Land at Sir Robert's Farm
Goose Green Lane
Pulborough
West Sussex

Water Neutrality Statement

In connection with:
Application for Prior Approval to add a second storey under AA.2. of Part 3 of Schedule 2 of The Town and Country Planning (General Permitted Development) (England) Order 2015, as amended by The Town and Country Planning (General Permitted Development) (England) (Amendment) Order 2016.

At:
Sir Robert's Farm
Goose Green Lane
Pulborough
West Sussex RH20 2LW

Version 1

1 Introduction and Executive Summary

This Water Neutrality Statement has been prepared in support of the application for Prior Approval to add a second storey under AA.2. of Part 3 of Schedule 2 of The Town and Country Planning (General Permitted Development) (England) Order 2015, as amended by The Town and Country Planning (General Permitted Development) (England) (Amendment) Order 2016.

This report demonstrates how the development will meet the requirements of Horsham District Council's Planning Policy, Natural England's Position Statement for Applications within the Sussex North Water Supply Zone[1]

Water neutrality is not defined in legislation, however Natural England draw the definition from the Gatwick Sub-regional Water Cycle Study (2020)[2]:

> *"For every new development,* ***total water use in the Sussex North Water Supply Zone*** *after the development must be* ***equal to or less*** *than the total water-use in the region before the new development."*

This report concludes that the proposed development <u>will have a net neutral water demand, compared to the baseline water consumption.</u>

2 The Proposed Development

Details of the proposed development can be found in the accompanying Planning Statement and associated drawings.

The proposed development is located at Sir Robert's Farm Goose Green Lane, Pulborough, West Sussex RH20 2LW. The site is located within the Sussex North Water Resource Supply Zone. This supply is sourced from abstraction points in the Arun Valley, which includes locations such as Amberley Wild Brooks Site of Special Scientific Interest (SSSI), Pulborough Brooks SSSI and Arun Valley Special Protection Area/Special Area of Conservation and Ramsar site.

The proposed development comprises the addition of a second storey to the principal part of the Cottage.

3 Policy and Regulations

The proposed development is required to meet both local planning policy as well as the National Standards (Part G) requirements in relation to water specification and use on site.

3.1 Building Regulation Approved Document Part G[3]

The minimum Part G standard equates to 125l/p/d and enhanced standard 110l/p/d (both including 5l/p/d external water use) and apply to a dwelling formed by:

- new construction

[1] September 2021 – Interim Approach
[2] Gatwick Sub-Region Water Cycle Study, Final Report (August 2020) JBA Consulting
[3] Sanitation, hot water safety and water efficiency (2015) edition with amendments

- material change of use where the building is used as a dwelling where previously it was not; or
- material change of use where the building contains a flat, where previously it did not.

3.2 Horsham District Planning Framework (Nov. 2015)

Policy 37 of the Horsham Planning framework (2015) sets out the water efficiency requirements for all new developments erected within the region. A target figure of 110 Litres/person/day must be achieved or bettered for all new developments.

3.3 Natural England Position Statement[4]

In September 2021, Natural England released substantive advice for all developments that fall within the Sussex North's water supply zone. To alleviate stresses imposed on the water network, all new developments must demonstrate the water consumption after the development is complete will be no greater than the consumption of the site as existing.

4 Existing Water Usage – The Baseline Water Consumption

The existing dwellinghouse comprises a one-bedroom bungalow.

The properties do not have a water meter. Therefore, the Baseline Water Consumption for each of the existing buildings is calculated based on the following basis:

4.1 Part G Calculator

Horsham District Counsel (HDC) has advised the Applicant that the average PCC in Southern Water's Sussex North Water Resource Zone of 135 l/p/d is no longer accepted in the calculation of the assumed baseline. HDC has advised that the baseline is to be calculated in accordance with the Part G calculator. The correspondence with HDC is in Appendix A.

To calculate the estimated water use of the existing dwellings, the WRC Part G Water Efficiency Calculator for new dwellings has therefore been used. This calculator has been developed in accordance with the Government's National Calculation Methodology for assessing water efficiency in new dwellings in support of: The Code for Sustainable Homes, April 2009 and subsequent versions, and the Building Regulations Approved Document Part G, 2009.

A report detailing the survey of the existing fixtures and fittings, and the calculated water consumption of each of the bungalow and cottage is contained in Appendix B.

Based on the Part G Water Consumption calculation, the total water consumption of the Cottage is: **165 Litres/person/day**.

[4] Natural England's Position Statement for Applications within the Sussex North Water Supply Zone (September 2021 – Interim Approach)

4.2 Occupancy

When calculating water use and water offset, each building's occupancy must be taken into consideration as part of the overall calculation in order to produce a total litres per day water use figure.

Based on extrapolated 2011 census data for Horsham District, average occupancy data is as follows:

- One-bedroom dwellings: 1.32 occupants
- Two-bedroom dwellings: 1.88 occupants
- Three-bedroom dwellings: 2.47 occupants
- Four-bedroom dwellings: 2.86 occupants
- Five-bedroom dwellings: 3.09 occupants

Accordingly, the Baseline Water Consumption is as follows:

Existing Dwelling	Bedrooms	Occupancy	(L/p/d)	Total (l/d)
Cottage	1	1.32	165	**247.3**

The proposed development therefore must be demonstrated to use no more than **247.3 litres/day** (the "**Baseline Water Consumption**").

5 Water Use of Proposed Development

To calculate the water use of the proposed development, the WRC Part G Water Efficiency Calculator for new dwellings has been used.[5] This calculator has been developed in accordance with the Government's National Calculation Methodology for assessing water efficiency in new dwellings in support of: The Code for Sustainable Homes, April 2009 and subsequent versions, and the Building Regulations Approved Document Part G, 2009.

The proposed water related fitting specifications are detailed in Appendix C.

Based on the proposed fittings, the total water consumption per person, per day is 85.4 litres (see Appendix D)

Proposed Dwelling	Bedrooms	Occupancy	PCC l/p/d	Total l/d
COttage	1	1.32	85.4	**112.7**

The total water consumption of the proposed development is **112.7 litres/day**. This is less than the Baseline Water Consumption. The proposed development uses less water and is therefore considered to be water neutral.

The site post-development will be net water neutral and will use no more water that the site pre-development and will not impose a burden on the existing water resources in the region.

[5] https://wrcpartgcalculator.co.uk/

The development complies with the objective of Natural England's position statement relating to water neutrality.

It should be noted that the develop seeks to implement further development on the site, including the addition of further dwellinghouse. The developer reserves the right to offset the water consumption of other development on the site against the difference between the Cottage's Baseline Water Consumption and water consumption of the proposed development (i.e. there remains 134.6 litres/day for offset against further development on the site).

Appendix A - Correspondence with HDC regarding calculation of Baseline Water Consumption

RE: DC/23/0547 - Revised Water Neutrality Statement

1 message

Robert.Hermitage <Robert.Hermitage@horsham.gov.uk> Wed, Aug 9, 2023 at 4:50 PM
To: Michael isherwood <[redacted]>

Hi Michael

I have just reviewed this statement. I note that 135lpd has been applied to the existing dwelling as an assumed baseline. Unfortunately, we no longer accept this position, as this caused some issues with offsetting schemes where we requested Part G calculators to demonstrate their baseline. In order to make things consistent, fair and taking the precautionary approach, we know expect baselines to be demonstrated with a Part G calculator.

Please let me know if you wish to update the statement again.

Many thanks

Robert Hermitage

Principal Planning Officer

Appendix B - Water Consumption Survey

Land at Sir Robert's Farm
Goose Green Lane
Pulborough
West Sussex

Water Consumption Survey

At:
Sir Robert's Farm
Goose Green Lane
Pulborough
West Sussex RH20 2LW

Version 1

1 Introduction

The report has been prepared in support of a water neutrality statement in connection with the proposed development of Sir-Roberts Farm. The proposed development relies on the baseline water consumption of two residential properties on the site. The residential properties comprise:

- an existing four-bedroom bungalow; and
- an existing one-bedroom cottage.

This report presents a survey of the existing fixtures and fittings in each of the properties, and evidences their current water consumption rate. The report presents recordings of the flow rate of each fixture/fitting and photographs of each, and an explanation of the methodology used to calculate the flow rates etc. The results have then been input into a Part G water calculator to calculate the total water consumption per person per day for each property.

Based on the flow rates and capacities measured, as calculated in accordance with the Part G Calculator, the total water consumption of the existing dwellings are:

- Bungalow: 211 Litres/person/day
- Cottage: 165 Litres/person/day

2 Methodology

This section describes the methodology used for calculating the capacity/flow rate etc of the existing fixtures and fittings. Videos of each process were taken during the survey and are available on request.

2.1 Taps

To measure the flow rate of each tap the following methodology was followed:

1. Tap photographed and short description of the tap style taken.
2. Tap opened to full flow.
3. Stopwatch prepared at zero.
4. One litre container placed under the tap collecting the water, stopwatch simultaneously started.
5. Stopwatch stopped once water reached one litre mark.
6. Process repeated three times and average reading taken.
7. Litres per minute calculated by:

   (60 / average recorded time) x no. of litres collected = litres / minute

2.2 Bath

For the Part G calculator, the Bath capacity (litres) up to the overflow is required. As the baths in the two properties are old, and exact specifications cannot be obtained, the baths were measured (length, width and depth to overflow. Comparable models have been located on-line and the capacities have been estimated from there.

2.3 Shower

Methodology as per Tabs, but using larger container, timing the collection of 5 litres.

2.4 Toilet

To measure the flush capacity of each toilet (each being single flush), the following methodology was followed:

1. Toilet photographed and short description taken.
2. Cistern lid opened. Water level marked inside cistern.
3. Measuring container with 10-15liters of water added. This was weighed.
4. The toilet is flushed, holding the float valve up so that the cistern does not refill after flushing.
5. Once flush complete, the water from the container was emptied into the cistern until it reaches the marked original water level.
6. The water level in the container was then measured using the marked scale, and weight.
7. The new weight is deducted from the original weight, giving the weight of water emptied into the cistern. The weight of water is 1kg per litre.

3 Results

3.1 Bungalow

The bungalow is a four-bedroom residential property, currently occupied. It has one family bathroom and one en-suite.

The family bathroom comprises a toilet, bath and basin.

The en-suit comprise a toilet, shower and basin. The en-suit is in a state of disrepair and has been for some time. The shower and toilet are not operational and therefore have not been considered in the water consumption of the property (see section 3.1.3.2).

3.1.1 Toilets (WC)

Main Bathroom. Two-piece, single flush toilet.



Figure 1 - Main Bathroom Toilet

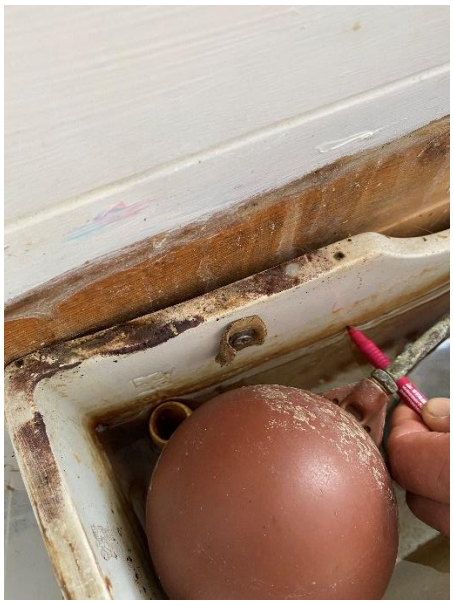


Figure 3 – Cistern water level marked



Figure 2 - Cistern water level measured



Figure 5 - Weight of water prior to refilling cistern



Figure 4 - Water level of water prior to refilling cistern



Figure 7 - Weight of water after cistern refill



Figure 6 - Water level after refill of cistern

Cistern flush volume = **13.7 Litres**

3.1.2 Bath

Rectangular bathtub measuring 1780mm long, 700mm wide. Depth to overflow 330mm



Figure 8 - Bathtub (no shower)

Based on a similar sized bath (link below), estimated volume of **207 Litres** up to overflow.

https://www.screwfix.com/p/ideal-standard-della-single-ended-bath-acrylic-2-tap-holes-1700mm/197jp

3.1.3 Basin Taps

3.1.3.1 Main Bathroom

Separate hot and cold basin taps. Old style taps.



Figure 9 - Main bathroom basin

Test no.	**Time taken to fill 1 Litre (seconds)**
1	3.58
2	3.67
3	3.73
Average:	**3.66**

The average time to fill one Litre of water from the cold tap was 3.66 seconds. This equates to a flow rate of **16.40 Litres/Minute**.

3.1.3.2 En-suite

3.1.3.2.1 Basin Taps

Separate hot and cold basin taps. Old style taps.



Figure 10 - En-suite basin

Test no.	Time taken to fill 1 Litre (seconds)
1	3.16
2	3.48
3	3.16
Average:	**3.27**

The average time to fill one Litre of water from the cold tap was 3.27 seconds. This equates to a flow rate of **18.34 Litres/Minute**.

3.1.3.2.2 Shower

The shower in the en-suite was inoperable and had been for some time. No measurement could be taken.



Figure 12 - Inoperable shower



Figure 11 - Temperature control dial missing from shower

3.1.3.2.3 Toilet

The toilet in the en-suite was inoperable and had been for some time. No measurement could be taken.



Figure 14 - Inoperable en-suite toilet



Figure 13 - Flush handle missing from toilet

3.1.4 Kitchen Tap

Single mixer tap.



Figure 15 - Kitchen tap

Test no.	Time taken to fill 1 Litre (seconds)
1	4.33
2	4.14
3	4.66
Average:	**4.37**

The average time to fill one Litre of water from the cold tap was 4.37 seconds. This equates to a flow rate of **13.73 Litres/Minute**.

3.1.5 Washing Machine



Figure 17 - Washing Machine

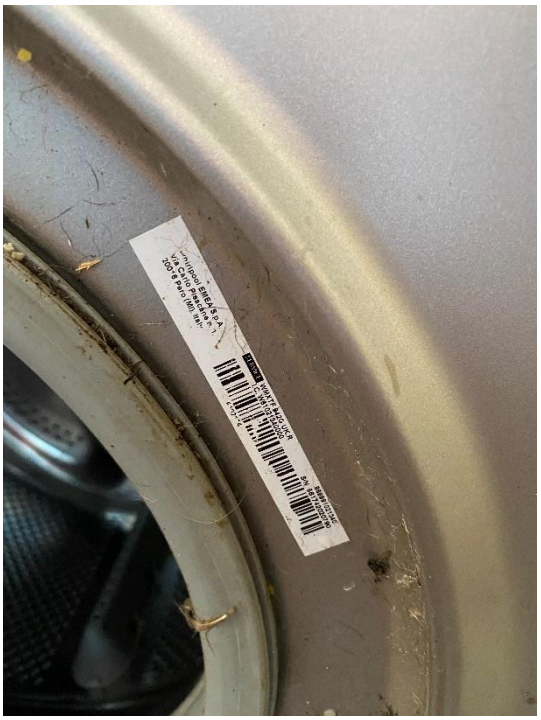


Figure 16 - Washing Machine Model Number

Based on the product data sheets (links below), the annual water consumption is 11690 Litres, based on 220 standard washing cycles at full and partial load. Average water consumption per wash is 53.1 Litres, equating to **5.9 Litres per kg dry load**.

https://www.hotpoint.co.uk/hotpoint-freestanding-front-loading-washing-machine-9kg-f102134/p

https://whirlpool-cdn.thron.com/static/TNOOIL_PRF102134en.pdf_5VEWMB.pdf?xseo=&response-content-disposition=inline%3Bfilename%3D%22doc.pdf%22

https://whirlpool-cdn.thron.com/static/SKQHYT_PFF102134en.pdf_X4NSEP.pdf?xseo=&response-content-disposition=inline%3Bfilename%3D%22Product-Fiche.pdf%22

3.1.6 Outdoor Tap

Single outdoor tap.



Figure 18 - Outdoor tap

No measurements were taken for the outdoor tap, as the Part G Calculator assumes 5 Litres per day per person

3.1.7 Part G Calculation

To calculate the water consumption of the proposed development, the WRC Part G Water Efficiency Calculator for new dwellings has been used. This calculator has been developed in accordance with the Government's National Calculation Methodology for assessing water efficiency in new dwellings in support of: The Code for Sustainable Homes, April 2009 and subsequent versions, and the Building Regulations Approved Document Part G, 2009.

Installation Type	Unit of Measure	Capacity/Flow rate (1)	Use Factor (2)	Fixed use (litres/person/day) (3)	Litres/person/day = [(1)x(2)] + (3) (4)
WC (single flush)	Flush Volume (litres)	13.70	4.42	0.00	60.55
WC (dual flush)	Full flush Volume (litres)		1.46	0.00	0
	Part flush Volume (litres)		2.96	0.00	0
WC (multiple fittings)	Average effective flushing Volume (litres)		4.42	0.00	0
Taps (excluding kitchen/utility room taps)	Flow rate (litres/min)	17.37	1.58	1.58	29.02
Bath (where shower also present)	Capacity to overflow(litres)		0.11	0.00	0
Shower (where bath also present)	Flow Rate(litres / minute)		4.37	0.00	0
Bath Only	Capacity to overflow(litres)	207.00	0.50	0.00	103.50
Shower Only	Flow Rate (litres/minute)		5.60	0.00	0
Kitchen/Utility room sink taps	Flow rate (litres/minute)	13.73	0.44	10.36	16.40
Washing Machine	(Litres/kg dry load)	5.90	2.1	0.00	12.39
Dishwasher	(Litres/place setting)	1.25	3.6	0.00	4.5
Waste disposal unit	(Litres/use)	☐ Present	3.08	0.00	0
Water Softener	(Litres/person/day)		1.00	0.00	0
	(5)	Total Calculated use (litres/person/day) =SUM(column 4)			226.36
	(6)	Contribution from greywater (litres/person/day)			0
	(7)	Contribution from rainwater (litres/person/day)			0
	(8)	Normalisation factor			0.91
	(9)	Total internal water consumption = [(5)-(6)-(7)]x(8) (litres/person/day)			205.99
	(10)	External water use			5.0
	(11)	Total water consumption (Building Regulation 17.K) =(9)+(10)(litres/person/day)			211.0

Click here to fill in details before printing:

Estimated water consumption of the Bungalow equals **211 Litres/Person/Day.**

3.2 Cottage

The cottage is a one-bedroom residential property, currently occupied. It has one bathroom.

The bathroom comprises a toilet, bath and basin.

3.2.1 Toilet (WC)

Two piece, single flush toilet.



Figure 19 - Toilet



Figure 20 - Water level market in cistern (red line)

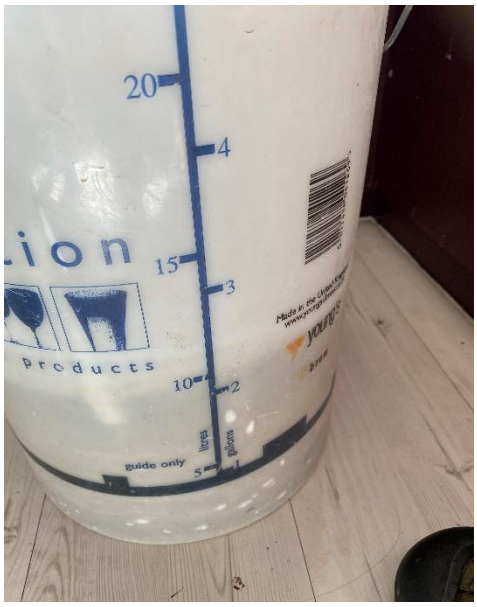


Figure 22 - Waterline at 10 litres prior to refilling cistern after flush.



Figure 21 - Water level after refilling cistern up to marked level (not registering on scale).



Figure 24 - Weight of water prior to refilling cistern



Figure 23 - Weight of water after refilling cistern

Cistern flush volume = **8.9 Litres**

3.2.2 Bath

Rectangular bathtub measuring 1480mm long, 780mm wide. Depth to overflow 310mm



Figure 25 – Bathtub (with shower)

Based on a similar sized bath (link below), estimated volume of **150 Litres** up to overflow.

https://www.victorianplumbing.co.uk/ideal-standard-i-life-1500-x-700mm-0th-single-ended-idealform-bath?categoryId=bddfea45-3f3b-4c92-8b2a-ea346b3e004d-2935:en-GB

3.2.3 Basin Tap

Separate hot and cold basin taps. Old style tap.



Figure 26 - Bathroom basin

Test no.	Time taken to fill 1 Litre (seconds)
1	3.81
2	3.69
3	3.71
Average:	**3.74**

The average time to fill one Litre of water from the cold tap was 3.74 seconds. This equates to a flow rate of **16.04 Litres/Minute**.

3.2.4 Shower

Mixer shower.



Figure 27 – Shower

It took 45.8 seconds for the shower to fill a container with 10 litres. This equates to a flow rate of **13.1 Litres/Minute**.

3.2.5 Kitchen Tap

Mixer tap.

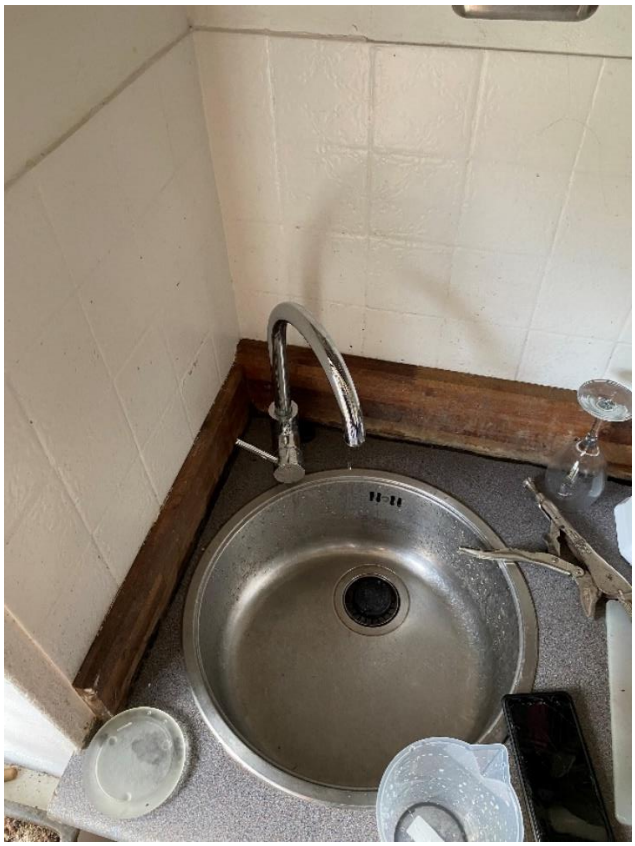


Figure 28 - Kitchen tap

Test no.	Time taken to fill 1 Litre (seconds)
1	5.16
2	5.93
3	5.58
Average:	**5.56**

The average time to fill one Litre of water from the cold tap was 5.56 seconds. This equates to a flow rate of **10.79 Litres/Minute**.

3.2.6 Washing Machine

Hoover 7kg washing machine



Figure 29 - Washing Machine

Specification can be found here: https://service.hoover.co.uk/advice-centre/washing-machines/ophs-712df/

Uses 44 Litres per cycle. Assuming a 7kg load, this equates to 6.29 Litres/kg

3.2.7 Outdoor Tap

Single outdoor tap.



No measurements were taken for the outdoor tap, as the Part G Calculator assumes 5 Litres per day per person.

3.2.8 Part G Calculation

To calculate the water consumption of the proposed development, the WRC Part G Water Efficiency Calculator for new dwellings has been used.[1] This calculator has been developed in accordance with the Government's National Calculation Methodology for assessing water efficiency in new dwellings in support of: The Code for Sustainable Homes, April 2009 and subsequent versions, and the Building Regulations Approved Document Part G, 2009.

Installation Type	Unit of Measure	Capacity/Flow rate (1)	Use Factor (2)	Fixed use (litres/person/day) (3)	Litres/person/day = [(1)x(2)] + (3) (4)
WC (single flush)	Flush Volume (litres)	9.80	4.42	0.00	43.32
WC (dual flush)	Full flush Volume (litres)		1.46	0.00	0
	Part flush Volume (litres)		2.96	0.00	0
WC (multiple fittings)	Average effective flushing Volume (litres)		4.42	0.00	0
Taps (excluding kitchen/utility room taps)	Flow rate (litres/min)	16.04	1.58	1.58	26.92
Bath (where shower also present)	Capacity to overflow(litres)	150.00	0.11	0.00	16.50
Shower (where bath also present)	Flow Rate(litres / minute)	13.10	4.37	0.00	57.25
Bath Only	Capacity to overflow(litres)		0.50	0.00	0
Shower Only	Flow Rate (litres/minute)		5.60	0.00	0
Kitchen/Utility room sink taps	Flow rate (litres/minute)	10.79	0.44	10.36	15.11
Washing Machine	(Litres/kg dry load)	6.29	2.1	0.00	13.21
Dishwasher	(Litres/place setting)	1.25	3.6	0.00	4.5
Waste disposal unit	(Litres/use)	☐ Present	3.08	0.00	0
Water Softener	(Litres/person/day)		1.00	0.00	0
	(5)	**Total Calculated use (litres/person/day) =SUM(column 4)**			176.81
	(6)	Contribution from greywater (litres/person/day)			0
	(7)	Contribution from rainwater (litres/person/day)			0
	(8)	Normalisation factor			0.91
	(9)	Total internal water consumption = [(5)-(6)-(7)]x(8) (litres/person/day)			160.90
	(10)	External water use			5.0
	(11)	**Total water consumption (Building Regulation 17.K) =(9)+(10)(litres/person/day)**			165.9

Click here to fill in details before printing:

Estimated water consumption of the Cottage equals **165 Litres/Person/Day.**

[1] https://wrcpartgcalculator.co.uk/

Appendix C - Proposed Water Fitting Specifications

Fitting	Measure	Capacity/flow rate	Product Details
WC (Dual Flush)	Flush Volume (litres)	Full Flush – 4l Part Flush – 3l	Ideal Standard Prosys 120mm Depth Mechanical Concealed Cistern
Kitchen and other taps (regulated by flow regulators)	Flow Rate (litres/min)	4l/m	Reliance RWC 4 Litres Per Minute Flow Regulator Valve with Isolating Valve & Strainer SERV970000
Shower	Flow Rate (litres/min)	6	Grohe Tempesta 100 Hand Shower
Bath	Capacity to overflow (litres)	181	Kent Premiercast Square Single Ended Bath
Washing Machine	Litres per kilogram of dry load	4.7	Fisher Paykel WM1490F1 9kg Freestanding Washing Machine 1400rpm
Dishwasher	Litres per place setting	0.43	Beko BDIN38641C | Integrated Dishwasher with SaveWater Technology

Appendix D - Water Consumption Calculation for Proposed development (litres/person/day) with water efficient fittings and appliances (without further water re-use measures)

Installation Type	Unit of Measure	Capacity/Flow rate (1)	Use Factor (2)	Fixed use (litres/person/day) (3)	Litres/person/day = ((1)x(2)) + (3) -4
WC (dual flush)	Full flush Volume (litres)	4	1.46	0	5.84
	Part flush Volume (litres)	3	2.96	0	8.88
Taps (excluding kitchen/utility room taps)	Flow rate (litres/min)	4	1.58	1.58	7.9
Bath (where shower also present)	Capacity to overflow(litres)	145	0.11	0	15.95
Shower (where bath also present)	Flow Rate(litres / minute)	6	4.37	0	26.22
Kitchen/Utility room sink taps	Flow rate (litres/minute)	4	0.44	10.36	12.12
Washing Machine	(Litres/kg dry load)	4.7	2.1	0	9.87
Dishwasher	(Litres/place setting)	0.43	3.6	0	1.55
	(5)	Total Calculated use (litres/person/day) =SUM(column 4)			88.33
	(6)	Contribution from greywater (litres/person/day)			0
	(7)	Contribution from rainwater (litres/person/day)			0
	(8)	Normalisation factor			0.91
	(9)	Total internal water consumption = [(5)-(6)-(7)]x(8) (litres/person/day)			80.38
	(10)	External water use			5
	(11)	Total water consumption (Building Regulation 17.K) =(9)+(10)(litres/person/day)			**85.4**