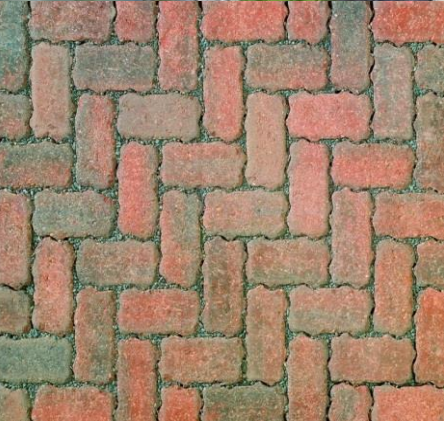


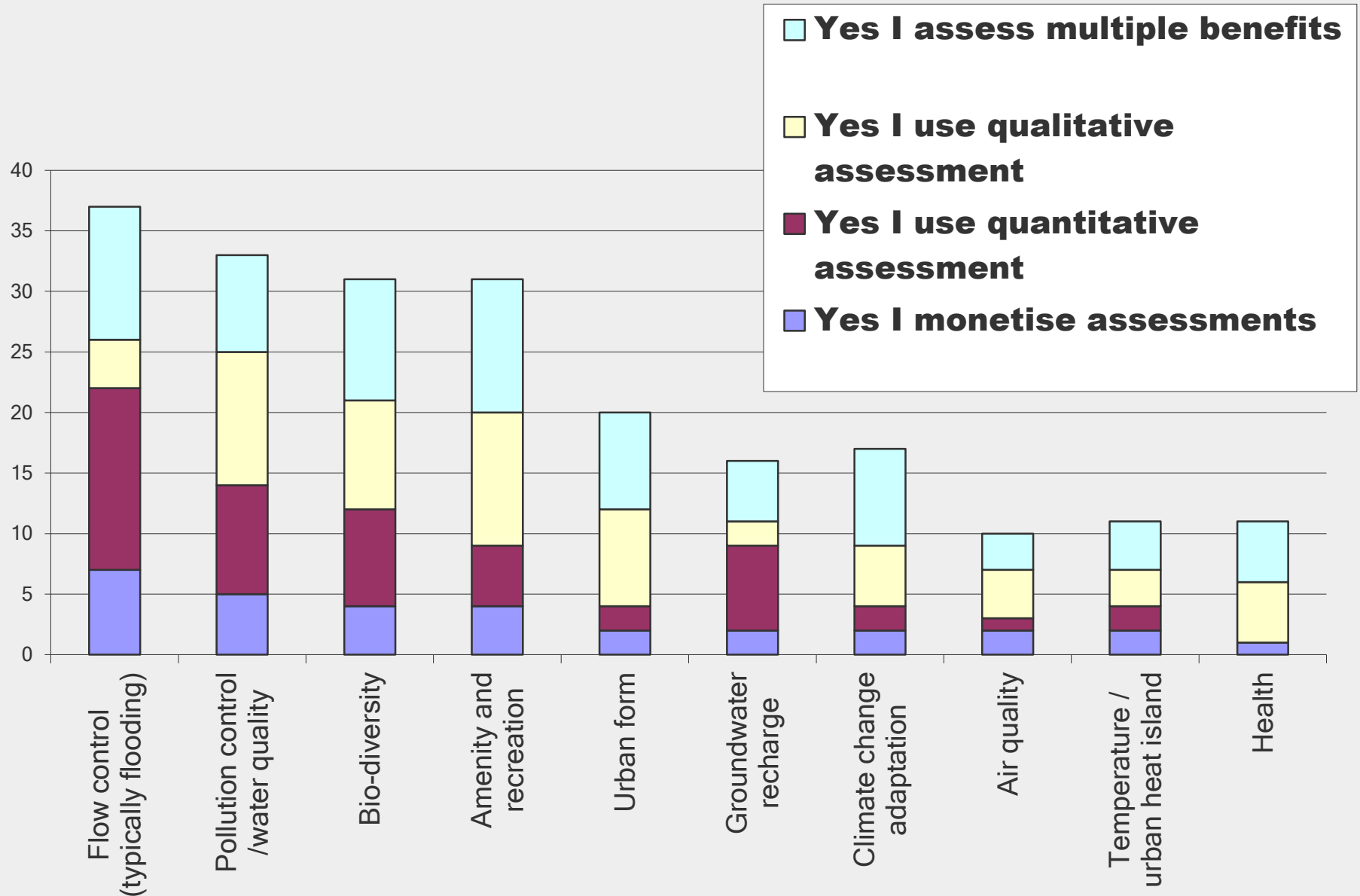


SuDS – Better Value?

November 2015
Dr Bruce Horton, MWH



How are benefits currently assessed?



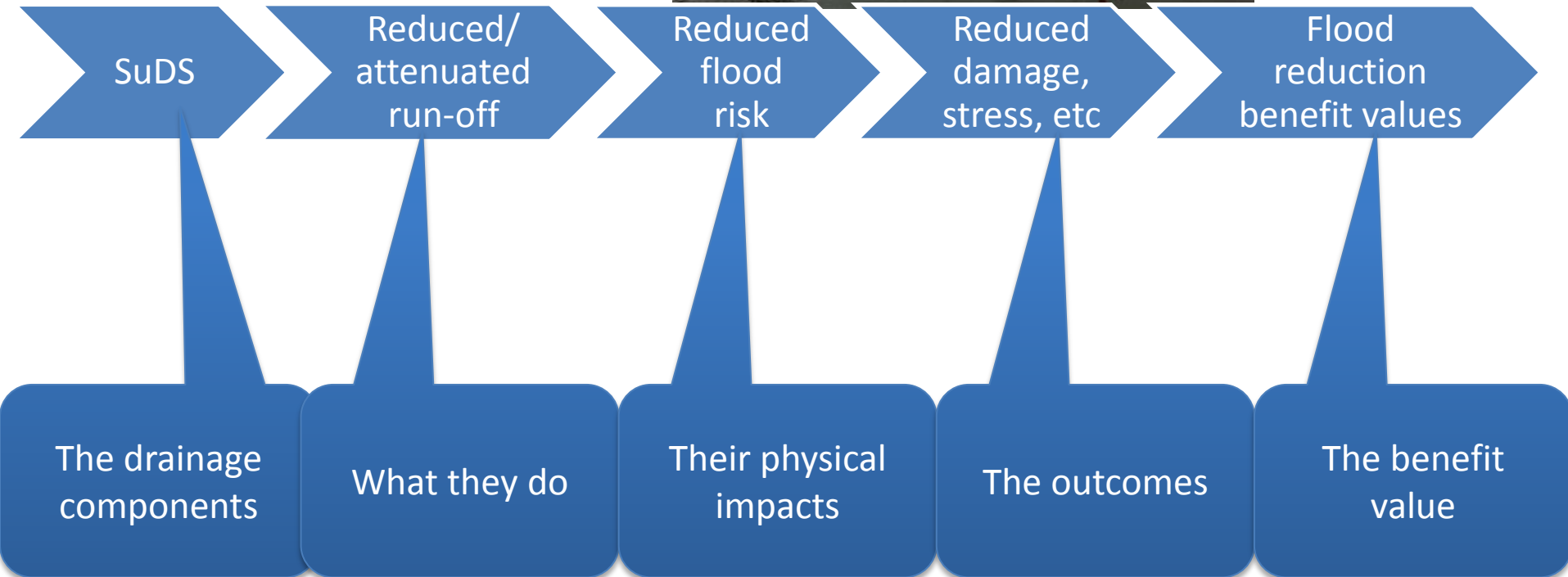
How does valuation fit into BeST?



Each benefit category has *impact pathway*



FLOODING



Valuation approaches used in BeST



Benefit category	Valuation approach	Units
Air quality	Damage cost	£ per tonne pollutant
Amenity	Value transfer (hedonic)	% house price change
Biodiversity and ecology	Value transfer	£ per hectare
Building temperature	Long-run variable cost	£ energy saved
Carbon reduction & sequestration	Marginal abatement cost	£ per tonne
Education	Avoided investment	£ per school trip
Flooding	Damage cost	£ per property
Groundwater recharge	Avoided abstraction cost	£ per cu mtr
Health	Avoided health costs	£ per person
Pumping wastewater	Long-run variable cost	£ energy saved
Rainwater harvesting	Avoided investment	£ per cu mtr
Recreation	Value transfer (travel cost)	£ per visit
Treating wastewater	Avoided treatment cost	£ per cu mtr
Water quality	Value transfer (stated pref)	£ per km

Examples of valuation in BeST



Benefit category	Change	Impact	Value
Amenity	Significant creation or enhancement of open space	Detached houses within 450m	2.7%
Biodiversity and ecology	Creation or improvement of inland marsh habitat	Number of hectares	£1,353/ha
Education	Cost of investing in nature-based school trips	Number of additional trips	£19.46/trip
Health	Reduced physical inactivity	Avoided local authority public health costs	£180/person
Health	Emotional well-being	View over green space	£305/person

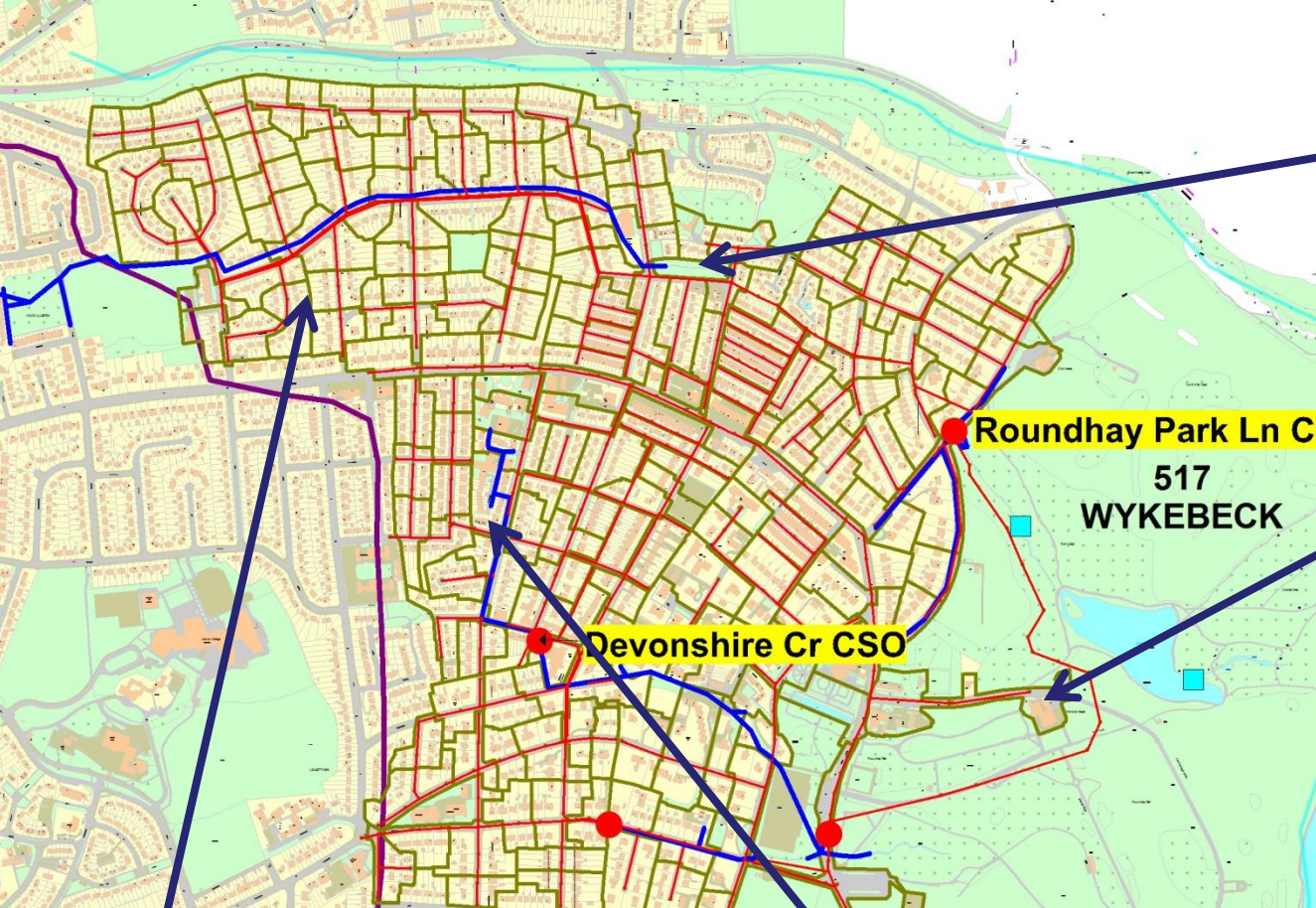


Examples using BeST

Elvetham Heath, Hampshire

Applying BeST – Retrofit Case Study





Open green space, potential storage



Private stakeholder with opportunity for source control

- Legend**
- Study DAS Boundary
 - Manholes
 - + Overloaded Hydraulic Pollution Clusters
 - CSO
 - River
 - UPM Sampling Location
 - ★ WFD - Fail
 - Flooding Clusters
 - ▼ Internal Flooding for 2 in 10, 1 in 10 and 1 in 20 yrs
 - ▲ External Flooding for 2 in 10, 1 in 10 and 1 in 20 yrs
 - Pollution Clusters
 - Surface Network
 - Combined Network
 - Foul Network



Housing with space to retrofit residential rain garden

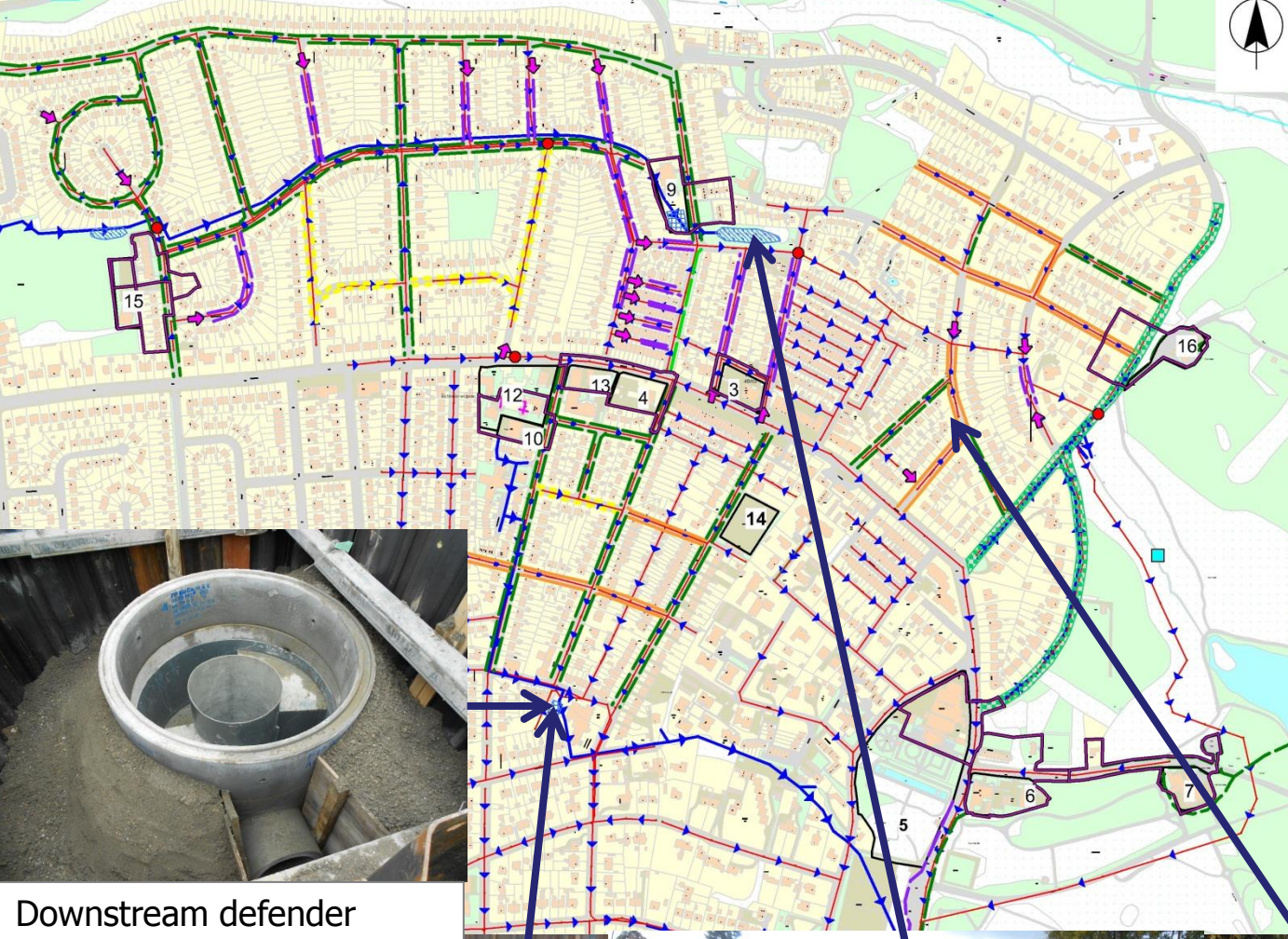


Street with grass verges and the space to build swales

Applying BeST – Retrofit Case Study



Measures	Conv	Conv+	SuDS Public	SuDS Public/Private
Residential Rain Gardens				✓
Residential Water Butts				✓
Shaft storage	✓	✓		
Pipe storage		✓		
Bio-filtration swales				✓
Driveway crossings			✓	✓
Detention basins			✓	✓
Geo-cellular storage			✓	✓
Kerb drainage			✓	✓



- Legend**
- Study DAS Boundary
 - Manholes
 - Overloaded Hydraulic Pollution Clusters
 - CSO
 - Notional Solutions
 - River
 - UPM Sampling Location
 - WFD - Fail
 - Flooding Clusters
 - Internal Flooding for 2 in 10, 1 in 10 and 1 in 20 yrs
 - External Flooding for 2 in 10, 1 in 10 and 1 in 20 yrs
 - Pollution Clusters
 - Surface Network
 - Combined Network
 - Foul Network
 - Wide Swales
 - Wide Bioinfiltration Swales
 - Kerb Drainage
 - Bioinfiltration Swales
 - Narrow Bioinfiltration Swales
 - Industrial Areas
 - Geocellular
 - Overland flow towards measure



Downstream defender



Geocellular storage

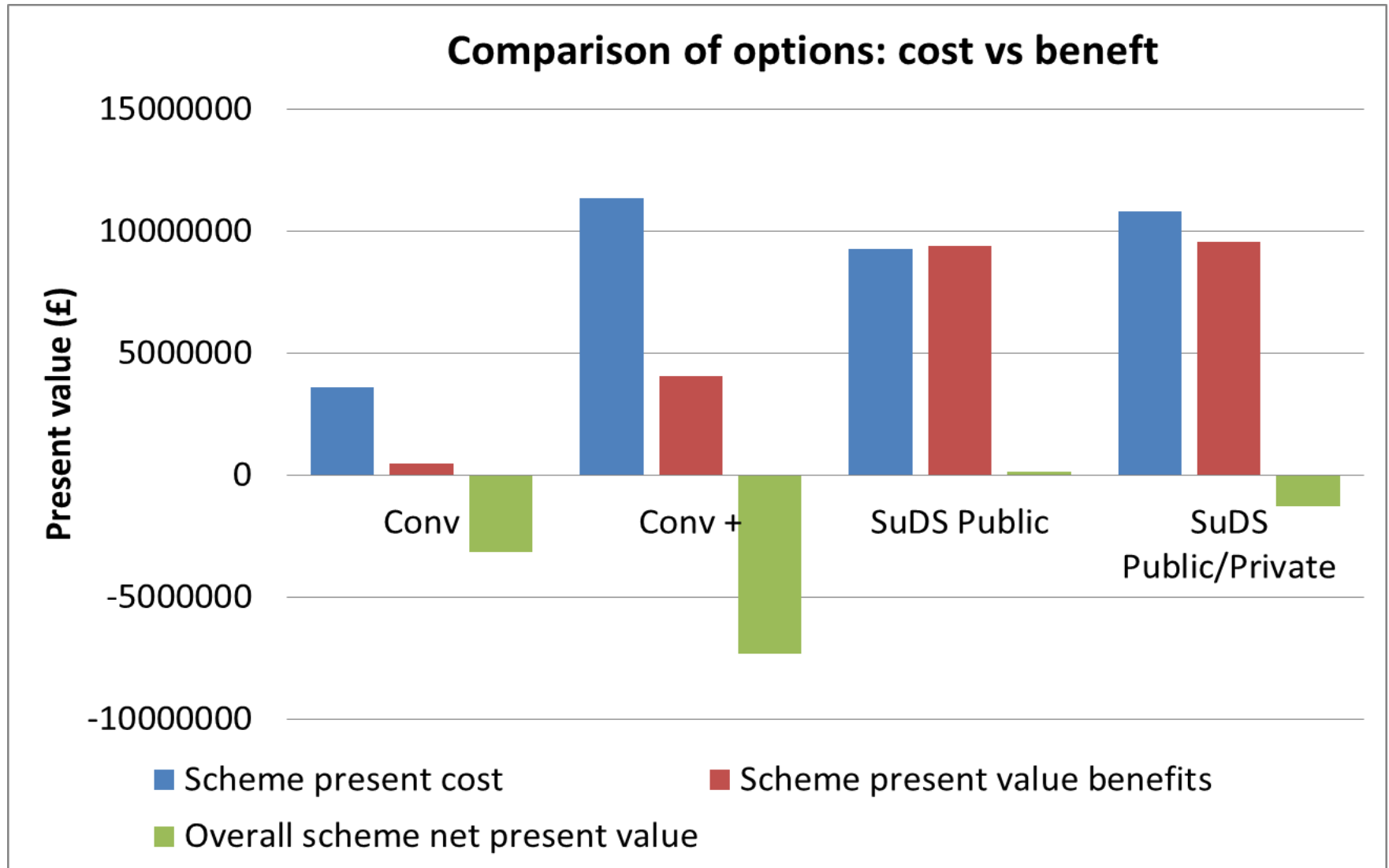


Detention basin in open space

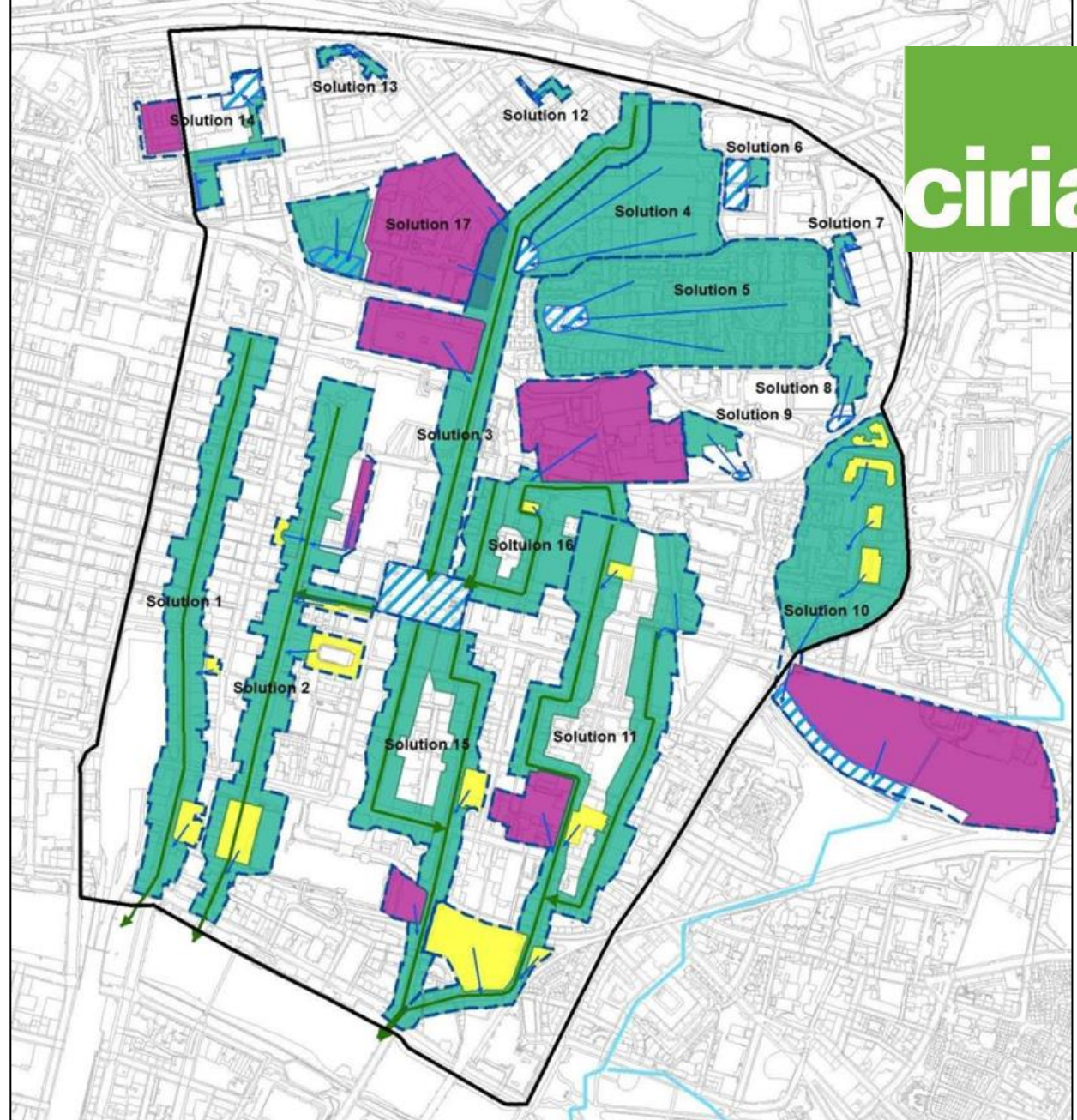


Bio-filtration swale along highway

Applying BeST – Retrofit Case Study

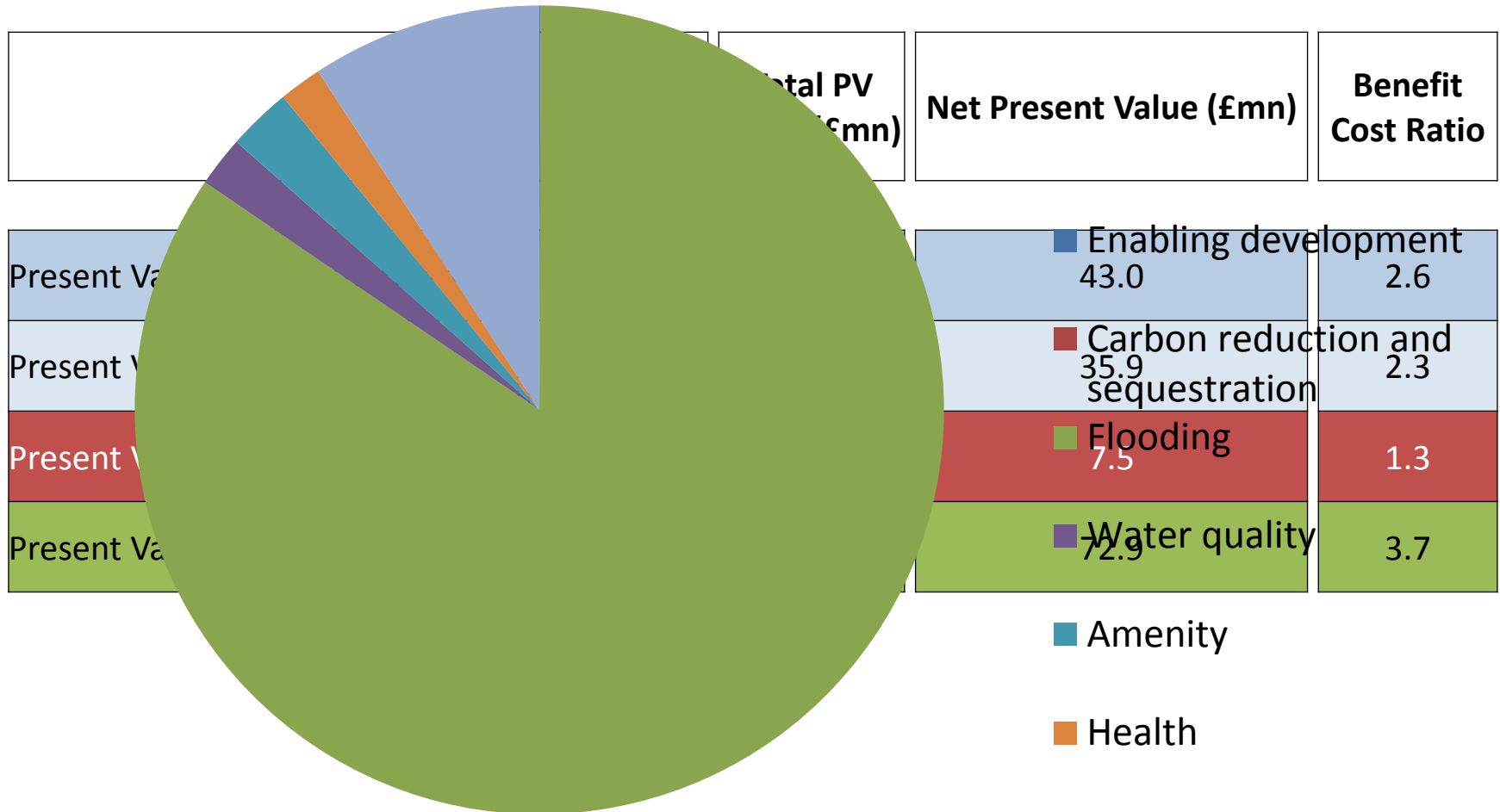


Applying BeST – Glasgow SWMP



ciria

Applying BeST – Glasgow SWMP



Summary

The Ciria logo, consisting of the word "ciria" in white lowercase letters on a green rectangular background.

1. Value of any drainage solution depends on costs *and* benefits
2. BeST can be used for efficiency *and* equity
3. New funding opportunities?





Want to know more?

<http://www.susdrain.org/resources/best.html>

best@susdrain.org

Thank you