

# SUSTAINABLE ARCHITECTURE – TERRA WATER

The Terra pavilion aims to be net-zero for water use. The pavilion structure is also designed to capture rain water and condensation to add to its potable water supply.

The pavilion contains large reed beds for natural filtration of dirty water as well as a water treatment for filtering and sterilisation.

Water is classified into three categories which determine its use and method of treatment.



POTABLE	GREYWATER	BLACKWATER
Water which is safe for drinking	Water which has been used, but does not contain harmful chemicals – such as water from bathroom sinks and floor drains	Water from toilets which may contain harmful bacteria

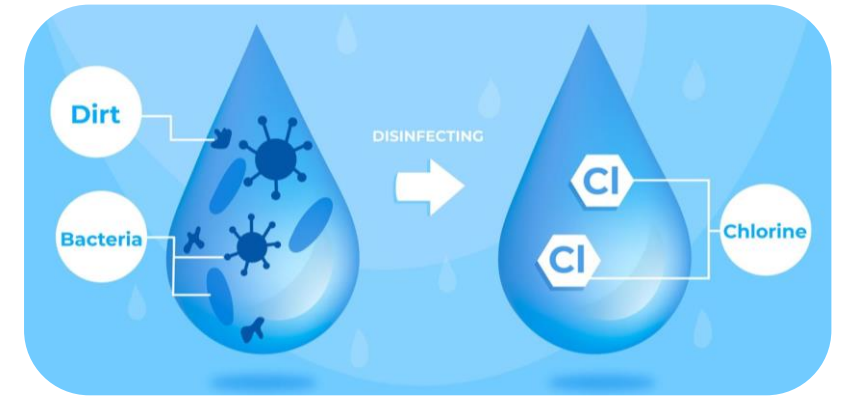
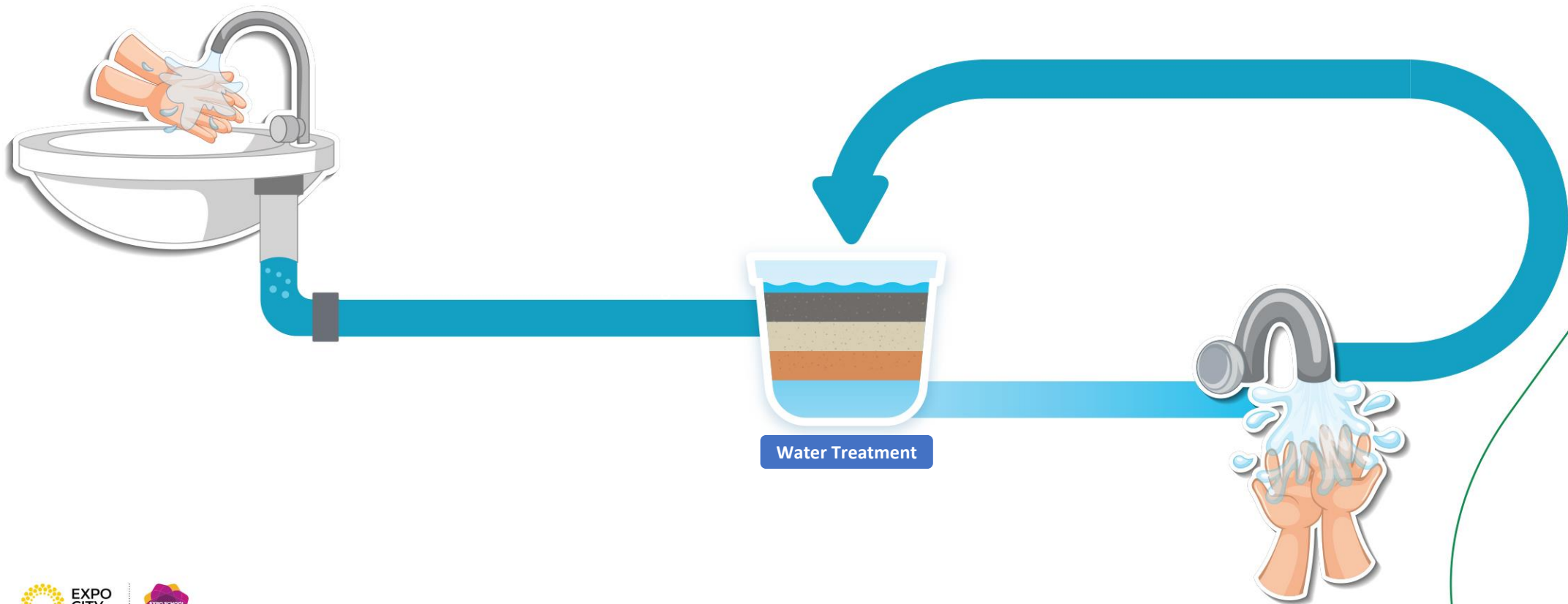


## TASK

Read the following slides which summarise how potable, greywater and blackwater are handled by Terra and answer the questions at the end.

## GREYWATER SYSTEM

Waste water from hand basins is continuously recycled via a treatment process within the pavilion. Water is filtered and sterilised on site before being recycled. This water does not enter the drinking water supply, but is very clean.

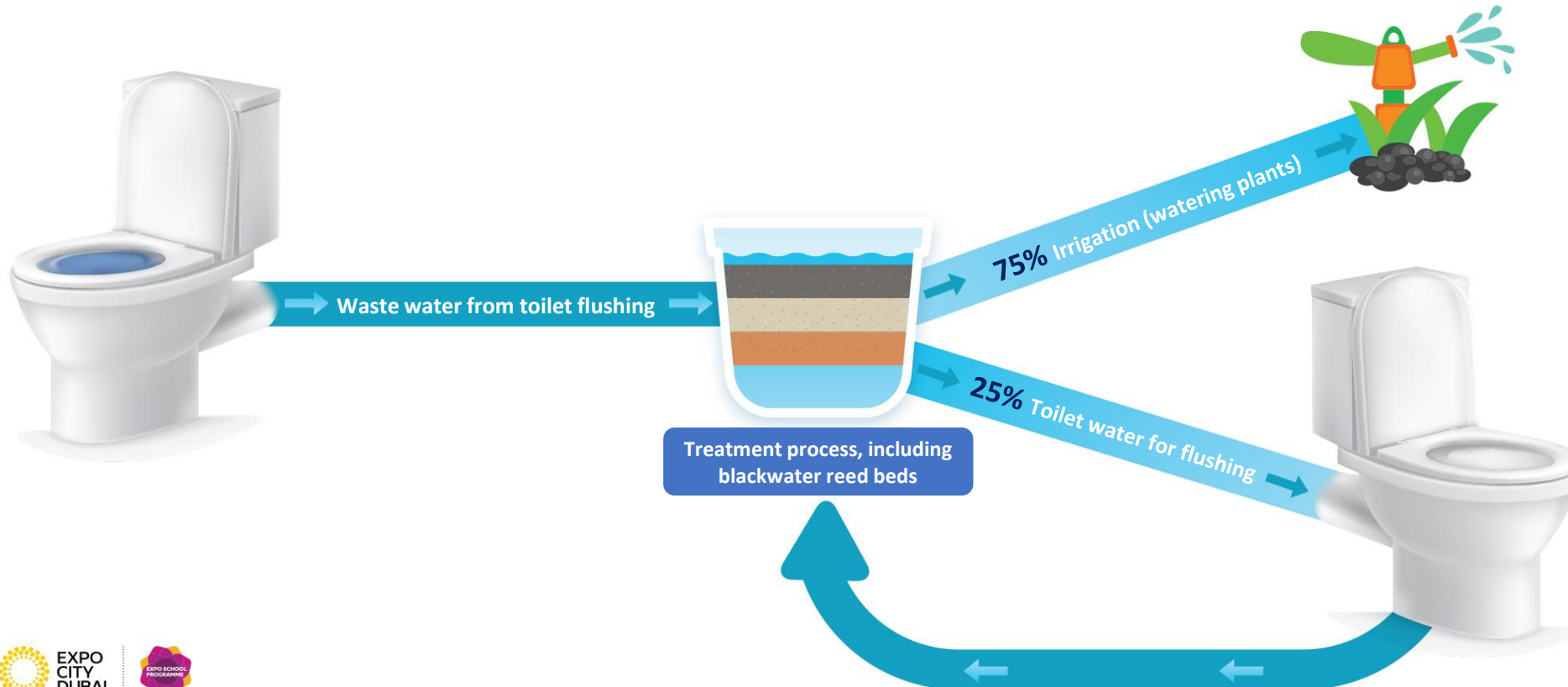


## BLACKWATER SYSTEM

The blackwater system recycles water from every toilet flush. The water is cleaned and mostly used for watering plants around the pavilion. Around 25% of the water is constantly recycled back into clean toilet water for flushing.



*Terra Blackwater Reed Beds*



## Questions

1. Give two examples for:
  - a) Potable water
  - b) Greywater
  - c) Blackwater
2. Why is it important for blackwater to be kept separate from potable water?
3. What difficulties do you think the Terra pavilion faces in meeting it's net-zero target, reducing the demand from the DEWA supply?
4. Terra uses reed beds as part of the blackwater filtration systems. Suggest why this is better than mechanical or chemical methods of filtration.
5. The use of greywater in handwashing and blackwater in flushing toilets can be described as 'closed loop systems' - what do you think this means?



DID YOU  
KNOW?

**Mangrove forests are natural water purifiers!**

They grow in salt water and cover around 30 million square meters of the UAE.

Mangroves survive in salt water because of their ability to desalinate water themselves through a process called '*capillary driven desalination*'.



Have you ever been to the mangrove forests in Abu Dhabi, Umm al Quwain or Ras Al Khaimah?

**See if you can find out more about how the UAE is protecting and growing its mangrove forests.**