Meadows Hall, Richmond

WATER EFFICIENCY CALCULATION

P2197-WAT-01

Revision	Date	Details	Authored	Checked
R01	18/112021	Issued for comment	C Armstrong	S Quinlan

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LONDON – One Bridge Wharf, 56 Caledonian Road, London, N1 9UU

Dwelling Desciption:	Duplex					
Bath and Shower Present	Yes					
Washing Machine Specified	Yes	If No, Default Value of 8.17 litres/kg will be entered				
Dishwasher Specified	Yes	If No, Default Value of 1.25 litres/place setting will be entered				
Waste Disposal Unit	No					
Greywater System in Place	No					
Rainwater System in Place	No					

Table A1: **The water efficiency calculator**

Installation Type	Unit of Measure		Capacity/ Flow Rate	Use Factor	Fixed use (l/pers/day)	l/pers/day
WC (Single Flush)	Flush Volume	litres	0.00	4.42	0.00	0.00
WC (Dual Flush)	Full Flush Volume	litres	6.00	1.46	0.00	8.76
	Part Flush Volume	litres	3.00	2.96	0.00	8.88
Taps (Excluding Kitchen/Utility Rooms)	Flow rate	litres/min	3.00	1.58	1.58	6.32
Bath	Capacity to overflow	litres	80.00	0.11	0.00	8.80
Shower	Flow rate	litres/min	8.00	4.37	0.00	34.96
Kitchen/Utility Sink Taps	Flow rate	litres/min	6.00	0.44	10.36	13.00
Washing Machine	Litres/kg dry load		6.00	2.10	0.00	12.60
Dishwasher	Litres/place setting		6.00	3.60	0.00	21.60
Waste Disposal Unit	Litres/use		0.00	3.08	0.00	0.00
Water Softener	Litres/person/day		0.00	1.00	0.00	0.00
			0.11		Total Calculated Use	114.92
			4.37		Greywater Contribution	0.00
					Rainwater Contribution	0.00
					Normalisation Factor	0.91
					Total Water Consumption	104.58
					External water use	5.00
					Total Water Consumption	109.58
					Targetted Water Efficiency	110.00
					Dwelling Compliance	Yes

Table A3: Water softener consumption calculation		
Total capacity user per regeneration	%	0
Water consumed per regeneration	litres	0
Average number of regeneration cycles per day	No.	0
Number of occupants served by the systems	No.	0
Water consumed beyond 4%	litres/day	0
Water consumed beyond 4%	litres/person/day	0

Table A4.6: Greywater collection calculation		
Bath, shower and wash hand basin usage	litres/person/day	0.00
Percentage of used water to be recycled	%	0
Greywater available for use	litres/person/day	0
Greywater demand	litres/person/day	0
Greywater savings	litres/person/day	0

Table A5.1: Rainwater collection calculation - BS815 intermediate approach		
Collection area	m2	
Yeild coefficient and hydraulic filter efficiency	eg 0.7	0.7
Rainfall	Average mm/year	
Daily rainwater collection	litres	0
Number of occupuants		
Daily rainwater per person	litres/person/day	0.00

Table A5.2: Rainwater collection calculation - BS8515 detailed approach		
Daily rainwater collection	litres	
Number of occupants		
Daily rainwater per person	litres/person/day	0.00

Table A5.5 Rainwater savings calculations for new dwellings		
Rainwater collected	litres/person/day	0.00
Rainwater demand	litres/person/day	0.00
Rainwater savings	litres/person/day	0.00

Table A2.7: WC (Dual Flush)

Fitting Type	Flush Type	Flush Volume (litres)	Number of Fittings	Flush Volumes
WC	Full Flush	6	2	12
	Part Flush	3		6
	Full Flush			0
	Part Flush			0
	Full Flush			0
	Part Flush			0
	Full Flush			0
	Part Flush			0
	Total Number of Fittings		2	
	Total Full Flush Volume		12	
	Total Part Flush Volume		6	
Average Full Flush volume (litres)			6	
Highest Full Flush Volume (litres)			6	
Proportionate Full Flush Volume (litres/min)			4.2	
Average Part Flush volume (litres)			3	
Highest Part Flush Volume (litres)			3	
Proportionate Part Flush Volume (litres/min)			2.1	

Table A2.7: WC (Single Flush)

Fitting Type	Flush Volume (litres)	Number of Fittings	
			0
			0
			0
			0
Total Number of Fittings		0	
Total Flush volume		0	
Average Flush volume (litres)		0	
Highest Flush Volume (litres)		0	
Proportionate Flush Volume (litres)		0	

Table A2.1: Taps (Excluding Kitchen/Utility Rooms)

Fitting Type	Flow rate (l/min)	Number of Fittings	
Bathroom tap	3	2	6
			0
			0
			0
Total Number of Fittings	2		
Total Flow Rate (litres/min)	6		
Average Flow Rate (litres/min)	3		
Highest Flow Rate (litres/min)	3		
Proportionate flow rate (litres/min)	2.1		

Table A2.2: Baths

Fitting Type	Capacity to overflow (litres)	Number of Fittings	
Bath	80	1	80
			0
			0
			0
Total Number of Fittings	1		
Total Capacity (litres)	80		
Average Capacity (litres)	80		
Highest Capacity (litres)	80		
Proportionate Capacity (litres)	56		

Table A2.3: Kitchen/Utility Sink Taps

Fitting Type	Flow rate (l/min)	Number of Fittings	
Kitchen tap	6	1	6
			0
			0
			0
Total Number of Fittings		1	
Total Flow Rate (litres/min)		6	
Average Flow Rate (litres/min)		6	
Highest Flow Rate (litres/min)		6	
Proportionate flow rate (litres/min)		4.2	

Table A2.4: Dishwasher

Fitting Type	l/Place Setting	Number of Fittings
Dishwasher	6	1
Total Number of Fittings	1	
Total Litres/Place Setting	6	
Average Litres/Place Setting	6	
Highest Litres/Place Setting	6	
Proportionate Litres/Place Setting	4.2	

Table A2.5: Washing Machine

Fitting Type	Litres/kg dry load	Number of Fittings
Dishwasher	6	1
Total Number of Fittings	1	
Total Litres/kg dry load	6	
Average Litres/kg dry load	6	
Highest Litres/kg dry load	6	
Proportionate Litres/kg dry load	4.2	

Table A2.6: Showers

Fitting Type	Flow rate (litres/min)	Number of Fittings
Shower	8	1
Total Number of Fittings	1	
Total Flow Rate (litres/min)	8	
Average Flow Rate (litres/min)	8	
Highest Flow Rate (litres/min)	8	
Proportionate flow rate (litres/min)	5.6	

Dwelling Desciption:	Mansion Flat					
Bath and Shower Present	Yes					
Washing Machine Specified	Yes	If No, Default Value of 8.17 litres/kg will be entered				
Dishwasher Specified	Yes	If No, Default Value of 1.25 litres/place setting will be entered				
Waste Disposal Unit	No					
Greywater System in Place	No					
Rainwater System in Place	No					

Table A1: **The water efficiency calculator**

Installation Type	Unit of Measure		Capacity/ Flow Rate	Use Factor	Fixed use (l/pers/day)	l/pers/day
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WC (Dual Flush)	Full Flush Volume	litres	6.00	1.46	0.00	8.76
	Part Flush Volume	litres	3.00	2.96	0.00	8.88
Taps (Excluding Kitchen/Utility Rooms)	Flow rate	litres/min	3.00	1.58	1.58	6.32
Bath	Capacity to overflow	litres	80.00	0.11	0.00	8.80
Shower	Flow rate	litres/min	8.00	4.37	0.00	34.96
Kitchen/Utility Sink Taps	Flow rate	litres/min	6.00	0.44	10.36	13.00
Washing Machine	Litres/kg dry load		6.00	2.10	0.00	12.60
Dishwasher	Litres/place setting		6.00	3.60	0.00	21.60
Waste Disposal Unit	Litres/use		0.00	3.08	0.00	0.00
Water Softener	Litres/person/day		0.00	1.00	0.00	0.00
			0.11		Total Calculated Use	114.92
			4.37		Greywater Contribution	0.00
					Rainwater Contribution	0.00
					Normalisation Factor	0.91
					Total Water Consumption	104.58
					External water use	5.00
					Total Water Consumption	109.58
					Targetted Water Efficiency	110.00
					Dwelling Compliance	Yes

Table A3: Water softener consumption calculation		
Total capacity user per regeneration	%	0
Water consumed per regeneration	litres	0
Average number of regeneration cycles per day	No.	0
Number of occupants served by the systems	No.	0
Water consumed beyond 4%	litres/day	0
Water consumed beyond 4%	litres/person/day	0

Table A4.6: Greywater collection calculation		
Bath, shower and wash hand basin usage	litres/person/day	0.00
Percentage of used water to be recycled	%	0
Greywater available for use	litres/person/day	0
Greywater demand	litres/person/day	0
Greywater savings	litres/person/day	0

Table A5.1: Rainwater collection calculation - BS815 intermediate approach		
Collection area	m2	
Yeild coefficient and hydraulic filter efficiency	eg 0.7	0.7
Rainfall	Average mm/year	
Daily rainwater collection	litres	0
Number of occupuants		
Daily rainwater per person	litres/person/day	0.00

Table A5.2: Rainwater collection calculation - BS8515 detailed approach		
Daily rainwater collection	litres	
Number of occupants		
Daily rainwater per person	litres/person/day	0.00

Table A5.5 Rainwater savings calculations for new dwellings		
Rainwater collected	litres/person/day	0.00
Rainwater demand	litres/person/day	0.00
Rainwater savings	litres/person/day	0.00

Table A2.7: WC (Dual Flush)

Fitting Type	Flush Type	Flush Volume (litres)	Number of Fittings	Flush Volumes
WC	Full Flush	6	1	6
	Part Flush	3		3
	Full Flush			0
	Part Flush			0
	Full Flush			0
	Part Flush			0
	Full Flush			0
	Part Flush			0
	Total Number of Fittings		1	
	Total Full Flush Volume		6	
	Total Part Flush Volume		3	
Average Full Flush volume (litres)			6	
Highest Full Flush Volume (litres)			6	
Proportionate Full Flush Volume (litres/min)			4.2	
Average Part Flush volume (litres)			3	
Highest Part Flush Volume (litres)			3	
Proportionate Part Flush Volume (litres/min)			2.1	

Table A2.7: WC (Single Flush)

Fitting Type	Flush Volume (litres)	Number of Fittings	
			0
			0
			0
			0
Total Number of Fittings		0	
Total Flush volume		0	
Average Flush volume (litres)		0	
Highest Flush Volume (litres)		0	
Proportionate Flush Volume (litres)		0	

Table A2.1: Taps (Excluding Kitchen/Utility Rooms)

Fitting Type	Flow rate (l/min)	Number of Fittings	
Bathroom tap	3	1	3
			0
			0
			0
Total Number of Fittings	1		
Total Flow Rate (litres/min)	3		
Average Flow Rate (litres/min)	3		
Highest Flow Rate (litres/min)	3		
Proportionate flow rate (litres/min)	2.1		

Table A2.2: Baths

Fitting Type	Capacity to overflow (litres)	Number of Fittings	
Bath	80	1	80
			0
			0
			0
Total Number of Fittings	1		
Total Capacity (litres)	80		
Average Capacity (litres)	80		
Highest Capacity (litres)	80		
Proportionate Capacity (litres)	56		

Table A2.3: Kitchen/Utility Sink Taps

Fitting Type	Flow rate (l/min)	Number of Fittings	
Kitchen tap	6	1	6
			0
			0
			0
Total Number of Fittings		1	
Total Flow Rate (litres/min)		6	
Average Flow Rate (litres/min)		6	
Highest Flow Rate (litres/min)		6	
Proportionate flow rate (litres/min)		4.2	

Table A2.4: Dishwasher

Fitting Type	l/Place Setting	Number of Fittings
Dishwasher	6	1
Total Number of Fittings	1	
Total Litres/Place Setting	6	
Average Litres/Place Setting	6	
Highest Litres/Place Setting	6	
Proportionate Litres/Place Setting	4.2	

Table A2.5: Washing Machine

Fitting Type	Litres/kg dry load	Number of Fittings
Dishwasher	6	1
Total Number of Fittings	1	
Total Litres/kg dry load	6	
Average Litres/kg dry load	6	
Highest Litres/kg dry load	6	
Proportionate Litres/kg dry load	4.2	

Table A2.6: Showers

Fitting Type	Flow rate (litres/min)	Number of Fittings
Shower	8	1
Total Number of Fittings	1	
Total Flow Rate (litres/min)	8	
Average Flow Rate (litres/min)	8	
Highest Flow Rate (litres/min)	8	
Proportionate flow rate (litres/min)	5.6	