

**RainCatcher Calculator examples to assist customers to determine appropriate tank sizes and payback periods – brought to you by Raincatcher Products and Services Ltd and John Moores University**

**Below are two examples with same input data but different locations (different rainfall depths)**

**Method 2 – Domestic Building**

**Example 1**

Data:

Building type domestic      Occupants =4                      (non -gravity)

Roof area= 150 m<sup>2</sup>              Rainfall (Wales) = 1343.2mm

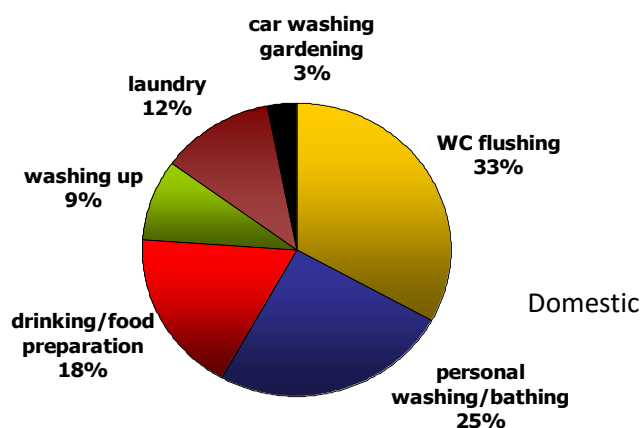
Roof type (pitched roof with tiles) =0.75 , Filter efficiency= 0.90

Daily water consumption = 150 l/day

An Total system cost=£1500              Installation cost=£500      Unit water cost =£2.9/m<sup>3</sup>

1. Annual yield= $150 \times 1343.2 \times 0.9 \times 0.75 = 135999$ litre

2. Annual demand:



For domestic:

Daily WC = $33\% \times 150 \times 4$

Daily washing machine= $12\% \times 150 \times 4$

Daily garden use= $3\% \times 150 \times 4$

Total annual demand= $48\% \times 150 \times 4 \times 365 = 105120$  litre

3. Saving of non potable water =lower of (135999 & 105120) give = **100% saving (enough yield to cover the demand)**

Annual Saving £=  $105120 \times £2.9/m^3 = £304.85$

4. Tank size:

6 % (annual yield) =  $0.06 * 135999 = 8159.94$  litre

6 % (annual demand) =  $0.06 * 105120 = 6307.2$  litre

Tank size the lower value = 4740.32 litre

6. Payback =  $\text{total cost} / \text{saving} = 1500 + 500 / (304.85) = 6.6$  years

### Example 2

Data:

Building type domestic      Occupants = 4      (non -gravity)

Roof area = 150 m<sup>2</sup>      Rainfall (England S) = 780.3mm

Roof type (pitched roof with tiles) = 0.75

Filter efficiency = 0.90

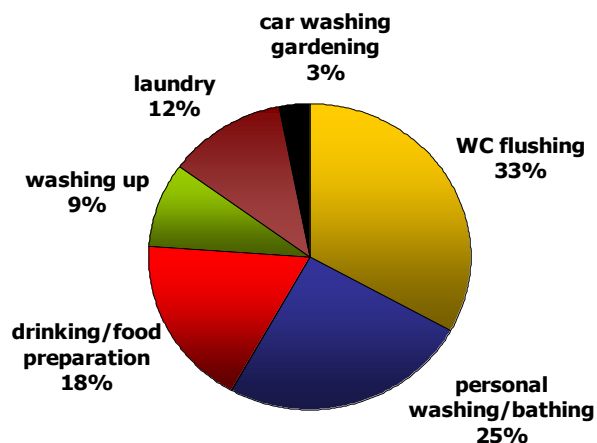
An Total system cost = £1500

Installation cost = £500

Unit water cost = £2.9/m<sup>3</sup>

1. Annual yield =  $150 * 780.3 * 0.9 * 0.75 = 79005.375$  litre

2. Annual demand:



Domestic

For domestic:

Daily WC =  $33% * 150 * 4$

Daily washing machine =  $12% * 150 * 4$

Daily garden use =  $3% * 150 * 4$

Total annual demand =  $48% * 150 * 4 * 365 = 105120$  litre



3. Saving of non potable water %=79005.375 /105120=**75%**

Saving £= 79005.375 \*£2.9/m<sup>3</sup> =**£229.12**

4. Tank size:

6%( annual yield) =0.06\*79005.375 =4740.32 litre



6%( annual demand) =0.06\*105120=6307.2litre

Tank size the lower value =4740.32 **litre**

6. Payback =total cost/saving =1500+500/ (229.12) =**8.7 years**



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