

A savanna landscape at sunset. The sky is a vibrant orange and yellow, with a large, bright sun partially obscured by a dark, silhouetted tree on the right. Two antelopes are silhouetted against the bright sky, one in the foreground and one further back. The overall scene is peaceful and natural.

Nature Based Solutions - Benefitting wildlife & humans

- Fran Igoe Regional Coordinator. South
East Region, South West Region, Local
Authorities Water Programme

Nature associated with water courses



Nature-based solutions



If delivered appropriately, Nature-based Solutions can significantly contribute to addressing multiple societal challenges

One third of climate mitigation needed to meet the goals of the Paris Agreement can be provided by Nature-based Solutions



Constructed wetlands



Green urban spaces



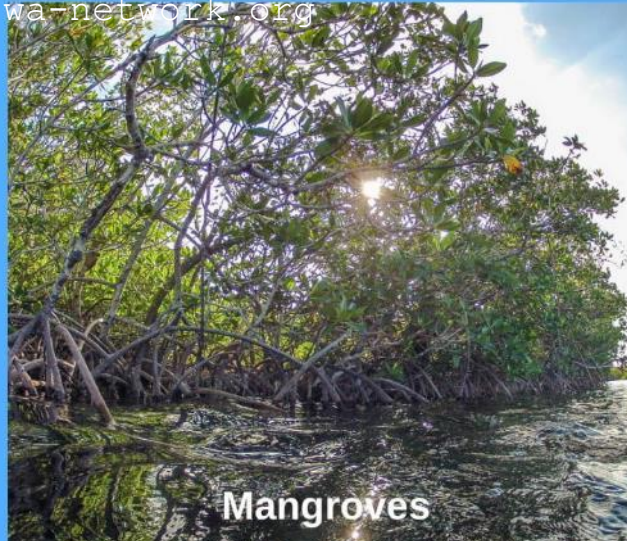
Bioswales

Types of Nature-based Solutions

Courtesy of **The International Water Association** <https://iwa-network.org>



Natural wetlands

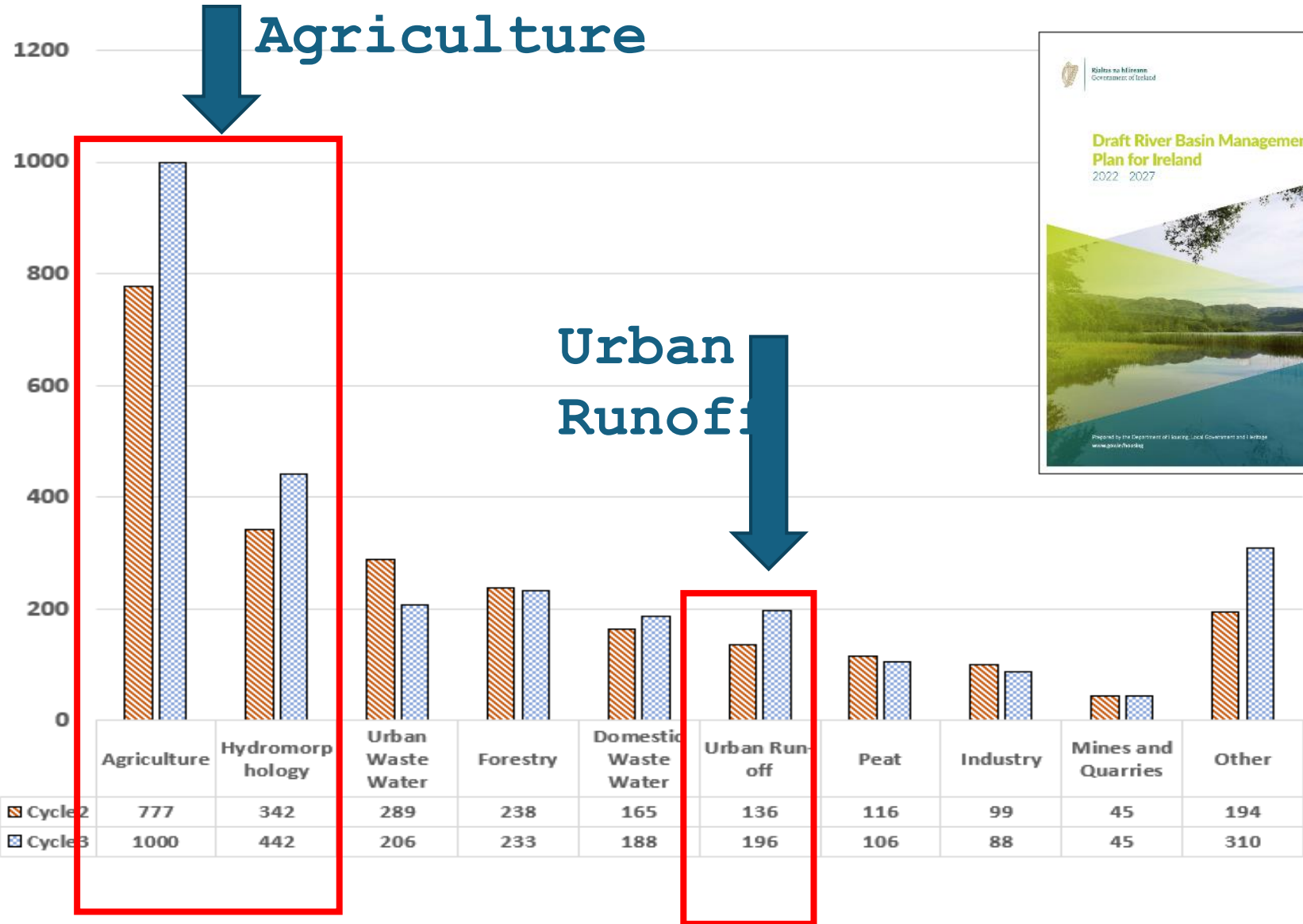


Mangroves



Reforestation

Key pressures impacting waters



Learnings from the River Groody

..informing policy

Nature-based solutions

- example 1 (River Groody)

- New ring road bypass for Limerick City required realignment of the River Groody
- Locally important river for brown trout angling. Salmon also present.
- Hard engineering solutions initially proposed in design (reno mattresses and gabions) i.e., mesh wire baskets filled with gravel
- Shannon Regional Fisheries Board requested a more Nature-based solution - to include removal of reno mattresses, limit gabions, introduce meanders using rock and timber in realigned channel to mimic natural process and allow for vegetation, plant willow trees and add gravel and random boulders for fish to spawn and shelter respectively.
- Significant benefits - not just for fish and biodiversity - but also from a maintenance and financial perspective (savings estimated at the time = between €70,000 to €100,000).



1999



2007



1999 GeoHive

2008



2023

A fishes worst nightmare!

River
literally
filtering
through
gabion
stairs

Gabions
on both
banks

Reno
mattress
covers
bed of
river





Diverse flow regime, greater habitat complexity & heterogeneity and more stable channel for flood conveyance

Random boulders for shelter for fish and for birds and mammals to sit

River bank vegetation establishing along banks generated by deposition of silt

Gravel introduced for spawning fish

15 years later!





19 May 2023



River Groody ..early

2000' s





PLANNING FOR WATERCOURSES IN THE URBAN ENVIRONMENT

A Guide to the Protection of Watercourses through the use of Buffer Zones,
Sustainable Drainage Systems, Instream Rehabilitation, Climate / Flood Risk and Recreational Planning

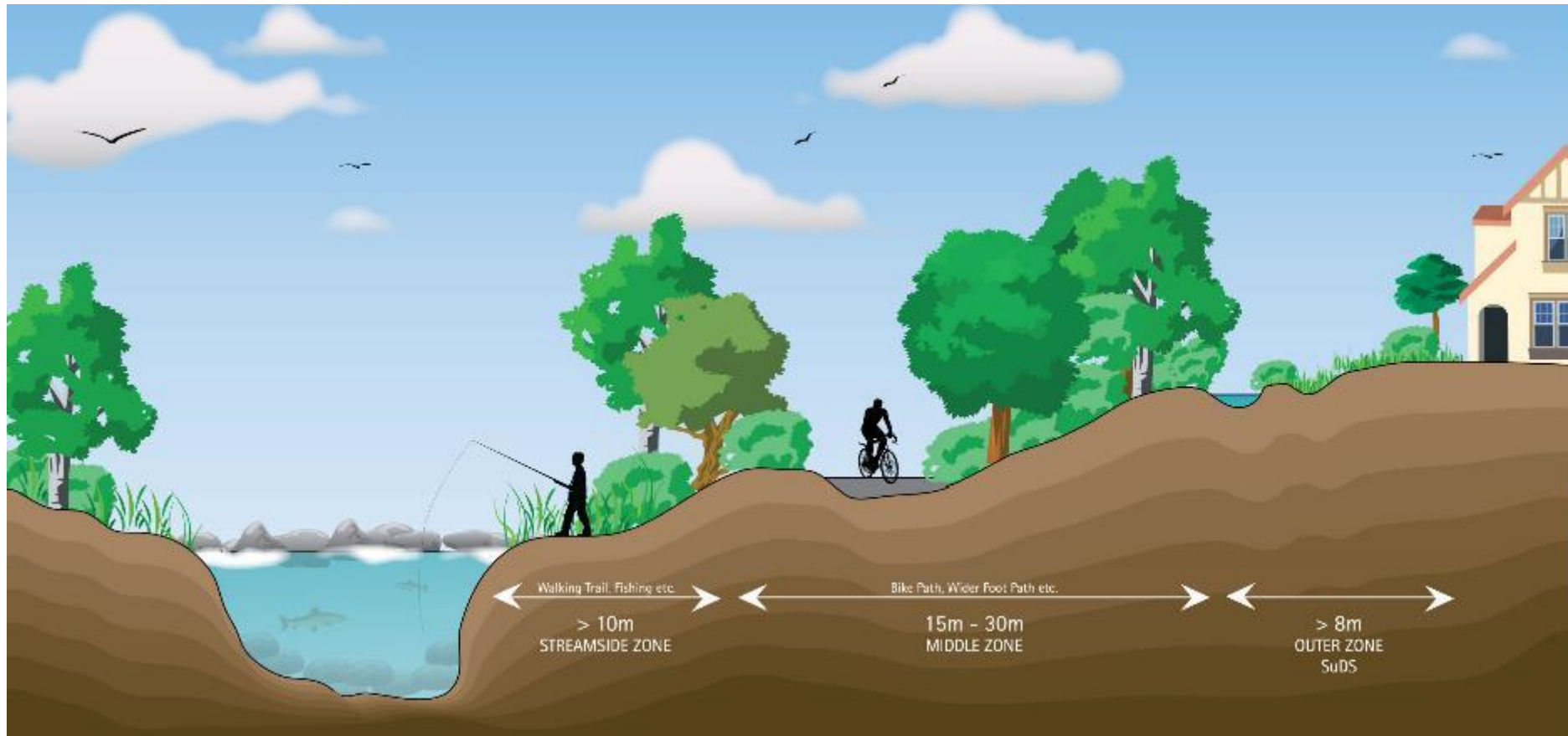
**Including one-off developments*



Iascach Iníre Éireann
Inland Fisheries Ireland

A Guideline Developed by Inland Fisheries Ireland

NBS bring multiple benefits



Making room for the river by using existing public spaces - takes flood pressure from towns



Making space for water. Dennis Burke park in Clonmel floods in February 2021. By working with Nature the park serves multiple functions including supporting amenity, biodiversity, alleviating flood risk and providing essential services in Clonmel with greater Climate resilience.

Greenways & riparian areas



- Urban growth will put pressure on existing riparian area
- Blueways, active travel routes etc already moving into these areas (e.g., above - before and after blueway development on the River Suir
- Hydromorphological pressure under WFD - issue for biodiversity also etc
- Leaving more space between the river and development- green zones can absorb some of this pressure

Nature-based solutions - example 2
- County Limerick (flood risk management)



Instream River Restoration

- Restores or replaces habitat loss by fisheries restoration techniques
- Introduce habitat heterogeneity- use structures such as vortex weirs, rubble mats etc
- Heavily modified channels - realign channel
- Overall objective - cater for all life stages for fish and other aquatic wildlife
- Proven track record in Ireland - extremely effective
- Ideally develop angling areas for kids etc





Instream River Restoration – R. Glasha (Mulkear) Pre-works



Instream River Restoration – Alternating deflectors



Instream River Restoration – 2yrs Post-works











Surface water runoff management in ROI

SuDS - Sustainable urban Drainage Systems



Often...



Road runoff is extremely toxic

After a storm, water often runs *off of* impervious urban surfaces directly into aquatic ecosystems. **This stormwater runoff is a cocktail of toxicants that have serious effects on the ecological integrity of aquatic habitats.** Young et al 2018. *Nature Scientific Reports*

Toxic road runoff kills adult coho salmon in hours, study finds



nature > scientific reports > articles > article

SCIENTIFIC REPORTS

Article | Open Access | Published: 12 February 2018

Urban stormwater runoff negatively impacts lateral line development in larval zebrafish and salmon embryos

Alexander Young, Valentin Kochenkov, Jennifer K. McIntyre, John D. Starki & Allison B. Coffin

Intercepting water using nature-based (vegetated) systems

BIORETENTION



RAIN CITY
STRATEGY

Raingarden



Raingarden



Example of Rain Gardens treating surface water runoff from a road

Reinforced grass



Reinforced grass



Reinforced grass



Reinforced grass



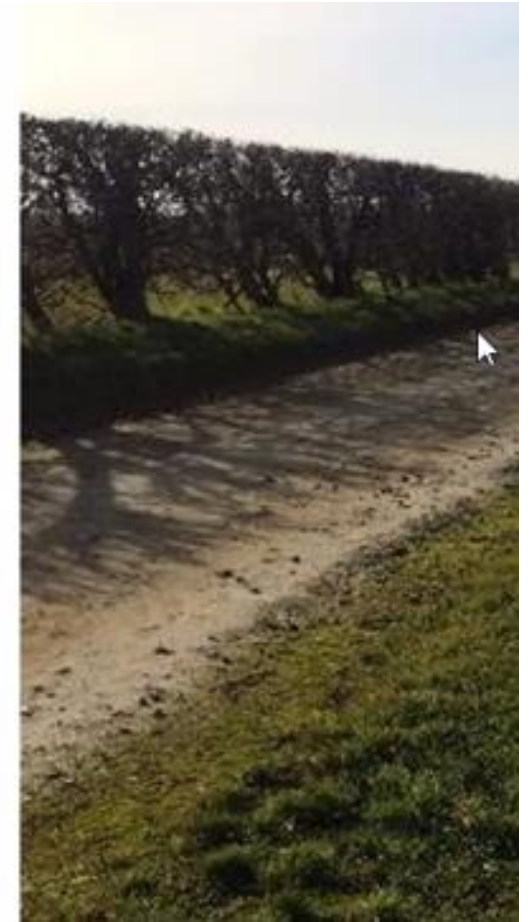
However in this project, the design changed during the delivery of the project and grasscrete put down in place of tarmac.

So many projects can be amended even during the construction phase.

Designing in at the beginning and considering a range of options helps avoid situations like the example on the previous slide.

Photo courtesy D
Joyce Cork CoCo

Reinforced grass



Reinforced grass



Ponds/wetlands



Shallow side slopes, erosion protection, amenity and bioversity





Courtesy P. Gorman, Carlow CoCo





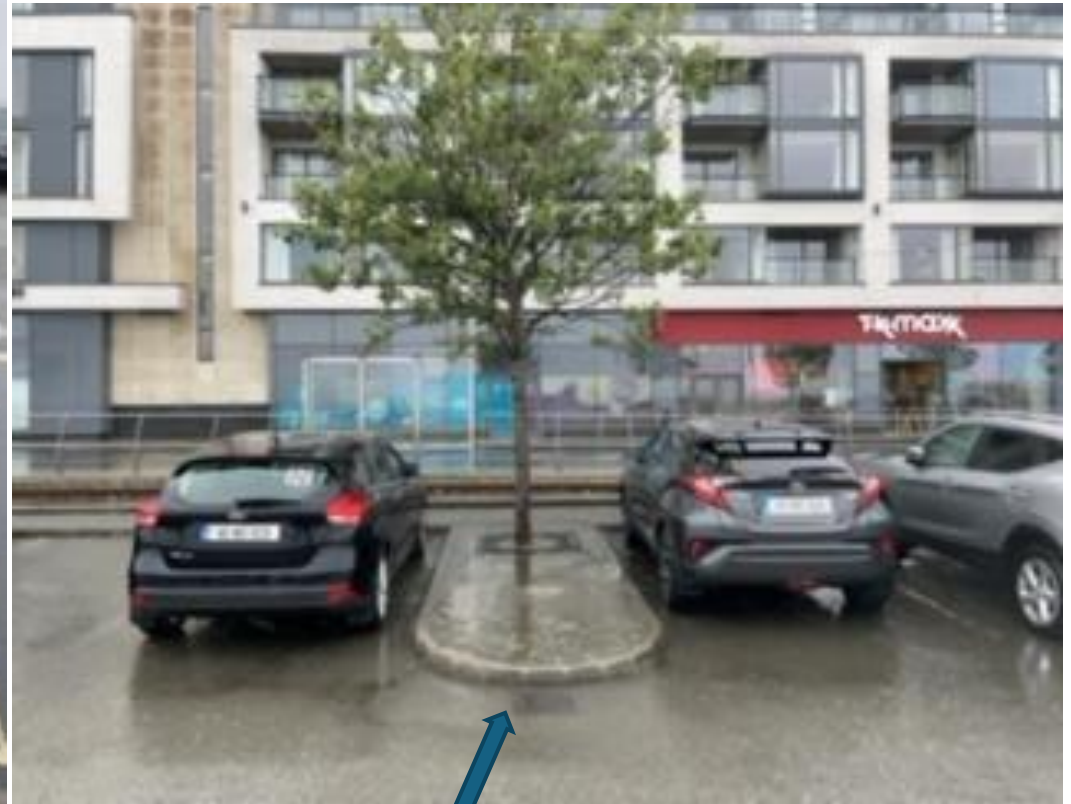


Look for opportunities in all projects (LA & third parties)

- lots of missed opportunities where water capture and filtration is not embedded.
- if done so, they would be self watering most of the time



Carpark adjacent to SPA
- during heavy rain
11/09/22



No treatment - via gully

Nature-based solutions for communities

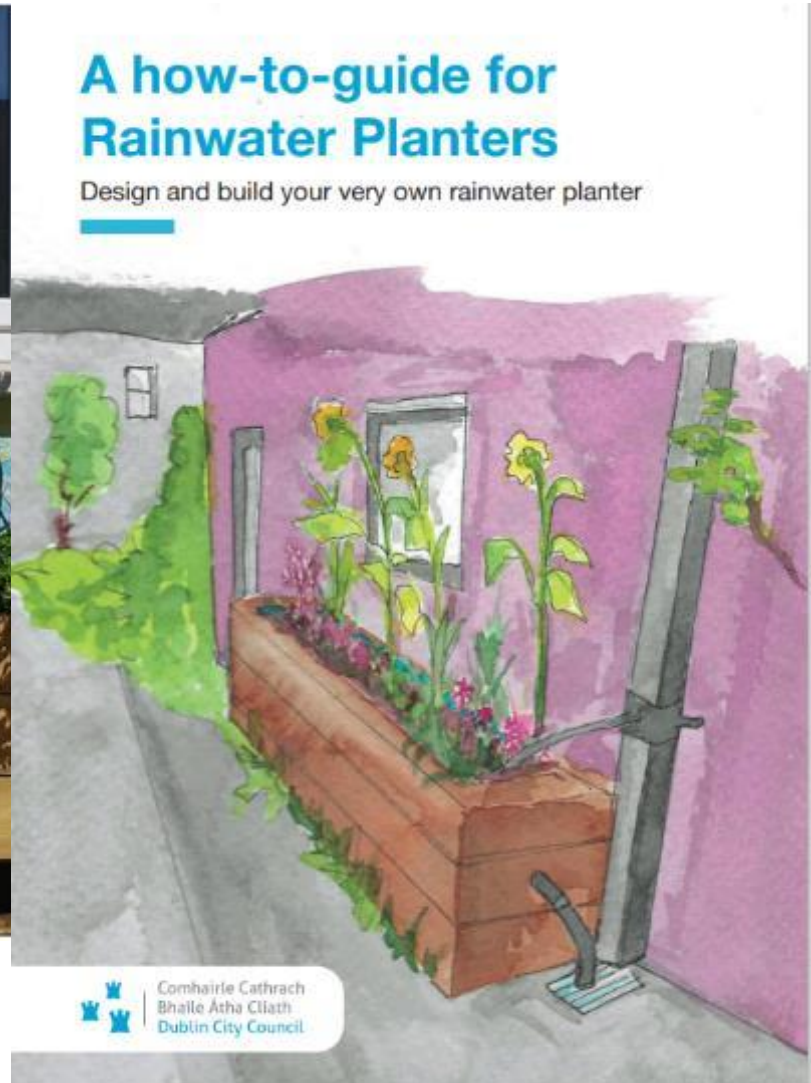


Nature-based solutions for community groups



Askeaton Community Group - (rainwater planters)

Rainwater planters



Tidy Towns



Geashill, Tidy Towns, Co Offaly. Funded via LAWPRO. World Water Day planting of wetland



Wetland servicing surface water runoff

Designing for biodiversity



Example from North Cork - pond draining a pitch and putt course. Surface water treatment. Diversity of plant and invertebrate life. IRD Duhallow - constructed 2014.



2015



2016



24 March 2022

Green roofs: *Optimising nature:*

- Effective 1st point of interception of rainwater
- Technology has moved on
- But still uneven distribution across the country
- Why?
 - Not considered important
 - Too costly - increase costs on developers and owners
 - Limit architectural design
- But can have significant nature benefits



WaterEIP (€50m)

Combining targeted measures and European Innovation Partnership funding to deliver water improvement.....for the public good.



Integrating with rural landscape (e.g., €60m WaterEIP)



Hedgerows: We need to look after existing features. Hedgerows provide benefits to water quality by regulating surface flow across the landscape and into the ground, provide significant biodiversity benefits, shelter for animals including livestock and of course sequester carbon.



Nature-based solutions and multiple benefits



- Nature-based solutions can benefit biodiversity, climate, food security, public health, amenity etc
- Nature-based solutions targeting a particular issue often not assessed in terms of multiple benefits
- Sometimes difficult to calculate the value of a co-benefit and different sectors may value a co-benefit differently
- Challenge for us all moving into the 3rd River Basin Management Plan cycle, Climate Action Plans and Biodiversity planning processes

Thank you

Videos and presentations from both Webinars also available on the LAWPRO Website

- [Nature-based Solutions to the Management of Rainwater and Surface Water Runoff in Urban Areas - Local Authority Water Programme \(lawwaters.ie\)](#)

