Development & Planning Authority

The Water Efficiency Calculator (Guernsey) for new dwellings

The Building (Guernsey) Regulations, 2012

The Development and Planning Authority's calculation methodology for assessing water efficiency in new dwellings in support of Regulation 23

2012 edition
With May 2016 amendments

MAIN CHANGES MADE BY THE MAY 2016 AMENDMENTS

1. Text changes made to reflect the new structure of government post May 1st 2016. All references to Departments have been removed.

How this Water Efficiency Calculator (Guernsey) differs from the UK version

1. In general there are different legislative references reflecting Guernsey legislation.
3. The UK Building (Approved Inspectors, etc.) Regulations 2010 are not in force in Guernsey. Therefore approved inspectors are not recognised on the Island and all references have been removed.
3. There are no references to the UK's Code for Sustainable Homes requirements.
4. This document assumes that the Water Efficiency Calculator software will be used for the assessment process.

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Introduction

The following document sets out the water calculation methodology for assessing the whole house potable water consumption in new dwellings. The calculation method is to be used to assess compliance against the water performance targets in Building (Guernsey) Regulations 2012, regulation 23 as set out below. It is not a design tool for water supply and drainage systems. It is also not capable of calculating the actual potable water consumption of a new dwelling. Behaviour and changing behaviour can also have an effect on the amount of potable water used throughout a home.

The Requirement

Extract from the Building (Guernsey) Regulations 2012

WATER EFFICIENCY

Water efficiency of new dwellings.

23. (1) The potential consumption of wholesome water by persons occupying a dwelling, to which this regulation applies, must not exceed 125 litres per person per day calculated in accordance with the methodology set out in the Water Efficiency Calculator for New Dwellings, as revised from time to time, published by the Department .

(2) This regulation applies to a dwelling which is –

(a) erected, or

(b) formed by a material change of use of a building within the meaning of regulation 7(a) or (b).

Section 1 - General Guidance

1.1 This document must be used in conjunction with the 'Excel' spreadsheet 'Water Use Calculator' available to download from **www.gov.gg/planning**. All consumption figures below must be inputted into this calculator and the summary sheet printed to be submitted as part of the full plans submission to Building Control for consideration under the Building Regulations

1.2 The calculation method requires the use of water consumption figures provided from manufacturers product details. Before the assessment can be carried out, figures will need to be collected from manufacturers product information to determine the consumption of each terminal fitting, including:

a. WCs

i. Flushing capacity for the WC suite including consumption at full and part flush for dual flush WCs.

ii. Where multiple WCs are specified with various flushing capacities, each flushing volume must be included separately.

b. Bidets

i. Bidets are excluded from the Water Efficiency Calculator for new dwellings due to their minimal water consumption, and although there is insufficient research to quantify this consumption, anecdotal evidence shows that there is evidence that bidets often displace other water consumption rather than increase consumption.

c. Taps

i. Flow rate of each tap, at full flow rate in litres per minute measured at a dynamic pressure of 3±0.2 bar (0.3±0.02 MPa) for high pressure (Type 1) taps, or at a dynamic pressure of 0.1±0.02 bar (0.01±0.002 MPa) for low pressure (Type 2) taps (BS EN 200:2008, sanitary tapware, single taps and combination taps for supply systems of type 1 and 2. General technical specifications) including any reductions achieved with flow restrictions.

ii. Where multiple taps are to be provided (e.g. separate hot and cold taps) the flow rate of each tap will be needed in order to calculate an average flow rate.

iii. For 'click taps' and other taps with a 'water break', the manufacturer's stated full flow rate should be used to perform calculations (measured as described above). Do not use the flow rate at the break point. A factor for percentage of flow rate is already assumed within the use factor for taps. There is currently no research to provide a separate use factor for 'click taps' so a standard use factor is applied.

iv. Taps on baths should not be included in the calculation as the water consumption from bath taps is taken account of in the use factor for baths.

d. Baths

i. Total capacity of the bath to overflow, in litres (excluding displacement, this is already included in the use factor for baths).

ii. Where multiple baths are specified with various capacities, each individual bath must in included separately.

iii. Jacuzzis are not included in the water efficiency calculator as they are generally not filled on a daily basis and their water consumption over a year is minimal.

e. Dishwashers

i. Litres per place setting derived from the figures quoted on the EU Energy Label.

ii. Where no dishwasher is to be provided and therefore consumption figures are unknown, a figure of 1.25 litres per place setting must be assumed.

iii. Where multiple dishwashers are specified with various consumptions, each appliance must be included separately.

f. Washing machines

i. Litres per kilogram of dry load derived from the figure quoted on the EU Energy Label.

ii. Where no washing machine is to be provided and therefore consumption figures are unknown, a figure of 8.17 litres per kilogram must be assumed.

iii. Where multiple washing machines are specified with various consumptions, each appliance must be included separately.

g. Showers

i. Flow rate of each shower at the outlet using cold water (T ≤ 30˚ C), in litres per minute measured at a dynamic pressure of 3±0.2 bar (0.3±0.02 MPa) for high pressure (Type 1) supply systems, or at a dynamic pressure of 0.1±0.05 bar (0.01±0.005 MPa) for low pressure (Type 2) supply systems (BS EN 1112:2008, Sanitary tapware. Shower outlets for sanitary tapware for water supply systems type 1 and 2. General technical specifications).

ii. Where multiple showers are specified with various flow rates, each appliance must be included separately.

h. Water softeners (where present)

i. Percentage of total capacity used per regeneration cycle.

ii. Water consumed per regeneration cycle (litres).

iii. Average number of regeneration cycles per day.

iv. Number of occupants (based on two occupants in the first bedroom and one occupant per additional bedroom assuming 2 occupants in studio flats).

v. Water softeners that do not have a water consumption such as electromagnetic types, are not included in the calculation.

i. Waste disposal units (where present)

i. Where present, a standard consumption of 3.08 litres per person per day must be assumed.

j. External taps

i. Flow rates of external taps are not included in the calculation as a fixed allowance of five litres per person per day is assumed for external water use in Regulation 23.

Rainwater harvesting and Greywater re-use

1.3 In some cases rain and greywater recycling may be used as a means of reducing water consumption to achieve higher water efficiency performance levels. This may be needed where options for improving the efficiency of terminal fittings (taps, WCs etc.) has been maximised and further savings are still needed. Rainwater harvesting may also be used as a means of reducing surface water runoff. The details required to determine the savings that can be made using these systems are as follows:

a. Greywater

i. Manufacturer or system designer details on the percentage of used water to be recycled, taking into account the storage capacity of the system.

ii. The volume of recycled water collected from waste bath, shower and washhand basin, dishwasher and washing machine usage.

iii. The consumption of fittings where greywater is to be used in accordance which can include WCs and washing machines.

b. Rainwater (in accordance with BS8515)

i. Collection area

ii. Yield co-efficient and hydraulic filter efficiency

iii. Rainfall (average mm/year)

iv. Daily non-potable water demand

Swimming Pools and Jacuzzis

1.4 Large water consuming installations such as swimming pools and jacuzzis where the water is replaced over a greater time interval do not need to be included as part of the water calculations for Regulation 23.

Section 2 - Using the calculator software

2.1 The following user guidance is to aid with the use of the Water Use Calculator software available to down load from **www.gov.gg/planning**

2.2 Flow rate from taps (excluding bath and bidet taps) at a standard three bar dynamic pressure (0.3MPa) (l/min)

2.3 Flow rates from showers at a standard three bar dynamic pressure (0.3MPa) at temperature of 37 C (l/min)

2.4 Capacity of Baths (litres) (Note - as the calculation works on bath capacity, there is no need to include bath taps in the "Taps - excluding kitchen taps" section of the calculator)

2.5 Flushing Volumes for Dual and Single Flush WCs (litres)

2.6 Water use per place setting for Dishwashers (litres)

2.7 Water use per kg of dry load for Washing Machines (litres)

2.8 Whether a Waste Disposal unit is attached to the sink (litres)

2.9 The amount of water over the standard 4% allowance used per regeneration cycle if installed (litres)

2.10 The capacity of any grey or rainwater harvesting system installed (litres)

2.11 This information should be available from the suppliers of these products and a table is provided below which provides guidance of the average flow rates and capacities

2.12 The calculation allows the use of grey or rainwater to reduce mains water demand

2.13 Further information is available in Guernsey Technical Standard G of the Building Regulations.

On completion of the spreadsheet software, that indicates a positive assessment result, the calculation sheet must be printed and included as part of the full plans submission to Building Control when applying for a building license under the Building Regulations.

Table 1 shows some sample values based on information from **www.waterwise.org .uk** actual values must be obtained from the individual appliances to be used for the fit out stage of the construction.

Table 1 **Sample Values**

Component	Typical Consumption	Range of Consumption
Taps		
Basin	6 l/min	2 - 20 l/min
Kitchen	9 l/min	6 - 25 l/min
Baths		
Undersized	165 l	
Corner	140 l	
Shower	250 l	
Standard	225 l	
Roll Top	205 l	
Whirlpool Spa	225 l	
Washing Machines	8 l/kg	6-12 l/kg
Dishwashers	0.9 l/place	0.8 - 1.6 l/place
Toilets		
Single Flush	6 l	
Dual Flush	6 l / 3 l	

Alternative approach

2.14 As an alternative to using the calculation software, the same result can be obtained following the calculation method as set out in the UK's **Water Efficiency Calculator for new Dwellings** available to down load from **www.Planningportal.gov.uk**, copies of this are also available from the reception in Sir Charles Frossard House.

Regulation 23

GUERNSEY TECHNICAL STANDARDS

The following documents have been approved and issued for the purpose of providing practical guidance with respect to the requirements of the Building Regulations

Guernsey Technical Standard A: Structure, 2012 edition with May 2016 amendments.

Guernsey Technical Standard B: Fire Safety - Volume 1 - Dwellinghouses, 2012 edition with May 2016 amendments.

Guernsey Technical Standard B: Fire Safety - Volume 2 - Buildings other than dwellinghouses, 2012 edition with May 2016 amendments.

Guernsey Technical Standard C: Site preparation and resistance to contaminants and moisture 2012 edition with May 2016 amendments.

Guernsey Technical Standard D: Toxic substances 2012 edition with May 2016 amendments.

Guernsey Technical Standard E: Resistance to the passage of sound, 2012 edition with May 2016 amendments.

Guernsey Technical Standard F: Ventilation, 2012 edition with May 2016 amendments.

Guernsey Technical Standard G: Health, hygiene and water efficiency, 2012 edition with May 2016 amendments.

Guernsey Technical Standard H: Drainage and waste disposal, 2012 edition with May 2016 amendments.

Guernsey Technical Standard J: Heat producing appliances and fuel storage systems, 2012 edition with May 2016 amendments.

Guernsey Technical Standard K: Safe means of access and egress, 2012 edition with May 2016 amendments.

Guernsey Technical Standard L1: Conservation of fuel and power – Dwellings, 2012 edition with May 2016 amendments.

Guernsey Technical Standard L2: Conservation of fuel and power – Buildings other than dwellings, 2012 edition with May 2016 amendments.

Guernsey Technical Standard M: Access to and use of buildings, 2012 edition with May 2016 amendments.

Guernsey Technical Standard N: Glazing - Materials and protection, 2012 edition with May 2016 amendments.

Guernsey Technical Standard P: Roads - Layout design and construction, 2012 edition with May 2016 amendments.

Guernsey Technical Standard Regulation 11: Materials and Workmanship, 2012 edition with May 2016 amendments.

This Document is available in PDF format for downloading
on the States of Guernsey website www.gov.gg

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