

SUSTAINABLE ARCHITECTURE

SUSTAINABLE ARCHITECTURAL DEVELOPMENTS

WATER



Water consumption

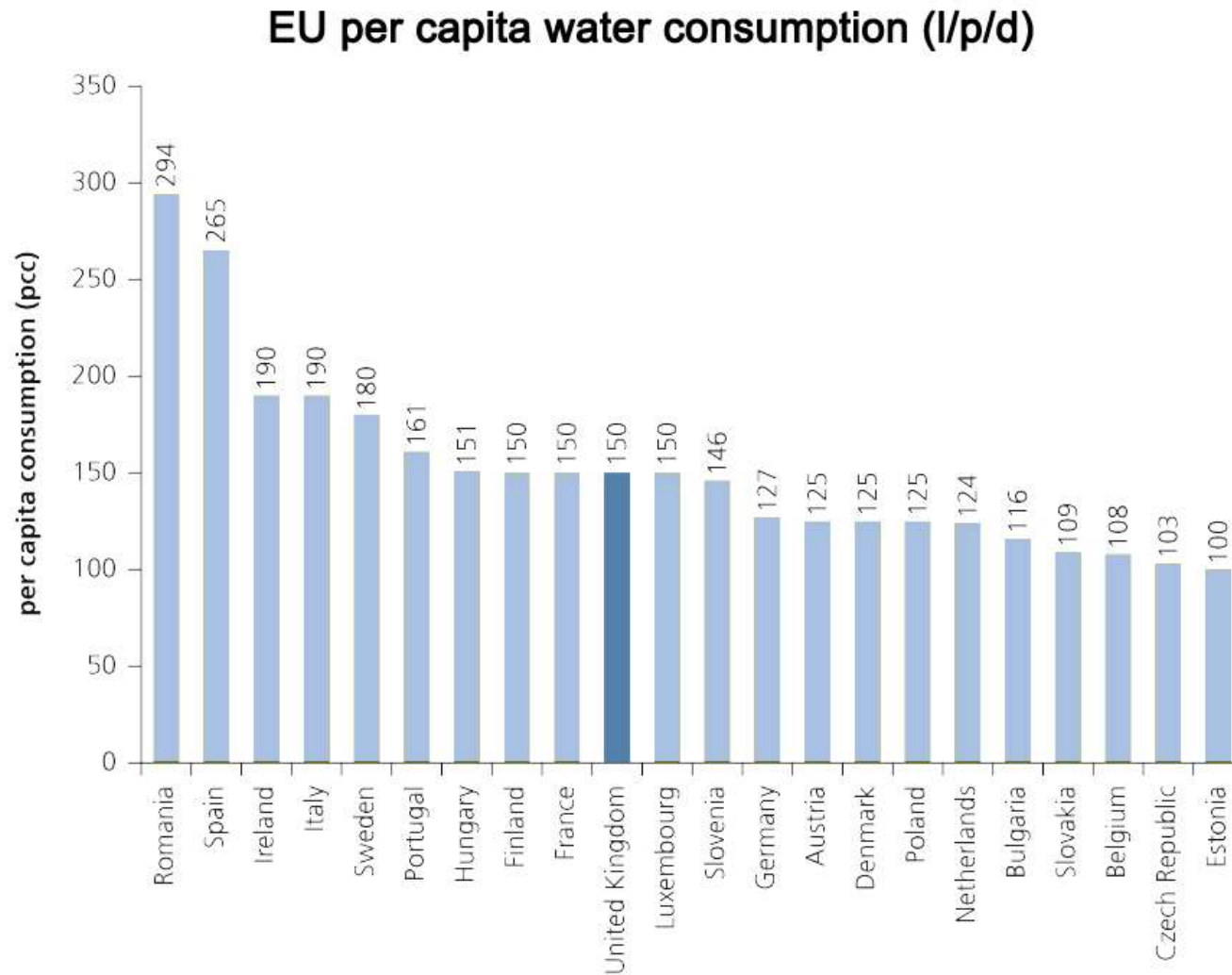
Average water usage for a standard household in the UK: about 164 m³ per year

Depending on the number of people living at home:

People living at home	Average annual water usage in m ³	Litres per day
1	54	149
2	101	276
3	134	367
4	164	450
5	191	523
6	216	592
7	239	655



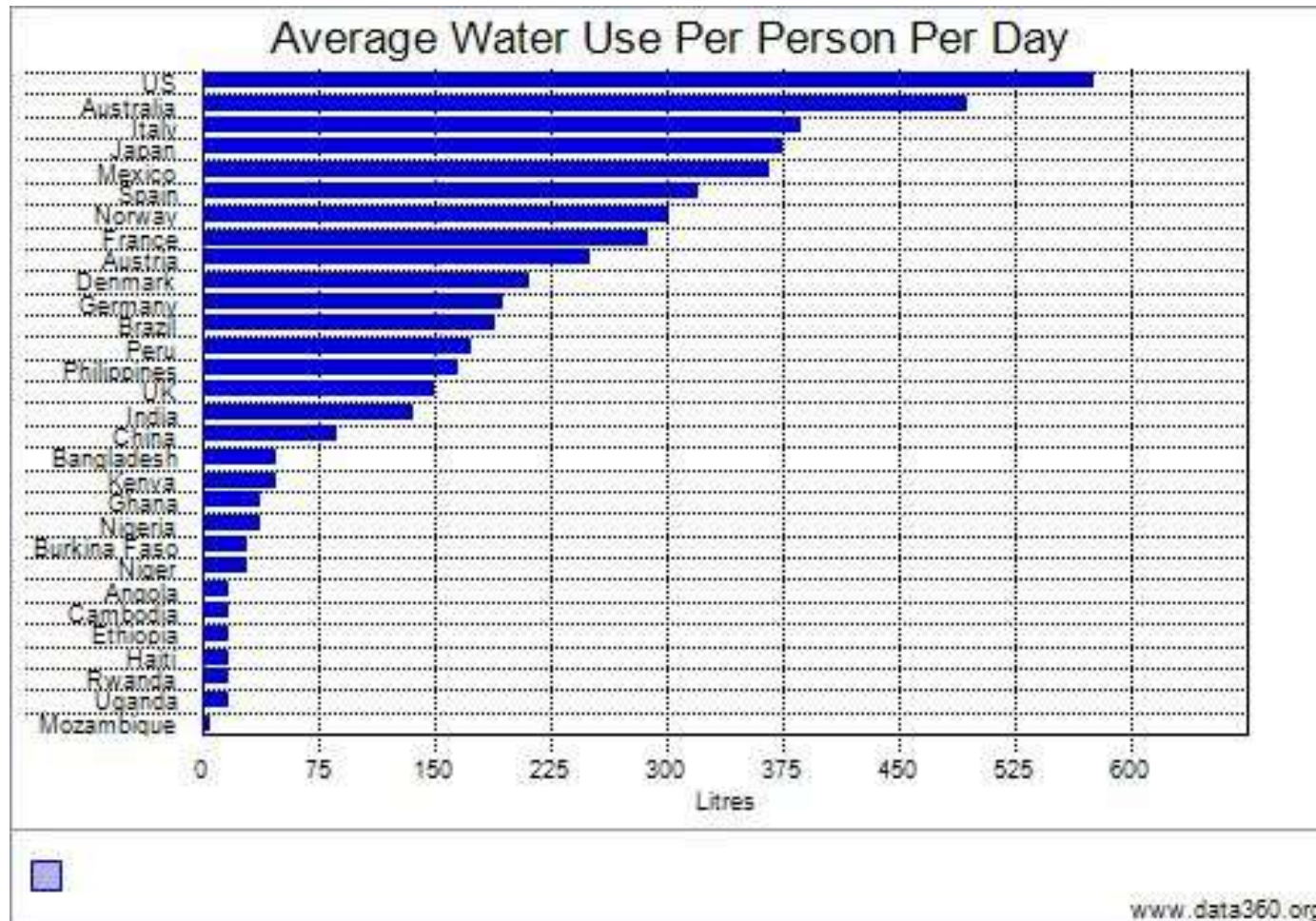
Water consumption



Source: based on Waterwise data, 2006



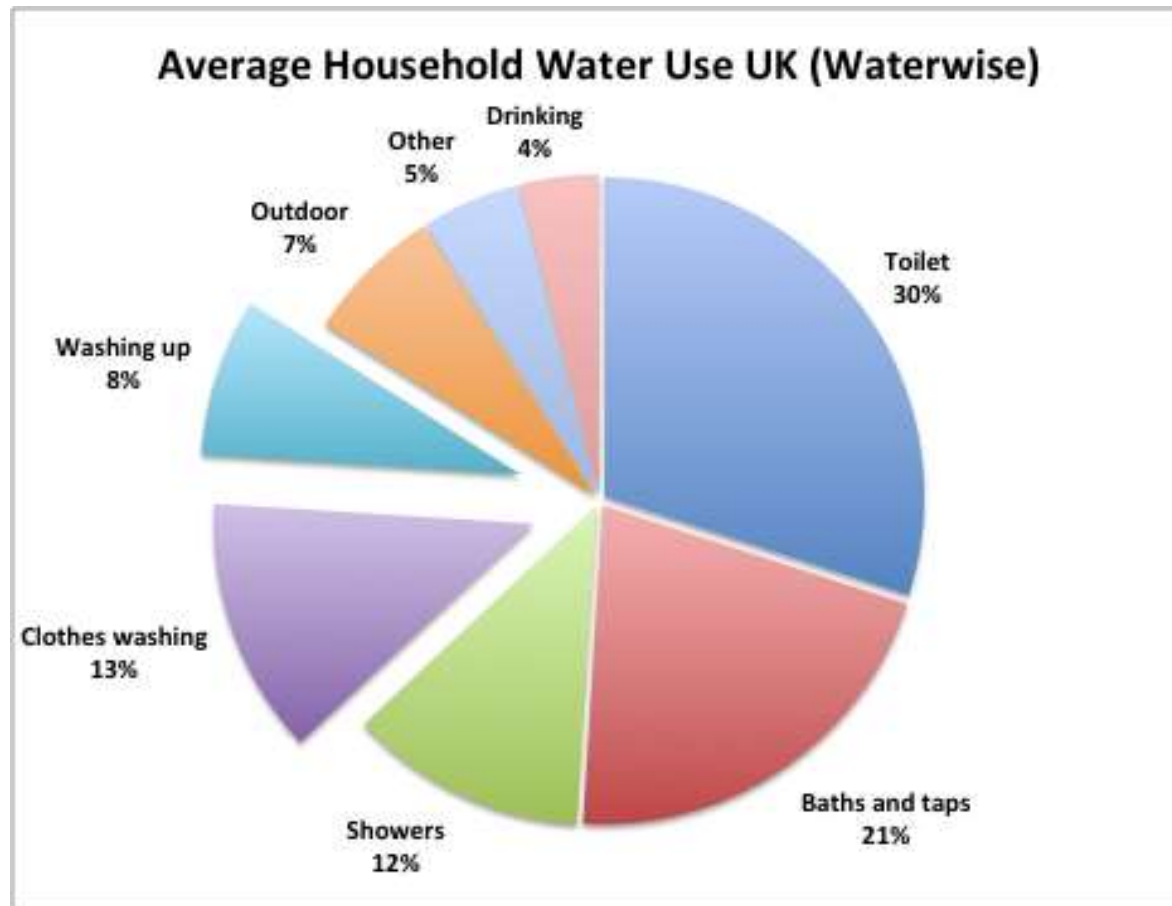
Water consumption





Water consumption

What uses do we have for domestic water?





Water consumption

Domestic water consumption is increasing due to:



Legislation

Building Regulations Part G. Sanitation, hot water safety and water efficiency (2010) (updated 2016)

<https://gov.wales/topics/planning/buildingregs/approved-documents/part-g-sanitation/?lang=en>



Actions

Reduction of water consumption

- Regulated water
- Non-regulated water

Water recycling

- Rainwater
- Grey water

Water treatment



Reduction of water consumption

Table 2.1 Maximum fittings consumption	
Water fitting	Maximum consumption
WC	6/4 litres dual flush or 4.5 litres single flush
Shower	10 l/min
Bath	185 litres
Basin taps	6 l/min
Sink taps	8 l/min
Dishwasher	1.25 l/place setting
Washing machine	8.17 l/kilogram

Figure 4: Part G section 2.6 maximum water consumption for each type of fitting

Estimated consumption of 125 litres per person



Reduction of water consumption

Water fitting	National Base Level
WC	4/2.6 litres dual flush
Shower	8 l/min
Bath	170 litres
Basin taps	5 l/min
Sink taps	6 l/min
Dishwasher	1.25 l/place setting
Washing machine	8.17 l/kilogram

Estimated consumption of 110 litres per person (optional requirement level)



Reduction of water consumption

Flow reduction

Tap aerator

Reduce water usage



2 litres per minute - for public bathrooms or where maximum water savings are desired.

4 litres per minute - suitable for household bathrooms.

6 litres per minute - for kitchens and laundries (lower flow rate).

9 litres per minute - for kitchens and laundries (higher flow rate).



Reduction of water consumption

Mixing-tap

Hot and cold water flows combined

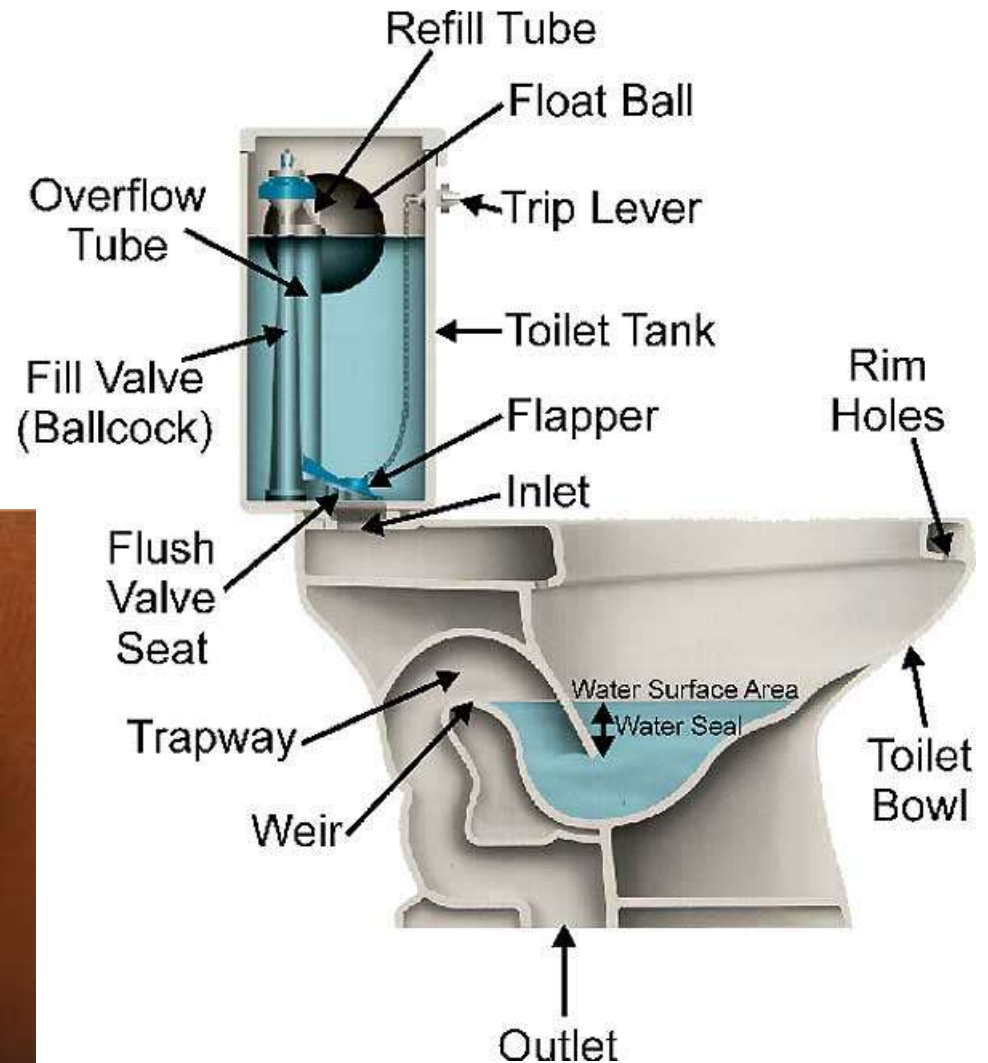
Can be regulated by one central-lever or two separate knobs





Reduction of water consumption

Flush reduction in toilets





Reduction of water consumption

Timers

Can regulate the amount of water consumed

Very useful for public buildings

- Showers
- Taps
- Gardens
- Etc.



Reduction of water consumption

Leak detection

Reduce risk of damage

Reduce loss of water due to leaks





Grey water reuse

Bathroom, sinks, showers, tubs, washing machines

Traces of dirt, food, grease, hair and certain household cleaning products

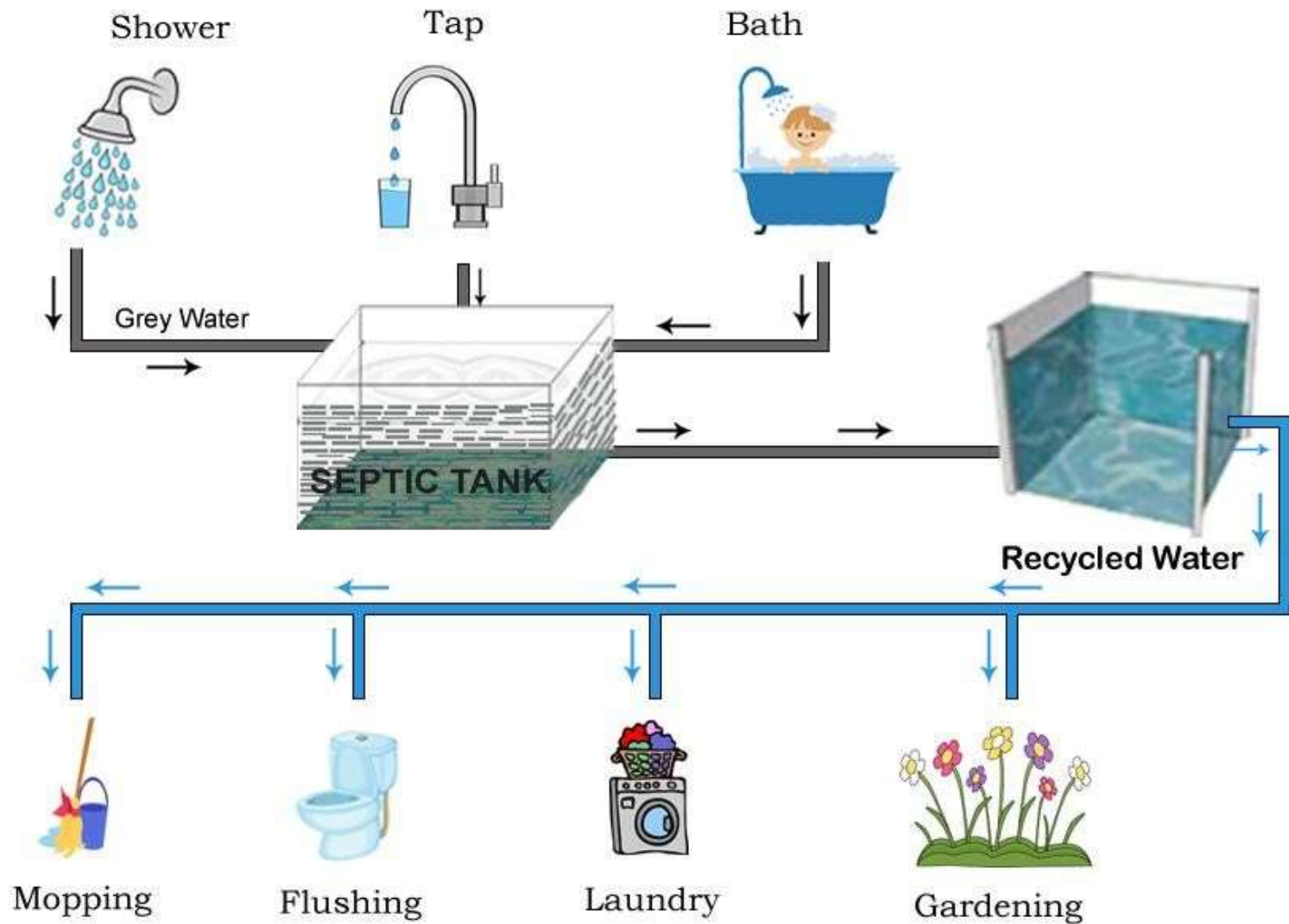
Safe (and even beneficial) source of irrigation water in a yard

Plants can use it as valuable fertilizers

- Ornamental plants
- Fruit trees
- Careful with vegetables
- Aware of use of plant friendly products
- do not store more than 24 hours



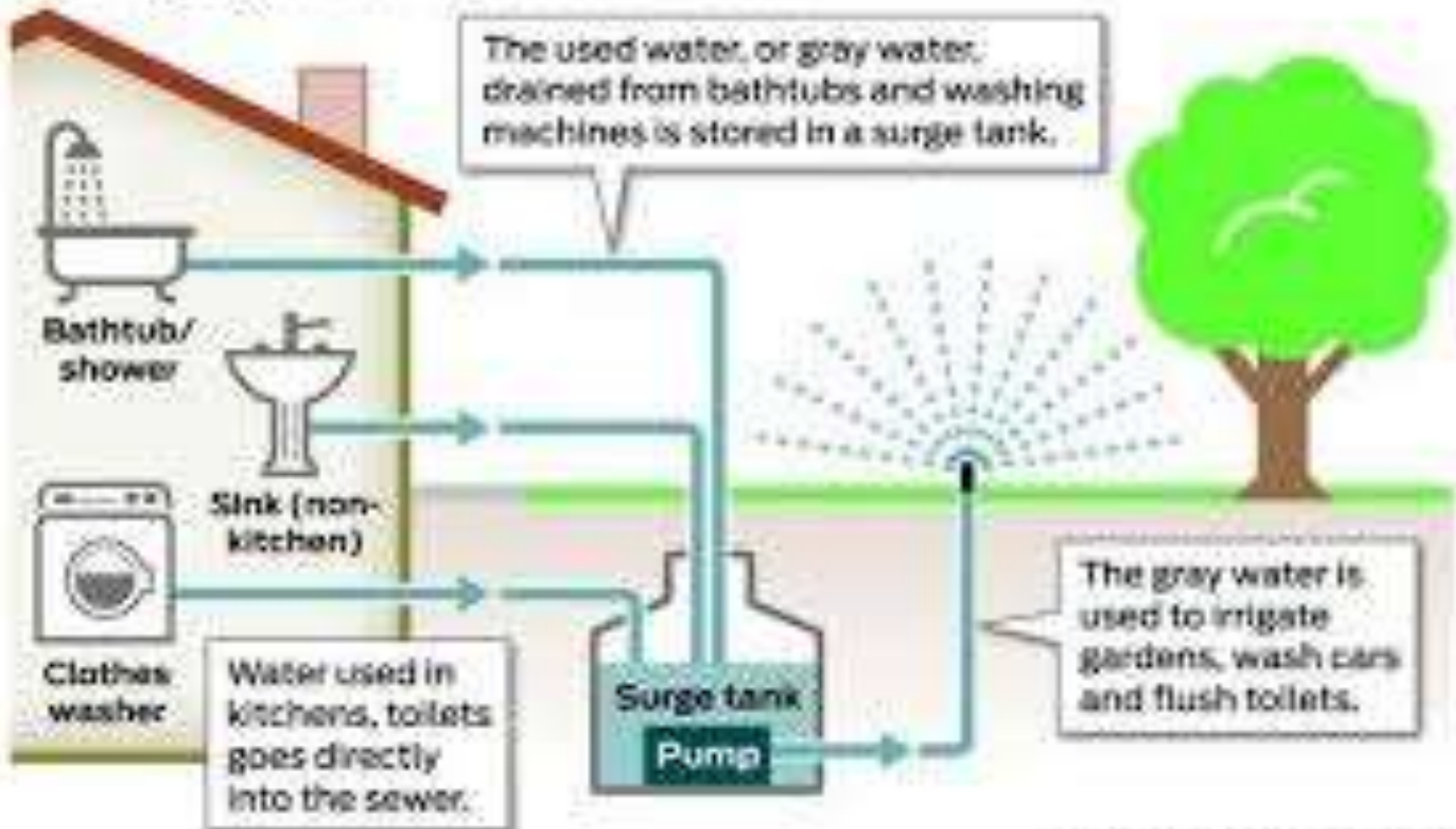
Grey water recycling





Grey water recycling

How gray water systems work





Grey water recycling

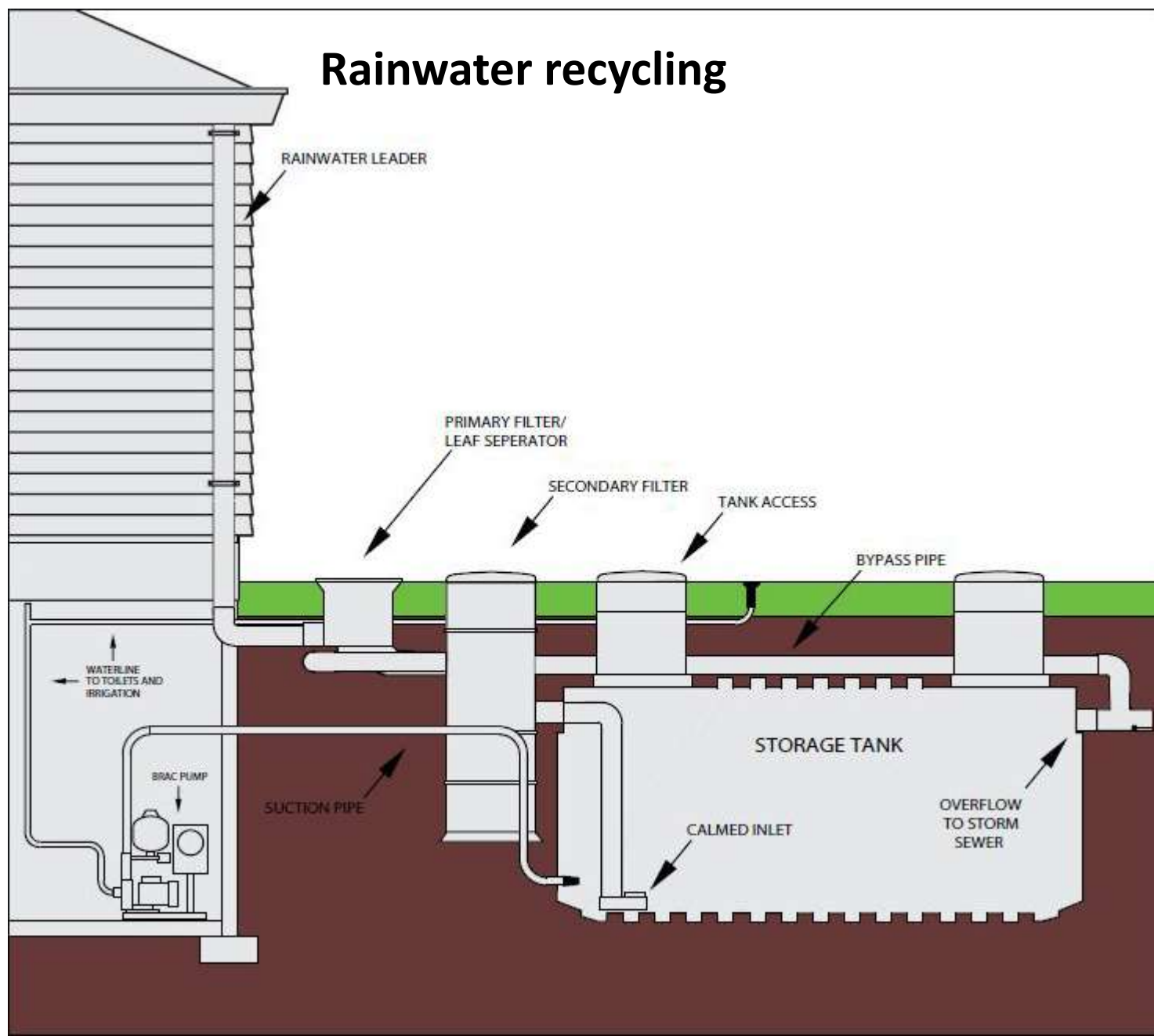
Use for WC



It can reduce about 25-40% of water consumption



Rainwater recycling





Calculations

Follow Appendix A Part G Building Regulations