We're taking climate action

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Caipiteal & Eastáit FSS
Oifig um Bonneagar Inbhuanaithe

HSE Capital & Estates
Sustainable Infrastructure Office

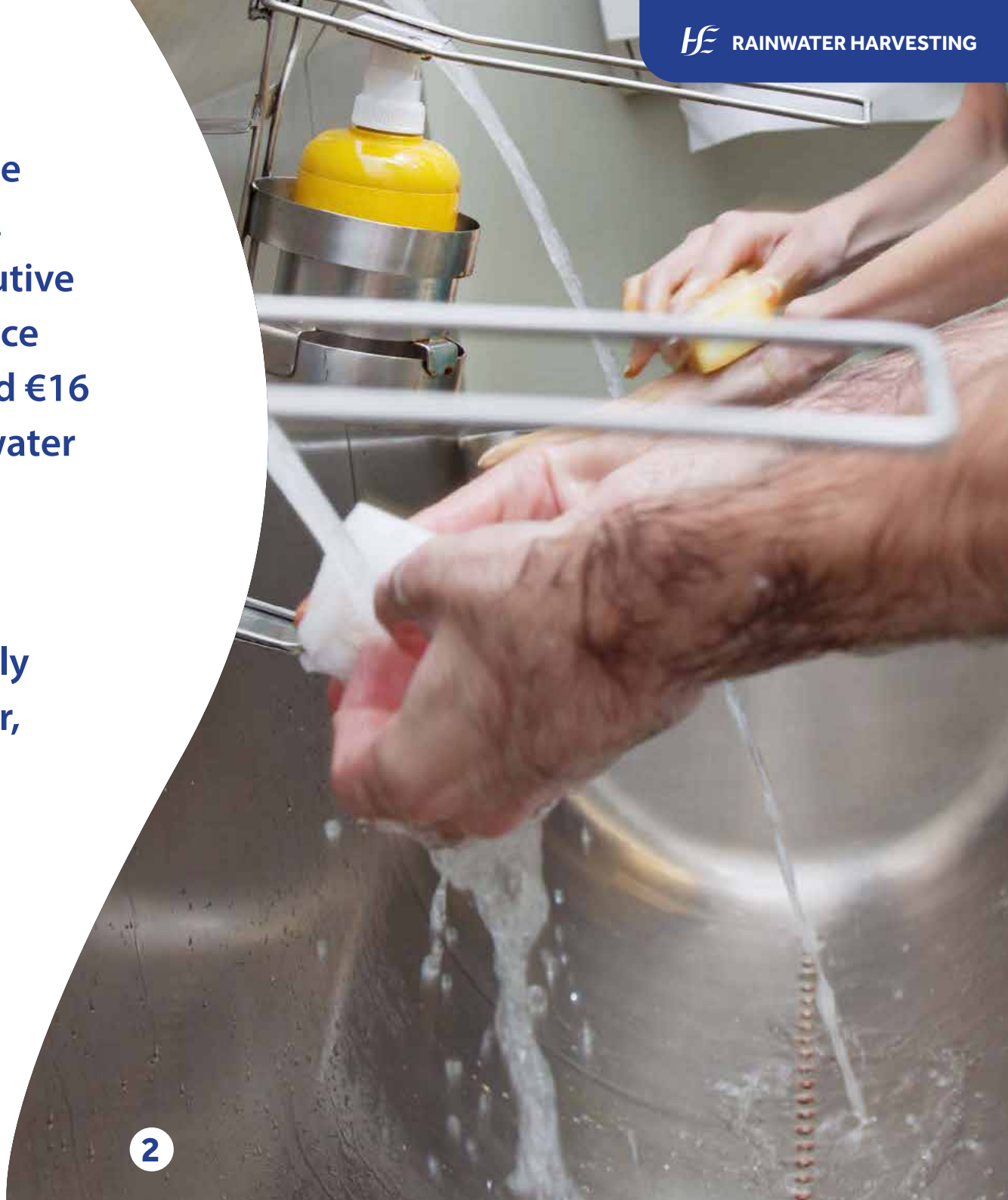
Rainwater Harvesting

Guidance for the Healthcare Sector

2025

Water is an essential resource for the operation of all healthcare services. Nationally, the Health Service Executive (HSE) is the biggest customer of Uisce Éireann (UE), spending an estimated €16 million a year on water and waste water services.

Operating in a unique water using environment where water is typically used 24 hours a day, 365 days a year, the healthcare sector must play a major role in national water conservation measures.



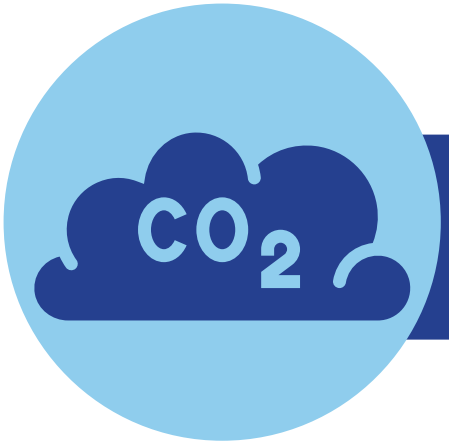
SUSTAINABLE DEVELOPMENT GOALS

Water conservation is now a key element to the HSE's Climate Action Strategy 2023-2050 and also addresses a number of the Sustainable Development Goals (SDGs) that Ireland has signed up to.

Some of the main reasons why water conservation is so important in healthcare include:

Water supply costs have increased by 41% in past 5 years

Wastewater management costs have increased by 56% in past 5 years



Embedded carbon associated with water and waste water treatment

Stress to our water supply nationally and security of supply to hospitals

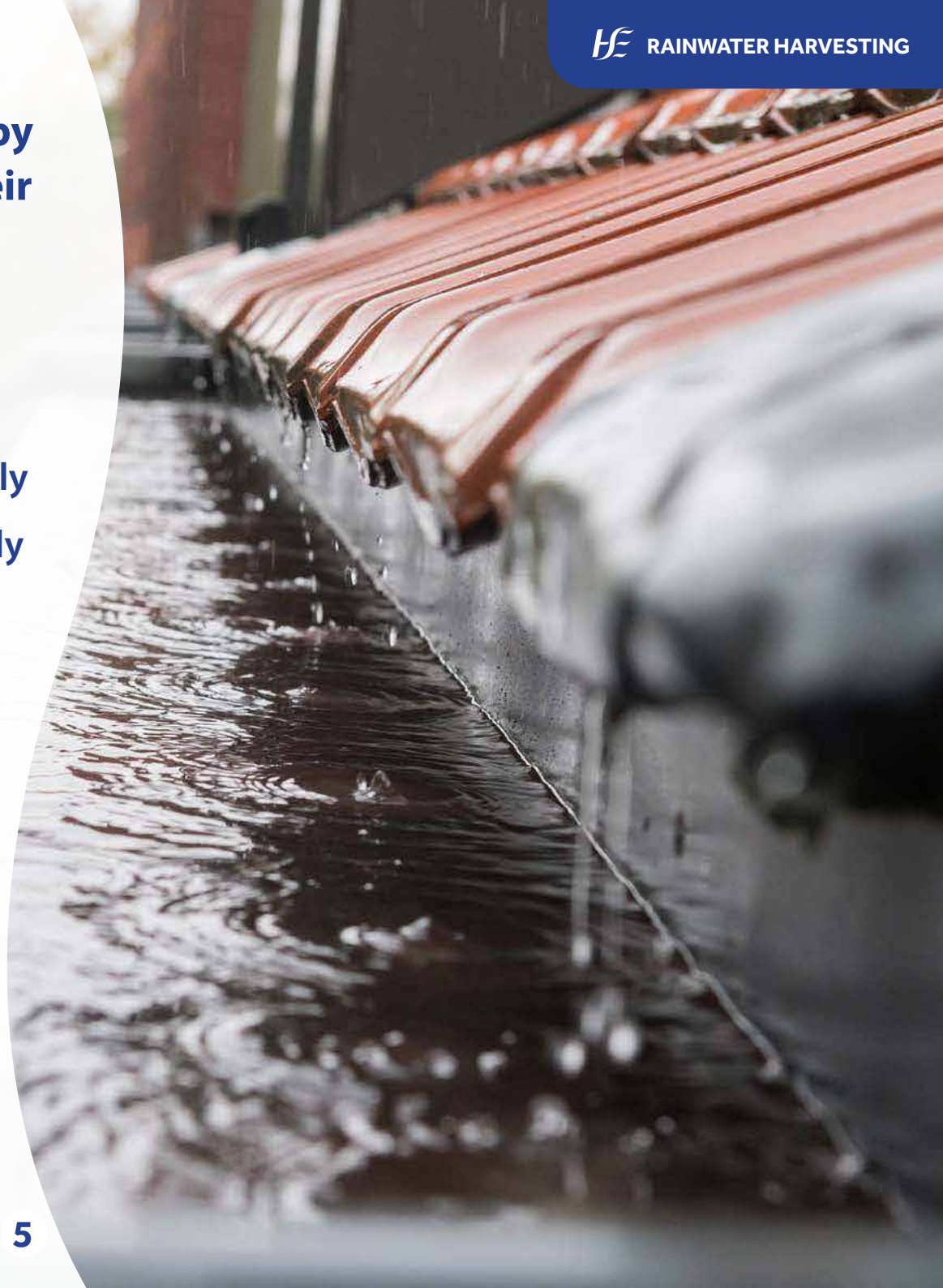
Rainwater harvesting is one mechanism by which healthcare facilities can reduce their reliance on mains water supply.

It has a number of benefits including:

- Making use of our local natural resource
- Minimising pressure on our mains water supply
- Providing a degree of on-site security of supply
- Reducing water costs
- Helping meet objectives set out in the HSE's Climate Action Strategy and SDGs

It should always be presumed that rainwater is non-potable i.e. not suitable as drinking water and should not be used where ingestion is a possibility.

See references 1 & 3 on page 16



However...

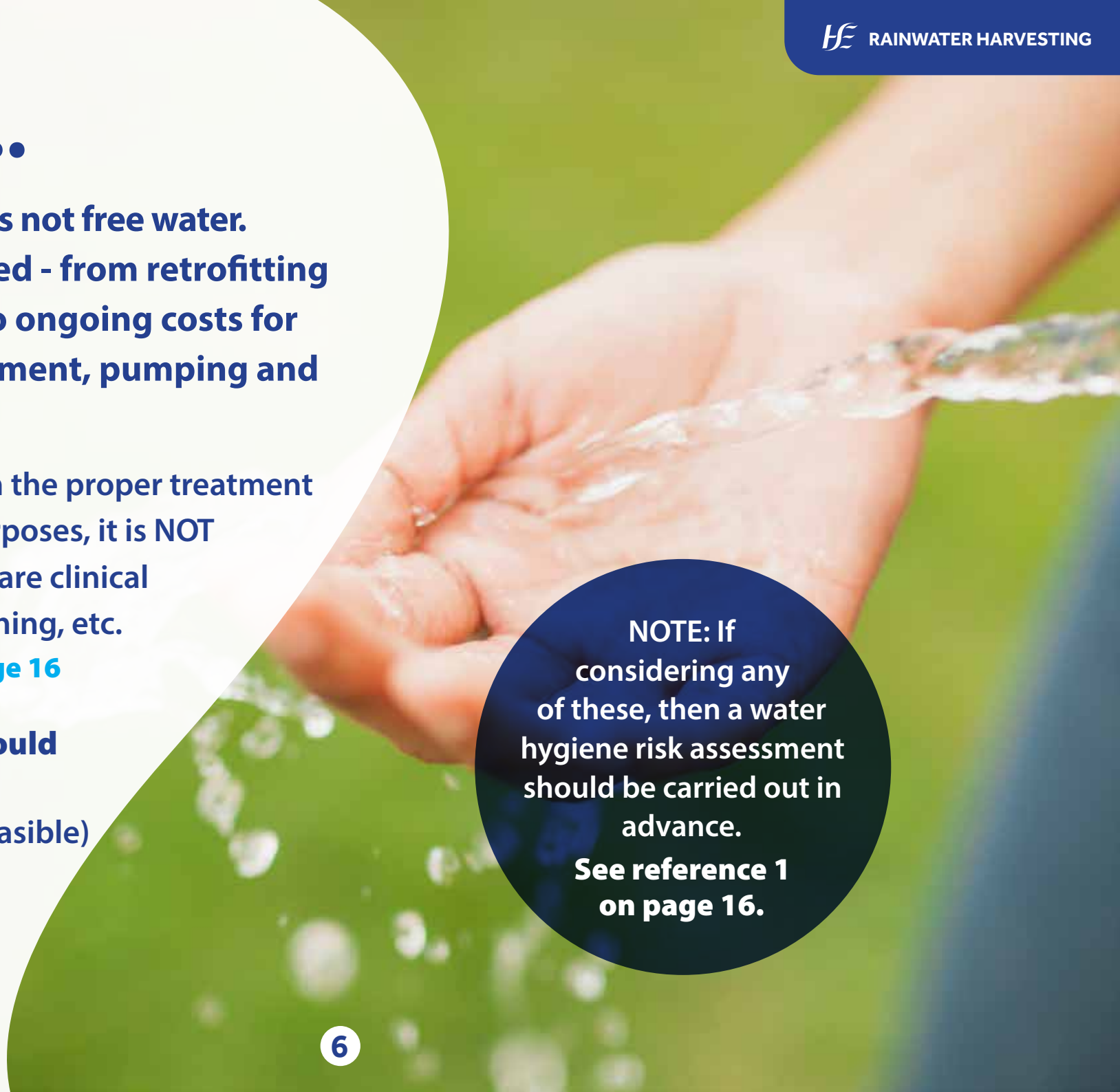
Rainwater harvesting is not free water. There are costs involved - from retrofitting an existing building to ongoing costs for water system management, pumping and treatment.

Also, while rainwater with the proper treatment can be used for many purposes, it is NOT recommended in healthcare clinical settings i.e. for hand washing, etc.

See references 2 & 4 on page 16

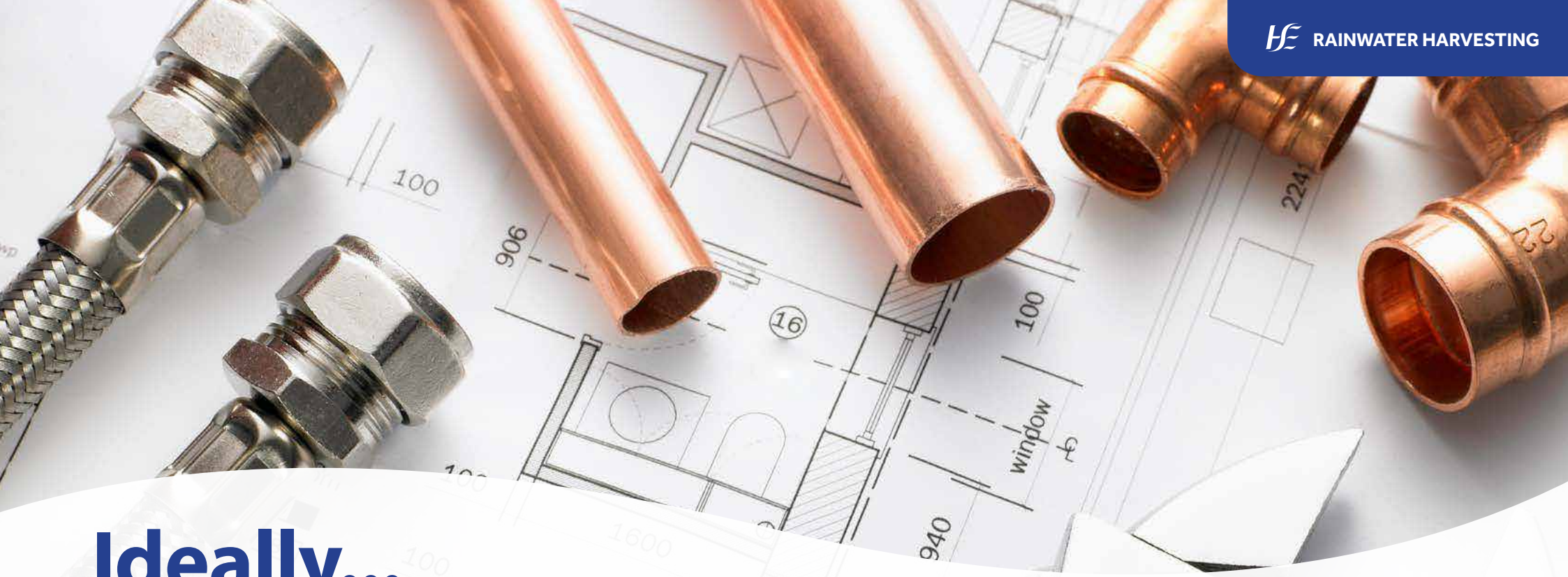
Harvested rainwater should only be considered for:

- Toilet flushing (where feasible)
- External site works
- Green space irrigation
- Yard washing
- Vehicle washing



NOTE: If considering any of these, then a water hygiene risk assessment should be carried out in advance.

See reference 1 on page 16.



Ideally...

In an ideal scenario, a mix of mains and rainwater can be used for different on-site services.

Incorporating rainwater into the planning of new builds is the best way to approach rainwater harvesting.

Retrofitting rainwater harvesting into existing buildings/sites is certainly possible but the feasibility of doing so will be determined on a site by site basis and needs to consider potential end users, plumbing upgrades needed, risk assessment outcomes and the costs involved.

Case Studies

The following examples provide context around some of the different rainwater harvesting projects either in place, or being considered, throughout healthcare settings in Ireland.

40 bed unit in Drogheda Hospital, Department of Psychiatry

Status: Rainwater system in place and operational.

When: New build - installed as part of the design and build of a new building.

Summary

An underground rainwater capture system was integrated as part of the original design of this building in 2013.

The system, which consists of a mesh filter and UV treatment feeds 3 cold water header tanks on the roof which service all the toilets of this 46 bed unit. There is currently no metered data available on the water savings realised but, based on national figures, it is estimated that in the 10 years since the building has been open, the system has saved ~3,000m^3 a year. Based on current costs, this is an annual saving of ~€10,000 and over €100,000 in a decade.

Key take away

Since the building has been opened, this rainwater harvesting system has worked seamlessly with the mains supply and no issues have been reported by users or the on-site maintenance team. This example shows that when incorporated at the design phase, rainwater harvesting is an excellent sustainability option.

Ennis Hospital rainwater harvesting for toilet flushing

Status: Rainwater system in place and operational.

When: New build - installed as part of the design and build of a new 50 bed ward extension.

Summary

An underground rainwater capture system was included as part of the design of this new ward block in 2011. The system consists of a mesh filter before the 7,500 litre holding tank. This water is pumped through a UV pre-treatment prior to feeding the cold water header tanks which service all the toilets of this 50 bed extension.

The system is set up so that, should there be insufficient rainwater, the header tanks are automatically topped up with mains water through an electronically operated dry run float switch.

Key take away

The rainwater tanks and filters are cleaned twice annually and since the system has been in operation, there have been no issues with either the system or with associated Legionella testing. There is also an alarm on the system in case of any malfunctions. Based on estimated figures, this system provides ~500,000 litres of rainwater annually to the hospital. This equates to ~€2,000 a year based on current costs and since installation has saved the HSE ~ €20,000 on water charges. However, it is important to note that there are also ongoing costs associated with this system including filter replacements and UV treatment.

Sligo Admin Building (200 employees) - Feasibility Assessment

Status: Rainwater system has been proposed and is currently going through final cost benefit assessment.

When: Retrofit – installing for external use only.

Summary

A HSE building in Sligo was examined for rainwater harvesting potential. The building, which provides administrative services only, has approximately 200 staff members and in addition to basic water services also has external water services including irrigation and vehicle washing.

It is estimated that ~3,000m^3 of water is used annually by the site with 50% used for the external services amounting to approximately €5,000 a year in water supply costs.

Key take away

Having assessed the internal plumbing within the building it was noted that the toilets are not plumbed separately so the extent of new works required to avail of rainwater means that rain water harvesting for toilet flushing is not a viable solution. However, with the extent of external water used by the site, and the ease of installing the system (with minimum site disruption), this option appears feasible and is currently being costed.

Cork Admin Building (200 employees) - Feasibility Assessment

Status: Rainwater system had been proposed and, after the initial scoping assessment, was deemed not financially viable.

When: Retrofit – installing for internal toilet use only.

Summary

As part of the proposed deep retrofit of this large admin building, the viability of installing rainwater harvesting for use in the toilets was explored.

Based on preliminary estimates, the total water used by the toilets (all of which are dual flush) and urinals is ~ 1,000m^3 a year (~€3,000). Though there is plenty of roof space available for rainwater collection, the plumbing for the toilets and urinals would need to be separated from the current storage tank supply which also feeds the sinks in each of the bathrooms.

Key take away

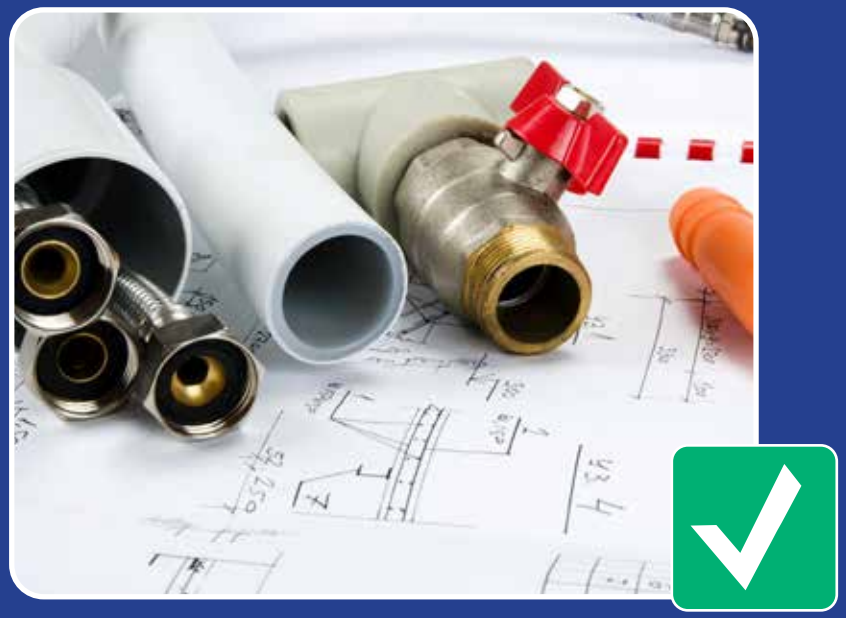
While the plumbing for the existing system would be relatively straightforward to change (all bathrooms are on an external wall and in a line above and below each other), the extent of plumbing retrofit, in addition to the cost of installing the rainwater harvesting system into the site, means that the costs of such a project are unlikely to be financially viable with only the toilets availing of the rainwater.

What to consider for rainwater harvesting

Rainwater harvesting should NOT be considered for ANY clinical purposes and settings

Retrofitting should be carefully assessed as this approach is usually too costly unless the site infrastructure and end uses align

Rainwater is a viable option when:



Rainwater harvesting installed at the design phase in line with best practice standards and water hygiene risk assessment

See references 1 & 2 on page 16

It is for use in toilets and/ or other high use external areas i.e. gardens and vehicle washing

See reference 5 on page 16

Remember, if you are considering rainwater ensure that:

A water hygiene risk assessment is carried out as part of the planning stage

See ref 1 on page 16

The water tank is situated or insulated to keep water cool and minimise risk i.e. Legionella or Pseudomonas risk

See ref 2 on page16

The tank can be easily accessed and has a regular cleaning schedule

See ref 3 & 5 on page 16

It's essential that all water systems, including any rainwater supplies, are captured in the Legionella risk assessment and control scheme

See ref 2 on page 16

RESOURCES - CLICK OR SCAN

Irish Guidance on Water Hygiene

1

Guidelines Prevention Control Infection from Water Systems in Healthcare Facilities | Health Protection Surveillance Centre

2

National Guidelines for the Control of Legionellosis in Ireland | Health Protection Surveillance Centre

NHS HTM Best Practice Water Hygiene Guidance

3

NHS HTM 04-01: Safe water in healthcare premises | NHS England

4

SHTM 04-02 Part B Rainwater harvesting | Health Facilities Scotland

Water efficiency & rainwater harvesting information

5

HTM 07-04 Water Management and water efficiency | UK Dept of Health

6

Rainwater Harvesting for Healthcare Sector | Rainharvesting Systems

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HSE Capital & Estates
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GreenHealthcare

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