

# How Greywater systems have developed (Dispelling the myths)

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# The perception – Domestic Application

- The “yuk factor”
  - Using someone else's water
- References to reports carried out up to 30years ago (Bruvold et al 1981)
- Many perceptions generated by surveys rather than “real” product trials
- Perception that greywater is being turned into potable water
- Poor ROI
- Difficult to install
- Poor user response
- It smells



## Greywater Communal systems

- Hi volume holding capacity
- Hi level of filtration
- Large pumps for distribution to community

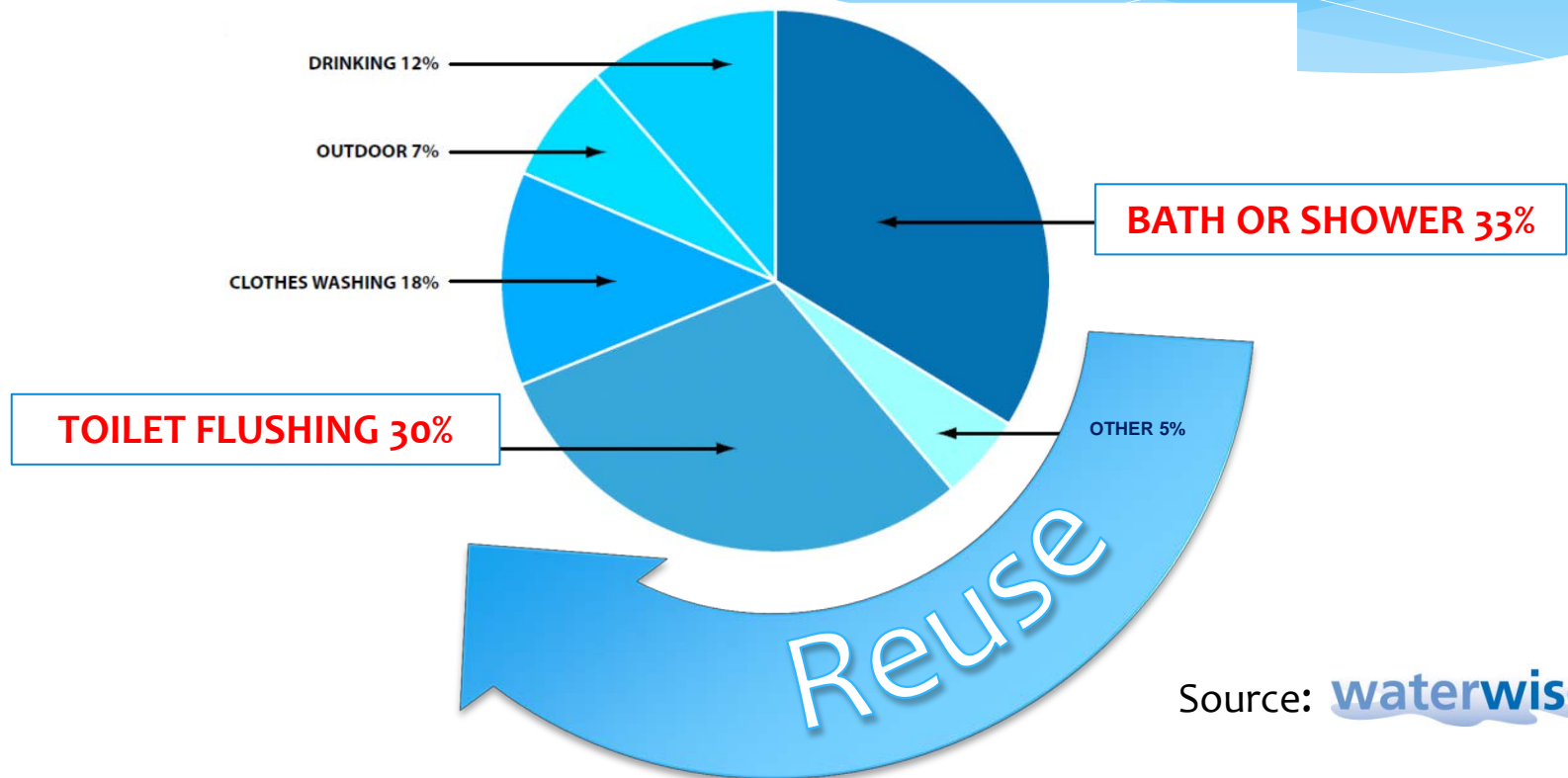


## Ecoplay

- Complex on site assembly
- Poor reliability
- Limited to 1 WC
- Limited installation options
- No longer available

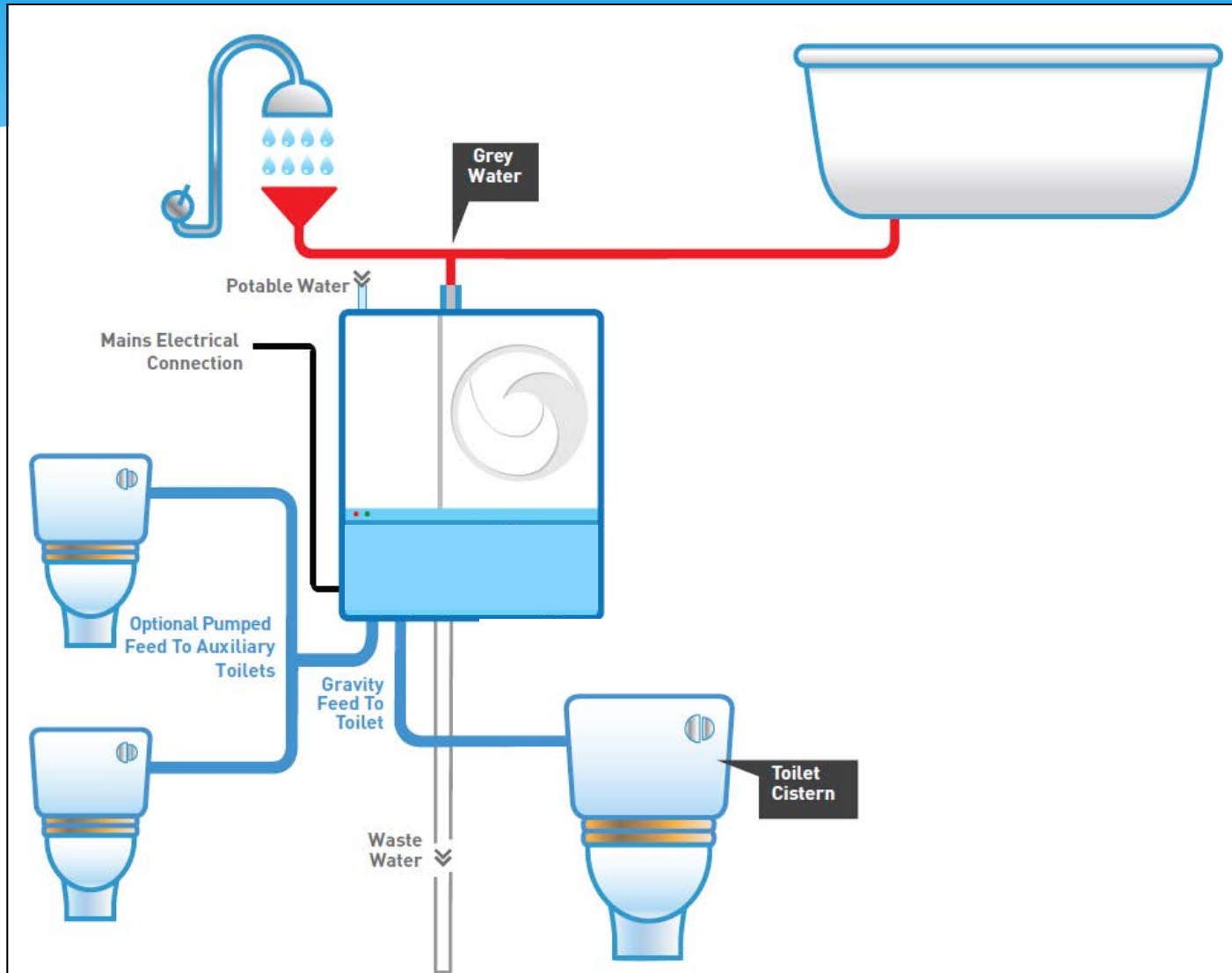
# Micro-greywater opportunity

Micro-greywater reuse systems exploits coincidence of water usage behaviours

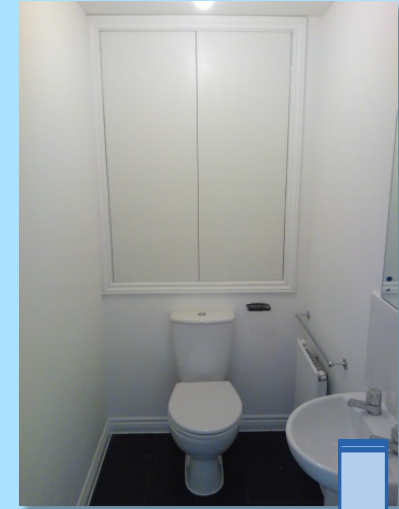
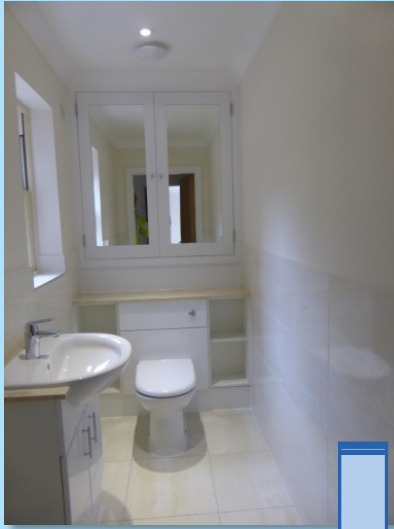


To deliver 30% saving in water and sewerage charges

# How mirco-reuse systems works



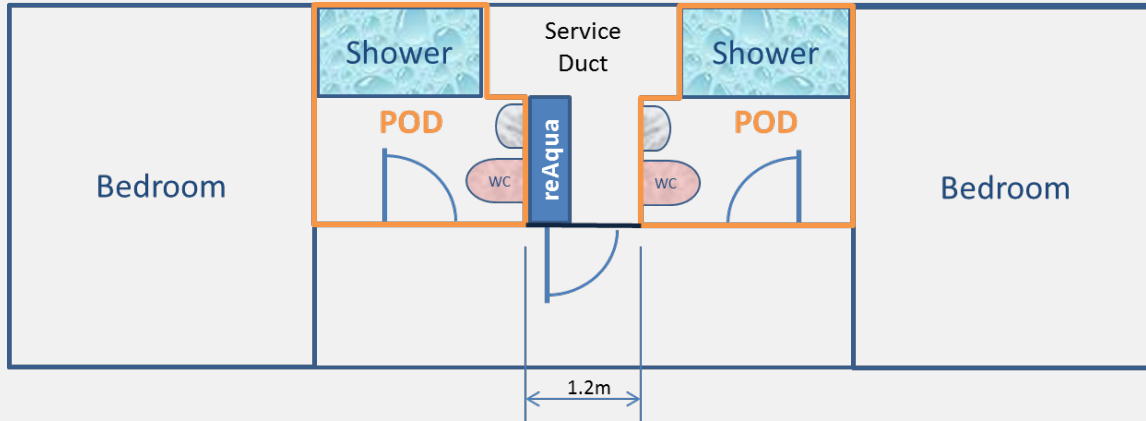
# Residential installations



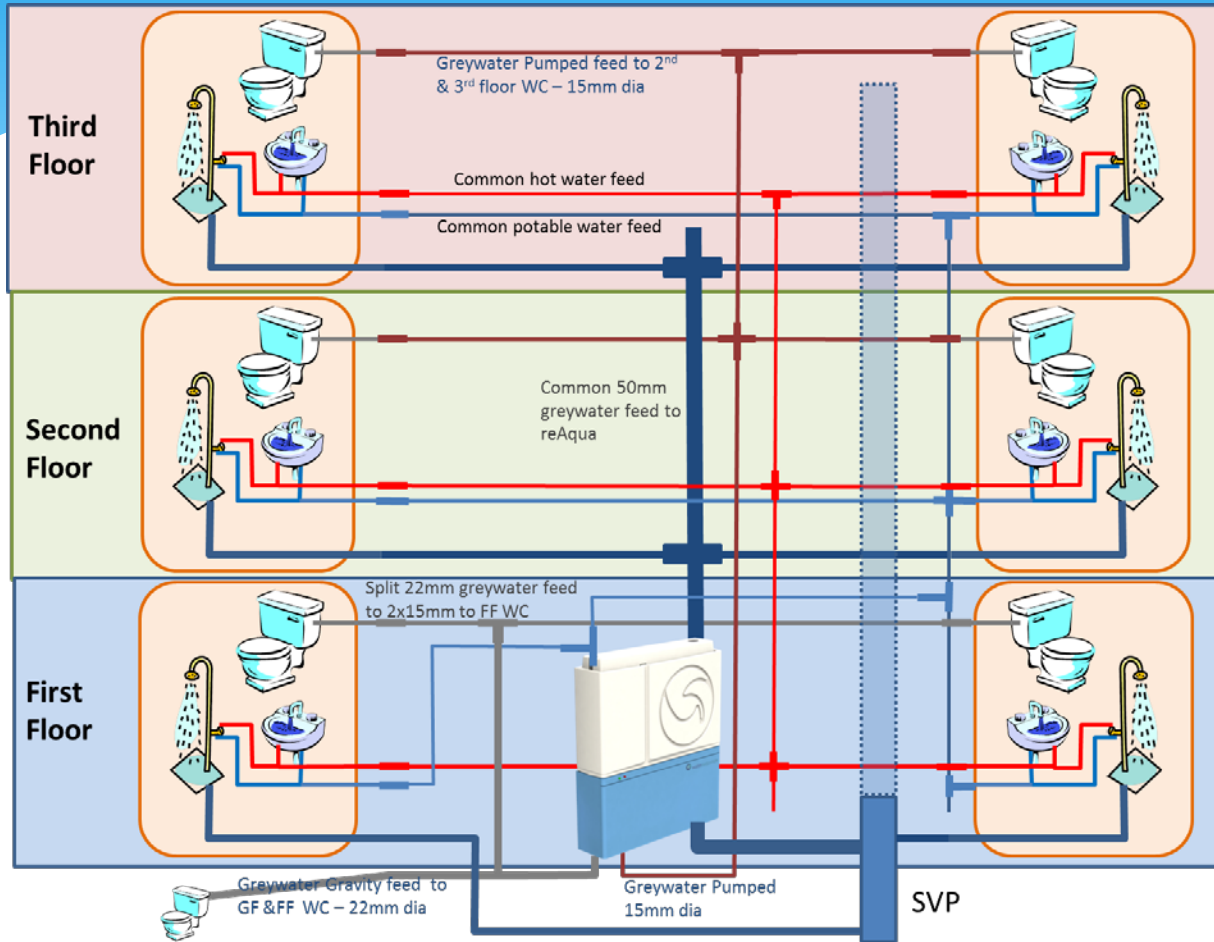
# Commercial installations



# Student Accommodation



# Birley Fields (Manchester Met Uni)



- \* System located on 1<sup>st</sup> Floor in service duct
- \* Greywater collected from 4 showers (2<sup>nd</sup>/3<sup>rd</sup> floor)
- \* Flushing 7 WCs in total across all floors

# What have user said about Micro-greywater products?

If you were to move home, would you want your house to have a grey water reuse unit installed?

- \* 11% No
- \* 0% No strong feelings - Don't mind
- \* 44% Yes, if it was already installed
- \* 44% Yes, even if it had to be installed (not considering any cost to you)

There is a disinfectant added to the water. In your opinion has this had any effect on how clean the toilet stays?

- \* All bar one said they thought it was cleaner than before (one was not aware of the disinfectant).

Are there any odours from the system?

- \* All said no.

The system has a couple of indicator lights; one red and one green. Have they ever been lit and if so how often?

- \* All bar one said that the red light had never come on, the green light was always lit. (one had not noticed any lights)

**Courtesy: Seven Trent Water**

# Water Quality

Test Parameter	reAqua	BS8525
BOD (mg/L)	91	-
TSS (mg/L)	3	-
E.Coli (cfu/100ml)	< 1	250 – 2,500
Thermotolerant Coliforms (cfu/100ml)	-	-
Chlorine Residual (mg/L)	0.02 – 0.17	<2 - 20
Turbidity (NTU)	2 - 18	<10 - 100
pH	6.94 – 8.33	5 – 9.5
Total Coliforms (cfu/100ml)	16.5	1,000 – 10,000
Intestinal Enterococci (cfu/100ml)	<1	100 – 1,000
Phosphorous (mg/L)	0.2 – 1.9	

# What are the Costs?

- Product cost range
  - “built in” spec (factory built homes) - sub £1,000
  - Heat recovery and water re-use – 1 off retail price £1,990
- Maintenance Cost
  - Annual maintenance only
    - Disinfectant – 10Ltrs - £26
    - Filter - £12
    - Visit duration - typically less than 10 minutes
- Installation time
  - “Built in” solution - sub 20 minutes
  - New build – typically <2hrs
  - Retrofit – typically 6-8hrs
- ROI
  - Vary depending on the system spec
  - Occupancy
  - Cost of water
    - Typically see range between 2yrs to 5yrs

# Rainwater Harvesting



## GRAF RWH

- Uses included: Washing machines, WC, irrigation
- Factory built control systems
- High reliability
- Mains water back up
- High efficiency pumps, improving payback time
- Payback
  - Commercial 2-5yrs
  - Domestic 5-7yrs