

Water Efficiency Calculator for New Dwellings

Kingfisher Grove, Three Mile Cross
Berkshire



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Report produced by –

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CONTENTS

1	Blewburton Limited.....	4
2	Introduction	4
3	Methodology.....	4
4	Assumptions.....	5
5	Results.....	6

1 Blewburton Limited

Blewburton Limited (BBL) was established in April 2016 and are the follow-on company to The Blewburton Partnership (BBP) which was established in 2008 to provide energy and sustainability consultancy to clients in both the private and public sectors. Staffing has since increased and all employees have been involved in the project management, assessment and consulting on projects involving renewable and sustainable energy for over twenty years, both with BBL, BBP and in former employment.

BBL is well placed to analyse and assess the potential for low and zero carbon energy technologies to contribute towards the energy mix and the offset of carbon emissions associated with new developments. We can help to determine the most cost effective and technically appropriate means of meeting the sustainable energy requirements relating to planning conditions and policies in whichever format the Local Planning Authority requires as part of their general policy.

BBL are also licensed Elmhurst SAP, BREEAM, HQM & Code for Sustainable Homes assessors.

2 Introduction

Blewburton Limited have been commissioned to prepare a report identifying the options for reducing internal residential water use to 95l/person/day for a proposed development at Kingfisher Grove. The proposed development involves the construction of 49 dwellings.

The site is located within Berkshire. The ERs require the dwellings to demonstrate an internal water use of 95l/person/day.

Measures to reduce water consumption such as flow restrictors will be reviewed and where further reductions are required rainwater and greywater will be assessed.

3 Methodology

The Water Efficiency Calculator for New Dwellings has been used to demonstrate for that the dwellings at Kingfisher Grove will be designed to have an internal water use below 95litres/person/day. The methodology outlined in Building Regulations Part G has been used to determine this.

This exceeds the Building Regulations requirement of 125litres/person/day which includes an additional allowance of 5litres for external use.

Where multiple fittings of different flow rates and capacities have been specified within one dwelling the Building Regulations Part G methodology has also been used to calculate average figures. Part G methodology also provides calculations determining the reduction in water use from greywater and rainwater.

4 Assumptions

It has been assumed that baths, WC's and flow restrictors for taps and showers will be the same throughout the development. Plans show that all plots will have both a bath and a shower (either over the bath or as a separate shower).

A summary of the specification is shown below.

Fitting	Specification
WC	SANDRINGHAM COUPLED CISTERN 4.2/2.6 LTR DUAL FLUSH
Taps (excluding kitchen and utility)	PRISM MONOBLOCK BASIN MIXER TAP WITH POP UP WASTE Flow restrictor required - 4l/min
Bath	2NO HOLE SANDRINGHAM 1700X700 NON SLIP REINFORCED STEEL BATH – 160l to overflow
Shower	TREVI LINK THERMOSTATIC BAR BATH/SHOWER MIXER ARTISAN THERMOSTATIC CHROME PLATED BATH/SHOWER MIXER ARTISAN THERMOSTATIC SHOWER WITH MULTI FUNCTION HANDSET Flow restrictor required to all - 7l/min
Kitchen/utility taps	RUBY EASYFIT MONO SINK MIXER CHROME Flow restrictor required - 5l/min
Washing machine	Default – 8.17 litres/kg dry load
Dishwasher	Default – 1.25l/place setting
Waste disposal unit	None
Water softener	None

5 Results

The internal water use will be 94.76litres/person/day and the total water use (including external) will be 99.68litres/person/day. Saving 25.24litres/person/day on Building Regulations

Full calculations are tabulated below:

Installation Type	Unit of Measure	Capacity/Flow rate	Use Factor	Fixed use (litres/person/day)	Litres/person/day
WC (Single flush)	Flush Volume (Litres)		4.42	0.00	0.00
WC (Dual flush)	Full Flush Volume (Litres)	4.2	1.46	0.00	6.13
	Part Flush Volume (Litres)	2.6	2.96	0.00	7.70
WC's (multiple fittings)	Average effective flushing volume (Litres)		4.42	0.00	0.00
Taps (excluding kitchen/utility room taps)	Flow rate (litres/minute)	4	1.58	1.58	7.90
Bath (Where shower also present)	Capacity to Overflow (Litres)	160	0.11	0.00	17.60
Shower (Where bath also present)	Flow rate (litres/minute)	7	4.37	0.00	30.59
Bath only	Capacity to Overflow (Litres)		0.50	0.00	0.00
Shower only	Flow rate (litres/minute)		5.60	0.00	0.00
Kitchen/utility room sink taps	Flow rate (litres/minute)	5	0.44	10.36	12.56
Washing machine	Litres/kg dry load (default 8.17)	8.17	2.10	0.00	17.16
Dishwasher	Litres/place setting (default 1.25)	1.25	3.60	0.00	4.50
Waste Disposal unit	Litres/use (if present =1, if absent =0)	0	3.08	0.00	0.00
Water Softener	Litres/person/day		1.00	0.00	0.00
Total calculated use (Litres/person/day)					104.14
Contribution from greywater (Litres/person/day)					0.00
Contribution from rainwater (Litres/person/day)					0.00
Normalisation factor					0.91
Total Internal Water Consumption					94.76
External Water Use					5.00
Total Water Consumption					99.76

These assumptions will be revised at detailed design stage. Further variation between the plots may be identified and amendments to the assumptions may be made. Water use calculations will be updated to reflect this and to ensure the overall target of an internal water use below 95litres/person/day will be achieved.