Technical Note 1: Water Neutrality Statement

Site: Oreham Manor Farm Oreham Common BN5 9SB
Prepared by: Ella Harrop
Approved by: Laura Jagiela
Date: 19th June 2025

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1.0 Introduction

1.1 This Water Neutrality Statement (WNS) has been prepared on behalf of Mr Andy Barrott to demonstrate how the proposed development will achieve water neutrality.

1.2 It is proposed to redevelop an existing single storey workshop into one three-bed bungalow.

1.3 Following the issue of Natural England's (NE's) Position Statement on Water Neutrality within the Sussex North Water Supply Zone (SNWSZ), all new, reserved matters, conditions discharge and Section 73 planning applications within the SNWSZ must demonstrate that the development can be water neutral. The SNWSZ covers part of Horsham District, as well as parts of the neighbouring Chichester, Arun and Crawley Districts. A plan showing the supply area can be found in **Appendix A** and NE's Position Statement can be found in full within **Appendix B.**

1.4 As the site falls within the SNWSZ boundary, Horsham District Council (HDC) as the Local Planning Authority (LPA) will want to know whether the proposed development represents a change in water consumption and, if so, that the proposed development can be water neutral.

1.5 Therefore, to satisfy NE's and HDC's requirements on water neutrality, this WNS will set out the following:

- The baseline, existing water demand for the development site;
- Whether there will be a change in water demand as a result of the proposed development;
- What water demand reduction measures, such as the fitting of water efficient fixtures and fittings and rainwater harvesting, will be used;
- Whether the proposed development will be water neutral, and;
- Whether any further offsetting measures to meet proposed water demand are required.

2.0 Site Description

2.1 The proposed development is located on Oreham Common, near the village of Henfield, in West Sussex.

2.2 The site currently consists of an existing single storey workshop.

2.3 The site proposals are to demolish the existing workshop and construct one three-bedroom bungalow in its place. A copy of the proposed site layout plan can be found in **Appendix C**.

3.0 Existing Baseline Water Usage

3.1 The existing site comprise of a single workshop building and does not have any existing water use.

3.2 Therefore, no existing water usage will be taken forward in the water neutrality calculations.

4.0 Additional Demand

4.1 As previously defined, the proposed development will provide one three-bed bungalow.

4.2 The occupancy levels for the development have been drawn from local census data (as recommended by HDC in their water neutrality methodology guidance) and this is summarised in Table 4.1, on the next page.

1-bed	2-bed	3-bed	4-bed
1.32	1.88	2.47	2.86

Table 4.1 – Average district occupancy levels per dwelling size

4.3 Using the above census data and the housing mix defined above, the population of the proposed development is estimated to be 2.47 persons.

4.4 To minimise the demand on the mains water, it is proposed that the new dwelling will achieve a water efficiency of less than 110 litres per person per day of water, which will be in accordance with the optional water efficiency target set out in the Building Regulations Part G. This will be achieved through the use of water efficient fixtures and fittings.

4.5 A water calculation in accordance with Buildings Regulations Part G has been carried out and confirms that the proposed dwelling will achieve a water consumption of 88.63 litres per person per day, which includes an allowance of 5 litres per person per day for external water usage. A copy of the Part G calculation can be found in **Appendix D** and is summarised in Table 4.1, below:

Fixture/Fitting Type	Total Water Usage (l/p/day)	Mains Water Usage (l/p/day)	RWH System Usage (l/p/day)
WC (full flush)	5.84		5.84
WC (part flush)	5.92		5.92
Taps (Excluding Kitchen)	5.85	5.85	
Shower	26.22	26.22	
Bath	14.30	14.30	
Kitchen Taps	12.12	12.12	
Washing Machine	17.16		17.16
Dishwasher	4.50	4.50	
Total	**91.90**	**62.99**	**28.92**
Normalisation Factor	0.91	0.91	0.91
Total	**83.63**	**57.32**	**26.32**
External Water Use	5.00		5.00
Total	**88.63**	**57.32**	**31.32**

Table 4.1 – Proposed Water Consumption Figure (l/p/day)

4.6 Further details of the fixtures and fittings to achieve the above water consumption can be found in **Appendix E**.

4.7 Using the Part G water consumption figure of 88.63 litres per person per day and the census-based development population of 2.47, the estimated water demand per day for the proposed development is 218.92 litres per day.

4.8 Following the development of the site, there will be a net increase in water demand of 218.92 litres per day. At this stage, the proposed development cannot be considered to be water neutral.

4.9 Therefore, further water reduction measures should be considered.

5.0 Water Reduction Measures

5.1 To help mitigate the increase in water demand, it is proposed to incorporate a rainwater harvesting system to the proposed development.

5.2 The water collected by the rainwater harvesting system will be utilised for flushing toilets and the washing machine, while all other uses will be mains water fed.

5.3 Noting these water uses, Table 4.1 above confirms that 31.32 litres per person per day will be supplied by rainwater harvesting systems, which equates to 77.32 litres per day, based on a population of 2.47.

5.4 The rainwater harvesting tank for the proposed dwelling has been sized using the calculation set out in BS EN 16941-1:2018 and will be large enough to store 9.6% of the Annual Water Demand. This will ensure that the tank will provide at least 35 days of storage for periods of drought, as required by HDC.

5.5 The proposed buildings will have a clay tile roof and therefore a yield coefficient of 0.8 has been used in the calculations.

5.6 The calculations confirm that the yields are sufficient enough to meet demands for the dwelling type. Calculations used the annual rainfall data from the nearest MET Office climate station to the proposed site, which is Shoreham. The calculation is summarised in Table 5.1 below and can be found in full in **Appendix F.**

Unit	Population	Roof Area (m^2)	9.6% Annual Rainwater Yield (litres)	9.6% Annual Water Demand (litres)	Minimum Tank Size (litres)
3-bed	2.47	390.44	20,294.38	2,709.84	3,400

Table 5.1 – Rainwater Harvesting Sizing Calculation

5.7 A typical layout and specification for a rainwater harvesting system is shown in **Appendix G.** The illustration shows how the rainwater will be collected, filtered and then returned to the property for re-use.

5.8 The dimensions of the proposed tanks can be found in **Appendix H**.

5.9 The rainwater harvesting systems will be managed and maintained in accordance with the attached Management and Maintenance Plan, as shown in **Appendix I.**

5.10 The rainwater harvesting system will contain the UV-DS55 filter manufactured by Silverline UK Limited. The specification of the UV filter can be found in **Appendix J.**

5.11 Once rainwater harvesting has been incorporated into the proposed dwelling , the mains water usage will be reduced to 57.32 litres per person per day, which equates to 141.57 litres per day, based on an population of 2.47.

5.12 Following the incorporation of the above measures to the proposed development there will be an increase in water demand of 141.57 litres per day and therefore further offsetting measures are required.

6.0 Offsetting Measures

6.1 To ensure the development can demonstrate water neutrality in accordance with the NE Position Statement, a residual mains water demand of 141.57 litres per day will need to be offset.

6.2 The client is proposing to offset the proposed development against an existing property under their ownership, Oreham Manor Farm Oreham Common Henfield West Sussex BN5 9SB.

6.3 Oreham Manor Farm Oreham Common Henfield West Sussex BN5 9SB is an existing five-bed dwelling with a current population of 3 persons.

Part G Calculations

6.4 Meter readings are not available for the existing house, therefore a flow survey was undertaken on 26th July 2023 to determine the existing water of Oreham Manor Farm Oreham Common Henfield West Sussex BN5 9SB. A copy of the flow survey can be found in **Appendix K.**

6.5 A Part G calculation following the flow survey gives a water consumption of 121.19 litres per person per day, which equates to 363.57 litres per day for the dwelling with a population of 3 persons. A copy of the existing water usage calculations can be found in **Appendix L.**

6.6 The house will be remaining and it is proposed to retrofit water efficient fixtures and fittings to it and a rainwater harvesting system. It is proposed that the existing bath, washing machine and dishwasher will remain, but all other fixtures and fittings will be changed.

6.7 A water calculation in accordance with Buildings Regulations Part G has been carried out and confirms that the water use of the existing dwelling can be reduced to 88.67 litres per person per day, which includes an allowance of 5 litres per person per day for external water usage. A copy of the Part G calculation can be found in **Appendix M** and is summarised in Table 6.1, below.

Fixture/Fitting Type	Total Water Usage (l/p/day)	Mains Water Usage (l/p/day)	RWH System Usage (l/p/day)
WC (full flush)	5.84		5.84
WC (part flush)	5.92		5.92
Taps (Excluding Kitchen)	5.85	5.85	
Shower	26.22	26.22	
Bath	19.80	19.80	
Kitchen Taps	12.12	12.12	
Washing Machine	12.60		12.60
Dishwasher	3.60	3.60	
Total	**91.95**	**67.59**	**27.17**
Normalisation Factor	0.91	0.91	0.91
Total	**83.67**	**61.50**	**22.18**
External Water Use	5.00		5.00
Total	**88.67**	**61.50**	**27.17**

Table 6.1 – Retrofit Water Consumption Calculation (l/p/day)

6.8 A copy of the flow restricting valves to achieve the above water consumption can be found in **Appendix N.**

Rainwater Harvesting System

6.9 The water use is then reduced further to 61.50 litres per person per day, through utilising rainwater harvesting.

6.10 The water collected by the rainwater harvesting system will be utilised for flushing toilets, in the washing machine, and all other uses will be mains water fed. The size of the rainwater harvesting tank for the existing dwelling has been calculated as per the guidance set out in BS EN 16941-1:2018 and will be large enough to store 9.6% of the Annual Water Demand. This will ensure that the tank will provide at least 35 days of storage for periods of drought, as required by HDC.

6.11 The existing buildings have clay tile roof and therefore a yield coefficient of 0.8 has been used in the calculations.

6.12 The calculations confirm that the yield is sufficient enough to meet demand. Calculations used the annual rainfall data from the nearest MET Office climate station to the proposed site, which is Shoreham. The calculation is summarised in Table 6.2 below and can be found in full in **Appendix O**.

Unit	Population	Roof Area (m^2)	9.6% Annual Rainwater Yield (litres)	9.6% Annual Water Demand (litres)	Tank Size (litres)
Existing 5-bed	3	239	12,422.80	2,856.11	3,400

Table 6.2 – Oreham Manor Farm, Rainwater Harvesting Tank Sizing Calculation

6.13 A typical layout and specification for a rainwater harvesting system is shown in **Appendix G.** The illustration shows how the rainwater will be collected, filtered and then returned to the property for re-use.

6.14 The dimensions of the proposed tanks can be found in **Appendix H**.

6.15 The rainwater harvesting systems will be managed and maintained in accordance with the attached Management and Maintenance Plan, as shown in **Appendix P**.

6.16 The rainwater harvesting system will contain the UV-DS55 filter manufactured by Silverline UK Limited. The specification of the UV filter can be found in **Appendix I.**

6.17 Using the Part G mains water consumption figure of 61.50 litres per person per day and the population size of 3 for the five-bedroom house, it is estimated that the existing water usage will reduce to 184.51 litres per day.

6.18 The five-bedroom dwelling's baseline water usage was 363.57 litres per day, following the incorporation of the above measures the mains water usage will reduce to 184.54 litres per day. This will provide 179.06 litres per day spare capacity for the proposed dwelling. Since 141.57 litres per day is needed for the proposed dwelling, there will be 37.48 litres per day as buffer should the water usage increase.

7.0 Summary and Conclusions

7.1 This Technical Note sets out the water usage strategy for the proposed development at Oreham Manor Farm, Oreham Common, Henfield, BN5 9SB.

7.2 The proposed development of the three-bed bungalow will reduce mains water demand on-site through the use of water efficient fixtures and fittings along with a rainwater harvesting system.

7.3 The increase in water demand will be offset onsite through retrofitting an existing property under the client's ownership, Oreham Manor Farm Oreham Common Henfield West Sussex BN5 9SB. A water saving of 179.06 litres per day can be provided for offsetting through retrofitting existing fixtures and fittings along with a rainwater harvesting system at the dwelling.

7.4 Therefore, the proposed mains water requirement of 141.57 litres per day has been fully offset with a buffer of 37.48 litres per day, and there is no additional mains water requirement within the SNWSZ as a result of the development.

7.5 This strategy will minimise the impact of the new development on the SNWSZ. This WNS confirms the proposal will be water neutral once complete and therefore satisfying NE's requirements.

Appendix A

Sussex North Water Supply Zone Map

East Hampshire District

Waverley District (B)

Mole Valley District

Crawley District (B)

Chichester District

Horsham District

Mid Sussex District

Arun District

Borough of Adur & Worthing

Local Planning Authorities

Sussex North WRZ DEFRA

Horsham District Council

Parkside, Chart Way, Horsham
West Sussex RH12 1RL.
Barbara Childs : Director of Place

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Sussex North Water Resource Zone

Chichester Horsham Crawley

Reference No :		Date : 23 November 2021	Scale : 1:3,000 at A2
Drawing No:	Drawn :	Checked :	Revisions :

Appendix B

Natural England's Position Statement

Natural England's Position Statement for Applications within the Sussex North Water Supply Zone

September 2021 – Interim Approach

Please take the following as Natural England's substantive advice for all applications which fall within Sussex North's Water Supply Zone.

Sussex North Water Supply Zone

Arun Valley SPA, SAC and Ramsar Site- Sussex North Water Supply Zone

The Sussex North Water Supply Zone includes supplies from a groundwater abstraction which cannot, with certainty, conclude no adverse effect on the integrity of;

- Arun Valley Special Area Conservation (SAC)
- Arun Valley Special Protection Area (SPA)
- Arun Valley Ramsar Site.

As it cannot be concluded that the existing abstraction within Sussex North Water Supply Zone is not having an impact on the Arun Valley site, we advise that developments within this zone must not add to this impact. This is required by recent caselaw, Case C-323/17 People over wind and Sweetman. Ruling of CJEU (often referred to as sweetman II) and Coöperatie Mobilisation for the Environment and Vereniging Leefmilieu Case C-293/17 (often referred to as the Dutch Nitrogen cases).

Between them these cases require Plans and Projects affecting sites where an existing adverse effect is known (i.e. the site is failing its conservation objectives), to demonstrate certainty that they will not contribute further to the existing adverse effect or go through to the latter stages of the Regulations (no alternatives IROPI etc).

Developments within Sussex North must therefore must not add to this impact and one way of achieving this is to demonstrate water neutrality.

In addition, the Gatwick Sub regional Water Cycle Study concluded that water neutrality is required for Sussex North to enable sufficient water to be available to the region.

The definition of water neutrality is the use of water in the supply area before the development is the same or lower after the development is in place.

Strategic approach

Natural England has advised that this matter should be resolved in partnership through Local Plans across the affected authorities, where policy and assessment can be agreed and secured to ensure water use is offset for all new developments within Sussex North. To achieve this Natural England is working in partnership with all the relevant authorities to secure water neutrality collectively through a water neutrality strategy.

Whilst the strategy is evolving, Natural England advises that decisions on planning applications should await its completion. However, if there are applications which a planning authority deems critical to proceed in the absence of the strategy, then Natural England advises that any application needs to demonstrate water neutrality. We have provided the following agreed interim approach for demonstrating water neutrality;

Minimising water use of new builds.

- Complete a water budget (based on occupancy)
- All new builds to demonstrate that they can achieve strict water targets (e.g., 85L/pp/day*)

  This can be achieved by measures such as:

- Grey water recycling (advantage of being reliable in hot dry weather);
- Rainwater harvesting;
- Water efficient fixings (such as shower aerators) to demonstrably reduce demand-this would need to be suitably certain.

In addition, water offsetting is required

- One way to achieve this is retrofitting of council owned properties/commercial buildings-located within Sussex North. Examples include:

- Grey water recycling- (for example there are clear opportunities for commercial properties).
- Rainwater harvesting of commercial settings;
- Installation of water reduction fittings in Council-owned buildings.

These measures need to be implemented until such time as a more sustainable water supply has been secured.

It will also need to be ensured that measures are not already proposed (for example in Southern Water's Management Plan) to avoid double-counting.

Any mitigation must be suitably certain in order to comply with the Habitats Regulations and Caselaw.

If the application cannot demonstrate, through an appropriate assessment, the required water neutrality, we advise that it is either revised to achieve this in line with the above or awaits completion of the strategic approach.

The securing of water neutrality is a matter which needs to be resolved at a strategic level and Natural England is working with the relevant authorities and the water company to achieve this. In light of this, Natural England will not be engaging with individual planning applications whilst the strategy is evolving.

***This this is the reasonably achievable figure with the above measures based on the early data from the strategic solution and may be subject to change as the strategic solution evolves.**

Appendix C

Proposed - Site Layout



Ground Floor Plan

1:100 | PROPOSED

MANORWOOD
building on tradition

Suite 114
26 The Hornet
Chichester
West Sussex
PO19 7BB

tel: 01243 201 102
email: enquiries@manorwood.co.uk
web: www.manorwood.co.uk

This drawing is the copyright of Manorwood Construction Ltd.

Exemptions apply for Local Authority planning purposes only.

Do not scale from this drawing.

All dimensions must be checked on site prior to commencement of works

Address

Oreham Manor Farm
Oreham Common Henfield
West Sussex BN5 9SB

Drawing

Proposed Plan:

Ground Floor Plan

Scale @ A3

1:100

Drawn:	Issued:
13.01.2022	13.01.2022
Drawn By	Checked By
MD	BK

Job No.

201123_R1

Drawing No.

201123_R1_206_r.0

Revisions:

R.0

Existing Footprint:
413.09m²

Proposed Footprint:
350.02m²

Existing GIA:
377.26m²

Proposed GIA:
312.16m²

Status

FOR COMMENT

1m @ 1:
50
100
200
500
1250

Appendix D

Proposed - Part G Calculation

Proposed Water Usage - Part G Calculation

Fixture	Capacity/Flow Rate	Use Factor	Fixed Use	litres/person/ day
WC (Single Flush)		4.42		0.00
WC (Dual Flush)	4	1.46		5.84
WC (Dual Flush) Part	2	2.96		5.92
Taps (excluding kitchen)	2.7	1.58	1.58	5.85
Bath (where shower present)	130	0.11		14.30
Shower (where bath present)	6	4.37		26.22
Bath Only		0.5		0.00
Shower Only		5.6		0.00
Kitchen Sink	4	0.44	10.36	12.12
Washing Machine	8.17	2.1		17.16
Dishwasher	1.25	3.6		4.50
	Total calculated use (litres/person/day)			91.90
Normalisation Factor				0.91
Total Water Consumption (CSH) (litres/person/day)				83.63
External Water Use				5.00
Total Water Consumption (Part G) (litres/person/day)				88.63

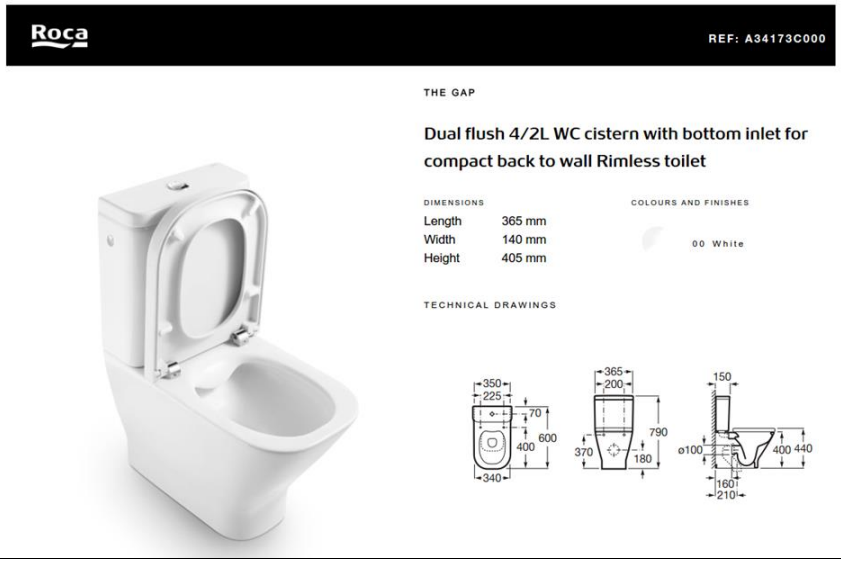
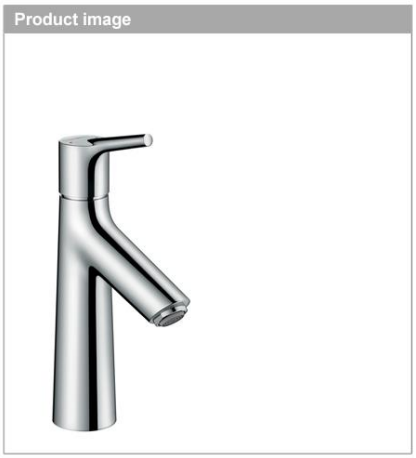
Rainwater Harvesting	31.31	litres/person/day
Mains Water	57.32	litres/person/day
Total	88.63	litres/person/day

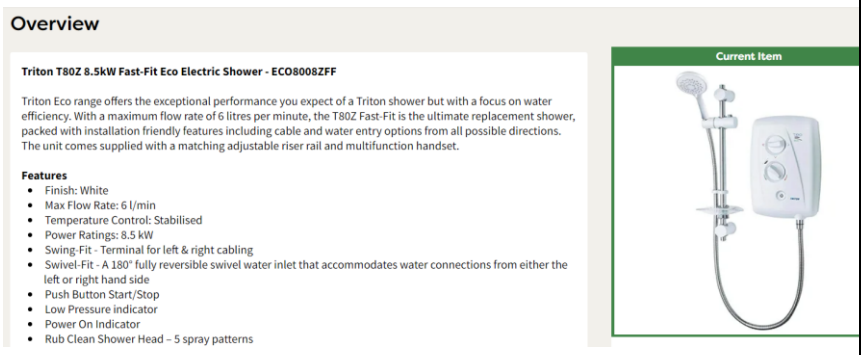
	No. Units	Population	Mains Water Usage (litres/day)	Rainwater Usage (litres/day)		
Proposed 3-bed house	1	2.47	141.57	77.35		
Totals	1	2.47	141.57	77.35	218.92	litres/day

Appendix E

Proposed - Fixtures and Fittings

Fixtures and Fittings - Part G Specifications

Item	Capacity/Flow rate	Overview
Toilet (Dual Flush)	4/2 litres	Roca  Roca REF: A34173C000 THE GAP Dual flush 4/2L WC cistern with bottom inlet for compact back to wall Rimless toilet DIMENSIONS Length 365 mm Width 140 mm Height 405 mm COLOURS AND FINISHES 00 White TECHNICAL DRAWINGS
Basin Tap	2.7 litres/minute	Hansgrohe Talis S  Product image Description **product features** · ComfortZone 100 provides space for greater freedom of movement · spout 93 mm long · spout height: 98 mm · free-standing installation · Maximum flow rate (at 3 bar): 2.7 l/min · ceramic cartridge · QuickClean technology for easy limescale removal · WRAS 1609018 - WRAS 1609018 approval letter · WRAS 2110027

Shower	6 litres/minute	Triton  **Overview** **Triton T80Z 8.5kW Fast-Fit Eco Electric Shower - ECO8008ZFF** Triton Eco range offers the exceptional performance you expect of a Triton shower but with a focus on water efficiency. With a maximum flow rate of 6 litres per minute, the T80Z Fast-Fit is the ultimate replacement shower, packed with installation friendly features including cable and water entry options from all possible directions. The unit comes supplied with a matching adjustable riser rail and multifunction handset. **Features** • Finish: White • Max Flow Rate: 6 l/min • Temperature Control: Stabilised • Power Ratings: 8.5 kW • Swing-Fit - Terminal for left & right cabling • Swivel-Fit - A 180° fully reversible swivel water inlet that accommodates water connections from either the left or right hand side • Push Button Start/Stop • Low Pressure indicator • Power On Indicator • Rub Clean Shower Head – 5 spray patterns Current Item
Kitchen Sink	4 litres/minute	Caple Single Lever Deluxe Tap  **FEATURES** • Single lever design • Minimum bar pressure required : 0.3 • Single lever ceramic valve • Single flow • WRAS approved • The SLD2/CH has been designed to you conform to Water efficiency requirements, it has a flow rate of less than 4 litres per minute at 3 bar

Appendix F

Proposed - Rainwater Harvesting Tank Sizing Calculation

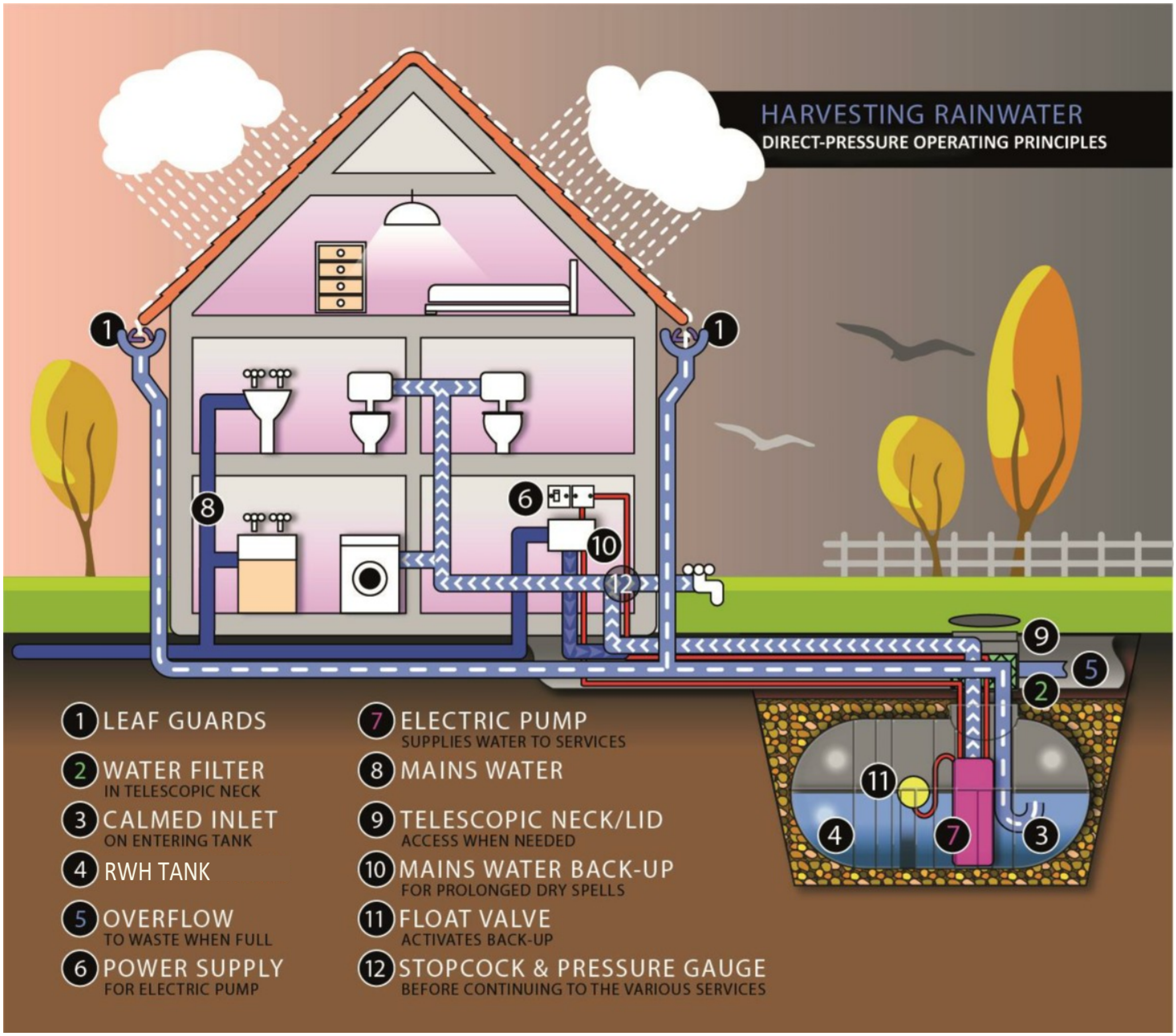
Rainwater Harvesting System (BS EN 16941-1:2018 - Intermediate Approach)

AAR	752.61	Average Annual Rainfall
e	0.8	Yield Coefficient
h	0.9	Hydraulic Filter Efficiency
P_d	31.31	Daily Requirement per Person

Unit	Type	No. Beds	No. Units	Census	Population	Roof Area	9.6% Annual Rainwater Yield (litres)	9.6% Annual Water Demand (litres)	Total Storage Volume at 9.6%	Minimum Tank Size (litres)
3-bed	Proposed	3	1	2.47	2.47	390	20,310.85	2,709.84	2,709.84	3,400
		Totals	1		2.47	390	20,310.85	2,709.84	2,709.84	

Appendix G

Typical Layout and Specification for Rainwater Harvesting System


HARVESTING RAINWATER
DIRECT-PRESSURE OPERATING PRINCIPLES
1 LEAF GUARDS
2 WATER FILTER
IN TELESCOPIC NECK
3 CALMED INLET
ON ENTERING TANK
4 RWH TANK
5 OVERFLOW
TO WASTE WHEN FULL
6 POWER SUPPLY
FOR ELECTRIC PUMP
7 ELECTRIC PUMP
SUPPLIES WATER TO SERVICES
8 MAINS WATER
9 TELESCOPIC NECK/LID
ACCESS WHEN NEEDED
10 MAINS WATER BACK-UP
FOR PROLONGED DRY SPELLS
11 FLOAT VALVE
ACTIVATES BACK-UP
12 STOPCOCK & PRESSURE GAUGE
BEFORE CONTINUING TO THE VARIOUS SERVICES

DIRECT PRESSURE SYSTEM HOME & GARDEN





Inside the Household

Top Up Controller

Automatic mains water top-up Controller kit for rainwater tanks with pump isolation and alarm. The system detects when the tank contents level is running low and initiates a mains top up procedure to ensure the tank never runs out of water supply.

SDS Ltd, Clearwater House, Castlemills, Biddisham, Somerset, BS26 2RE
T: +44 (0)1934 751303
E: info@sdslimited.com

SYSTEM:

A Direct Pressure System is the most popular, cost effective and risk-free option for rainwater harvesting. It can be used for both garden and household applications, for example, it can be used in buildings with a small block of toilets, and for garden irrigation and machine washdowns. The system sends pressurised water straight from the external tank directly to the application. If the water level in the tank gets too low, the top up controller will activate a mains top up so the tank doesn't empty.

COMPONENTS

P Series pumps are stainless steel pumps with plastic coverings and are suitable for domestic water systems, rainwater harvesting, tanks, surface irrigation and tank transfer.

The rodent guard protects the internal water from rodents and large debris which could contaminate the water entering via the overflow.

The PF filter is designed with a level drop, this along with its very smooth surface structure allows excess dirt to be rinsed straight through to the overflow. The filter cartridge mesh is stainless steel within plastic housing and is self-cleaning, though regular inspection is recommended.

The calmed inlet removes the kinetic energy from the water as it enters the tank. This means that as the water enters it doesn't stir up the contents of the tank.

The turret set provides the connection between the pump and the pipework leading to the various external applications. They are made from a flexible plastic so can easily deal with the pressurised water coming from the pump.

The pump lifting chain aids in servicing the pump as it allows the pump to be easily pulled up towards the top of the tank.

A floating intake ensures that no water from either the bottom or the surface of the tank is taken in. Meaning only clean water passes through the system and is pumped into the household.

ADDITIONAL SPECIFICATIONS

- Service duct
- Delivery hose (Options available)
- Top up controller
- Tanks sold separately
- Extra overflow on tanks 5600 – 10000

POPULAR USE:

- Garden irrigation
- Cleaning the car
- Washing windows
- Power washing drive/patio
- Outside tap and hosepipe
- Flushing toilets
- Drinking water (if tank is potable)
- Washing machine





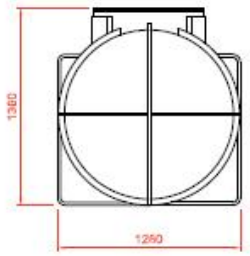
SDS Ltd, Clearwater House, Castlemills, Biddisham, Somerset, BS26 2RE
T: +44 (0)1934 751303
E: info@sdslimited.com

Appendix H

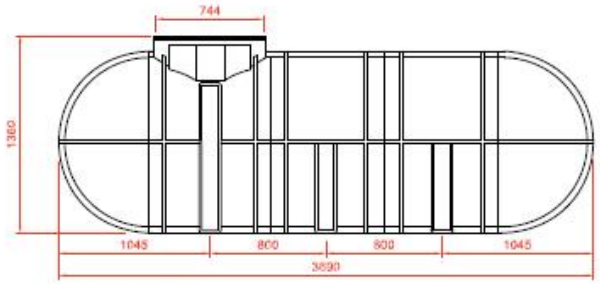
Rainwater Harvesting Tank Dimensions

SDS 3,400 Litre Rainwater Harvesting Tank

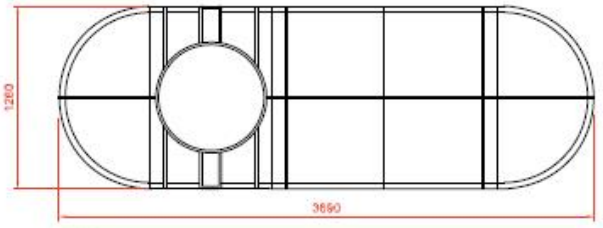




END ELEVATION



SIDE ELEVATION



PLAN

Client	SDS	Details
Project Name	3,400 Litre Tank	
Type	Standard Detail	
Date	-	
Drawing no.	-	
Revision	A	

Notes:

This Drawing is to be read in conjunction with all relevant Architect, Engineers and Specialists drawings and specifications.

Do not scale from the drawing in either paper or digital form. Use written dimensions only.

SDS Water Infrastructure Systems

Appendix I

Proposed - Rainwater Harvesting Management and Maintenance Plan

Proposed Dwelling at Oreham Manor Farm
Oreham Common, Henfield

Rainwater Harvesting Management and Maintenance Plan

For

Mr Andy Barrott

motion

Document Control Sheet

Proposed Dwelling at Oreham Manor Farm

Oreham Common, Henfield

Mr Andy Barrott

This document has been issued and amended as follows:

Date	Issue	Prepared by	Approved by
9th April 2025	FINAL	EH	NJ

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2.0 Treatment 2
3.0 Water □uality Control 4
4.0 Continuity of Supply 5
5.0 Maintenance Categories 6
6.0 The Rainwater Harvesting System 7
7.0 General Maintenance Principles 8
8.0 Inspection and Maintenance Frequency of Components 9

1.0 Introduction

1.1 The report sets out the principles for the long-term management and maintenance of the rainwater harvesting systems at the proposed development.

1.2 The purpose of this report is to ensure that the client has a robust inspection and maintenance plan for the lifetime of the development. This will ensure the optimum operation of the rainwater harvesting systems and that they will be continually maintained. This will ensure that the proposed development will remain water neutral.

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1.7 In recognition of the requirements of the CDM Regulations 2015, this rainwater harvesting management and maintenance plan expects that the maintenance work will be carried out by a competent person who must have prior knowledge of the rainwater harvesting systems onsite.

2.0 Treatment

2.1 The rainwater harvesting system shall incorporate suitable treatment in accordance with BS EN 16941-1:2018, to ensure that the water quality is suitable for its intended end use.

2.2 The potential contaminants are listed below:

- pH
- TOC
- Colour
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- Suspended solids
- Conductivity
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- Na, Ca, Mg, Al
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- Total ☐Dissolved Fe
- Mn
- Ammonium/Ammonia
- TVC, E.Coli, Coliforms, Pseudomonas aeruginosa, Enterococci, Clostridium Perfringens

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- Filtration following the storage device, depending on the intended use.

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3.7 The British Standard and DWI guidance, does not require water quality testing for systems serving one domestic unit. However, HDC has requested that testing is carried out in accordance with the standards set in paragraphs 3.4 and 3.5 above.

4.0 Continuity of Supply

4.1 To ensure that sufficient water is available for re-use, the storage tank will be sized so that it can provide 35 days of storage, which will provide sufficient supply during periods of drought.

4.2 Where drought periods extend beyond 35 days, the rainwater harvesting system will include an automatic mains backup. This will ensure that water is available at all times, even during extended periods of drought.

5.0 Maintenance Categories

5.1 There are three categories of maintenance activities referred to in this report. These are:

Inspection and Monitoring

- Inspection and monitoring tasks shall be carried out frequently, nominally once a month, and will include a visual inspection of all components including all inlets and outlets.

Regular Maintenance (Monthly)

- Regular maintenance consists of basic tasks done on a frequent and predictable schedule.

Seasonal Maintenance (Quarterly)

- Seasonal maintenance comprises tasks that are likely to be required periodically, but on a much less frequent and predictable basis than the routine tasks.

Remedial Maintenance

- Remedial maintenance comprises of intermittent tasks that may be required to rectify faults associated with the system that have been identified through visual inspections. The likelihood of faults can be minimised by correct installation, regular inspection and timely maintenance.

6.0 The Rainwater Harvesting System

6.1 The proposed rainwater harvesting system will receive rainwater passing through and over several structures and will store rainwater within several items of infrastructure. These include:

- Roofs
- Gutters
- Filters;
- Pumps;
- Overflows; and
- Storage tanks.

6.2 All components shall be installed in accordance with the manufacturer's instructions and to the levels/arrangements as defined on the designer's drawings.

6.3 This report shall be read in con□nction with the rainwater harvesting design, so that the location and type of each item of infrastructure can be recognised and understood.

6.4 Manufacturer's instructions are to be added to this document once specific products have been selected and installed as part of the detailed design. This document will subsequently form the basis for a maintenance regime for the rainwater harvesting system.

7.0 General Maintenance Principles

7.1 All rainwater harvesting systems require regular maintenance to keep them working at optimum efficiency and capacity. The maintenance of the rainwater harvesting systems shall be carried out alongside other regular maintenance tasks within the property.

7.2 Timely and adequate maintenance will increase the lifespan of the rainwater harvesting system. Inadequate maintenance will do the reverse.

7.3 The property owners are responsible for the monitoring and maintenance of the rainwater harvesting system for the lifetime of the development.

8.0 Inspection and Maintenance Frequency of Components

8.1 Table 8.1 below lists each of the components used within the development's rainwater harvesting systems. It suggests an indicative maintenance frequency for each component and ascribes typical maintenance tasks to them.

8.2 In accordance with the DWI's Private Water Supply regulations, it is the responsibility of the homeowner to ensure that all necessary maintenance activities are carried out in a timely manner and that the design performance of each drainage component is preserved. The homeowner may appoint a competent contractor to assist with the maintenance of their rainwater harvesting system. Additionally, the Council has a role to ensure the regulations are upheld by the homeowner.

8.3 If there is any uncertainty regarding the correct and safe methods of cleaning, or what equipment will be used, the manufacturer should be consulted.

Maintenance Schedule	Required Action	Frequency
Regular Maintenance	Inspection of the tank for debris and sediment build-up	Annually
	Inspection of inlets/outlets and withdrawal devices	Annually
	Inspection of filters	Annually
	Inspection of Pumps	Annually
	Inspection of overflow areas	Annually
	Inspection of gutters	Annually
	Cleaning of tank	Annually
	Cleaning of inlets and outlets and withdrawal devices	Annually
	Cleaning of gutters and roof drain filters	Annually
	Check pump operation	Annually
Occasional Maintenance	Cleaning and/or replacement of any filters	□uarterly
	Sampling of water supply	Every five years
Remedial Actions	Repair of overflow erosion damage or damage to tank	As required
	Pump repairs	As required

Table 8.1 – Maintenance tasks and frequencies

8.4 Upon completion of maintenance activities, a record will be kept of the work carried out. This will be retained and an annual maintenance report will be compiled, which shall include the following:

- Observations resulting from inspections;
- Maintenance and operation activities undertaken during the year; and

- Recommendations for inspections and maintenance programmes for the following year.

8.5 On the next page is a table with suggested information that will be recorded and included with the maintenance plan. As mentioned in the introduction to this document, this shall be a living document and regularly updated, as required and will be kept for the lifetime of the development.

Date	Component requiring maintenance	Issues prompting maintenance	Scheduled maintenance (Y/N)	Maintenance carried out	Additional works required (Y/N). If yes, please detail	Next scheduled date of inspection and maintenance

Appendix J

Proposed – Rainwater Harvesting UV-DS55 Filter Specification

UV-DS55 Technical Specifications

Silverline®



WRAS APPROVED PRODUCT

model shown
UV-DS55 with ¾" BSP offset ports









Flow rate	36 lpm	
Unit wattage	55 w	
Lamps	1 x 55 w	
Quartz sleeve	1	
Inlet/outlet port size	¾" BSP	
Length	36"	(92cm)
Unit Width	3½"	(9cm)
Height	5"	(13cm)
Chamber diameter	3½"	(9cm)
Shipping weight	8 kg	
Casing stainless steel	316	
Voltage	220/240 v	
Max operating pressure	100 psi	

Dimensions are approximate. Specifications may be subject to modification without notice.

- available with offset or parallel ports
- spray baked electrical control box
- available on polypropylene backboard

Silverline UK Limited
Whitemoor
Iddesleigh, Winkleigh
Devon EX19 8BN

Tel: +44 (0)1805 804202
enquiries@silverlineuk.co.uk
www.silverlineuk.co.uk

Appendix K

Existing Dwelling at Oreham Manor Farm Oreham Common Henfield West Sussex BN5 9SB - Flow Survey

Site name	Oreham Manor Farm		
Carried out by	Gas cert	Steve Richardson	
Date	26-Jul-23		
Fixture/Fitting	Flow/Volume	Units	Comments
Kitchen 1			
Sink Taps	9.5	litres/minute	
Dishwasher	12	litres place setting	max 12 place settings
			economy mode
Kitchen 2			
Sink Taps	11	litres/minute	
Dishwasher	12	litres place setting	13 place settings
Utility			
Washing Machine	48	litres/kg dry load	max 8kg
Cloakroom			
WC (single flush)		litres	
WC (Dual flush)	6	Full-litres	
	3	Part-litres	
Basin Taps	12	litres/minute	
Downstairs Bathroom			
WC (Single Flush)		Litres	
WC (Dual Flush)	6	Full-litres	
	3	Part-litres	
Bath Taps	22	litres/minute	
Basin Taps	22	litres/minute	
Shower	16	litres/minute	
Bed 1 Bathroom			
WC (Single Flush)		litres	
WC (Dual Flush)	6	Full-litres	
	3	Part-litres	
Shower	10	litres/minute	
Bath	10	litres/minute	
Basin Taps	22	litres/minute	2x (basins)
Bed 2			
WC (Single Flush)		litres	
WC (Dual Flush)	6	Full-litres	
	3	Part-litres	
Shower	11	litres/minute	
Basin Taps	10	litres/minute	

Family Bathroom			
WC (Single Flush)		litres	
WC (Dual Flush)	6	Full-litres	
	3	Part-litres	
Shower	10	litres/minute	
Basin Taps	9	litres/minute	
Bath Taps	20	litres/minute	

Appendix L

Existing Dwelling at Oreham Manor Farm Oreham Common Henfield West Sussex BN5 9SB - Existing Part G Calculation

Existing Water Usage - Flow Survey, Part G

Fixture	Capacity/Flow Rate	Use Factor	Fixed Use	litres/person/ day
WC (Single Flush)		4.42		0.00
WC (Dual Flush)	6	1.46		8.76
WC (Dual Flush) Part	3	2.96		8.88
Taps (excluding kitchen)	9	1.58	1.58	15.80
Bath (where shower present)	180	0.11		19.80
Shower (where bath present)	10	4.37		43.70
Bath Only		0.5		0.00
Shower Only		5.6		0.00
Kitchen Sink	9.5	0.44	10.36	14.54
Washing Machine	6	2.1		12.60
Dishwasher	1	3.6		3.60
	Total calculated use (litres/person/day)			127.68
Normalisation Factor				0.91
Total Water Consumption (CSH) (litres/person/day)				116.19
External Water Use				5.00
Total Water Consumption (Part G) (litres/person/day)				121.19

	Population	Mains Water Usage (litres/day)
Existing 5-bed house	3.00	363.57
Totals	3.00	363.57

Appendix M

Existing Dwelling at Oreham Manor Farm Oreham Common Henfield West Sussex BN5 9SB - Retrofit Part G Calculation

Existing Water Usage - Retrofit, Part G

Fixture	Capacity/Flow Rate	Use Factor	Fixed Use	litres/person/ day
WC (Single Flush)		4.42		0.00
WC (Dual Flush)	4	1.46		5.84
WC (Dual Flush) Part	2	2.96		5.92
Taps (excluding kitchen)	2.7	1.58	1.58	5.85
Bath (where shower present)	180	0.11		19.80
Shower (where bath present)	6	4.37		26.22
Bath Only		0.5		0.00
Shower Only		5.6		0.00
Kitchen Sink	4	0.44	10.36	12.12
Washing Machine	6	2.1		12.60
Dishwasher	1	3.6		3.60
	Total calculated use (litres/person/day)			91.95
Normalisation Factor				0.91
Total Water Consumption (CSH) (litres/person/day)				83.67
External Water Use				5.00
Total Water Consumption (Part G) (litres/person/day)				88.67

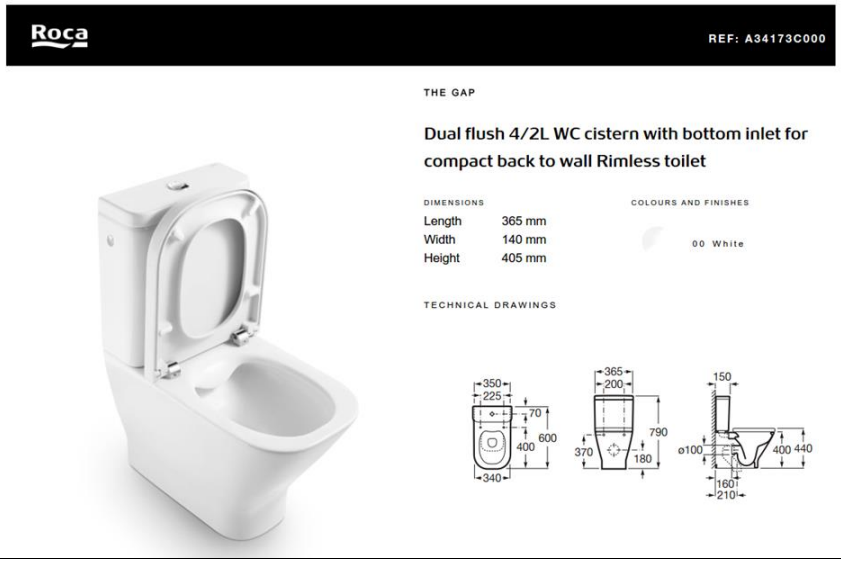
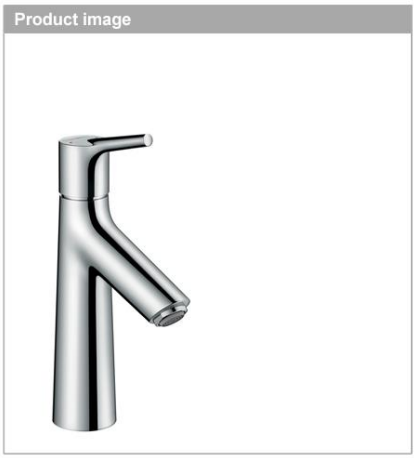
Rainwater Harvesting	27.17	litres/person/day
Mains Water	61.50	litres/person/day
Total	88.67	litres/person/day

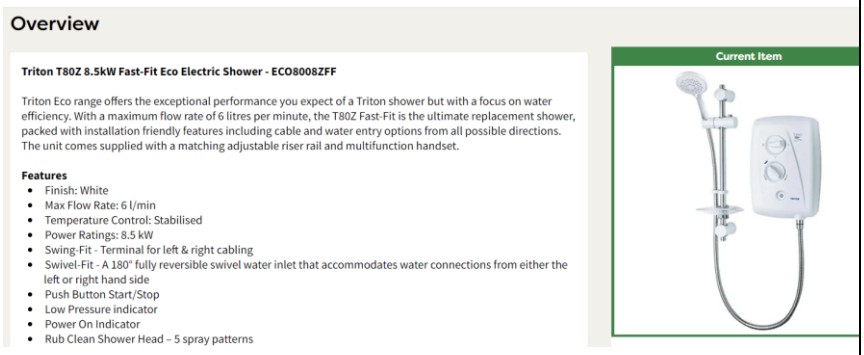
	Population	Mains Water Usage (litres/day)	Rainwater Usage (litres/day)
Existing 5-bed House	3.00	184.51	81.50
Totals	3.00	184.51	81.50

Appendix N

Existing Dwelling at Oreham Manor Farm Oreham Common Henfield West Sussex BN5 9SB - Retrofit Fixtures and Fittings

Fixtures and Fittings - Part G Specifications

Item	Capacity/Flow rate	Overview
Toilet (Dual Flush)	4/2 litres	Roca  Roca REF: A34173C000 THE GAP Dual flush 4/2L WC cistern with bottom inlet for compact back to wall Rimless toilet DIMENSIONS Length 365 mm Width 140 mm Height 405 mm COLOURS AND FINISHES 00 White TECHNICAL DRAWINGS
Basin Tap	2.7 litres/minute	Hansgrohe Talis S  Product image Description **product features** · ComfortZone 100 provides space for greater freedom of movement · spout 93 mm long · spout height: 98 mm · free-standing installation · Maximum flow rate (at 3 bar): 2.7 l/min · ceramic cartridge · QuickClean technology for easy limescale removal · WRAS 1609018 - WRAS 1609018 approval letter · WRAS 2110027

Shower	6 litres/minute	Triton  **Overview** **Triton T80Z 8.5kW Fast-Fit Eco Electric Shower - ECO8008ZFF** Triton Eco range offers the exceptional performance you expect of a Triton shower but with a focus on water efficiency. With a maximum flow rate of 6 litres per minute, the T80Z Fast-Fit is the ultimate replacement shower, packed with installation friendly features including cable and water entry options from all possible directions. The unit comes supplied with a matching adjustable riser rail and multifunction handset. **Features** • Finish: White • Max Flow Rate: 6 l/min • Temperature Control: Stabilised • Power Ratings: 8.5 kW • Swing-Fit - Terminal for left & right cabling • Swivel-Fit - A 180° fully reversible swivel water inlet that accommodates water connections from either the left or right hand side • Push Button Start/Stop • Low Pressure indicator • Power On Indicator • Rub Clean Shower Head – 5 spray patterns Current Item
Kitchen Sink	4 litres/minute	Caple Single Lever Deluxe Tap  **FEATURES** • Single lever design • Minimum bar pressure required : 0.3 • Single lever ceramic valve • Single flow • WRAS approved • The SLD2/CH has been designed to you conform to Water efficiency requirements, it has a flow rate of less than 4 litres per minute at 3 bar

Appendix O

Existing Dwelling at Oreham Manor Farm Oreham Common Henfield West Sussex BN5 9SB - Retrofit Rainwater Harvesting Calculations

Rainwater Harvesting System (BS EN 16941-1:2018 - Intermediate Approach)

AAR	752.61	Average Annual Rainfall
e	0.8	Yield Coefficient
h	0.9	Hydraulic Filter Efficiency
P_d	27.17	Daily Requirement per Person

Unit	Type	No. Beds	No. Units	Census	Population	Roof Area (m^2)	9.6% Annual Rainwater Yield (litres)	9.6% Annual Water Demand (litres)	Total Storage Volume at 9.6%	Minimum Tank Size (litres)
5-bed	Existing	5	1	3	3	239	12,432.88	2,856.11	2,856.11	3,400
		Totals	1		3	239	12,432.88	2,856.11	2,856.11	

Appendix P

Oreham Manor Farm – Rainwater Harvesting Tank Management and Maintenance Plan

Existing Dwelling at Oreham Manor Farm
Oreham Common, Henfield

Rainwater Harvesting Management and Maintenance Plan

For

Mr Andy Barrott

motion

Document Control Sheet

Existing Dwelling at Oreham Manor Farm

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4.0 Continuity of Supply

4.1 To ensure that sufficient water is available for re-use, the storage tank will be sized so that it can provide 35 days of storage, which will provide sufficient supply during periods of drought.

4.2 Where drought periods extend beyond 35 days, the rainwater harvesting system will include an automatic mains backup. This will ensure that water is available at all times, even during extended periods of drought.

5.0 Maintenance Categories

5.1 There are three categories of maintenance activities referred to in this report. These are:

Inspection and Monitoring

- Inspection and monitoring tasks shall be carried out frequently, nominally once a month, and will include a visual inspection of all components including all inlets and outlets.

Regular Maintenance (Monthly)

- Regular maintenance consists of basic tasks done on a frequent and predictable schedule.

Seasonal Maintenance (Quarterly)

- Seasonal maintenance comprises tasks that are likely to be required periodically, but on a much less frequent and predictable basis than the routine tasks.

Remedial Maintenance

- Remedial maintenance comprises of intermittent tasks that may be required to rectify faults associated with the system that have been identified through visual inspections. The likelihood of faults can be minimised by correct installation, regular inspection and timely maintenance.

6.0 The Rainwater Harvesting System

6.1 The proposed rainwater harvesting system will receive rainwater passing through and over several structures and will store rainwater within several items of infrastructure. These include:

- Roofs
- Gutters
- Filters;
- Pumps;
- Overflows; and
- Storage tanks.

6.2 All components shall be installed in accordance with the manufacturer's instructions and to the levels/arrangements as defined on the designer's drawings.

6.3 This report shall be read in con□nction with the rainwater harvesting design, so that the location and type of each item of infrastructure can be recognised and understood.

6.4 Manufacturer's instructions are to be added to this document once specific products have been selected and installed as part of the detailed design. This document will subsequently form the basis for a maintenance regime for the rainwater harvesting system.

7.0 General Maintenance Principles

7.1 All rainwater harvesting systems require regular maintenance to keep them working at optimum efficiency and capacity. The maintenance of the rainwater harvesting systems shall be carried out alongside other regular maintenance tasks within the property.

7.2 Timely and adequate maintenance will increase the lifespan of the rainwater harvesting system. Inadequate maintenance will do the reverse.

7.3 The property owners are responsible for the monitoring and maintenance of the rainwater harvesting system for the lifetime of the development.

8.0 Inspection and Maintenance Frequency of Components

8.1 Table 8.1 below lists each of the components used within the development's rainwater harvesting systems. It suggests an indicative maintenance frequency for each component and ascribes typical maintenance tasks to them.

8.2 In accordance with the DWI's Private Water Supply regulations, it is the responsibility of the homeowner to ensure that all necessary maintenance activities are carried out in a timely manner and that the design performance of each drainage component is preserved. The homeowner may appoint a competent contractor to assist with the maintenance of their rainwater harvesting system. Additionally, the Council has a role to ensure the regulations are upheld by the homeowner.

8.3 If there is any uncertainty regarding the correct and safe methods of cleaning, or what equipment will be used, the manufacturer should be consulted.

Maintenance Schedule	Required Action	Frequency
Regular Maintenance	Inspection of the tank for debris and sediment build-up	Annually
	Inspection of inlets/outlets and withdrawal devices	Annually
	Inspection of filters	Annually
	Inspection of Pumps	Annually
	Inspection of overflow areas	Annually
	Inspection of gutters	Annually
	Cleaning of tank	Annually
	Cleaning of inlets and outlets and withdrawal devices	Annually
	Cleaning of gutters and roof drain filters	Annually
	Check pump operation	Annually
Occasional Maintenance	Cleaning and/or replacement of any filters	□uarterly
	Sampling of water supply	Every five years
Remedial Actions	Repair of overflow erosion damage or damage to tank	As required
	Pump repairs	As required

Table 8.1 – Maintenance tasks and frequencies

8.4 Upon completion of maintenance activities, a record will be kept of the work carried out. This will be retained and an annual maintenance report will be compiled, which shall include the following:

- Observations resulting from inspections;
- Maintenance and operation activities undertaken during the year; and

- Recommendations for inspections and maintenance programmes for the following year.

8.5 On the next page is a table with suggested information that will be recorded and included with the maintenance plan. As mentioned in the introduction to this document, this shall be a living document and regularly updated, as required and will be kept for the lifetime of the development.

Date	Component requiring maintenance	Issues prompting maintenance	Scheduled maintenance (Y/N)	Maintenance carried out	Additional works required (Y/N). If yes, please detail	Next scheduled date of inspection and maintenance