



Ecoplay
Product Positioning against
the
Code for Sustainable
Homes

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May 2008

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1 Code for Sustainable Homes: Water 1 Specifications

1.1 Introduction

The Code for Sustainable Homes (Code), became mandatory on 1st May 2008. A raft of legislation has been introduced, aimed at significantly raising the performance of new homes. Home information packs, energy performance certificates, national government planning policy and local authority planning requirements (many requiring Code Level 3 and 4 already) are all driving the need for better, more sustainable homes.

The code covers 9 areas:

1. Energy and CO2 Emissions
2. Water
3. Materials
4. Surface Water Run-off
5. Materials
6. Waste
7. Health and Wellbeing
8. Management
9. Ecology

A Code Level is awarded by achieving a set of mandatory minimum standards, gaining credits in the above areas, then converting the credits to points and an overall score.

The 2 categories with the greatest weighting within the Code are energy and water, which together account for 45% of all the credits available. Water has the highest credit value, with approximately 1.5 points for each credit gained. Water also has three mandatory levels which have to be achieved in order to gain credits at various levels.

The Ecoplay products therefore have an important contribution to make in terms of reducing potable water use and gaining credits towards an overall rating under the Code for Sustainable Homes.

In **Category 2 Water, Wat 1**, the aim is to reduce the internal potable water use. Credits are awarded according to the predicted average household water consumption.

There are 3 mandatory threshold levels and up to 5 credits available (see table below)

Water consumption (litres/person/day)	Credits	Mandatory Levels
≤ 120 l/p/day	1	Levels 1 and 2
≤ 110 l/p/day	2	
≤ 105 l/p/day	3	Levels 3 and 4
≤ 90 l/p/day	4	
≤ 80 l/p/day	5	Levels 5 and 6

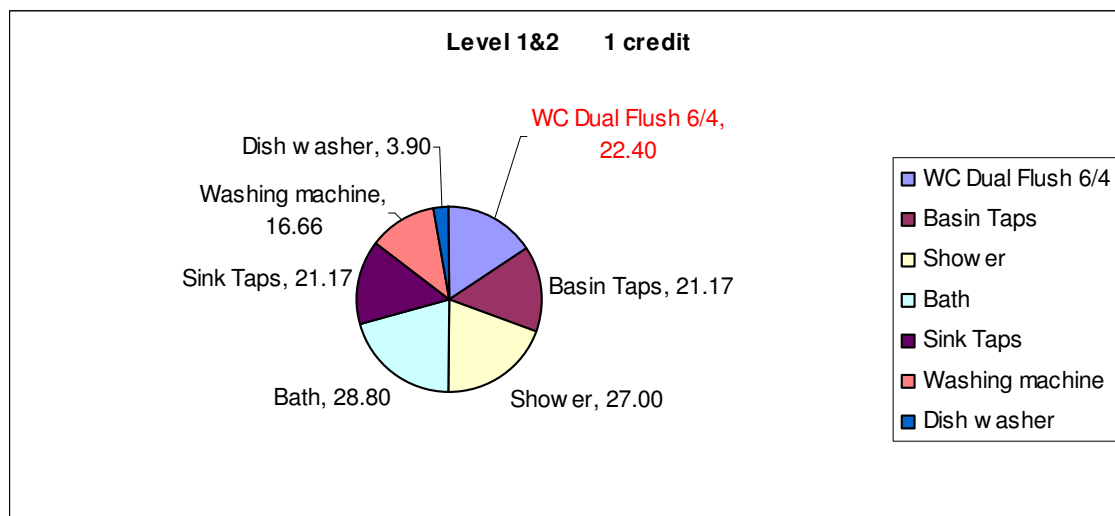
The Ecoplay grey water recycling unit uses waste water from the bath and shower to flush one or two toilets in a dwelling. This reduces the consumption of mains water.

This report shows examples of how Ecoplay can be used to achieve your code level strategy for Category 2 Water. The following pages show examples of how to achieve 1 to 5 credits and all Levels of the Code for water.

1.2 Wat1: Levels 1&2: 1 credit

To meet the most basic mandatory requirement in Wat 1, the water consumption must be less than or equal to 120 l/p/day. The average usage in the UK is around 150 l/p/day, so a considerable saving must be made in order to pass this level. The following example shows a specification which uses Ecoplay to achieve Level 1&2, gaining 1 credit. The table below is a summary of the inputs and outputs from the Water Calculator tool 'CSH_Spreadsheet_Tool_-_Wat1_Rev04' which is used by BRE licensed Code Assessors. A copy of the actual spreadsheet is attached as appendix 1.

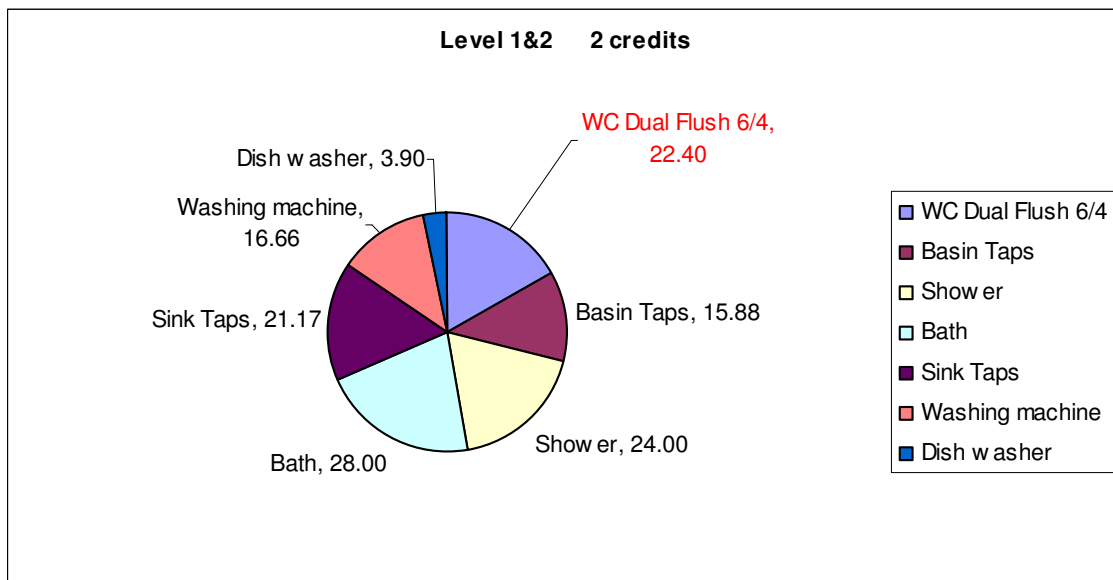
Appliance	litres/person/day	Specification Notes/Water Calculator inputs
WC Dual Flush 6/4	22.40	Standard Dual Flush 6/4 litre
Basin Taps	21.17	Flow rate of taps 6 litres/min entered in Wat1 Calculator as 4 litres/min (2/3 rd rule)
Shower	27.00	9 litres/min flow rate (0.6 proportion entered)
Bath	28.80	180 litres to overflow (0.4 proportion entered)
Kitchen Sink Taps	21.17	Flow rate of taps 6 litres/min, entered as 4 l/m
Washing machine	16.66	Standard 49 litres/cycle (default in calculator)
Dish washer	3.90	Standard 13 litres/cycle (default in calculator)
Gross Water consumption	141.10	Total water consumed if Ecoplay was not installed
<i>Ecoplay saving</i>	<i>22.40</i>	<i>Ecoplay saves all the water required for WC flushing in this example</i>
Net internal water consumption	118.70	The consumption with Ecoplay is reduced to below 120 l/p/day
Credits gained	1	1 credit gained for achieving ≤ 120 l/p/day
Level	Level 1&2	Mandatory level is passed



1.3 Wat1: Levels 1&2: 2 credits

The following example shows a specification which uses Ecoplay to achieve Level 1&2, but going above the basic mandatory requirement and gaining 2 credits. The table below is a summary of the inputs and outputs from the Water Calculator tool 'CSH_Spreadsheet_Tool_-_Wat1_Rev04' which is used by BRE licensed Code Assessors. A copy of the actual spreadsheet is attached as appendix 1.

Appliance	litres/person/day	Specification Notes/Water Calculator inputs
WC Dual Flush 6/4	22.40	Standard Dual Flush 6/4 litre
Basin Taps	15.88	Flow rate of taps 4.5 litres/min entered in Wat1 Calculator as 3 litres/min (2/3 rd rule)
Shower	24.00	8 litres/min flow rate (0.6 proportion entered)
Bath	28.00	175 litres to overflow (0.4 proportion entered)
Kitchen Sink Taps	21.17	Flow rate of taps 6 litres/min, entered as 4 l/m
Washing machine	16.66	Standard 49 litres/cycle (default in calculator)
Dish washer	3.90	Standard 13 litres/cycle (default in calculator)
Gross Water consumption	132.01	Total water consumed if Ecoplay was not installed
Ecoplay saving	22.40	Ecoplay saves all the water required for WC flushing in this example
Net internal water consumption	109.61	The consumption with Ecoplay is reduced to below 110 l/p/day
Credits gained	2	2 credits gained for achieving ≤ 110 l/p/day
Level	Level 1&2	Mandatory level is passed

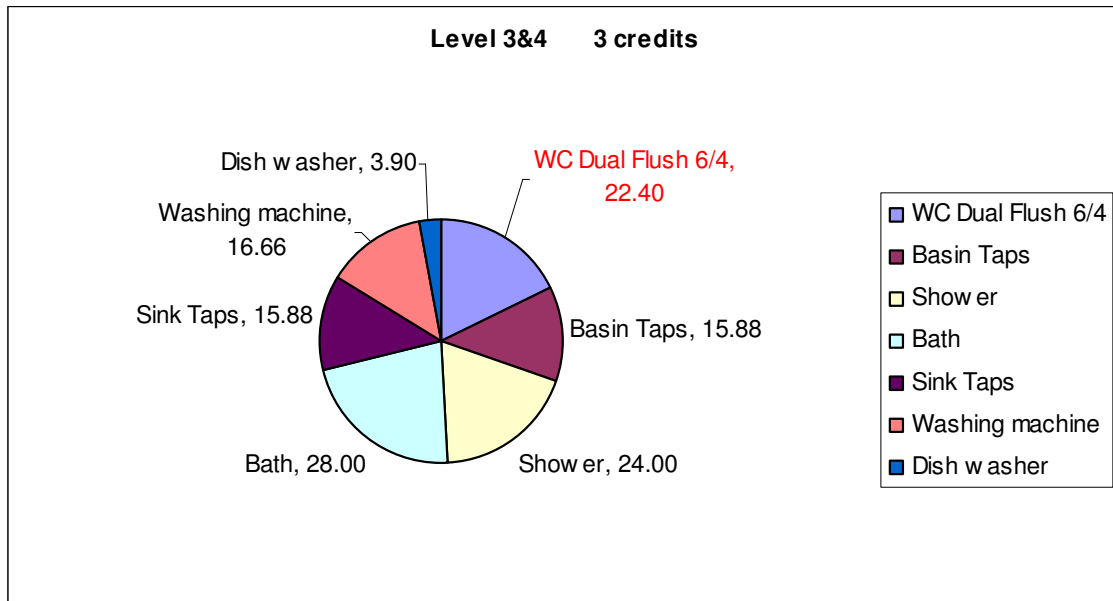


1.4 Wat1: Levels 3&4: 3 credits

The following example shows a specification which uses Ecoplay to achieve Level 3&4, achieving the mandatory threshold for this level and gaining 3 credits.

The table below is a summary of the inputs and outputs from the Water Calculator tool 'CSH_Spreadsheet_Tool_-_Wat1_Rev04' which is used by BRE licensed Code Assessors. A copy of the actual spreadsheet is attached as appendix 1.

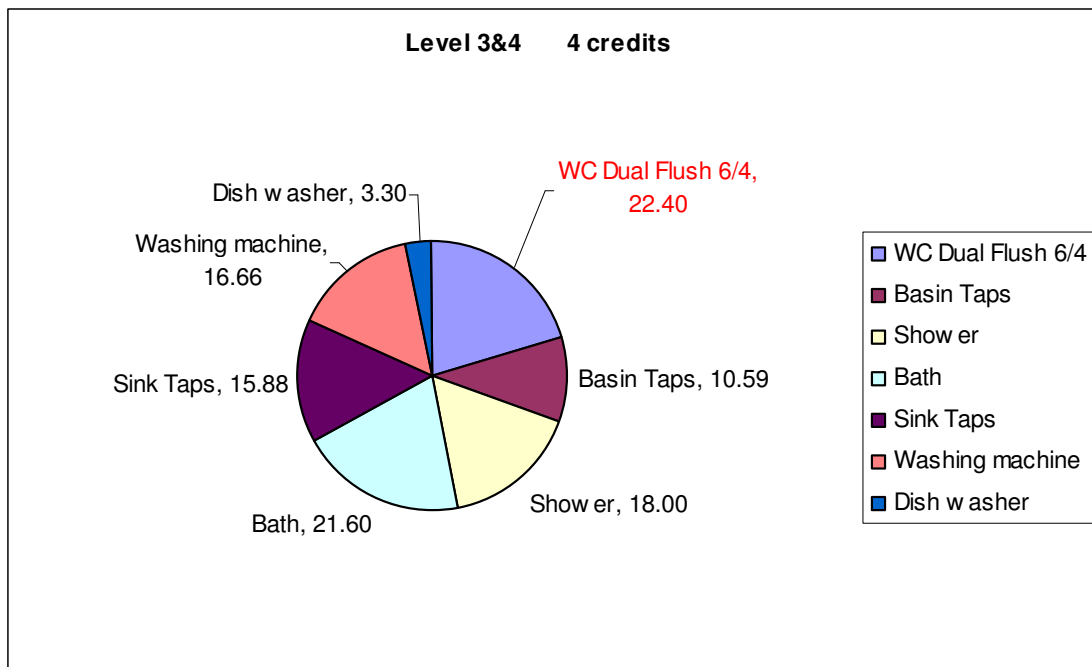
Appliance	litres/person/day	Specification Notes/Water Calculator inputs
WC Dual Flush 6/4	22.40	Standard Dual Flush 6/4 litre
Basin Taps	15.88	Flow rate of taps 4.5 litres/min entered in Wat1 Calculator as 3 litres/min (2/3 rd rule)
Shower	24.00	8 litres/min flow rate (0.6 proportion entered)
Bath	28.00	175 litres to overflow (0.4 proportion entered)
Kitchen Sink Taps	15.88	Flow rate of taps 4.5 litres/min, entered as 3 l/m
Washing machine	16.66	Standard 49 litres/cycle (default in calculator)
Dish washer	3.90	Standard 13 litres/cycle (default in calculator)
Gross Water consumption	126.72	Total water consumed if Ecoplay was not installed
Ecoplay saving	22.40	Ecoplay saves all the water required for WC flushing in this example
Net internal water consumption	104.32	The consumption with Ecoplay is reduced to below 105 l/p/day
Credits gained	3	3 credits gained for achieving ≤ 105 l/p/day
Level	Level 3&4	Mandatory level is passed



1.5 Wat1: Levels 3&4: 4 credits

The following example shows a specification which uses Ecoplay to achieve Level 3&4, going beyond the mandatory threshold for this level and gaining 4 credits. The table below is a summary of the inputs and outputs from the Water Calculator tool 'CSH_Spreadsheet_Tool_-_Wat1_Rev04' which is used by BRE licensed Code Assessors. A copy of the actual spreadsheet is attached as appendix 1.

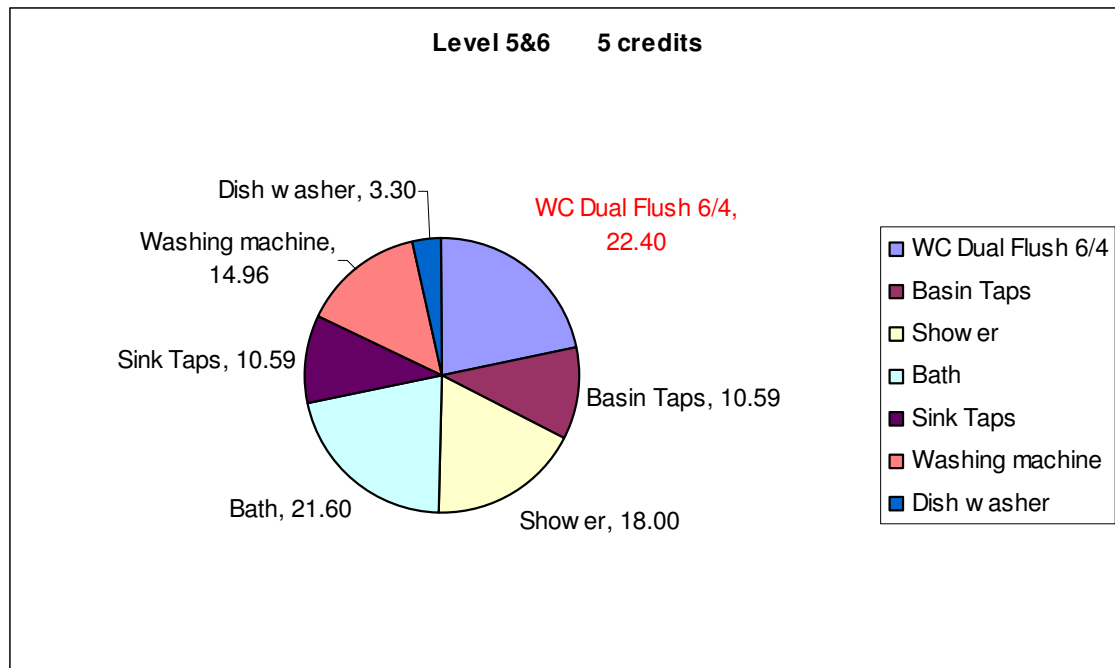
Appliance	litres/person/day	Specification Notes/Water Calculator inputs
WC Dual Flush 6/4	22.40	Standard Dual Flush 6/4 litre
Basin Taps	10.59	Flow rate of taps 3 litres/min entered in Wat1 Calculator as 2 litres/min (2/3 rd rule)
Shower	18.00	6 litres/min flow rate (0.6 proportion entered)
Bath	21.60	135 litres to overflow (0.4 proportion entered)
Kitchen Sink Taps	15.88	Flow rate of taps 4.5 litres/min, entered as 3 l/m
Washing machine	16.66	Standard 49 litres/cycle (default in calculator)
Dish washer	3.30	Efficient 9 litres/cycle (enter 9 into calculator)
Gross Water consumption	108.43	Total water consumed if Ecoplay was not installed
Ecoplay saving	22.40	Ecoplay saves all the water required for WC flushing in this example
Net internal water consumption	86.03	The consumption with Ecoplay is reduced to below 90 l/p/day
Credits gained	4	4 credits gained for achieving ≤ 90 l/p/day
Level	Level 3&4	Mandatory level is passed



1.6 Wat1: Levels 5&6: 5 credits

The following example shows a specification which uses Ecoplay to achieve Level 5&6, going beyond the mandatory threshold for this level and gaining 5credits. The table below is a summary of the inputs and outputs from the Water Calculator tool 'CSH_Spreadsheet_Tool_-_Wat1_Rev04' which is used by BRE licensed Code Assessors. A copy of the actual spreadsheet output is attached as appendix 1.

Appliance	litres/person/day	Specification Notes/Water Calculator inputs
WC Dual Flush 6/4	22.40	Standard Dual Flush 6/4 litre
Basin Taps	10.59	Flow rate of taps 3 litres/min entered in Wat1 Calculator as 2 litres/min (2/3 rd rule)
Shower	18.00	6 litres/min flow rate (0.6 proportion entered)
Bath	21.60	135 litres to overflow (0.4 proportion entered)
Kitchen Sink Taps	10.59	Flow rate of taps 3 litres/min, entered as 2 l/m
Washing machine	14.96	Efficient 39 litres/cycle (enter 39 into calculator)
Dish washer	3.30	Efficient 9 litres/cycle (enter 9 into calculator)
Gross Water consumption	101.43	Total water consumed if Ecoplay was not installed
Ecoplay saving	22.40	Ecoplay saves all the water required for WC flushing in this example
Net internal water consumption	79.03	The consumption with Ecoplay is reduced to below 90 l/p/day
Credits gained	5	5 credits gained for achieving ≤ 80 l/p/day
Level	Level 5&6	Mandatory level is passed



2 Ecoplay Specification Clauses and Code Evidence requirements

Typical specification clauses.

Grey Water Recycling

A grey water recycling system capable of serving 2 toilets, self cleaning and purging, to be fitted such as the Ecoplay or similar approved, which collects water from the shower and bath, assuming 95% collected.

Showers and Baths

Showers to be of maximum flow rate of X litres per minute. Baths to have a maximum capacity to overflow of Y litres. Waste pipes from baths and showers to be plumbed into the grey water recycling system.

Code evidence requirements: Design stage

- Specifications text as above
- Location and details of grey water collection system in the dwelling marked on drawings
- Water calculator sheet from the Code assessor

Code evidence requirements: Post Construction stage

- Drawings showing the location and details of grey water collection system
- Copies of purchase order receipts or photographic evidence or assessor site survey report
- Ecoplay product literature
- Water calculator sheet output from the Code assessor

3 Advantages of Using Ecoplay

3.1 Category 2: Water

Achieving Level 3&4 or higher for the water credits are challenging in the Code. It is difficult to achieve a level of comfort for consumers who are used to high flow rate showers, taps and large baths, without using water recycling at this level.

Design teams need to find the right balance between reducing the flow rates and water usage of appliances to meet the Code level required, and not specifying such low flow rates that householders find them unacceptable.

The use of the Ecoplay grey water recycling unit provides the design team with a flexible way to maintain reasonable levels of flow rates and still achieve any level of the Code water requirements.

3.2 Category 1: Energy

Ecoplay retains hot water from the bath and shower, within the dwelling for a period of time. This hot water is normally drained away externally. This retained heat, effectively contributes to the space heating of the bathroom and especially when aiming for higher code levels, can make a contribution to reducing the heating load. Further technical details are available if required.

4 The Report Author

4.1 Background

This report has been written by Steven Knight, Technical Director of Code Consultancy Services Ltd. Steven is a BRE licensed Code for Sustainable Homes Assessor and civil engineer with broad experience of the construction industry. Having worked in the UK and abroad, in roles spanning structural engineering, to site agent, materials testing and project management, to new product development, he brings a wide knowledge of construction and a long standing interest in high quality, high performance buildings.

Steven's work for housing developers such as Jones Homes, Ainsworth Acquisitions and Irish Anglo properties, gives relevant practical experience of issues faced when moving from basic building regulation performance to Code Level 3 and above.

As co-founder and trustee of the charity 'Action for Sustainable Living' which takes a holistic approach to sustainability, Steven is deeply involved and has broad working knowledge of many of the wider environmental and social sustainability issues. Action for Sustainable Living works in communities sets up recycling projects and social enterprises. Its work assisting schools to gain eco-schools status and with sustainability networks is developing strongly.

5 Appendix 1: Water Calculator Outputs

Job Name: Ecoplay
Issue Date: May-08

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WATER USE CALCULATOR					SPEC. ID		Level 1&2 1 credit	Level 1&2 2 credits	Level 3&4 3 credits	Level 3&4 4 credits	Level 5&6 5 credits
Installation type	Installation Item				Uses / person / day	Use Factor	No. within dwelling type	No. within dwelling type	No. within dwelling type	No. within dwelling type	No. within dwelling type
WC	Type	Full Flush (litres capacity)	Part Flush (litres capacity)								
	1) Dual Flush	6.00	4.00	4.80	1.00	1.00	1.00	1.00	1.00	1.00	
	2)										
	3)										
Consumption / person / day (Litres)						22.40	22.40	22.40	22.40	22.40	
BIDET	Bidet present?		2.64	2.00	1.00						
	Consumption / person / day (Litres)						0.00	0.00	0.00	0.00	0.00
WASH HAND BASIN TAPS	Flow Rate (Litres / Min)			7.90	0.67						
	Type 1	4.00				1.00					
	Type 2	3.00					1.00	1.00			
	Type 3	2.00							1.00	1.00	
Consumption / person / day (Litres)						21.17	15.88	15.88	10.59	10.59	
SHOWER	Flow Rate (Litres/ Min)			0.60 (Bath & Shower) 1.00 (Shower Only)	5.00						
	Type 1	9.00				0.60					
	Type 2	8.00					0.60	0.60			
	Type 3	6.00							0.60	0.60	
Consumption / person / day (Litres)						27.00	24.00	24.00	18.00	18.00	
BATH	Capacity to Overflow (Litres)			0.40 (Bath & Shower) 1.00 (Bath Only)	0.40						
	Type 1	180.00				0.40					
	Type 2	175.00					0.40	0.40			
	Type 3	135.00							0.40	0.40	
Consumption / person / day (Litres)						28.80	28.00	28.00	21.60	21.60	
KITCHEN SINK TAPS	Flow Rate (Litres / Min)			7.90	0.67						
	Type 1	4.00				1.00	1.00				
	Type 2	3.00						1.00	1.00		
	Type 3	2.00								1.00	
Consumption / person / day (Litres)						21.17	21.17	15.88	15.88	10.59	
WHITE GOODS	Washing Machine - typical practice		49	0.34	1.00	1.00	1.00	1.00	1.00	1.00	
	Actual - User Input (litres / cycle)										
	Washing Machine - typical practice										
	Actual - User Input (litres / cycle)		39.00						1.00		
	Consumption / person / day (Litres)						16.66	16.66	16.66	16.66	14.96
	Dishwasher - typical practice		13	0.30	1.00	1.00	1.00	1.00	1.00	1.00	
Actual - User Input (litres / cycle)											
Dishwasher - typical practice											
Actual - User Input (litres / cycle)		9.00						1.00	1.00		
Consumption / person / day (Litres)						3.90	3.90	3.90	3.30	3.30	
WATER SOFTENER	Is a Water Softener Present?				N/A	No	No	No	No	No	
	Average Number of regeneration cycles per day										
	Litres of water used per regeneration cycle										
	% of total capacity used per regeneration										
	Is the water softener a centralised system serving a group of dwellings?										
	No. of occupants						0.00	0.00	0.00	0.00	0.00
	Volume of water used beyond 4% / person / day (litres)				0	N/A	0.00	0.00	0.00	0.00	0.00
Consumption / person / day (Litres)						0.00	0.00	0.00	0.00	0.00	
1	NET INTERNAL WATER CONSUMPTION					141.10	132.01	126.72	108.43	101.43	
2	RAINWATER COLLECTION SAVING					0.00	0.00	0.00	0.00	0.00	
3	GREYWATER RECYCLING SAVING					22.40	22.40	22.40	22.40	22.40	
GROSS INTERNAL WATER CONSUMPTION (litres / person / day)						118.70	109.61	104.32	86.03	79.03	
CREDITS ACHIEVED						1.00	2.00	3.00	4.00	5.00	
MANDATORY LEVEL:						Level 1/2	Level 1/2	Level 3/4	Level 3/4	Level 5/6	

Job Name:
Issue Date:

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GREYWATER CALCULATOR	SPEC. ID	Level 1&2 credit	Level 1&2 credits	Level 3&4 credits	Level 3&4 credits	Level 5&6 credits	5
Part 1: Is greywater collected within this dwelling type?							
		Yes	Yes	Yes	Yes	Yes	
Part 2: Where is the greywater collected from? (Yes/No)							
Wash hand basin?		No	No	No	No	No	
	<i>Consumption (litres/person/day)</i>	0.00	0.00	0.00	0.00	0.00	
Shower?		Yes	Yes	Yes	Yes	Yes	
	<i>Consumption (litres/person/day)</i>	27.00	24.00	24.00	18.00	18.00	
Bath?			Yes	Yes	Yes	Yes	
	<i>Consumption (litres/person/day)</i>	28.80	28.00	28.00	21.60	21.60	
Part 3: Amount of greywater collected							
Total greywater collected from above fittings:		55.80	52.00	52.00	39.60	39.60	
Percentage Collected:		95.00%	95.00%	95.00%	95.00%	95.00%	
Total greywater collected:	<i>(litres/person/day)</i>	53.01	49.40	49.40	37.62	37.62	
Part 4: Where is the greywater to be used?							
WC's?		Yes	Yes	Yes	Yes	Yes	
	<i>Consumption of WC's (litres / person / day):</i>	22.40	22.40	22.40	22.40	22.40	
Which WC/WC's is grey water to be used?		Type 1	Type 1	Type 1	Type 1	Type 1	
	<i>Consumption of WC's using greywater</i>	22.40	22.40	22.40	22.40	22.40	
Washing Machine?		No	No	No	No	No	
	<i>Consumption (litres / person / day):</i>	0.00	0.00	0.00	0.00	0.00	
Total water consumed by above fittings:	<i>(litres/person/day)</i>	22.40	22.40	22.40	22.40	22.40	
Part 5: Savings from greywater							
Water provided by greywater		53.01	49.40	49.40	37.62	37.62	
Remaining demand not met by greywater		0.00	0.00	0.00	0.00	0.00	
Excess greywater not currently used:		30.61	27.00	27.00	15.22	15.22	
Water saved from greywater use:	<i>(litres/person/day)</i>	22.40	22.40	22.40	22.40	22.40	

Please note: This tool was not designed for the purposes of sizing grey/rainwater systems and is only used to assess Code credit Wat1 to estimate the savings the system will provide in order to size the system appropriately. © CIBA, CESA, BREIA Technical Note TN 7/2004