



An Roinn Tithíochta,  
Rialtais Áitiúil agus Oidhreachta  
Department of Housing,  
Local Government and Heritage

# Update on Urban Nature-based Solutions in Ireland

Averil Gannon, CEng, MIEI

15<sup>th</sup> October 2024

# Nature-based Solutions Update



- Nature-based Solutions to the Management of Rainwater and Surface Water Runoff in Urban Areas - Interim Guidance Document
- DMURS Advice Note 5: Road and Street drainage using nature-based solutions
- National Implementation Strategy
- Rainwater Management Planning – Guidance for Local Authorities
- Implementation Phase – ongoing Projects





# Why use Nature-based solutions as a drainage mechanism?



- Nature-based solutions can be used as a drainage treatment train to **collect, slow, treat and convey water**





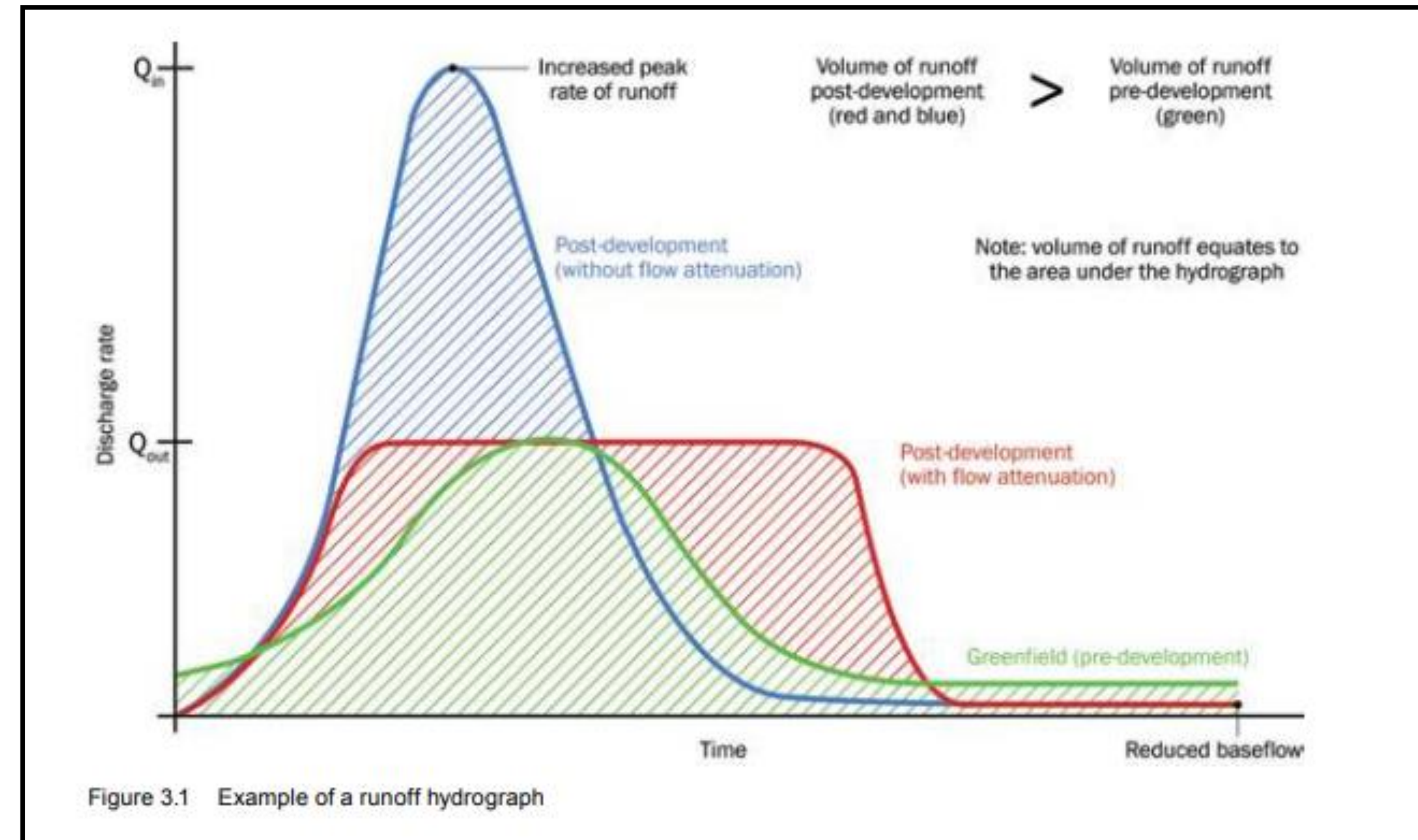
# Runoff Volume Control



Attenuation, where provided controls the peak runoff rate but not the runoff volume

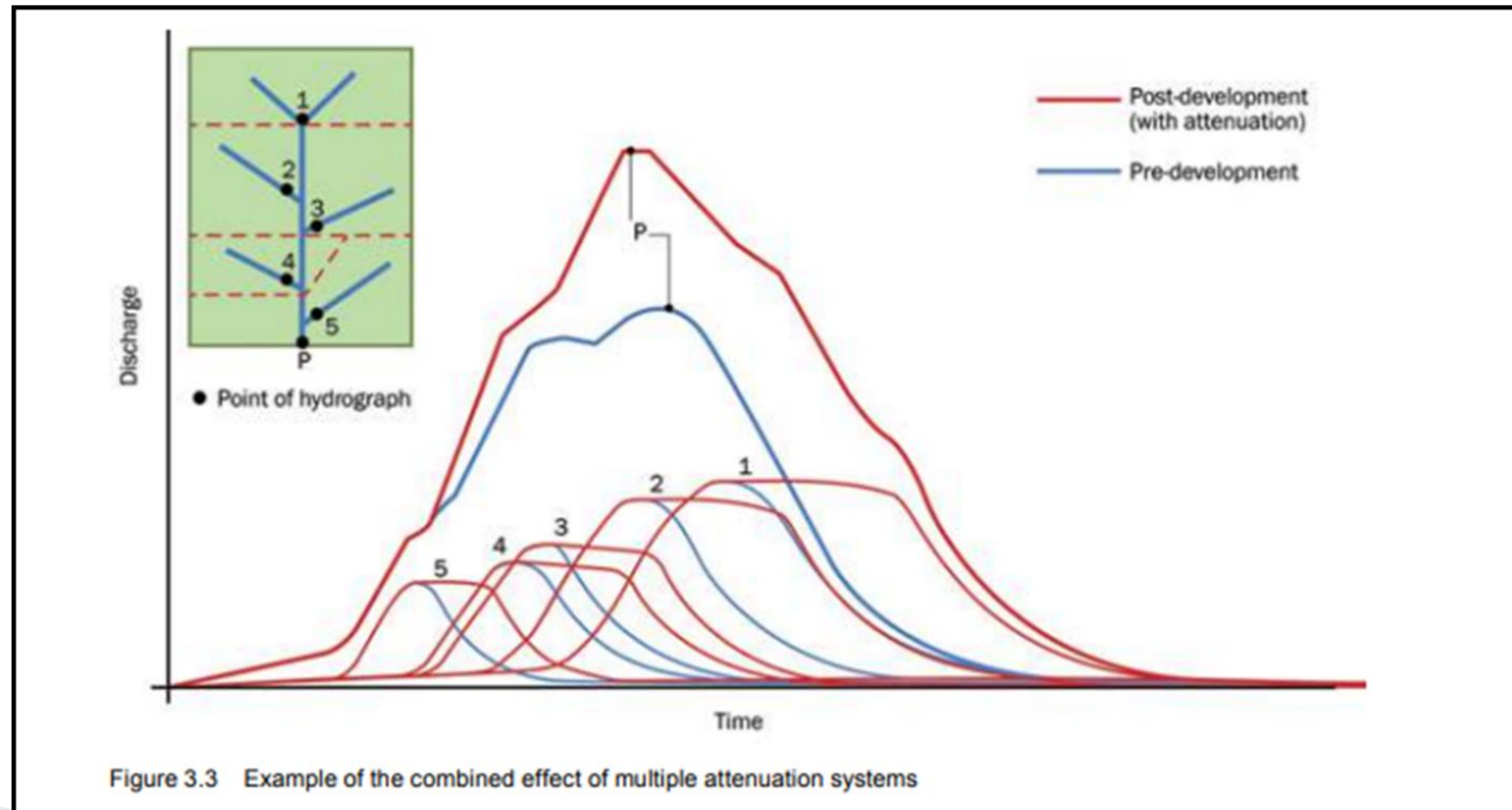
**More hard surface means greater water volume** and potentially increased flooding extents

Attenuation alone is not sufficient to mitigate the risk of flooding



The SuDS Manual Figure 3.1 example of runoff hydrograph

# Runoff Volume Control – catchment scale



- At catchment scale, we can see there that downstream the peak flow will continue to rise due to greater total volumes being discharged from each sub-catchments.
- Therefore the likelihood of flooding downstream increases.

The SuDS Manual Figure 3.3 example of combined effect of multiple attenuation systems



# Interim Guidance Document



Rialtas na hÉireann  
Government of Ireland

## Nature-based Solutions to the Management of Rainwater and Surface Water Runoff in Urban Areas

Water Sensitive Urban Design

Interim Guidance Document

- Definition and concepts
- Managing Rainfall through Three-Dimensional Planning & Design
- A Plan and Design-Led Multidisciplinary Approach
- Multiple Use of Urban Spaces, Public Realm, Open Spaces, Amenity Areas, Car Parks
- Climate Adaptive and Resilient Urban Design

Prepared by the Department of Housing, Local Government and Heritage  
[gov.ie/housing](http://gov.ie/housing)

Published Nov 2021



# Information Webinars



- Launch of **Interim Guidance Document** - Nov 2021 Approx. 500 attendees
- Project Managers in **URDF** and **RRDF** schemes – March 2022. Approx. 300 attendees
- **Active Travel** teams – May 2022. Approx. 230 attendees
- CPD presentation for **DHLGH Planners** – May 2022 –approx. 20 attendees
- **Engineers Ireland Webinar series** – May 2023 – 4 webinars with over 1200 registered for each webinar. 1<sup>st</sup> webinar attended by over 1500 people







**Advice Note 5**  
**Road and Street Drainage**  
**using Nature Based Solutions**

*Design Manual for  
Urban Roads and Streets*



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# **DMURS Advice Note 5 – Road and Street Drainage using Nature-based Solutions**

**Published August 2023**



# Design Manual for Urban Roads and Streets (DMURS) Advice Note 5 – Road and Street Drainage using nature-based solutions





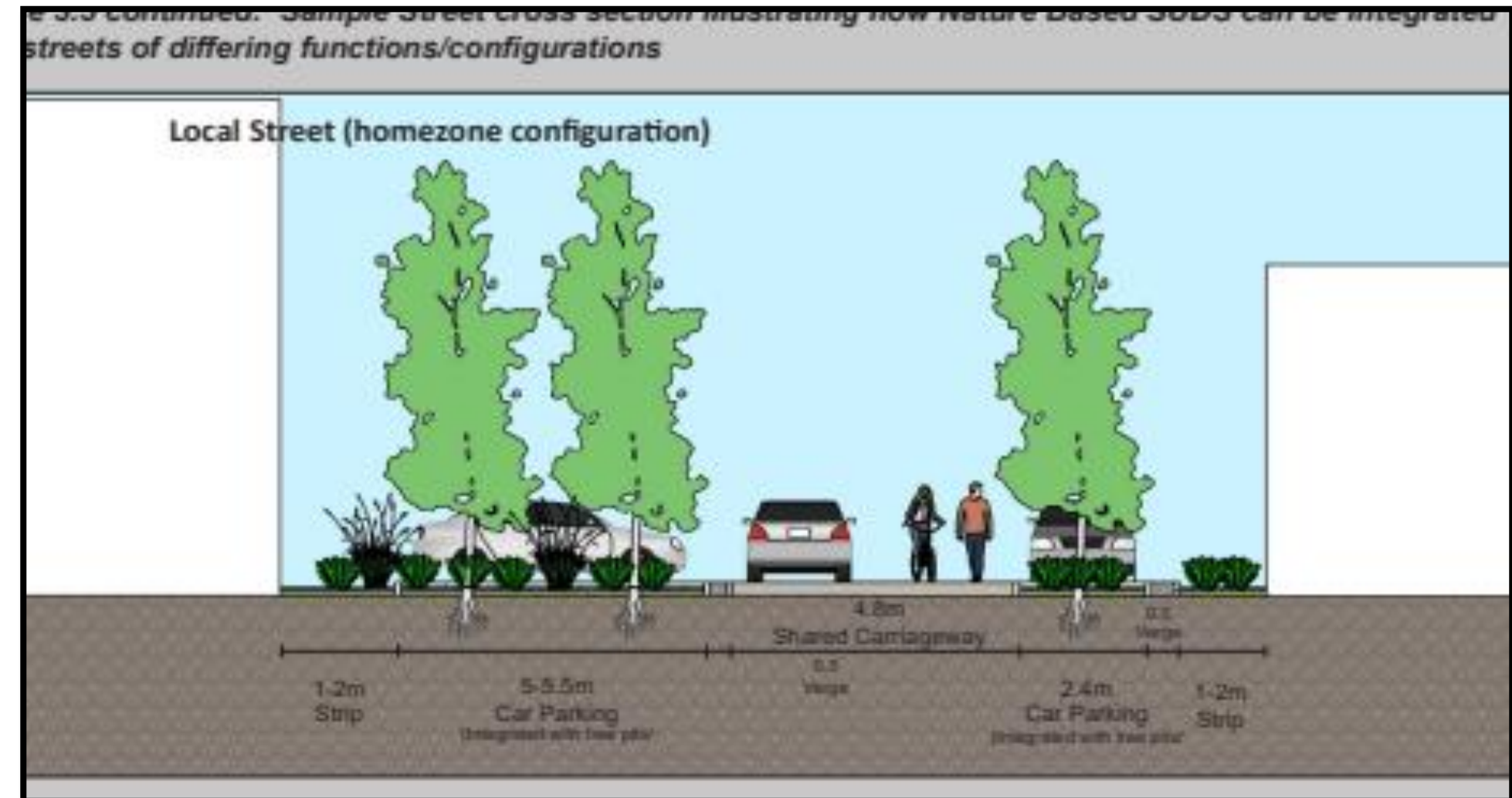
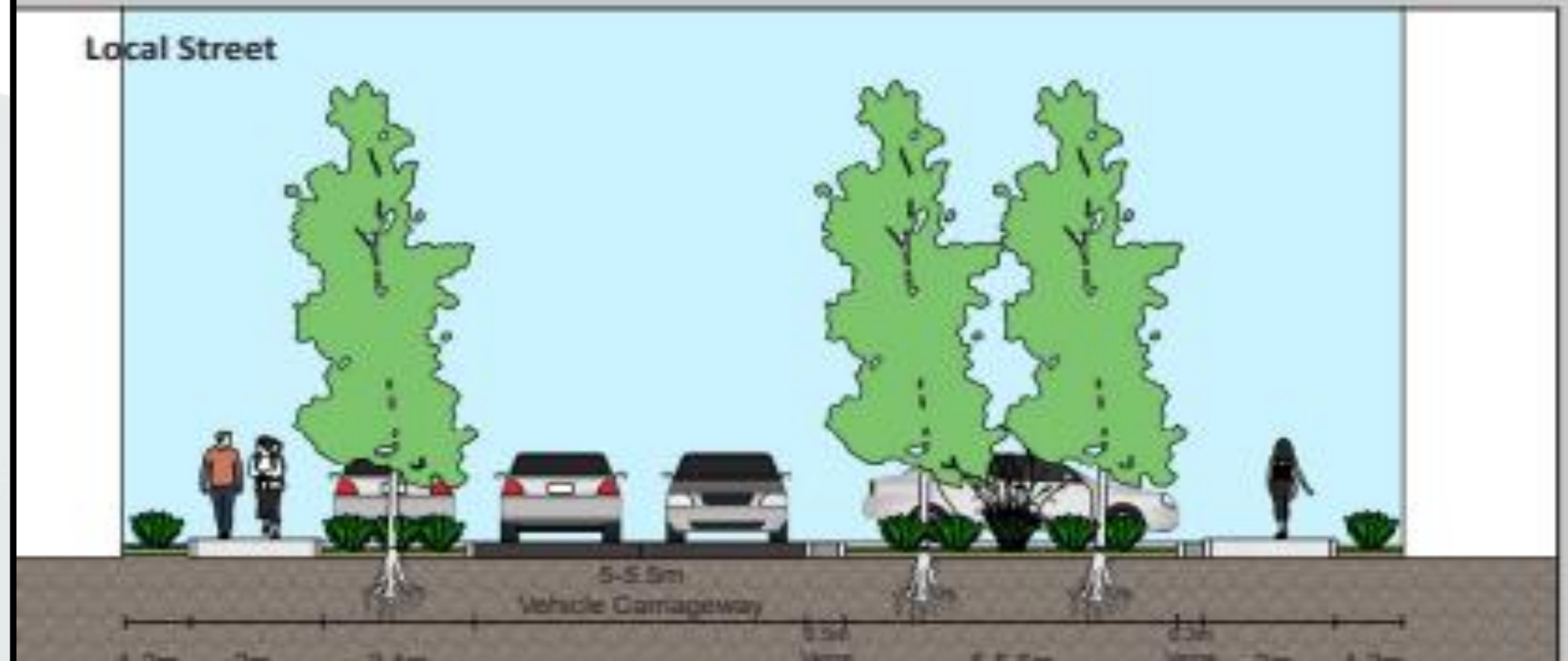
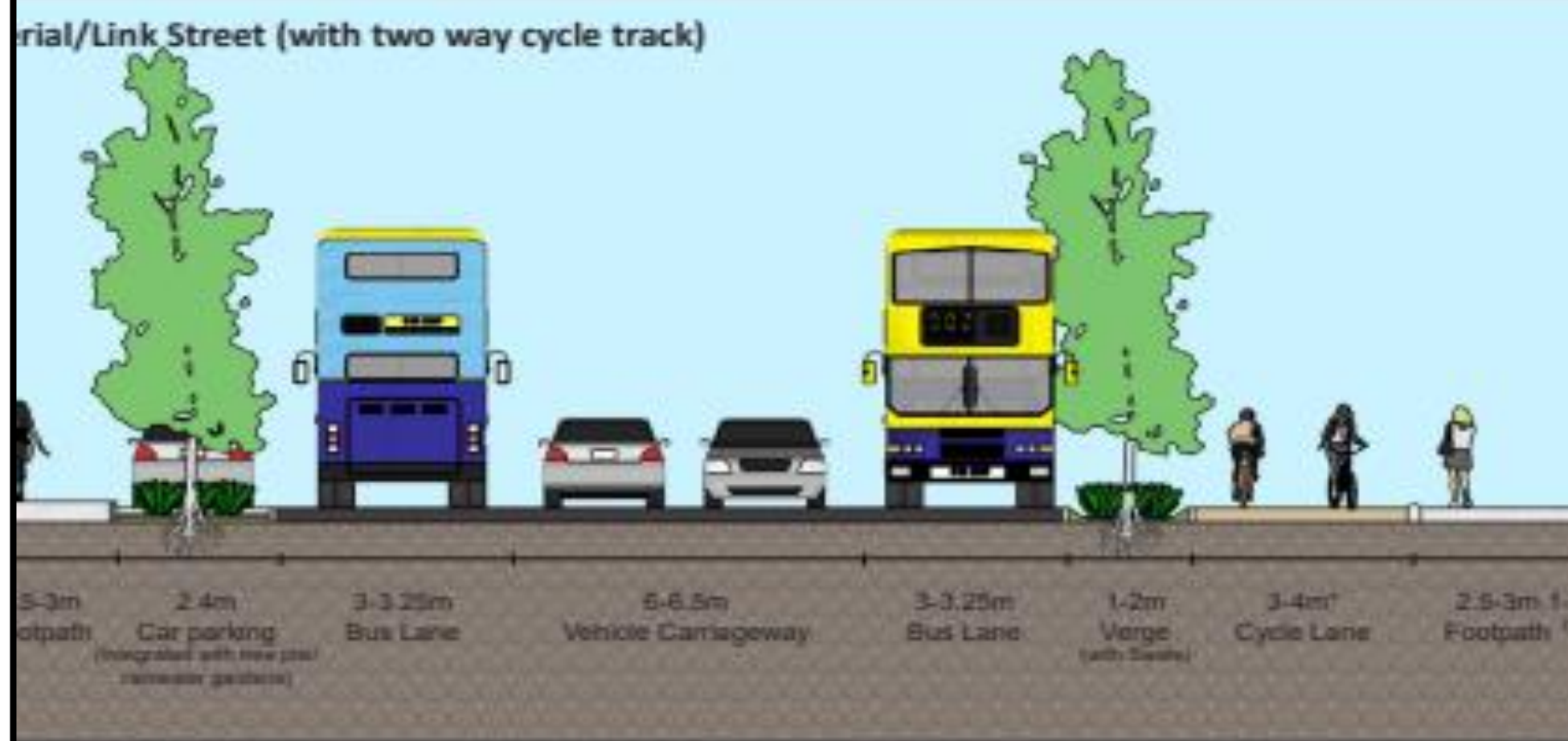
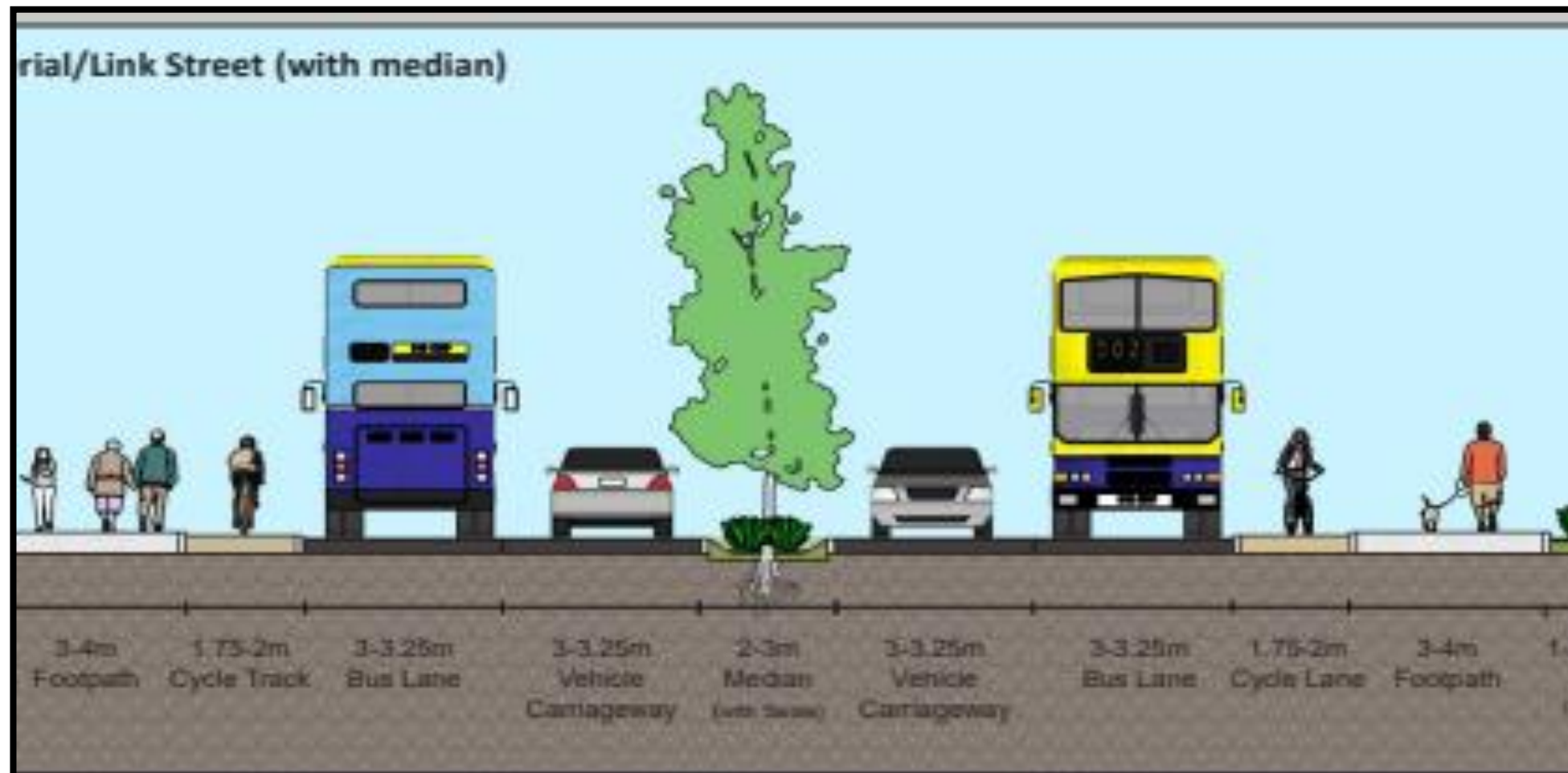
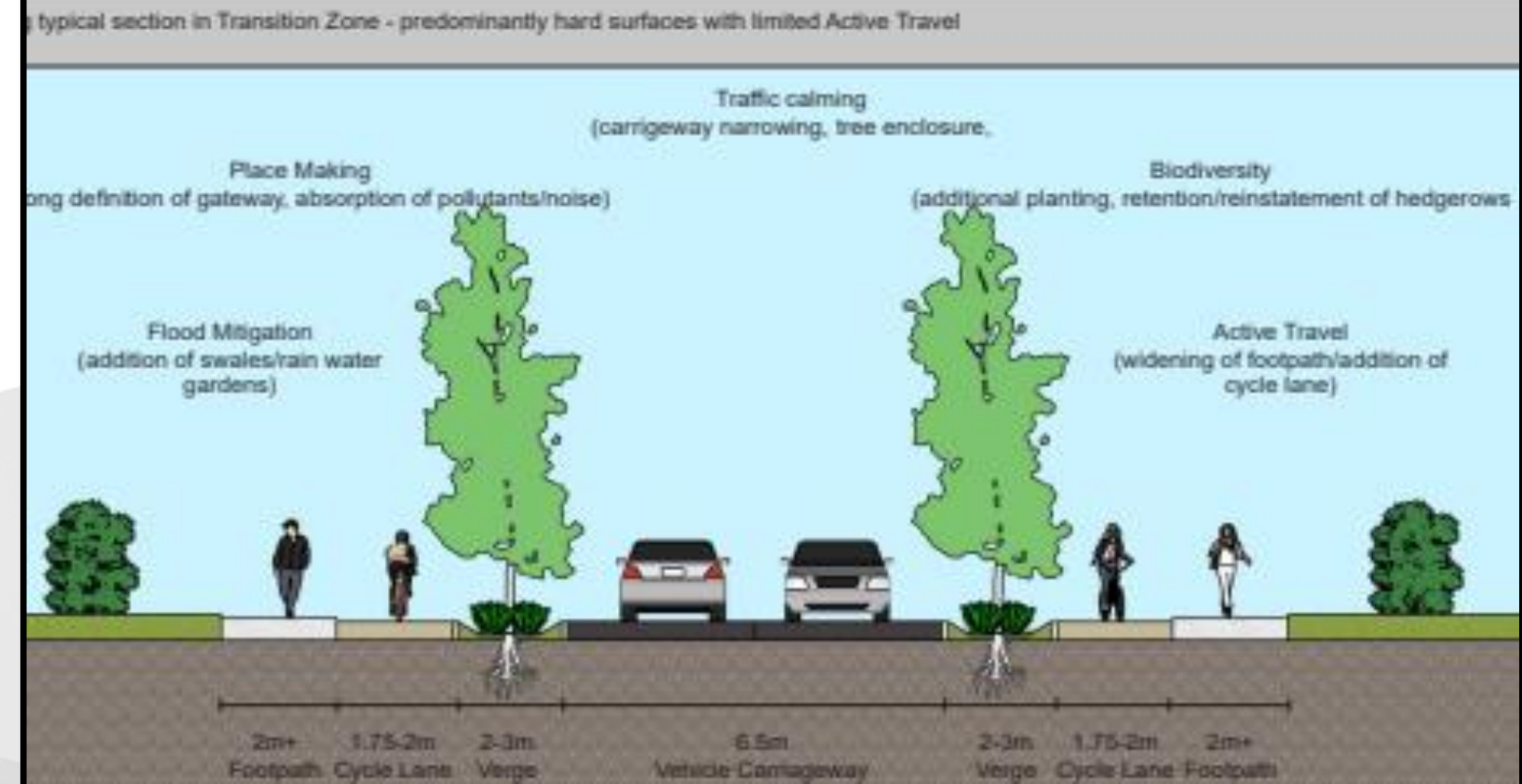
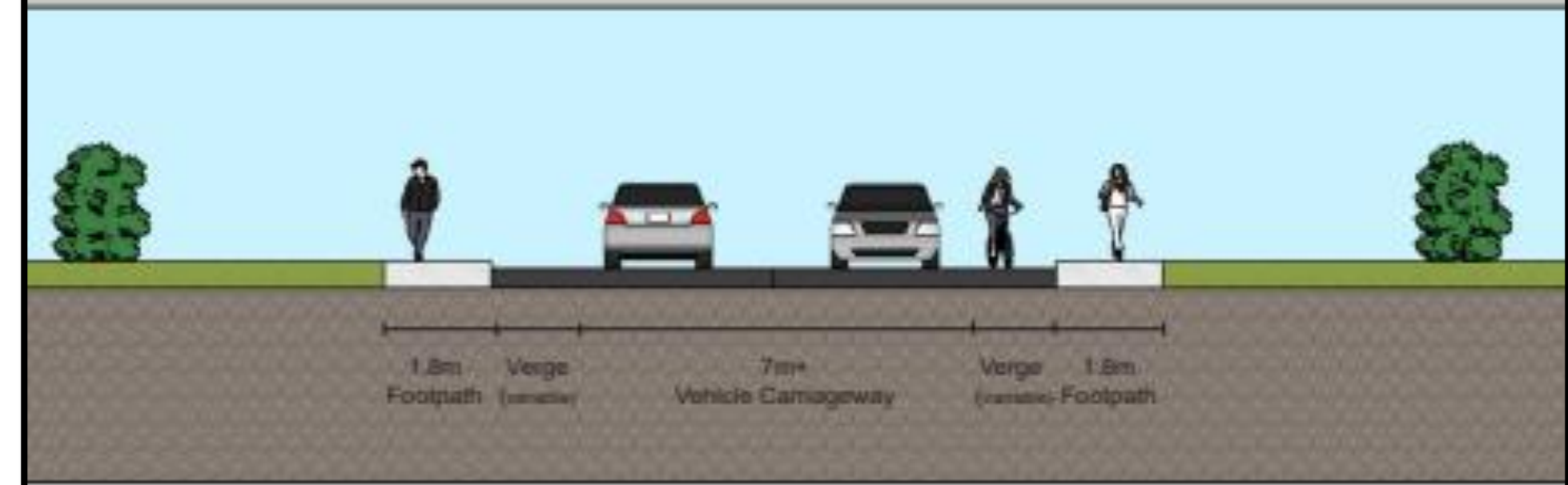
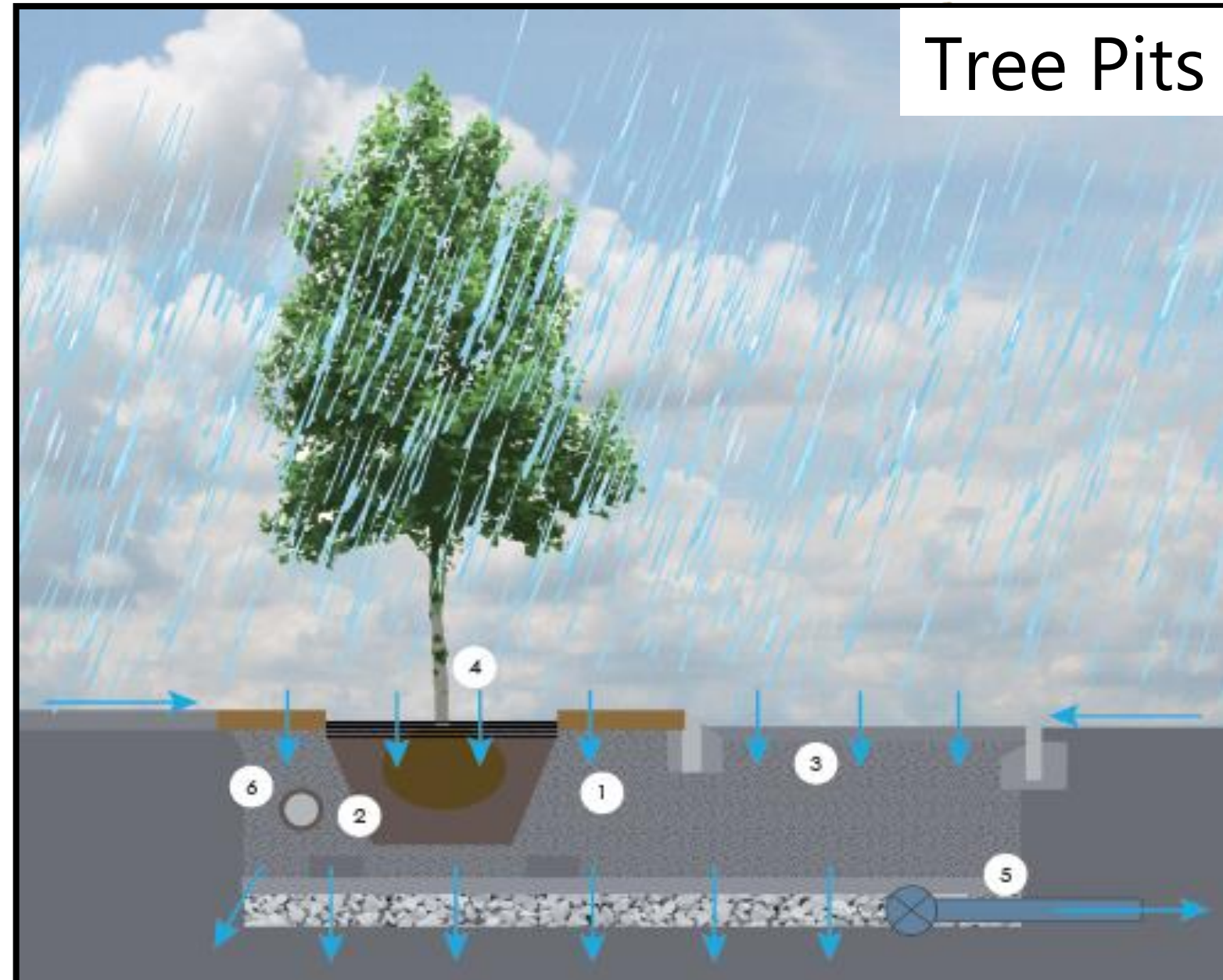
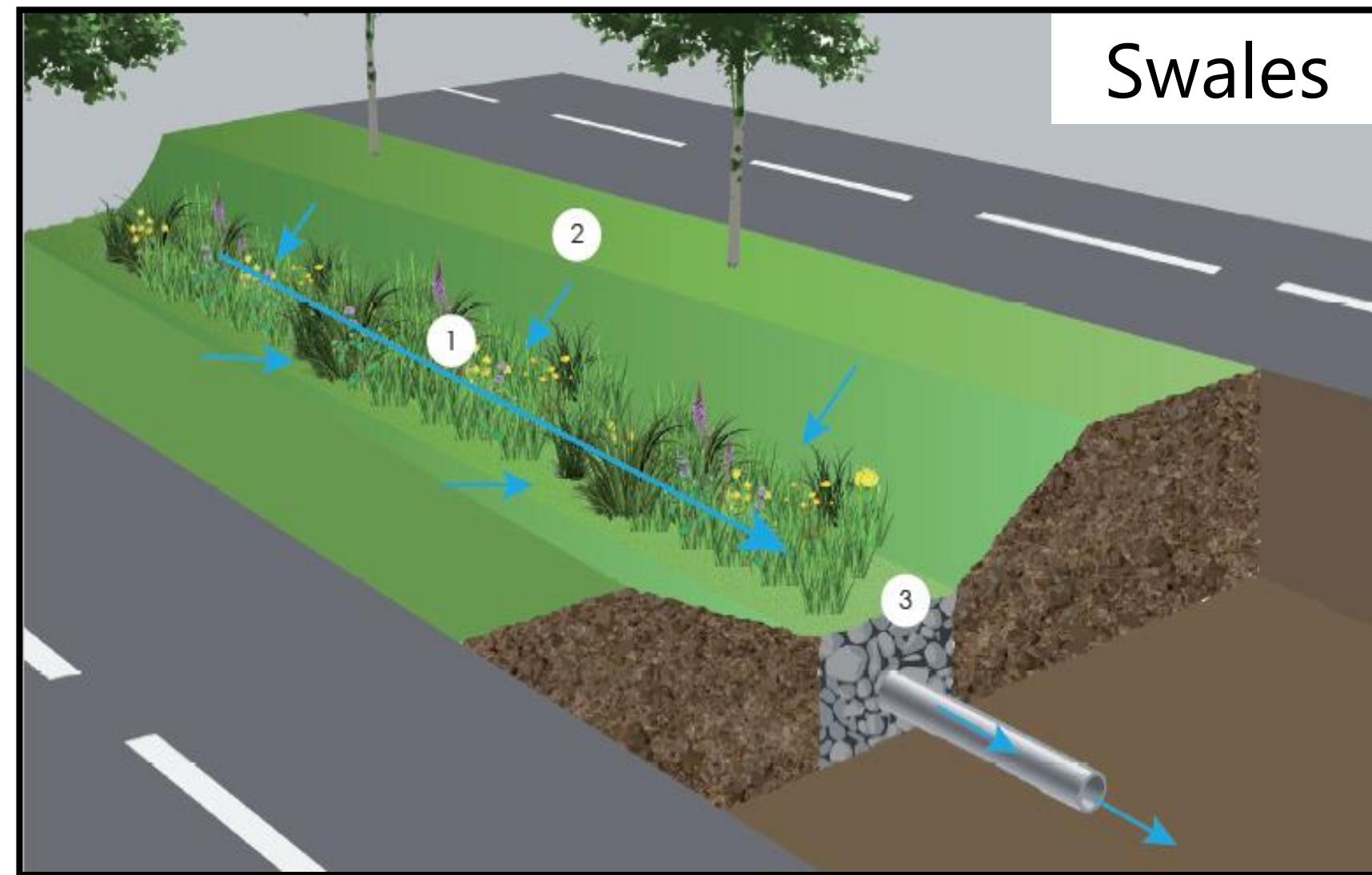
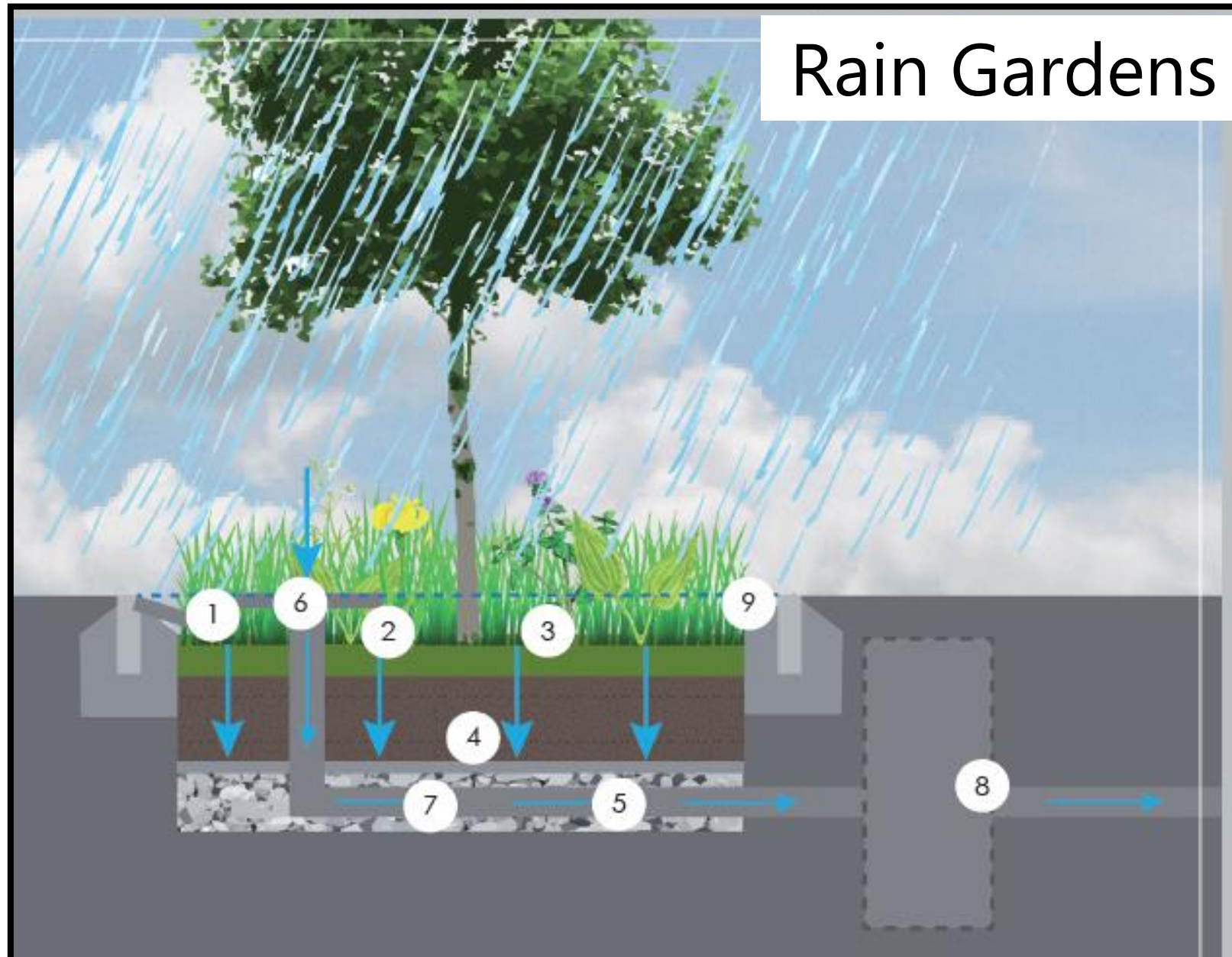


Figure 3.6: Transition zone incorporating landscape/SUDs features which reinforce a gateway to reduce vehicle speeds upon entry to an urban area.





# Section 4 – Design Issues in Context of DMURS / DMURS Advice Notes



Car Parking Bays

Nature-based Solutions & Mobility

Open Spaces / Amenity Areas



# NTA Greening and Nature-based SuDS for Active Travel Schemes

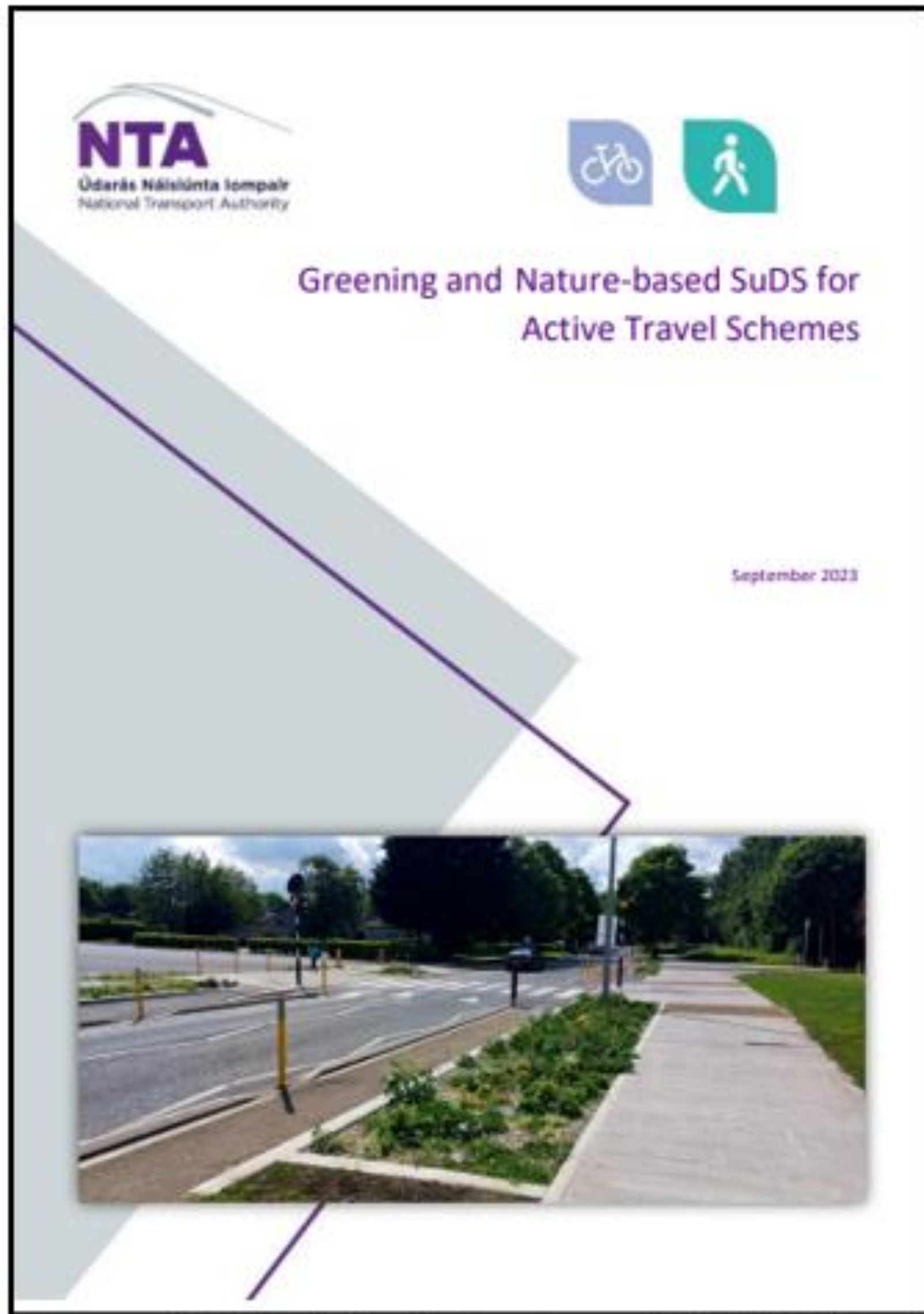


Figure 17 Rain gardens installed in existing verge, footpath width



Figure 18 Rain gardens on [Rock Road, Co. Dublin](#)

Published Sept 2023



# Tree species selection



Figure 25 Stockholm tree pit system under construction in O'Connell Street



Figure 26 Completed scheme for the Stockholm tree pit system in O'Connell Street Dublin

Table 6 Tree pits- Challenges and Solutions

SuDS Tree Pits (TP): Tree pits are constructed to attenuate Surface Water runoff by exploiting the natural void within the tree soil rooting zone and is contained within an underground tree pit	
Challenges	Solutions
Availability of space	The ideal soil volume for a tree pit will be dependent on the species of tree as such it will often be possible to select trees to suit the specific context <a href="#">GreenBlueUrban - S</a>
Structural Performance	As the tree pit and adjacent pavement can be utilised which can be utilised which stone
Root protection	Root barrier systems of root growth and structures and utilities

Table 9 Example Species list and basic SuDS information

Example Species List			
Latin Name	Common Name	Form	SuDS Tolerance
<i>Acer campestre</i> 'Elsrijk'	Field Maple	Medium tree, Dense conical shaped crown	Good tolerance with drought and saturated conditions. Suitable for Paved and soft SuDS. Yellow leaves in autumn
<i>Liquidambar styraciflua</i>	Sweetgum	Large tree, Conical Shape, Standard or Feathered	Good to moderate tolerance with drought and saturated conditions. Tolerant of Light and shade conditions. Suitable for paved and soft SuDS.
<i>Alnus x spaethii</i>	Spaeth Alder	Large tree, Conical-Ovoid crown, standard or feathered,	Good tolerance with drought and saturated conditions. Tolerant of Light and low tolerance of shade conditions. Suitable for paved and soft SuDS.
<i>Platanus x acerifolia</i>	Fastigate Plane	Large tree, Conical shape, large tree, Standard	Good tolerance with drought and saturated conditions. Tolerant of Light and low tolerance of shade conditions. Suitable for paved and soft SuDS.
<i>Acer saccharinum</i>	Silver Maple	Large tree, An open globe crown,	Good tolerance with drought and saturated conditions. Tolerant of Light, moderate tolerant of shade conditions. Suitable for paved and soft SuDS.
<i>Malus</i> (many cultivars)	Crab Apple	Small tree, Ovoid / open crown. Standard	Good Tolerance with drought and only short-lived saturated conditions. Tolerant of Light, moderately tolerant of shade conditions. Suitable for paved and soft SuDS.



# National Implementation Strategy for Urban Nature-based Solutions



## Measure in the Water Action Plan 2022-2027

An Roinn Tithíochta,  
Rialtais Áitiúil agus Oidhreachta  
Department of Housing,  
Local Government and Heritage

**Nature Based Management of  
Urban Rainwater and Urban  
Surface Water Discharges**  
A National Strategy

2024

Prepared by the Department of  
Housing, Local Government and Heritage  
gov.ie

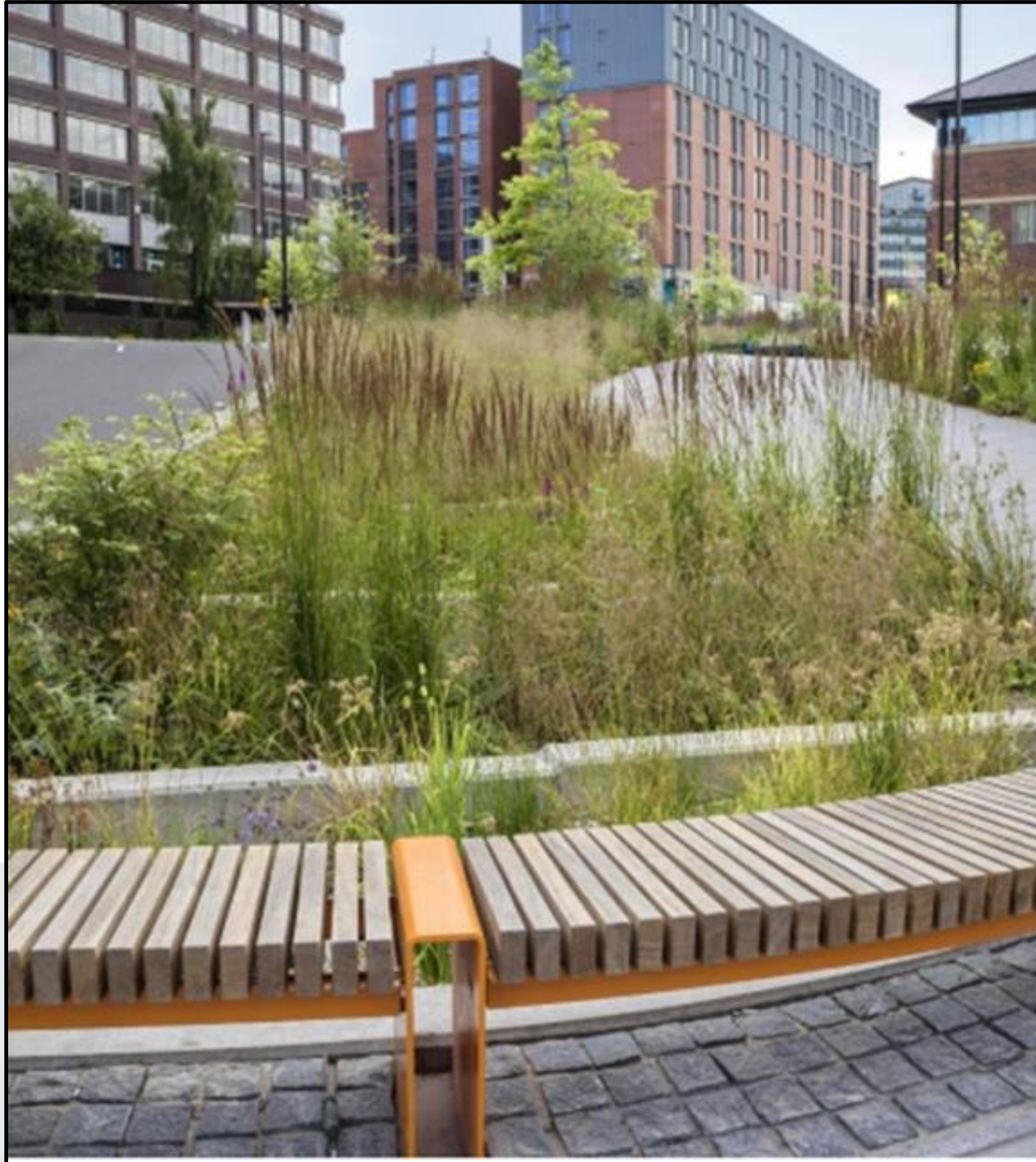


Image by Jason Taylor, Sydney

Published May 2024



# National Implementation Strategy for Urban Nature-based Solutions



- Working Group members:

Dept. Environment, Climate and Communications,  
Dept. of Transport,

NTA

Uisce Éireann,

LAWPRO,

Dept. of Housing, Local Government and Heritage.  
(Planning and Water Advisory Unit)

EPA

Commenced Q4 2023



# National Implementation Strategy for Urban Nature-based Solutions



- **Climate Adaption**
- **Planning**
- **Uisce Éireann**
- **Roads, Streets and Transportation**
- **Funding and Capital Appraisal**
- **Education and Training**
- **Community Engagement and Communications**
- **Public Health and Wellbeing**



Image: Front of St Peter and Pauls Church, Clonmel, Fran Igoe



# National Implementation Strategy for Urban Nature-based Solutions



Chapter	ID	Indicator	Definition	Current Baseline - May 2024	End 2027 Target	End 2035 Target	End 2045 Target	Responsibility	Comments / Status - SGM 10/09/2024
								LAWPRO Uisce Éireann DHLGH OPW	
(4) PLANNING FOR NATURE BASED SOLUTIONS	4.1	RMP Template	Template in Place	Draft in place	Template Completed	Template Updated	Template Updated	Cork Co. Co. / DHLGH / LAWPRO	LAWPRO to promote the RMP during LA engagements / ROC meetings etc. LAWPRO to disseminate RWMP Guidance to Regional Assemblies to inform LA's - ongoing
	4.2	Planning Guidelines and Guidance	Planning Guidelines and guidance to outline requirements and best practice outcomes for NBS in urban areas, where relevant.	Sustainable Residential Development and Compact Settlement Guidelines (SRDCSG)	Design manual (to supplement SRDCSG to provide best practice examples of NBS)	Guidelines and Guidance reviewed and updated as appropriate	Guidelines and Guidance reviewed and updated as appropriate	DHLGH	Off-line update from DHLGH on 09/09/2024 - Following the publication of the Sustainable Residential Development and Compact Settlement Guidelines last January we are nearing the completion of a supporting Urban Design Manual. The Manual will build upon the DMURS advice note and include several 'best practice' examples of NBS. LAWPRO NbS guidance document aimed at planners & developers currently being drafted. To be published in Q4 2024.
	4.3	Data for RMPs	Summary of Required data included in RMP	Not in place	Guidance issued re data requirement and how to use "best available data"	Updated Guidance and expanded data sets relevant to RMP preparation.	Updated Guidance and expanded data sets relevant to RMP preparation.		Clarify if required data is covered under the current RMP Guidance and / or what else is required, Contact A Conway to clarify.
	4.4	Examples of Best Practice	Details of completed urban RMPs in Ireland, lessons learned etc.	Not available	Initial Information collated from LAs where RMPs are in place.	Expanded details of completed RMPs, best practice, etc.	Expanded details of completed RMPs, best practice, etc.		Cork CoCo have completed the RMP for Carrigtwohill and are awaiting sign off from senior management. Expected to be finalised by late September 2024, thereafter it will be published on their website. Once released this can be published as an appendix to the RMP.
	4.5	RMPs in Place	Number of urban areas with completed RMPs	Limited number	Every LA to have one example of a completed urban RMP	RMPs to be in place or underway for most urban areas	RMPs to be in place or underway for all urban areas.	All Local Authorities	LAWPRO to promote the RMP during LA engagements / ROC meetings. Track locations (LA's / settlement areas) where RMP are completed or underway "example LACAP". - ongoing
(5) CLIMATE ADAPTION	5.1	Urban Adaptation	LAs to promote urban climate adaptation, supported by the CAROs.	LACAPs 2024 to 2029 - have been adopted	Discussion on Built Environment/Urban Adaptation Plans to be drafted by LAs for towns above 10k population.	Potentially Built environment/Urban Sectoral Adaptation Plans in place (see below)	Potentially Built Environment/Urban Sectoral Adaptation Plans in place (see below)	DHLGH / DECC / CARO / All Local Authorities	DHLGH to follow up. LAWPRO promotion through ROC meetings and engagements with planners and relevant LA Staff. - ongoing
	5.2	LACAP Guidance	Examine how best to integrate NBS into LACAP guidelines if new guidelines are developed.	LACAPs 2024 to 2029 - have been adopted	Discussion on New Guidance, if appropriate, to be agreed for next round of LA CAPs	New Guidance to be devised, if appropriate	LA CAPs to include nature based urban adaptation measures, if appropriate.		Check with CARO to see if there will be any further guidance issued.





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# Rainwater Management Plans

## Guidance for Local Authorities

2024



# Rainwater Management Planning – Guidance for Local Authorities

Published May 2024



# Rainwater Management Planning - Guidance for Local Authorities



Identifying subcatchments and storage locations

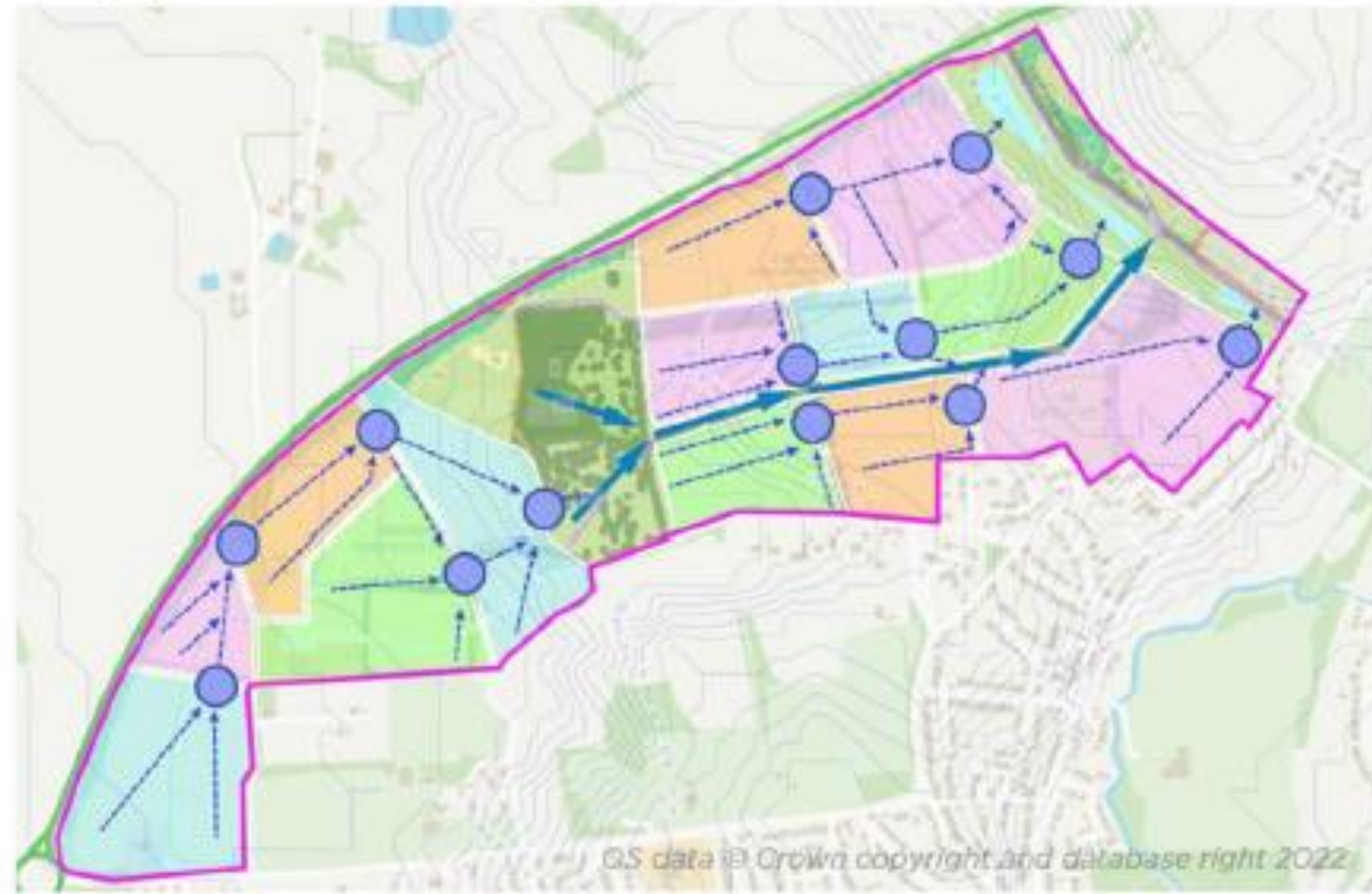


Figure 1-3: Example RMP Output

- Data gathering
- Stakeholder engagements
- Developing a Rainwater Management plan
- Rainwater Management techniques
- Inclusion of Carrigtwohill Rainwater Management Plan in Appendix for information

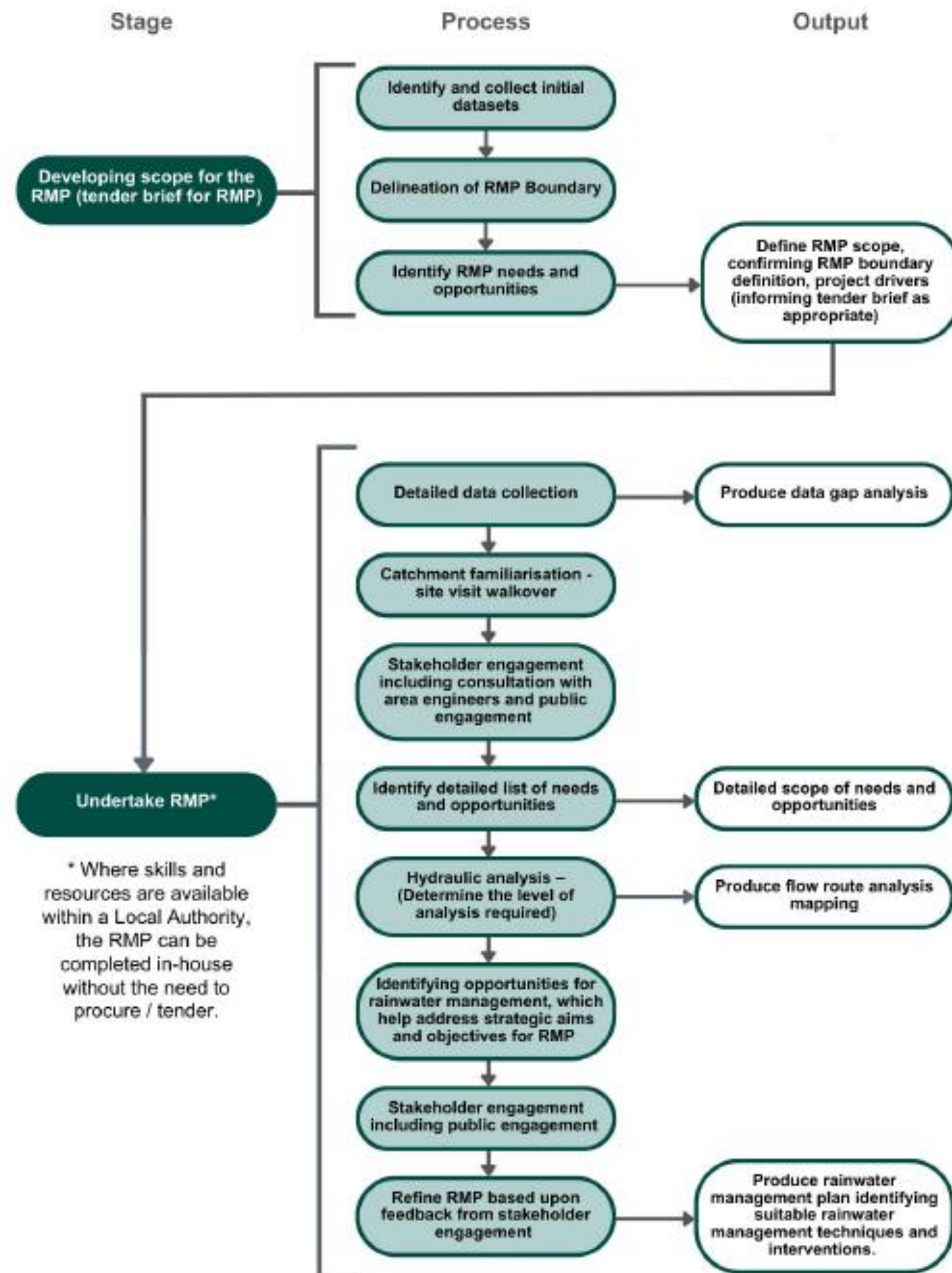


# Rainwater Management Planning - Guidance for Local Authorities



## 1.3 The RMP Process

The following chart indicates the typical processes for undertaking an RMP.



\* Where skills and resources are available within a Local Authority, the RMP can be completed in-house without the need to procure / tender.

## Hierarchy for selection of rainwater management Techniques

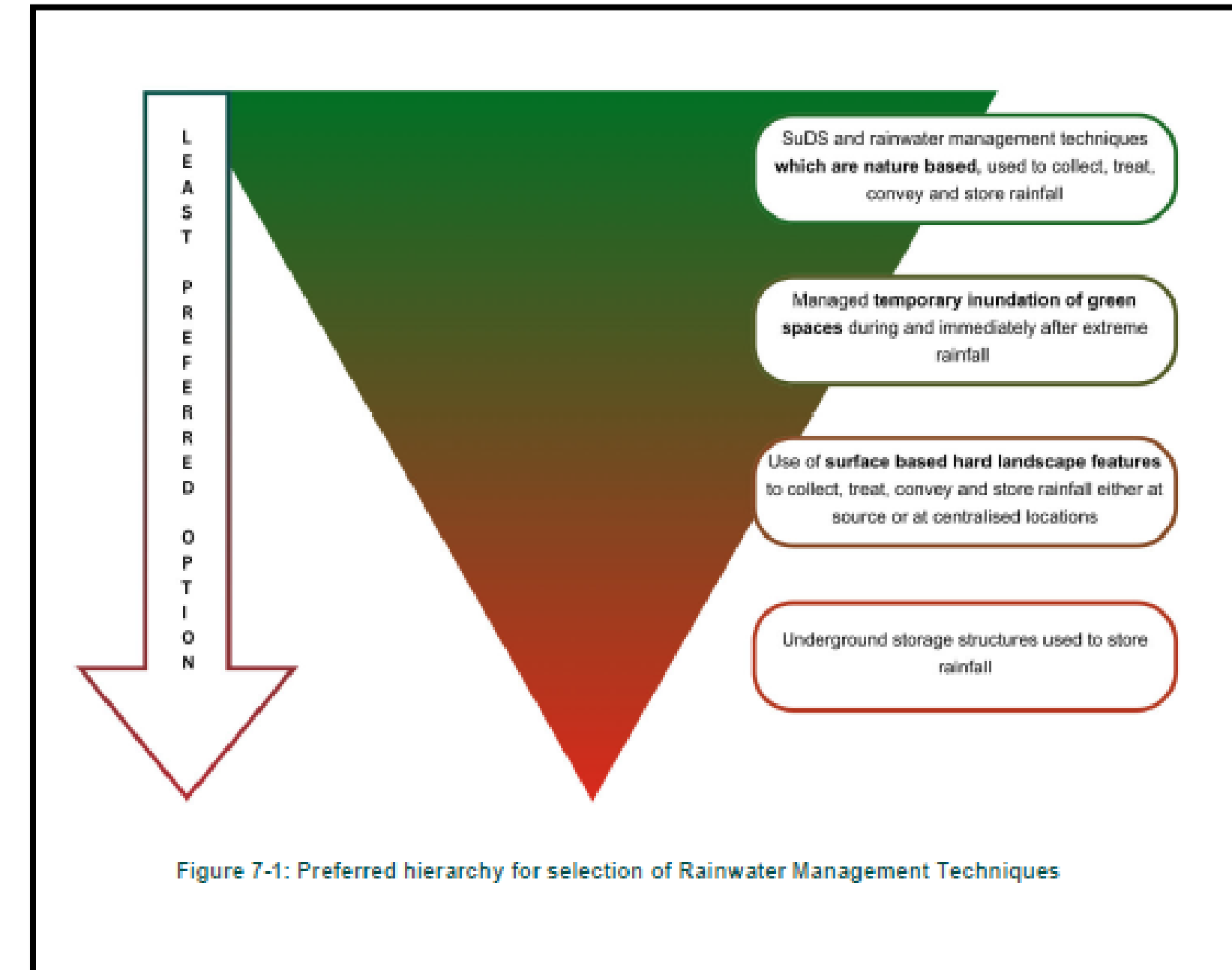


Figure 7-1: Preferred hierarchy for selection of Rainwater Management Techniques

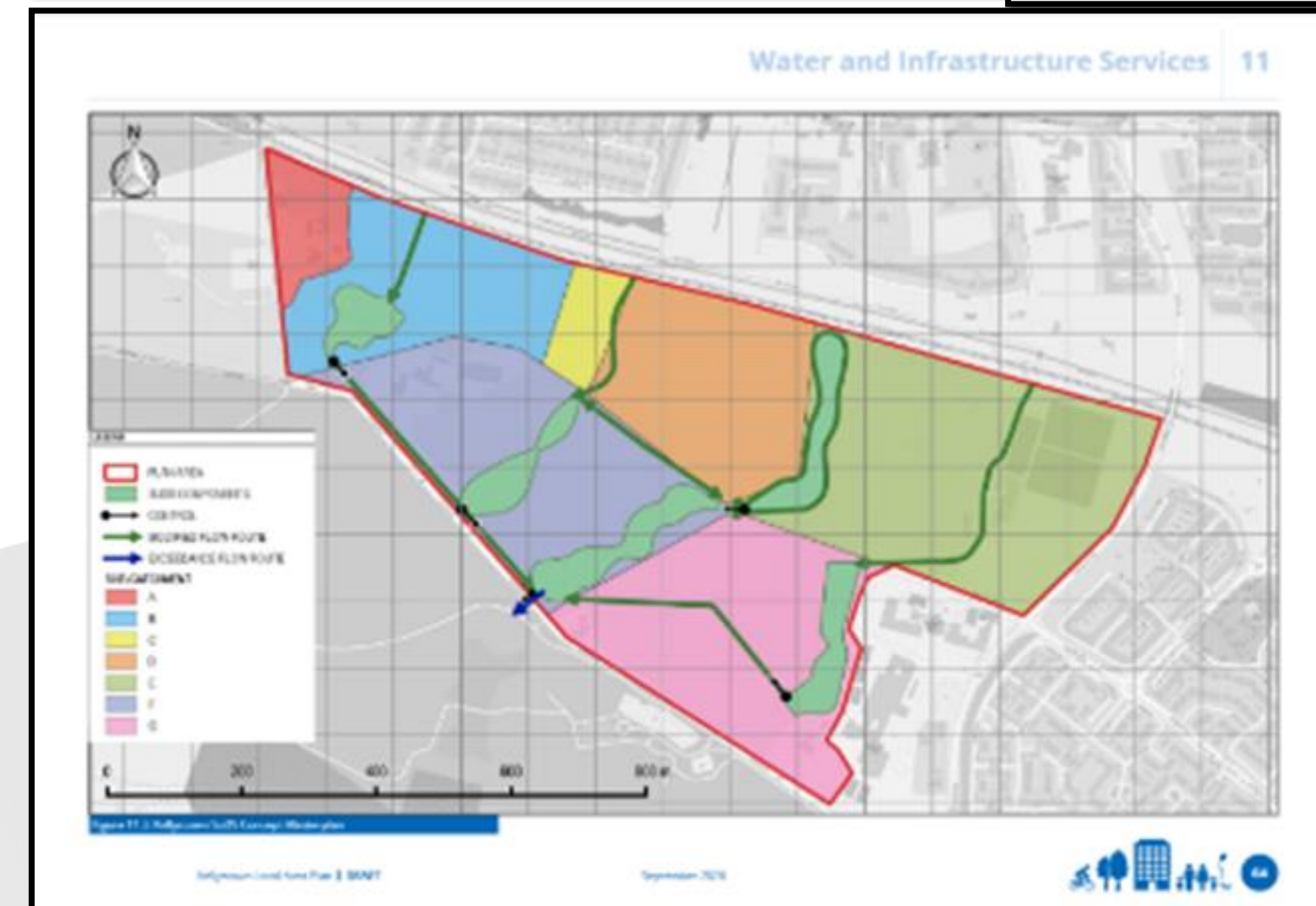
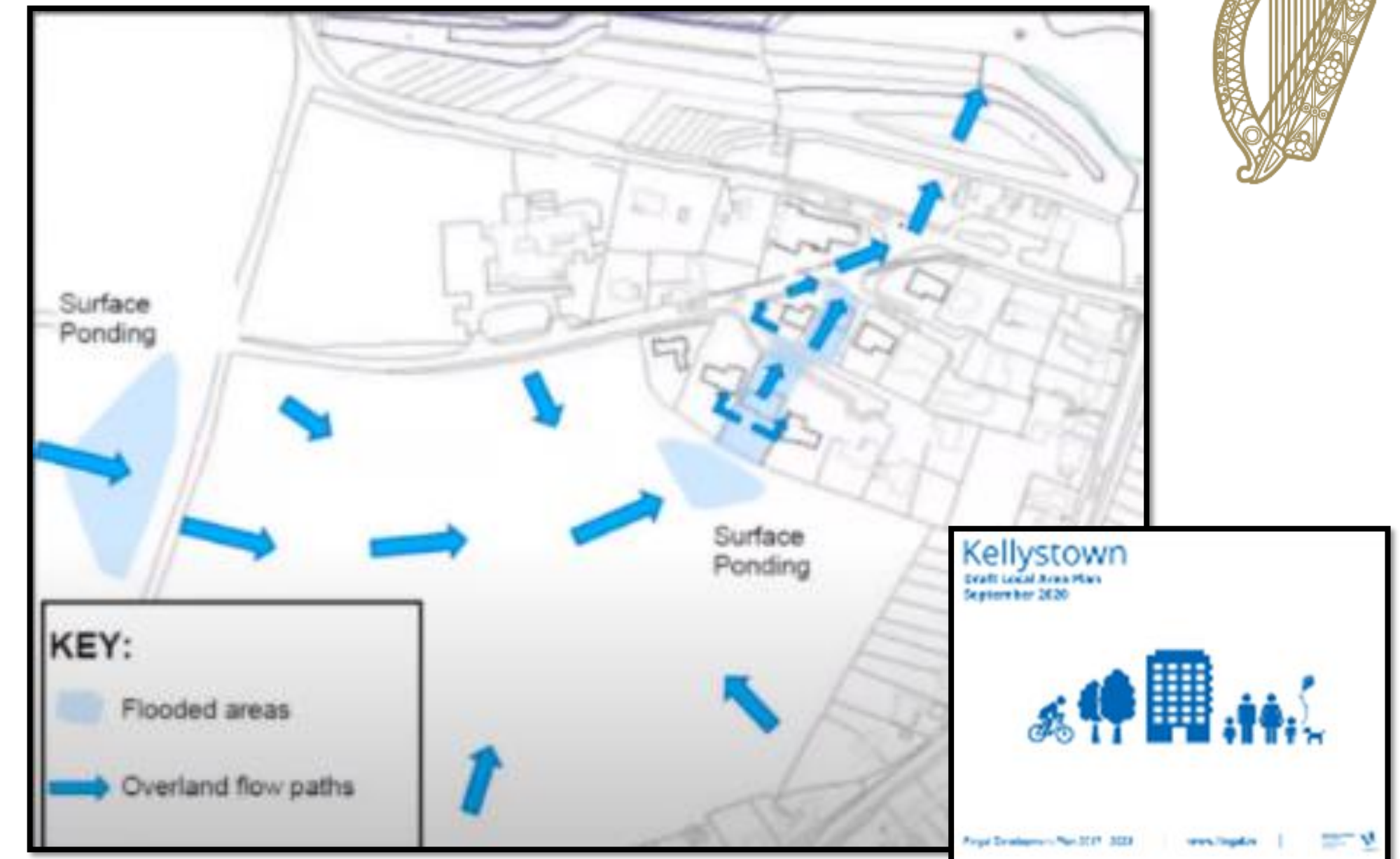
## Rainwater Management Plan Process



# Rainwater Management Planning - Guidance for Local Authorities



- Will become more important from Climate Change perspective (pluvial flooding, cloud bursts etc).
- Integration of water sensitive urban design concepts including development of Rainwater Management Plans
- Guide location, type, scale and integration of nature-based solutions
- *Working with Cork City and County, Wexford, Offaly, Kildare, Fingal and Wicklow County Councils*





# Nature-based Solutions Pilot Projects



- 3<sup>rd</sup> River Basin Management Plan – measure includes two pilot projects in Dublin City and Cobh, Co. Cork to look at Nature-based Solutions in Ireland
- Research including monitoring into NBS infrastructure in Ireland
- These projects commenced in 2023





# Nature-based Solutions Pilot Projects



- Monitoring different soil types to determine best combination in Irish context
- Using this information to design rain gardens and tree pits in larger public realm scheme
- Winner of Social Impact Award at the National Property Awards 2023



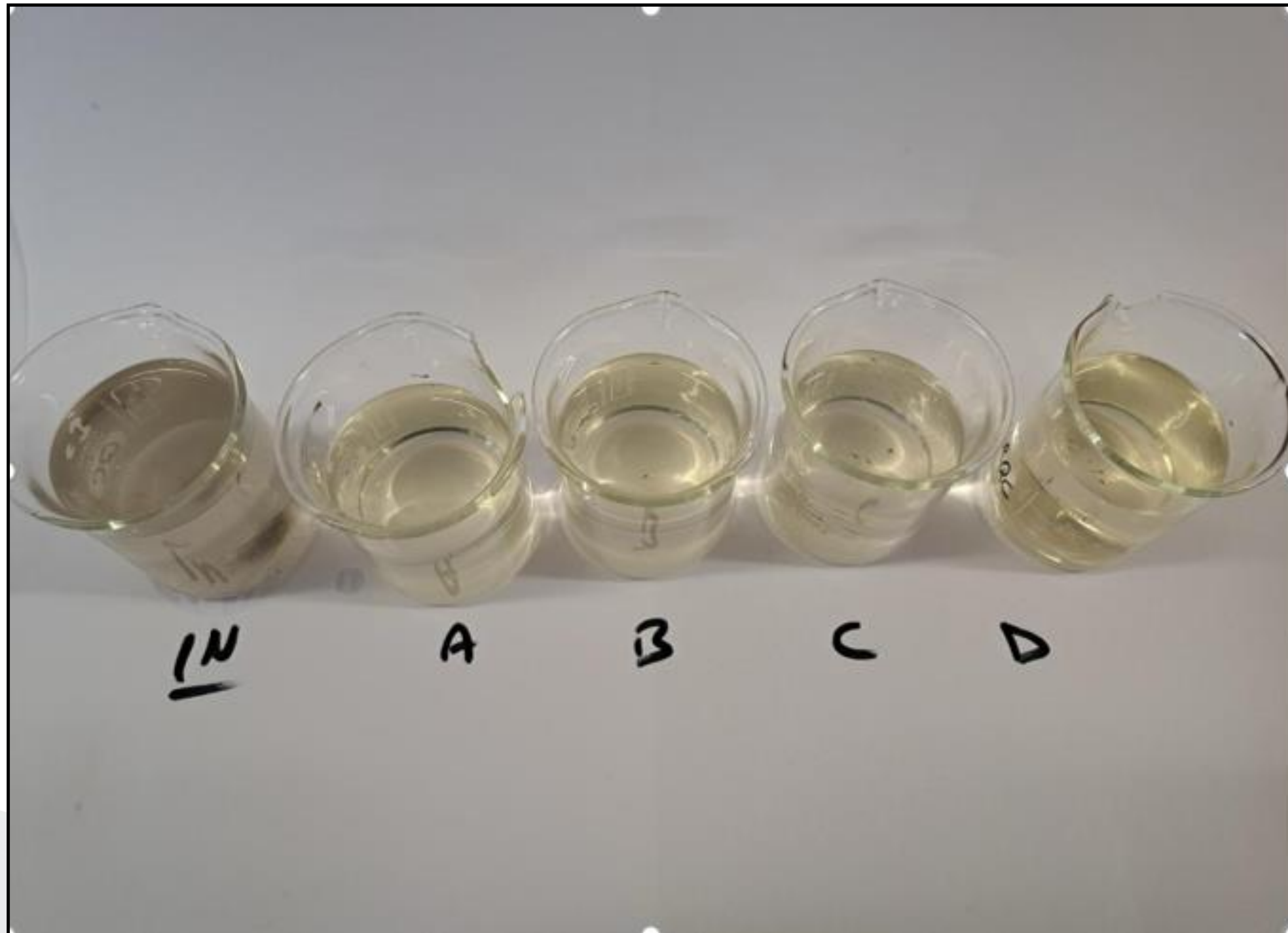
# Nature-based Solutions Pilot Projects



Cobh Demonstrator project  
– 1 year on

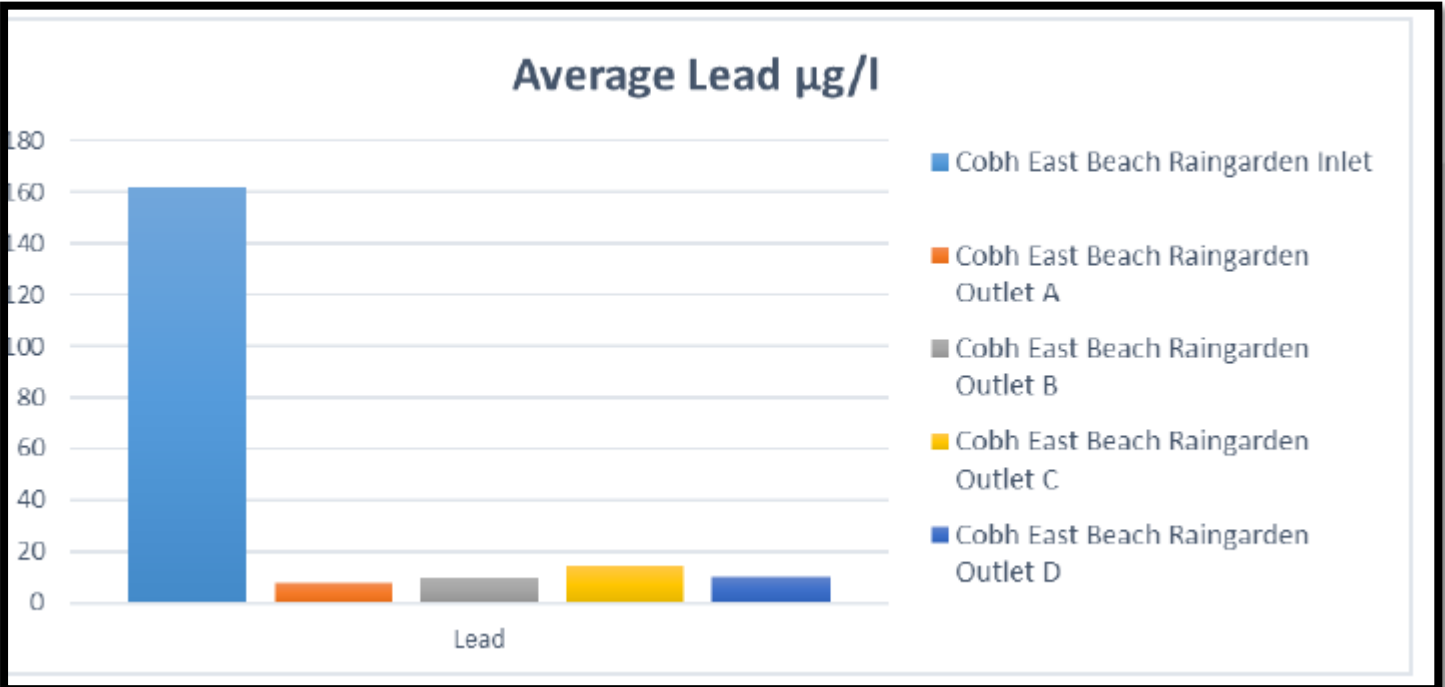
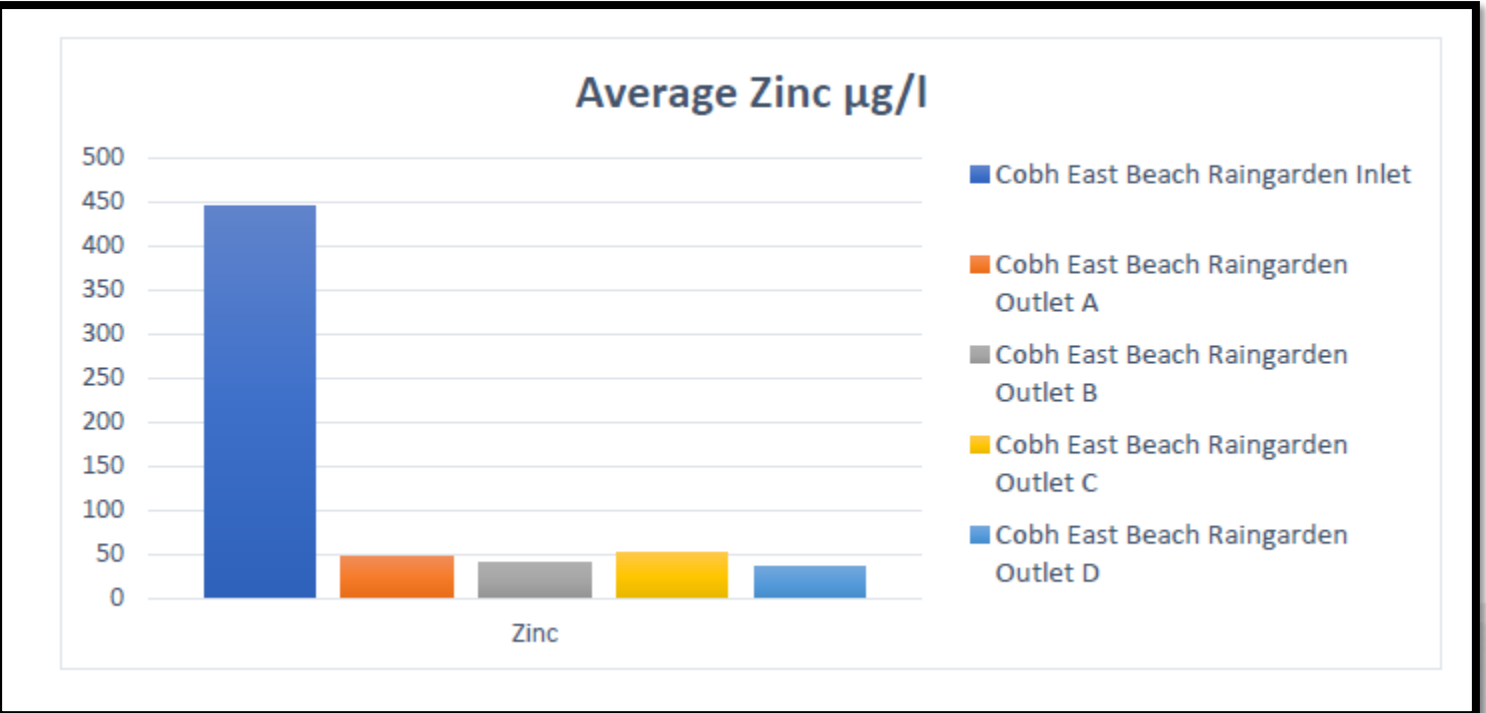
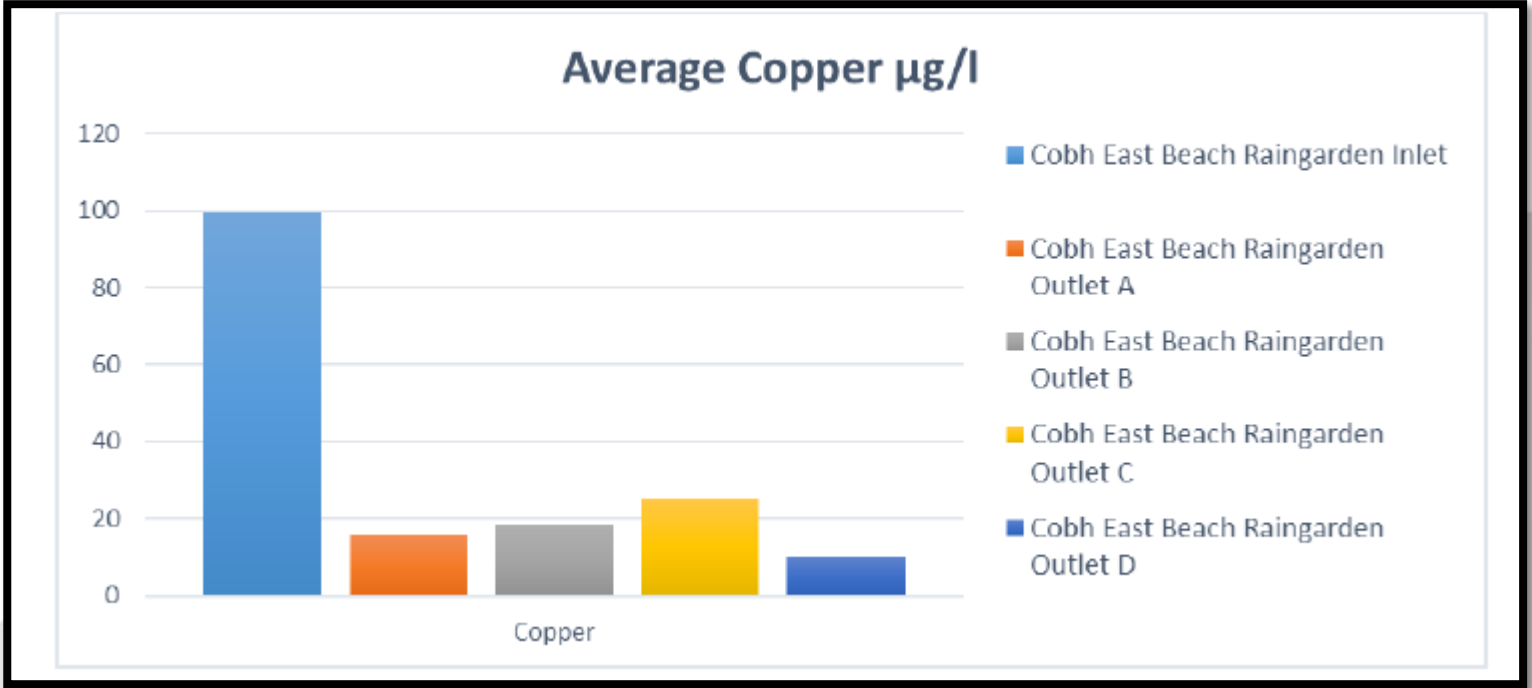
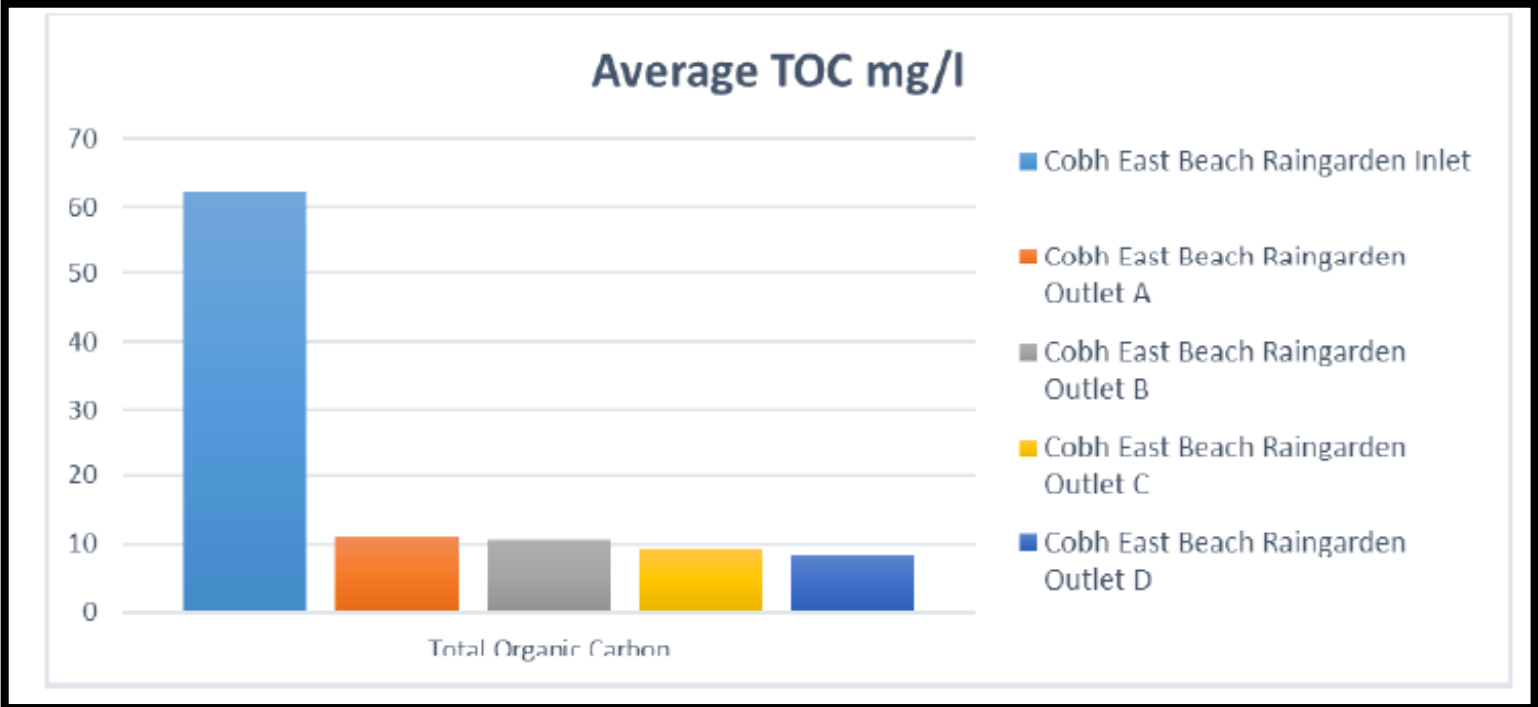
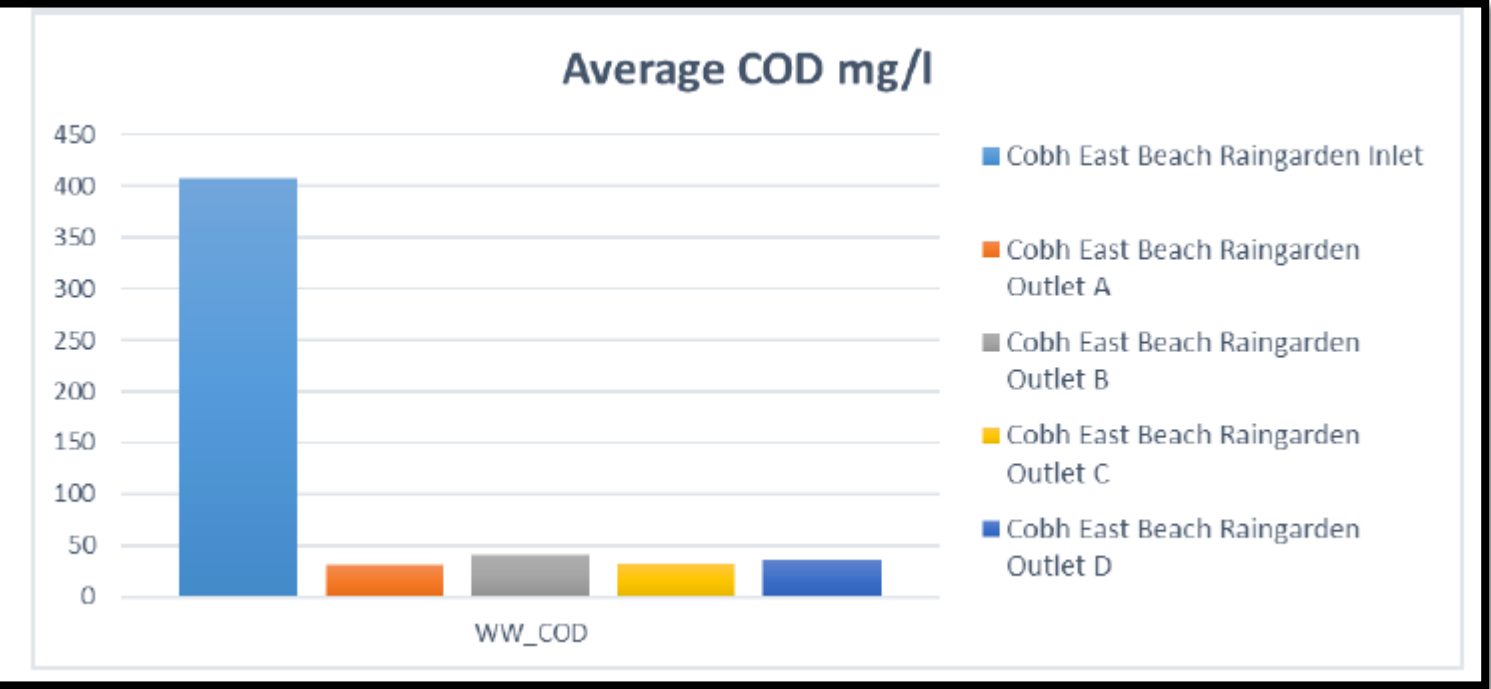
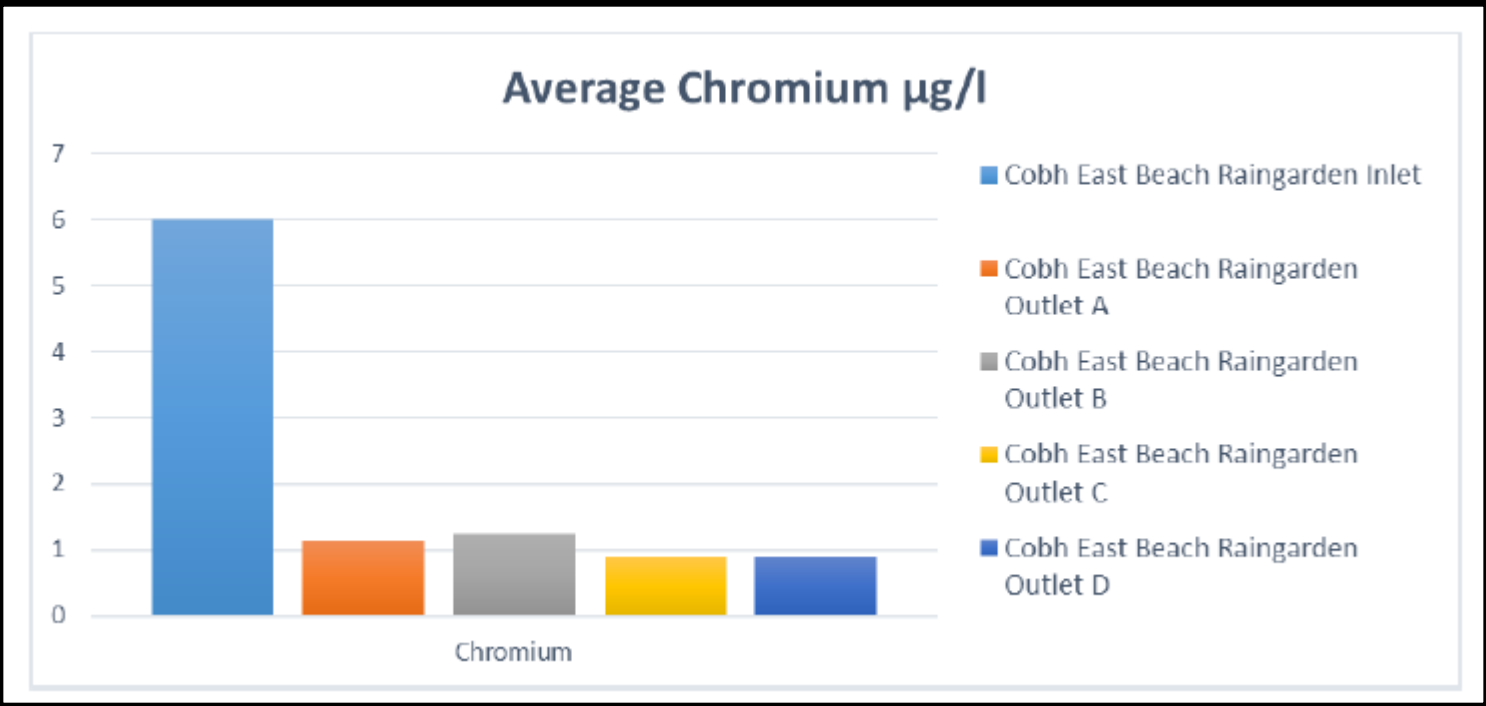
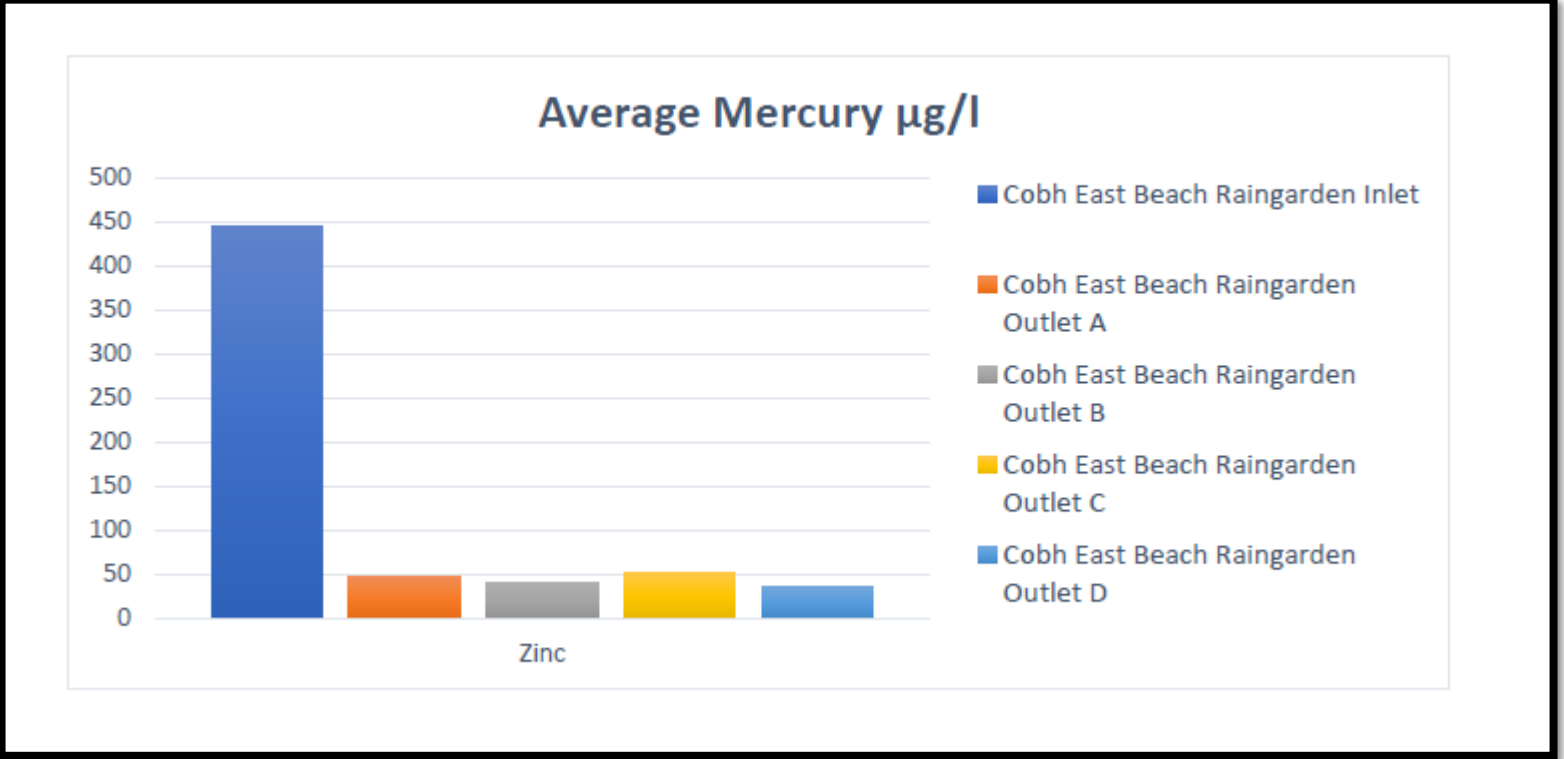
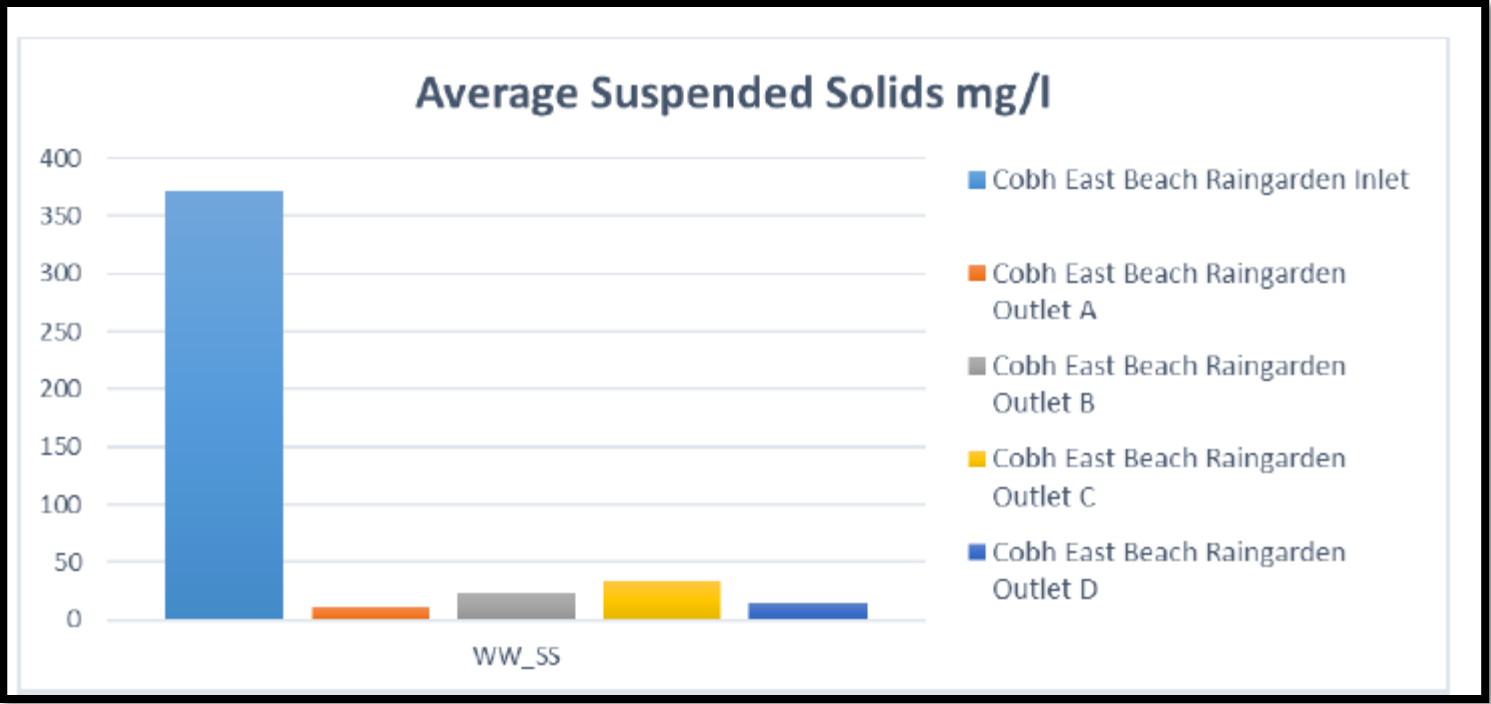


# Nature-based Solutions Pilot Projects





# Nature-based Solutions Pilot Projects – Monitoring Results





# Nature-based Solutions Pilot Projects



Inclusion of rain gardens, permeable paving and tree pits after consultation and monitoring

Images: Ribh Road, Rainscapes Project, Dublin City Council



# Images from Rainscape project: Ribh Road and McAuley Park, Santry, Dublin















Before and after picture





# Example of project delivery by a Local Authority using the supports / training



**Bioretention Areas (Rain Gardens) – Pollerton Road/Green Lane Junction**

Courtesy P. Gorman, Carlow CoCo





# Rain gardens in Sept 2024







**President Prize  
Award winning  
Carlow Co. Co.  
raingardens  
from EU Entente  
Florale 2024**

ing, Planning and Local Government







Questions may be asked through SLIDO using the QR Code on your lanyard

Thank you

Email: [Averil.Gannon@housing.gov.ie](mailto:Averil.Gannon@housing.gov.ie)