, USA



Tim Fletcher
Uni. of Melbourne,
Australia

New Partners



Collaborative Design & Delivery: Experimental Systems at Lab/Pilot Scale

Lab



Bioretention Columns (Sheffield)
Exploration of:

- ◆ Retention Processes (ET)
- ◆ Detention Processes

Pilot



Bioretention Lysimeters (NGIF)
Collection of:

- ◆ Long-term validation data
- ◆ Controlled design storm simulations



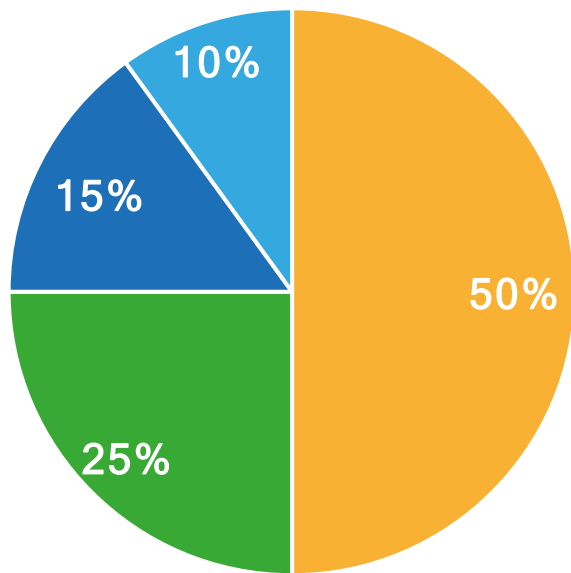
Grey-to-Green Phase 1
Sheffield, UK

📷 @NigelDunnett



Collaborative Design & Delivery: Experimental Lysimeters

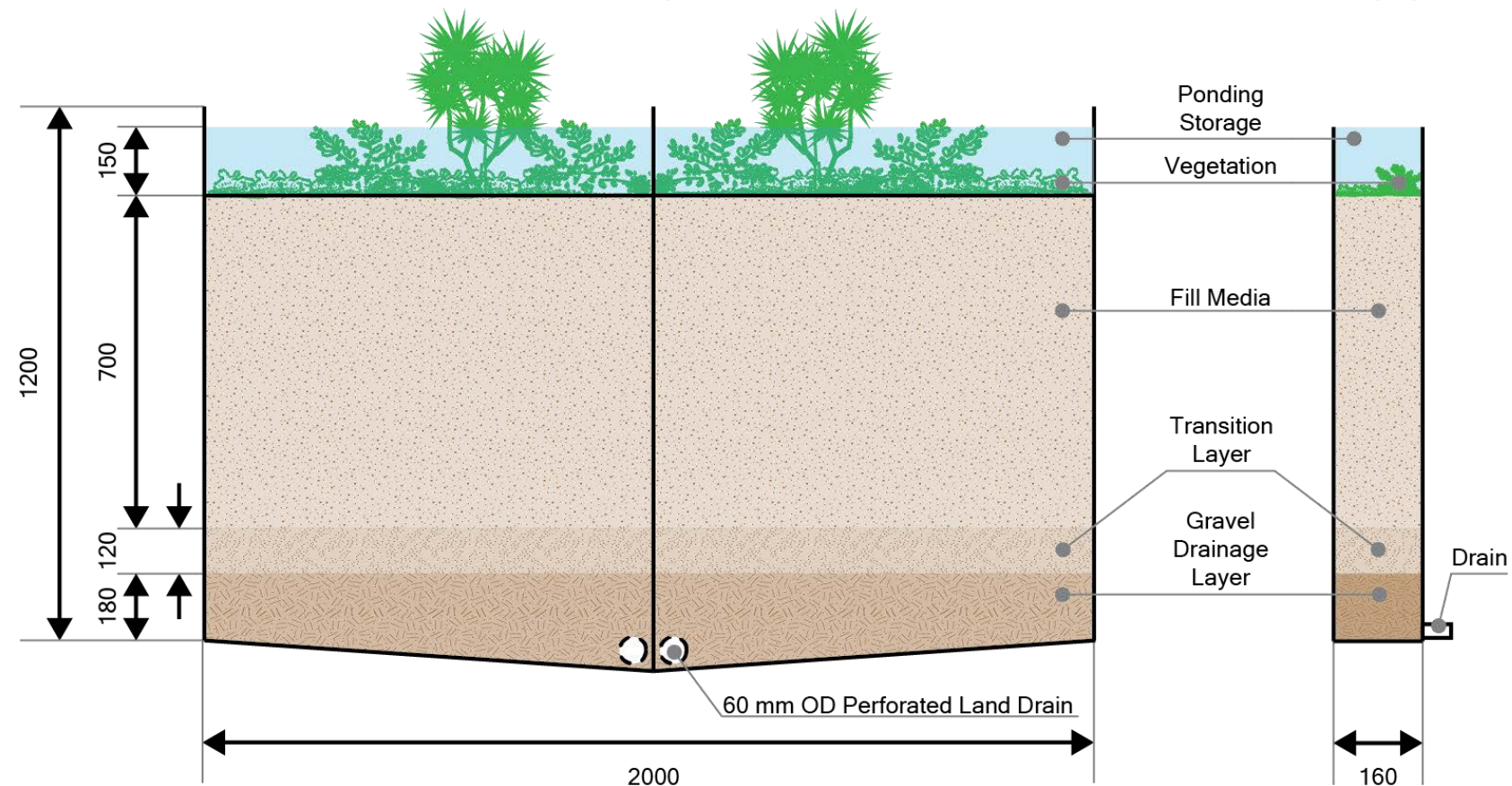
Field Media



- Quarry Waste
- Crushed Glass
- Green Waste Compost
- Sugar Beet Washings

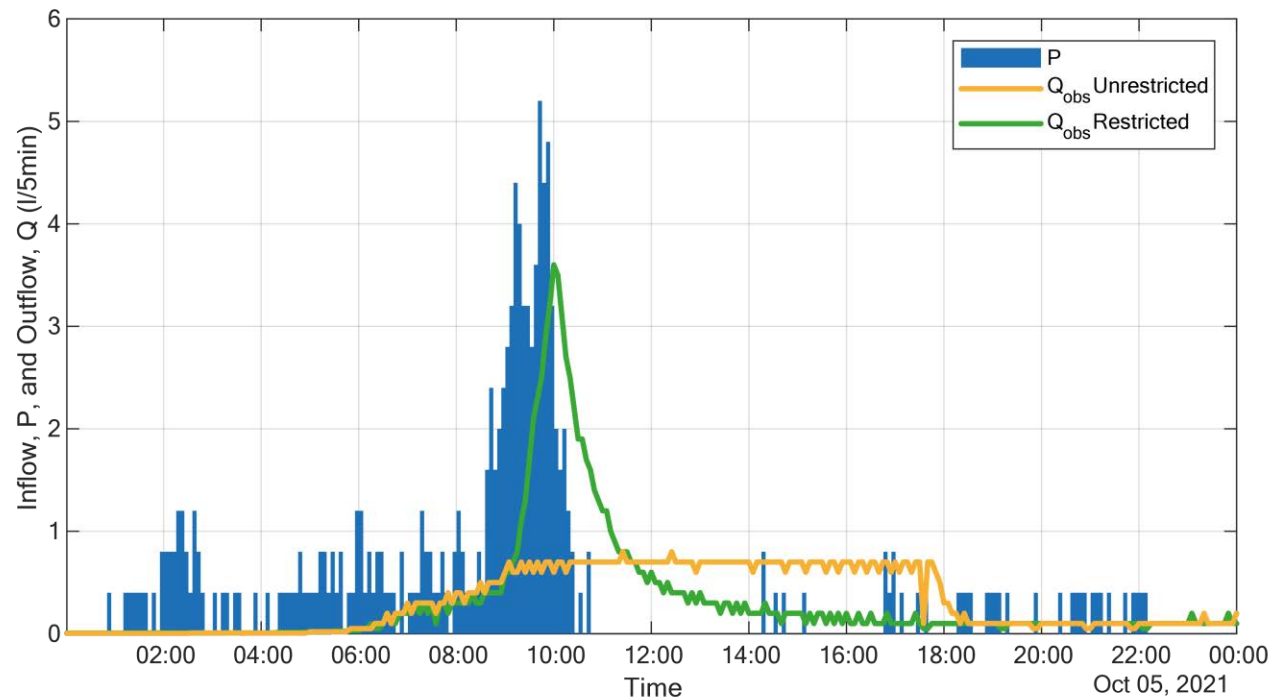
Pilot

Lab

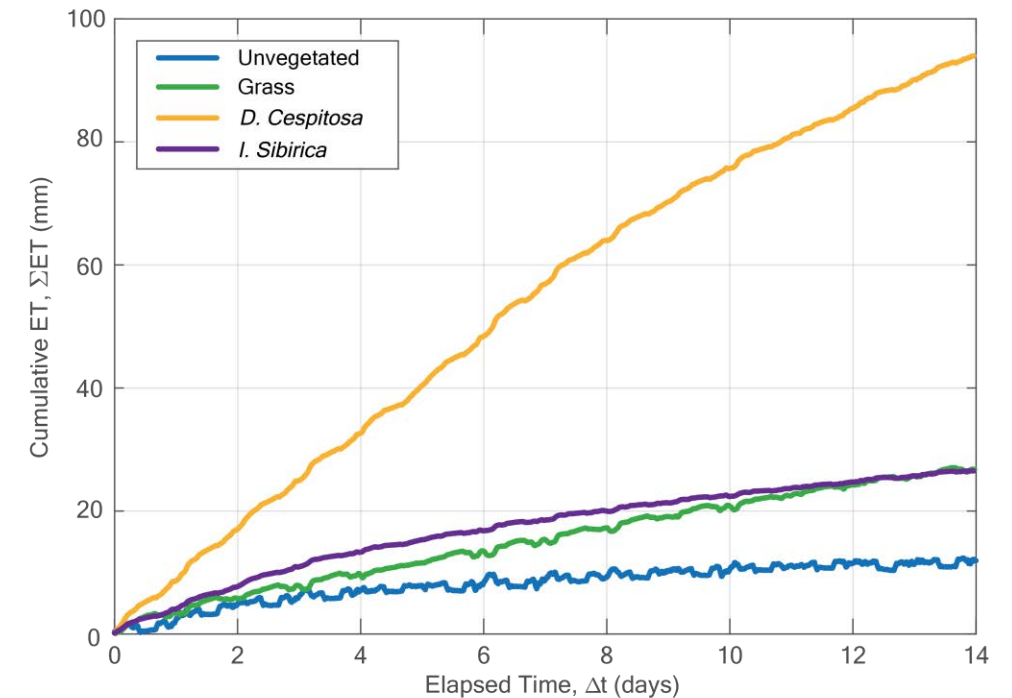


Collaborative Design & Delivery: Experimental Lysimeters

Pilot scale lysimeters are critical for model development validation data.



Lab columns allow exploration of parameters in controlled conditions



Collaborative Design & Delivery: Media Clogging

Ongoing engagement with partners highlighted uncertainties about system longevity due to sedimentation clogging.

This was not a core project output, but we had the capacity and know-how to provide preliminary insight.

Sheffield
Grey-to-Green
Phase 1
March 2022

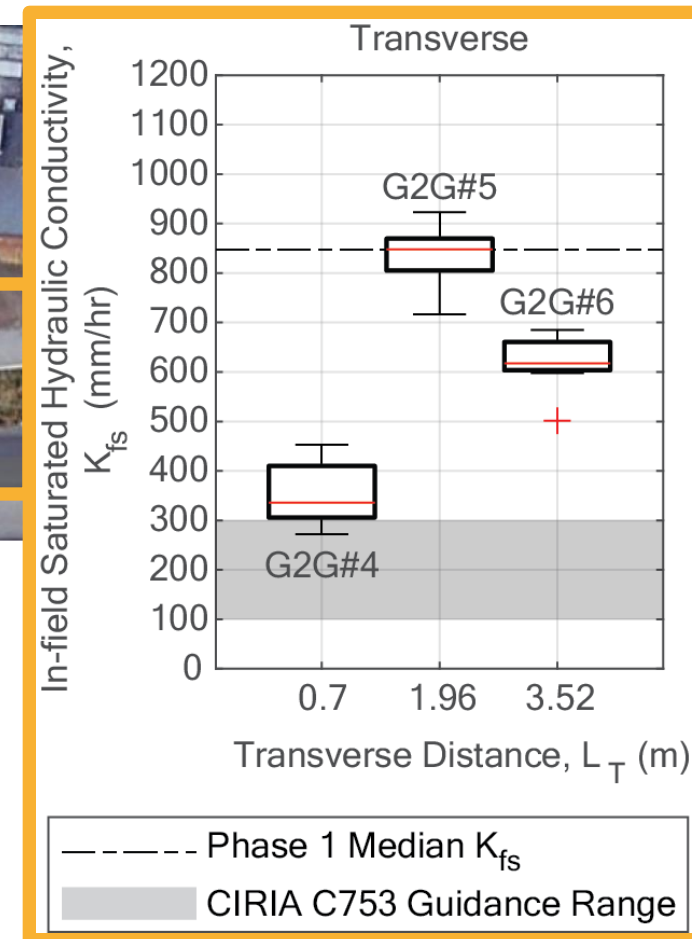


Deposition of
seasonal
vegetation
debris

Heavy surface
fouling from
unknown source

Finer road
sediment
contained
to energy
dissipation
structure

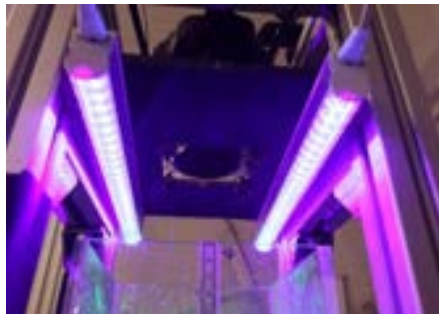
Collaborative Design & Delivery: Media Clogging



Collaborative Design & Delivery: Media Clogging

Field testing identified observable effects of clogging on physical properties governing system performance.

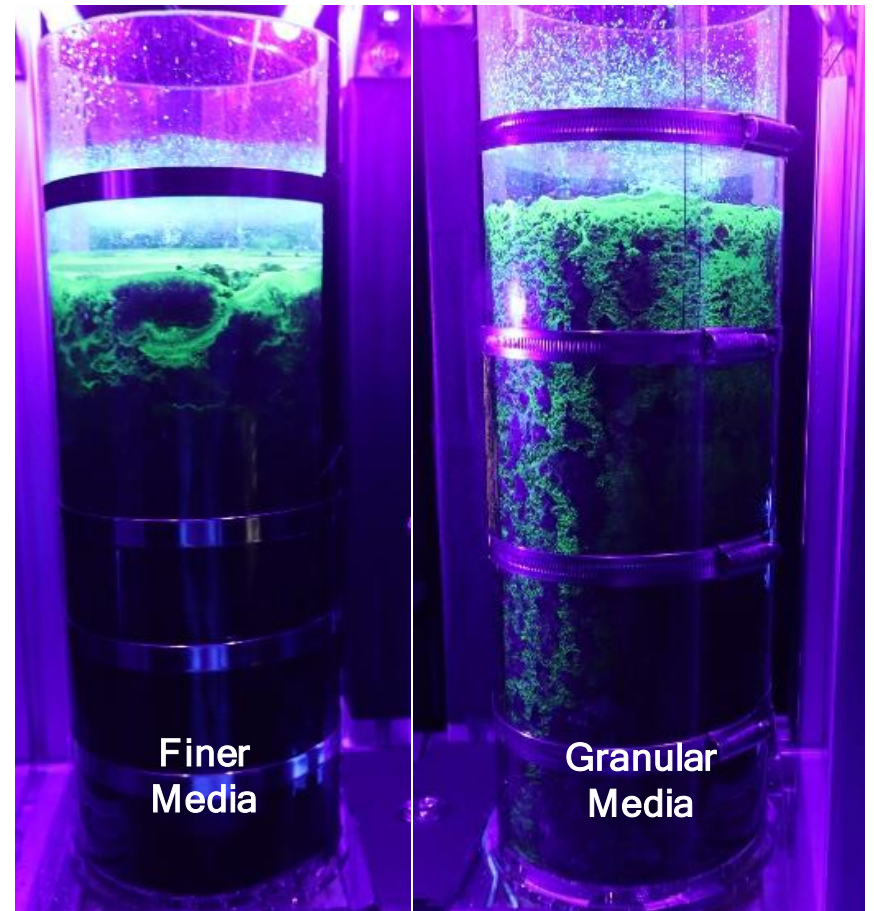
What is the likely sub-surface extent of this problem? Lab testing helps avoid digging up a functional system.



UV Lighting
Array



Fluorescent
Tracer
Particles
Prior to
Testing



Fluorescent
Tracer
Particles
After
Testing

Finer
Media

Granular
Media

Collaborative Dissemination

End of project event designed to integrate the fundamental science with real-world engineering applications.

Bioretention Research and Practice

Partners and invited guests will reflect on the project and look forward to how Urban Green DaMS outcomes can be integrated in future guidance, modelling approaches and design.

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ciria



Innovyze
An AUTODESK company

SEVERN
TRENT



Mansfield Sustainable Flood Resilience
Severn Trent

Developing Future Partnerships



UKRI Network+
Universities of Surrey,
Bath, Bangor and
Warwick, with CEH

LOGO GOES HERE

SuDS Network
Coventry University and
Abertay University

**Urban Green
Infrastructure Forum**
University of Sheffield



**Enhancing Urban
Green Infrastructure via
kNowledge Exchange**
University of Sheffield
Severn Trent



Urban Green DaMS

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