Consulting Civil Engineers

Water Neutrality Report

Rushford, Wheatsheaf Road, Henfield

For

Amanda Goodridge

Rev – **P4**

Reference **C3712**

Date **17th July 2025**

Revision	Date of Issue	Comments	Prepared By	Checked By
P-	27.05.2025	Initial Issue	LT	CS
P1	12.06.2025	Revised	LH	CS
P2	16.06.2025	Updated to address council comments	LT	CS
P3	15.07.2025	Revised to suit comments	LH	CS
P4	17.07.2025	Revised to suit comments	LH	CS

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1 Introduction

1.1.1 CGS Civils Ltd has been appointed by Amanda Goodridge to undertake a Water Neutrality Report for a proposed development at Rushford, Wheatsheaf Road, Henfield. Retrospective planning permission is sought for the conversion of the existing 1-bedroom outbuilding located at the rear of the property into a 1-bedroom holiday let Airbnb

1.1.2 The site falls within the Sussex North Water Supply Zone, in which Natural England have written to all authorities within the zone providing a position statement for applications which may place increased pressure on this zone. This explains that recent case law has established that abstraction from the Supply Zone may be having an impact on protected sites (Arun Valley Special Area of Conservations (SAC), Special Protection Area (SPA) and Ramsar site).

1.1.3 Developments within this zone must not add to this impact, as such, the purpose of this report is to therefore provide an overview on the potential water usage changes on the site because of the proposed development, and to confirm that the site is water neutral.

Fig 1. Sussex North Water Supply Zone Area

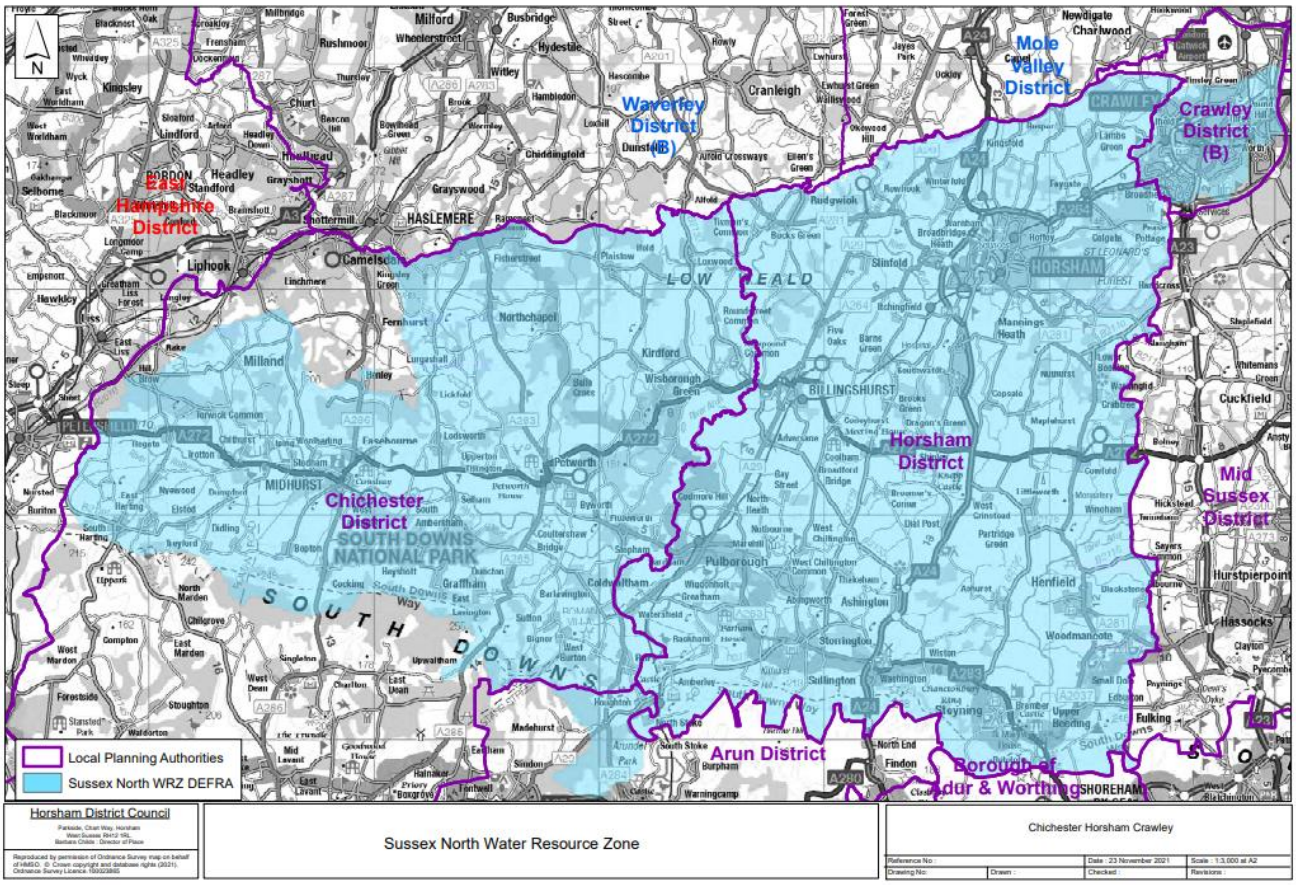
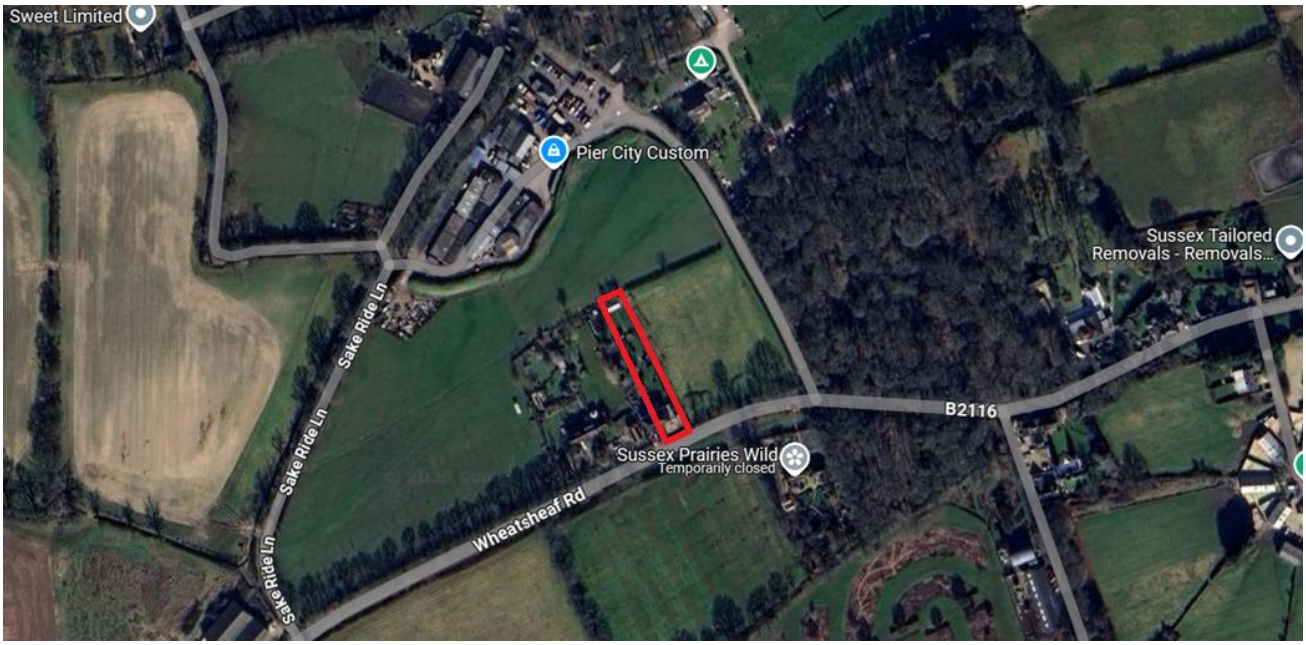


Fig 2. Site Location



1.1.4 The proposed development is located at OS Grid Reference TQ 23073 18131 and has the post code BN5 9AT.

1.1.5 Waterwise defined Water Neutrality as:

'For every new development, total water use in the region after the development must be equal to or less than the total water uses in the region before the new development.'

1.1.6 Achieving water neutrality involves using a three-step approach. First, the demand for water from the new development must be reduced as far as is practicable, followed by the re-use of water; then the remaining demand should be offset within the region. Following this three-step approach allows the volume that requires offsetting to be reduced which ultimately reduces the cost of the overall scheme. This is noted within the Waterwise neutrality definition, which defines the three steps which should be undertaken in order to achieve water neutrality in their recent review dated January 2021.

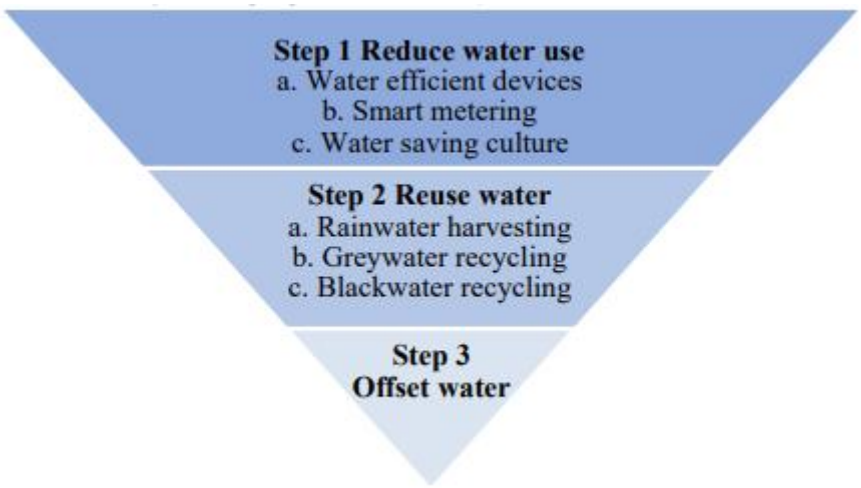
- Reduce water demand in the new development through improvement in efficiency.
- Re-use water, wherever possible.
- Offset the remaining water demand from the new development if required.

1.1.7 The report will be split into the following sections:

- A Review of Water Neutrality demand reduction
- A calculation of estimate water usage from proposed development
- Identification of measures that can be first used to reduce this demand
- Identification of measures that can be used to re-use water
- Establish solutions to offset that demand in order to achieve neutrality.

1.1.8 This report will follow the methods documented within *'A Review of Water Neutrality in the UK'* carried out by Waterwise in January 2021. The document provides details on how developments can achieve water neutrality by utilising the 3-stage approach.

Fig 3. 3-stage approach



1.1.9 Some increase in water demand within the region from planned development during the local plan period is inevitable. However, it can be minimised by making the site as water efficient as possible.

1.1.10 Per Capita Consumption (PCC) is used as a measure of water use and is the volume of water that is used by one person in one day. It is usually measured in litres per person per day (l/p/d). The average PCC within Southern Water's 'Sussex North Water Resource Zones (WRZ)' is 135 l/p/d. Homes without a water meter consume on average 160 l/p/d and for homes with a water meter, consume on average 131 l/p/d.

1.1.11 Part G of the Building regulations currently states that new build housing should achieve a minimum of 125 l/p/d. A tighter target of 110 l/p/d can be requested if the local authority can establish a clear need based on available evidence.

1.1.12 The table below indicates different demand scenarios including Southern Water's Target 100 Ambition to achieve 100 l/p/d, as well as further scenarios where water demand is cut more dramatically.

Table 1 PCC Demand Scenarios

Demand Scenario	Per Capita Consumption (l/p/d)
British Flows and Loads	150
Building Regulations Standard	125
Building Regulations Optional	110
Target 100	100
Realistic Achievable	85
Ambitious	62

1.1.13 The benefits of water neutrality are wide ranging, from financial and reputational to environment and social. For a new domestic building, they could include:

- **Saving Water** – Over 100,000 litres of water can be saved per year for each water neutral home built
- **Saving Carbon** – A significant CO2 saving can be achieved by reducing the demand for hot water for baths, showers, basins, dishwashers and washing machines
- **Saving Money** – Both water and energy bills will reduce
- **Reducing environmental impact** – Decreasing water abstracted from rivers and groundwater sources
- **Improved Resilience** – For the future by minimising the additional pressure on water resources
- **Enabling future housing growth** – In water scarce areas by reducing the impact of new homes and buildings
- **Reducing discharge to sewage** – by using less water, collecting rainwater and recycling greywater, less water is discharged to the drainage network
- **Short pay-back time** – After approximately 5 years the saving of water neutrality will outweigh the costs of doing so.

2 Executive Summary

2.1.1 The site currently consists of a 1-bedroom outbuilding located at the rear of Rushford, Wheatsheaf Road, Henfield. The water demand of this existing outbuilding has been determined to be **0 l/day** as it is currently used by the occupants of the main dwelling**.** The proposed scheme will consist of the conversion of this outbuilding into a 1-bedroom holiday let, the water demand for which will be **109.80 l/day,** prior to any mitigation techniques.

2.1.2 As demonstrated within this report, the use of water efficient fittings and small changes to the existing dwelling is enough to result in a water neutral site.

Table 2 Water Usage Comparison

Existing Water usage	0 l/day
Proposed Scheme water usage prior to mitigation measures	109.80 l/day
Proposed Scheme water usage post mitigation measures	83.64 l/day
Water demand offset by changes to existing dwelling	94.2 l/day
Proposed Scheme water usage equal to or lower than existing site	Yes

3 Calculation of estimated water usage from the proposed development

3.1.1 Before any necessary steps to achieve water neutrality can be determined, the total water demand for the proposed development must first be calculated. The proposed scheme will consist of converting the existing outbuilding into a 1-bedroom holiday let. In accordance with the average occupancy levels set out by Horsham DC, the population for the property will be 1.32.

Table 3 Average occupancy levels

Number of bedrooms	Average occupancy level
1	1.32
2	1.88
3	2.47
4	2.86
5	3.09

3.1.2 In order to comply with Policy 37 of the Horsham District Planning Framework (HDPF), which requires that the holiday lets' water demand complies with the optional building regulations standard of 110 litres per person per day (l/p/d). It should be noted that there is no washing machine within the Holiday let and a value for one has not been included within the calculations as the guests are most likely from outside the Sussex North Water Resource Zone. The water demand of the proposed holiday let is: (**See Appendix A**)

1.32 x 82.64 l/p/d
= 109.08 l/day

- *1.32 (average occupancy level for a 1-bedroom dwelling) x 82.64 (Appendix A – Water Calculator for Proposed fittings)*

3.1.3 It should be noted that while the holiday let is only going to be available for rent between 1st April and 31st October or approximately 58% of the year, for the purposes of this report it will be assumed that the holiday let is fully booked every day of the year.

4 Step 1 – Identifying measures that can be used to reduce this demand

4.1.1 The first and most important step in achieving water neutrality will be to ensure that the water used by the proposed development is used as efficiently as possible; the smaller the water demand of the building due to the design and fittings, the less water is needed to be reused and offset. There are a number of ways of achieving a smaller water demand:

- Fitting homes with efficient products, such as:
  - Aerated Taps
  - Aerated Shower heads
  - Low Flush Toilets, or air flush toilets
  - Water efficient white goods
- Installing Smart Meters, this allows the consumer to see how much water they are using, and how this affects their water saving bill. This can help consumers to reduce water usage, identify leaks, and meet water saving targets, with the bonus of reduced bills.
- Designing home to encourage water saving behaviours, this can also help reduce water use and help ensure that other measures that are put in place are effective. Education and awareness are important components of achieving water neutrality.

4.1.2 Building Regulations Part G states that when the new fittings approach is used, the water consumption of the fittings must not exceed a total of 125 l/p/day/. The values are listed in the table 4 below:

Table 4 Maximum Fittings Consumption from Building Regulations Part G

Water Fitting	Maximum Rating
WC	6/4 litres dual flush or 4.5 litres single flush
Shower	10 l/min
Bath	185 litres
Basin Taps	6 l/min
Sink Taps	8 l/min
Dishwasher	1.25 l/place setting
Washing Machine	8.17 l/kilogram

4.1.3 Should the proposed development be required to comply with the optional water efficiency as part of the conditions for planning permission, the estimated consumption of water can be calculated via the Optional requirement level of fittings consumption. This is listed within Building Regulations Part G, which also states that the water consumption must not exceed 110 l/p/day, and the maximum fittings consumption for optional requirement can be found in Table 5 below:

Table 5 Maximum fittings consumption optional requirement level from Building Regulations Part G

Water Fitting	National Base Level
WC	4/2.6 litres dual flush
Shower	8 l/min
Bath	170 litres
Basin Taps	5 l/min
Sink Taps	6 l/min
Dishwasher	1.25 l/place setting
Washing Machine	8.17 l/kilogram

4.1.4 However, to improve on the above requirements, the proposed site can implement the following measures in order to focus on becoming a water efficient development. By installing the following features, the development can achieve a water demand of around 85 l/p/d, which aligns with a 'Realistic Achievable' PCC. See Table 6 below:

Table 6 Water efficient fittings consumption

Water Fitting	Consumption Level
WC	4/2.6 litres dual flush
Shower	7 l/min
Bath	145 litres
Basin Taps	2.5 l/min
Sink Taps	5 l/min
Dishwasher	0.67 l/place setting
Washing Machine	5.5 l/kilogram

Please note that by accepting this report, you accept the low flow rates of the proposed fittings required to achieve water neutrality. CGS Civils cannot be held responsible for any reduced comfort levels that may arise from the use of these fittings.

4.1.5 Within the proposed holiday let and in the retrofitted main house, shower heads with a flow rate of **5 l/min** will be fitted in order to further reduce the proposed site's water demand.

4.1.6 Water demand can also be reduced through fitting metres, which help to identify leaks and track water consumption as a way to support and encourage behavioural changes such as, not leaving the tap running when brushing teeth and using eco settings on the washing machine and dishwasher. It should be noted that behavioural changes have not been used within the calculations within this report as it is impossible to enforce.

Table 7 Practical Summary of Step 1

Step 1: Reduce Water				
Toilets	Cistern displacement devices (toilet hippos)	Retrofit flush devices to dual flush	Fix leaky toilets	
Taps	Tap inserts (aerators)	Low flow restrictors	Push taps	Infrared Taps
Showers/baths	Low flow shower heads (less than 8litres/min)	Shower timers	Reduced bath frequency & volume	
Outdoors	Hosepipe flow restrictors	Hosepipe siphons	Water butts	Mulches and composting to keep soil moist
Smart Metering	Leakage information	Encourage behavioural changes	Innovative tariffs	Savings estimates

4.1.7 By installing the water efficient devices listed above, it is possible to reduce the water demand on site from **109.08 l/day** down to **83.64 l/day**

1.32 x 63.36 l/p/d

= **83.64 l/day**

- *1.32 (average occupancy level for a 1-bedroom dwelling) x 63.36 (Appendix B – Water Calculator for Proposed fittings)*

5 Step 3 – Offsetting remaining water demand

5.1.1 Finally, the remaining water requirements for new homes or developments which cannot be satisfied with non-potable sources must be offset. Offsetting can generally be done by investing in schemes that save water within the local region such as retrofitting existing buildings with water efficient devices or water reuse systems.

5.1.2 In this instance however, the existing property is owned by the client and can undergo the 'reduce and re-use' measures that are listed in the above sections 1 and 2. It is proposed that the toilets are fitted with water efficient cisterns, aerators are fitted to the basin taps, kitchen taps and the shower within the dwelling. This proposed change will reduce the water demand from **271.9 l/day** to **177.7 l/day**, which is a reduction of **94.2 l/day** – as described within the Existing Fittings Survey (**C3712 Existing Fittings Survey**) which has been submitted alongside this report - which is sufficient to offset the proposed holiday let.

5.1.3 A copy of the existing dwellings floor plan can be found within **Appendix E.**

5.1.4 As indicated within the above calculations, the proposed site is not only water neutral, but there will be an overall betterment over the existing site's water demand therefore reducing the impact within the region.

Proposed water demand prior to mitigation	– 109.08 l/day
Proposed demand post mitigation techniques	– 83.64 l/day
Capacity released from modifications to existing dwelling	- 94.2 l/day
Difference	**- 10.56 l/day**

6 Conclusion

6.1.1 To summarise:

- The proposed holiday let has a water demand of **109.08 l/day.**
- This water demand can be reduced to **83.64 l/day** through the installation of water reducing appliances
- The existing dwelling is owned by the client and they are willing to install water efficient cisterns in the toilets, aerators to the taps and showers within the dwelling as well as install a water butt external to offset the proposed dwelling. These changes will reduce the water demand by **94.2 l/day** which is enough to offset the proposed holiday let.

7 Appendices

7.1 Appendix A:

Table 10 – Water Calculator from Building Regulations Part G – Information input from proposed site.

The Water Calculator for New Dwellings with Water efficient measures					
Installation Type	Unit of measure	Volume/ flow rate	Use factor	Fixed use	Litres/person/day
WC (Single Use)	Flush volume (l)	0	4.42	0	0
WC (Dual Flush)	Full Flush Vol.	4	1.46	0	5.84
	Part Flush vol.	2.6	2.96	0	7.70
WC (Multiple Fittings)	Average effective flush volume (l)	0	4.42	0	0
Taps (excl. Kitchen)	Flow rate (l/min)	5	1.58	1.58	9.48
Bath (shower also present)	Capacity to overflow (l)	0	0.11	0	0
Shower (bath also present)	Flow rate (l/min)	0	4.37	0	0
Bath only	Capacity to overflow (l)	0	0.5	0	0
Shower only	Flow rate (l/min)	8	5.6	0	44.80
Kitchen sink taps	Flow rate (l/min)	6	0.44	10.36	13.00
Washing Machine	Litres/kg dry load	0	2.1	0	0
Dishwasher	litres/place setting	1.25	3.6	0	4.50
Waste disposal unit	litres/use	0	3.08	0	0
Water softener	litres/person/day	0	1	0	0
		Total Calculated use (l/p/d)			85.32
		Contribution from greywater (l/p/d)			0
		Contribution from rainwater (l/p/d)			0
		Normalisation factor			0.91
		External water use			5
		Total water consumption (36(1)) (l/p/d)			82.64

7.2 Appendix B:

Table 10 – Water Calculator from Building Regulations Part G – Information input from proposed site with water efficient fittings.

The Water Calculator for New Dwellings with Water efficient measures					
Installation Type	Unit of measure	Volume/ flow rate	Use factor	Fixed use	Litres/person/day
WC (Single Use)	Flush volume (l)	0	4.42	0	0
WC (Dual Flush)	Full Flush Vol.	4	1.46	0	5.84
	Part Flush vol.	2.6	2.96	0	7.70
WC (Multiple Fittings)	Average effective flush volume (l)	0	4.42	0	0
Taps (excl. Kitchen)	Flow rate (l/min)	2.5	1.58	1.58	5.53
Bath (shower also present)	Capacity to overflow (l)	0	0.11	0	0
Shower (bath also present)	Flow rate (l/min)	0	4.37	0	0
Bath only	Capacity to overflow (l)	0	0.5	0	0
Shower only	Flow rate (l/min)	5	5.6	0	28.00
Kitchen sink taps	Flow rate (l/min)	5	0.44	10.36	12.56
Washing Machine	Litres/kg dry load	0	2.1	0	0
Dishwasher	litres/place setting	1.25	3.6	0	4.5
Waste disposal unit	litres/use	0	3.08	0	0
Water softener	litres/person/day	0	1	0	0
		Total Calculated use (l/p/d)			64.13
		Contribution from greywater (l/p/d)			0
		Contribution from rainwater (l/p/d)			0
		Normalisation factor			0.91
		External water use			5
		Total water consumption (36(1)) (l/p/d)			63.36

7.3 Appendix C:

Table 11 – Water Calculator from Building Regulations Part G – Information input from the existing house

The Water Calculator for New Dwellings with Water efficient measures					
Installation Type	Unit of measure	Volume/ flow rate	Use factor	Fixed use	Litres/person/day
WC (Single Use)	Flush volume (l)	0	4.42	0	0
WC (Dual Flush)	Full Flush Vol.	6	1.46	0	8.76
	Part Flush vol.	4	2.96	0	11.84
WC (Multiple Fittings)	Average effective flush volume (l)	0	4.42	0	0
Taps (excl. Kitchen)	Flow rate (l/min)	6	1.58	1.58	11.06
Bath (shower also present)	Capacity to overflow (l)	0	0.11	0	0
Shower (bath also present)	Flow rate (l/min)	0	4.37	0	0
Bath only	Capacity to overflow (l)	0	0.5	0	0
Shower only	Flow rate (l/min)	10	5.6	0	56.00
Kitchen sink taps	Flow rate (l/min)	8	0.44	10.36	13.88
Washing Machine	Litres/kg dry load	5.5	2.1	0	11.55
Dishwasher	litres/place setting	0.67	3.6	0	2.41
Waste disposal unit	litres/use	0	3.08	0	0
Water softener	litres/person/day	0	1	0	0
		Total Calculated use (l/p/d)			115.50
		Contribution from greywater (l/p/d)			0
		Contribution from rainwater (l/p/d)			0
		Normalisation factor			0.91
		External water use			5
		Total water consumption (36(1)) (l/p/d)			110.11

7.4 Appendix D:

Table 12 – Water Calculator from Building Regulations Part G – Information input from the existing house with proposed fittings.

The Water Calculator for New Dwellings with Water efficient measures					
Installation Type	Unit of measure	Volume/ flow rate	Use factor	Fixed use	Litres/person/day
WC (Single Use)	Flush volume (l)	0	4.42	0	0
WC (Dual Flush)	Full Flush Vol.	4	1.46	0	5.84
	Part Flush vol.	2.6	2.96	0	7.70
WC (Multiple Fittings)	Average effective flush volume (l)	0	4.42	0	0
Taps (excl. Kitchen)	Flow rate (l/min)	2.5	1.58	1.58	5.53
Bath (shower also present)	Capacity to overflow (l)	0	0.11	0	0
Shower (bath also present)	Flow rate (l/min)	0	4.37	0	0
Bath only	Capacity to overflow (l)	0	0.5	0	0
Shower only	Flow rate (l/min)	5	5.6	0	28.00
Kitchen sink taps	Flow rate (l/min)	5	0.44	10.36	12.56
Washing Machine	Litres/kg dry load	5.5	2.1	0	11.55
Dishwasher	litres/place setting	0.67	3.6	0	2.41
Waste disposal unit	litres/use	0	3.08	0	0
Water softener	litres/person/day	0	1	0	0
		Total Calculated use (l/p/d)			73.59
		Contribution from greywater (l/p/d)			0
		Contribution from rainwater (l/p/d)			0
		Normalisation factor			0.91
		External water use			5
		Total water consumption (36(1)) (l/p/d)			71.96

7.5 Appendix E:

Existing House Floor Plan:

