Water Neutrality Statement

Rowfold Lodge
Coneyhurst Road
Billingshurst
West Sussex
RH14 9DD

On Behalf of
Mr Rutherford

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CONTENTS

1 INTRODUCTION

1.1 Horsham District is situated in an area of serious water stress, as identified by the Environment Agency Water Stressed Areas Classification.

1.2 Horsham District is supplied with water by Southern Water from its Sussex North Water Resource 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.

1.3 On 14 September 2021, Horsham District Council received a Position Statement from Natural England. Information collected by Natural England shows that water abstraction for drinking water supplies is having a negative impact on the wildlife sites in the Arun Valley. They have advised that any new development that takes place must not add to this negative impact.

1.4 One way of preventing any further negative impact is to ensure that all new development which takes place is water neutral. Water neutrality is defined as the use of water in the supply area before the development is the same or lower after the development is in place.

1.5 The application site is located within the Sussex North Water Resource Zone. This report therefore provides evidence to show that the proposed development will be water neutral.

2 BASELINE CALCULATIONS

2.1 Prior approval for the conversion of an agricultural building to form a one bedroom dwelling was granted on 18th April 2024 under application reference DC/24/0304.

2.2 A Regulation 77 application was submitted under reference HRA/24/0014 to demonstrate that the consented scheme would be water neutral.

2.3 The Regulation 77 application confirms that by fitting flow restrictors on the fixtures and fittings within the existing dwelling known as Rowfold Lodge would provide a water saving of 120.78 litres per day or 44,084.70 litres per annum and would be available to provide offsetting for the approved Class Q dwelling.

2.4 This has been secured via a S106 agreement which was completed on the 29th May 2025 as a deed.

2.4 This report has been prepared in support of a new planning application for the demolition of the agricultural building and adjoining stable block and its replacement with a 3 bedroom dwelling. This is being submitted as an alternative to the scheme approved under prior approval reference DC/24/0304.

3 CALCULATING WATER USAGE

3.1 Introduction

3.1.1 In the UK every person uses approximately 150 litres of water a day, whilst consumption in our homes has steadily increased every year by around 1% since 1930 as we enjoy better standards of cleanliness and greater use of water-using appliances.

3.1.2 Increased consumption and a growing number of households has put more pressure on water supplies and it is likely that this problem will worsen as our climate changes.

3.1.3 From April 2010 Part G of the Building Regulations requires new dwellings to limit maximum water usage to 125 litres per person per day, whilst dwellings assessed under The Code for Sustainable Homes are required to achieve a lower maximum water usage level. Policy 37 of the Horsham District Planning Framework sets out a more stringent requirement of 110 litres of water per person per day.

3.2 What is needed for a water usage calculation

3.2.1 The calculation method requires the use of water consumption figures provided from manufacturer's product details. In order to calculate predicted water usage of a dwelling the following information is collected to determine the consumption of each fitting:

- Whether the dwelling has a low or high water pressure system.
- Kitchen, utility and other taps – the quantity of taps as well as the flow rates in litres per minute for each tap. Where separate hot and cold taps are provided the flow rate of each is taken to determine the average.
- Baths – the quantity of baths and the capacity to overflow in litres. The flow rates of the bath taps are not required. Jacuzzis are not included in the water efficiency calculations.
- Showers – the quantity of showers and the cold-water flow rate.

- WCs – the quantity of toilets and flush capacity in litres of both single and dual flushes (part and full flush)

- Dishwashers – the water usage in litres per place setting. If no dishwasher is present in the development then a generic figure of 1.25 litres per place setting is used. This will allow for any future installations.

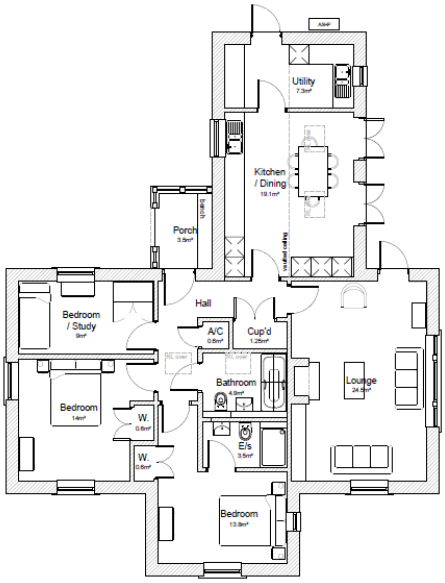
- Washing machines – the water usage in the litres per kilogram of dry load. If no washing machine is present in the development, then a generic figure of 8.17 litres per kilogram of dry load is used. This will allow for any future installations.

3.2.2 External taps are included in Building Regulations calculations at a fixed rate of 5 litres per person per day. External water use is not included in the target consumption rates for Code for Sustainable Homes.

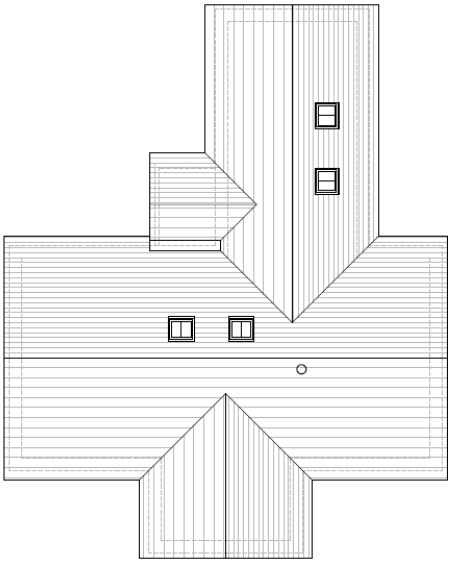
4 PROPOSED WATER CONSUMPTION

4.1 The planning application seeks permission for a 3 bedroom dwelling as an alternative to the approved 1 bedroom dwelling via prior notification reference DC/24/0304.

Figure 4.1 – Proposed Floor Plan



GROUND FLOOR AS PROPOSED
115.8m² GIA (incl. porch)



ROOF PLAN AS PROPOSED

4.2 Based on 2011 census data for the Horsham District, the average occupancy rate for a 3 bedroom dwellings is 2.47 occupants.

4.3 The dwelling will be subject to Horsham District Council's maximum water usage requirement of 110 litres of water per person per day.

4.4 Calculations are provided at Appendix A to show the water usage of the proposed dwelling.

4.5 The calculations show that the dwelling will achieve water usage of 88.2 litres per person per day which includes 5 litres for an outside tap.

4.6 The proposed dwelling will therefore use 217.85 litres per day or 79,515.25 litres per annum.

88.2 litres per person per day x 2.47 occupants = 217.85 litres per day

217.85 litres per day x 365 = 79,515.25 per annum

4.7 Section 5 details a strategy to offset this figure to ensure the development is water neutral.

5 OFFSETTING

5.1 As mentioned previously the application site has an existing permission for a new dwelling via DC/24/0304 with water offsetting being approved via HRA/24/0014.

5.2 Due to the proposal being an alternative dwelling than the approved the same previously accepted offsetting of 120.78 litres per day via the fitting of flow restrictors at Rowfold Lodge is proposed and will count towards the offsetting subject to this application.

Figure 5.1 – Location Plan of Application and Offsetting Site

Summary of Approved Offsetting Strategy Via HRA/24/0014

5.3 Rowfold Lodge is a 5 bedroom detached dwelling which has an occupancy rate of 2.86 The actual occupation rate of the property however is 3 persons, with other family members staying on a regular basis. For the purposes of this application and to err on the side of caution we have based our calculations using Horsham's District Councils Occupancy Rate of 2.86.

5.4 It is therefore proposed to offset the water demand of the proposed dwelling by installing flow restrictors onto the existing fittings located within Rowfold Lodge.

5.5 A qualified plumber attended site to verify the existing fixtures and fittings' flow rates and to confirm what these can be reduced to by installing flow restrictors. A summary of the findings is provided in Table 5.1 and Table 5.2.

Table 5.1 – Existing Flow Rates

Appliance	QTY	Existing Average Flow Rate
Kitchen Tap Cold	1	22
Kitchen Tap Hot	1	20
Utility Room Tap Cold	1	12
Utility Room Tap Hot	1	16
Cloak Room Tap Cold	1	14
Cloak Room Tap Hot	1	12
Master Tap Cold	1	18
Master Tap Hot	1	16
Master Shower Hot	1	9
Master Shower Cold	1	10
Bathroom Tap Cold	1	16
Bathroom Tap Hot	1	14
Bathroom Shower Hot	1	12

Appliance	QTY	Existing Average Flow Rate
Bathroom Shower Cold	1	14
Jack & Jill Tap Cold	1	18
Jack & Jill Tap Hot	1	16
Ensuite Tap Cold	1	22
Ensuite Tap Hot	1	16
Ensuite Shower Hot	1	11
Ensuite Shower Cold	1	12

5.6 Total water usage of the existing fixtures and fittings per day is 98.37 litres per person, multiplied by the average occupancy of a 5 bedroomed property totals 281.34 litres per day.

98.37 litres per day x 2.86 Occupancy Rate = 281.34 litres per day

5.7 The proposed water saving fittings are flow limiters which will be fitted to the kitchen taps, hand basins and showers to reduce water flow. The water savings are detailed within table 5.2.

Table 5.2 – Proposed Flow Rates

Appliance	QTY	Existing Average Flow Rate
Kitchen Tap Cold	1	8
Kitchen Tap Hot	1	8
Utility Room Tap Cold	1	8

Appliance	QTY	Existing Average Flow Rate
Utility Room Tap Hot	1	8
Cloak Room Tap Cold	1	8
Cloak Room Tap Hot	1	8
Master Tap Cold	1	8
Master Tap Hot	1	8
Master Shower Hot	1	6
Master Shower Cold	1	6
Bathroom Tap Cold	1	8
Bathroom Tap Hot	1	8
Bathroom Shower Hot	1	6
Bathroom Shower Cold	1	6
Jack & Jill Tap Cold	1	8
Jack & Jill Tap Hot	1	8
Ensuite Tap Cold	1	8
Ensuite Tap Hot	1	8
Ensuite Shower Hot	1	6
Ensuite Shower Cold	1	6

5.8 Total water usage per day will therefore be 56.14 litres per person, multiplied by the average occupancy of a 5 bedroom property in the Horsham District gives a total water usage of 160.56 litres per day. This equates to a reduction in water consumption of 120.78 litres per day and which is available towards offsetting.

56.14 litres x 2.86 occupancy rate = 160.56 litres per day

Existing Water Usage 281.34 litres per day – 160.56 Proposed Water Usage litres per day = 120.78 litres per day

Further Offsetting Measures for New Dwelling

5.9 As noted within Section 4 of this report the proposed dwelling will use a total of 217.85 litres per day which minus the offsetting available of 120.78 litres per day requires a further 97.07 litres per day to be offset.

217.85 litres per day – 120.78 litres per day = 97.07 litres per day

5.10 It is therefore proposed to offset this additional water usage by using rainwater harvesting to serve the WC's, outside tap and washing machine and which will be treated with a UV system to remove any bacteria from the rainwater prior to use, details of which can be found in Appendix D.

Rainwater Harvesting on Proposed Dwelling

5.11 The roof plan area of the proposed dwelling measures approximately 115.8 sqm.

5.12 The application site is located within the Arun at Pallingham Catchment area and details of the average rainfall within this area for the last 5 years has been recorded as 884.94 mm per annum.

Figure 5.2 - Rainfall data for Arun at Pallingham Catchment Area

	Rainfall (in mm)						
	July 2019 - June 2020	July 2020 - June 2021	July 2021 - June 2022	July 2022 - June 2023	July 2023 - June 2024	July 2024 - June 2025	Average
July	114.147	37.533	97.554	3.16	28.671	67.848	58.15216667
August	46.893	26.984	88.968	37.59	40.86	36.279	46.26233333
September	53.995	64.433	84.821	87.88	49.451	156.293	82.81216667
October	99.84	28.527	60.034	95.69	83.179	90.822	76.34866667
November	118.658	178.691	153.733	218.17	116.909	86.143	145.384
December	120.986	68.975	14.954	112.707	94.188	53.915	77.62083333
January	146.305	130.707	84.359	103.6	79.601	128.571	112.1905
February	84.842	84.842	25.693	7.132	96.191	68.87	61.26166667
March	151.345	57.227	57.226	131.382	56.599	4.965	76.45733333
April	55.98	35.209	71.396	89.867	84.555	22.458	59.91083333
May	48.866	95.213	22.113	38.497	60.544	24.298	48.25516667
June	4.438	97.553	61.197	19.123	19.104		40.283
TOTAL	1046.295	905.894	822.048	944.798	809.852		884.9386667

5.13 To calculate how much rainwater can be collected by a harvesting system per year the rainfall (mm) is multiplied by the roof surface area (sqm) as follows:

115.8 sqm x 884.94 mm per annum = 102,476.05 litres per annum

5.14 As evidenced in the water calculator attached at Appendix A the WC's, washing machine and outside tap will use a combined 39.84 litres per person per day of mains water.

17.68 (WC) + 17.16 (Washing Machine) + 5 (Outside Tap) = 39.84 litres per person per day

5.15 Based on the proposed occupancy rate of 2.47 equates to a daily mains water usage of these fixtures and fittings of 98.40 litres per day.

39.84 litres per person x 2.47 occupancy = 98.40 litres per day

5.16 It is therefore proposed to replace the mains water usage of these fixtures and fittings with rainwater harvesting off the application roof.

5.17 As noted above the roof is capable of capturing 102,476.05 litres per annum which is more than adequate to cater for the 35,916 litres per annum to serve the washing machine, outside tap and WCs at the new property.

98.40 litres per day x 365 days = 35,916 litres per annum

5.18 1 x 3500 litre tanks will be required to provide adequate storage to cover a 35 day drought period details of which can be found in Appendx D.

5.19 By replacing the proposed mains water usage with rainwater harvesting provides a further reduction in mains water usage of 98.40 litres per day and deems the proposal water neutral.

Water Usage	Litres Per Day
Proposed Mains Water Usage	217.85
Offsetting Available via Rowfold Lodge	120.78

Offsetting via Rainwater Harvesting	98.40
Mains Water Residual	**-1.33**

Appendix A

Water Calculator for New Proposed Dwelling

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)		4.42	0.00	0
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)	4.00	4.42	0.00	17.68
Taps (excluding kitchen/utility room taps)	Flow rate (litres/min)	2.00	1.58	1.58	4.74
Bath (where shower also present)	Capacity to overflow(litres)	90.00	0.11	0.00	9.90
Shower (where bath also present)	Flow Rate(litres / minute)	6.00	4.37	0.00	26.22
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)	2.00	0.44	10.36	11.24
Washing Machine	(Litres/kg dry load)	8.17	2.1	0.00	17.157
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)			91.44

	(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)	83.21
	(10)	External water use	5.0
	(11)	Total water consumption (Building Regulation 17.K) =(9)+(10)(litres/person/day)	88.2

Installation Type	Make/Model (mandatory)	Litres/Person/Day
WC (multiple fittings)	4 Litre Flush	17.68
Taps	2 Litres Per Minute	4.74
Baths (shower(s) present)	90 Litres Fill	9.90
Showers (bath(s) present)	6 Litres Per Minute	26.22
Kitchen Taps	2 Litres Per Minute	11.24
Washing Machines		17.157
Dishwasher		4.5

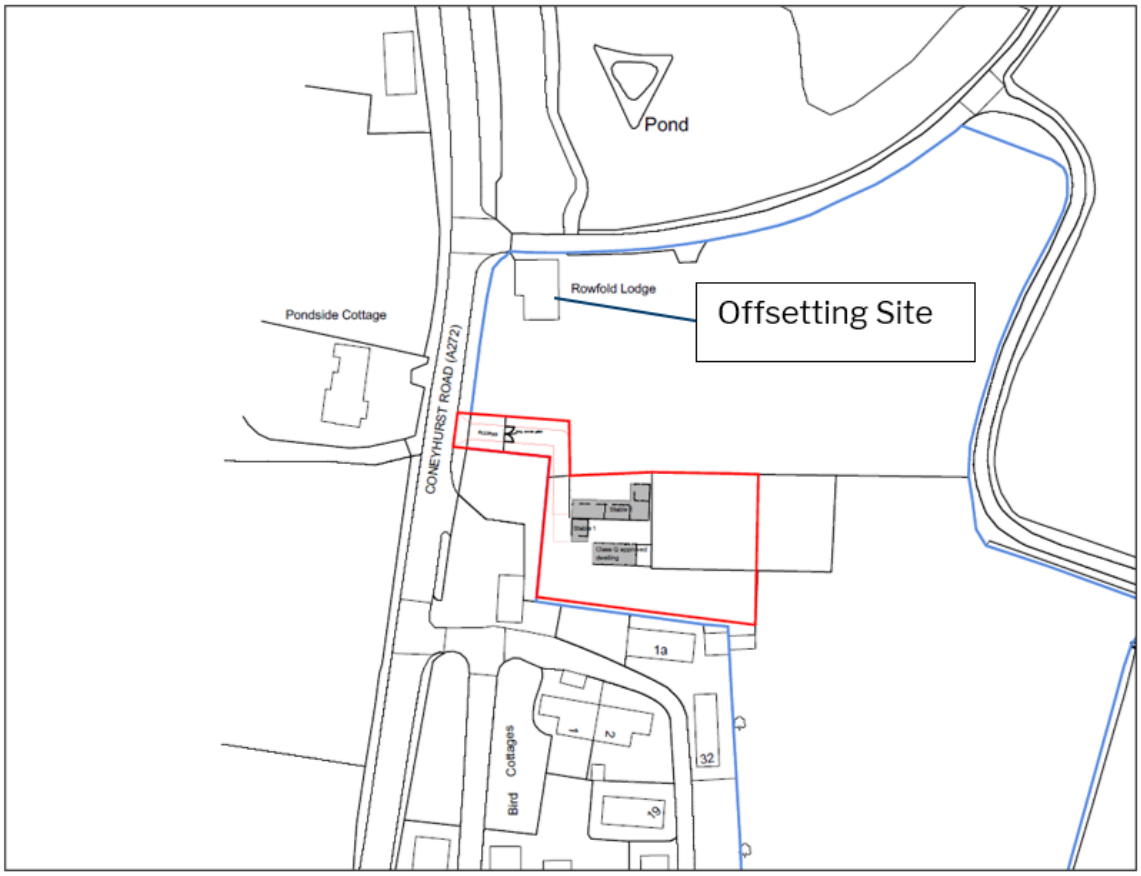
Appendix B

HRA Decision Notice

To be provided once issued by Horsham District Council

Appendix C

Location of Offsetting Site



Appendix D

Rainwater Harvesting Tank

3500 Litre

Home » Tanks » Enduramaxx Water Storage Tanks » Underground Water Tanks » **3,500 Litre Underground Tank**

3,500 Litre Underground Tank

SKU: 350

From £1,200.00 inc. VAT

£1,000.00 exc. VAT

3,500 Litre Underground Tank Features

- Dimensions (mm) 2480 L x 1580 W x 1940 H
- Comes complete with 450mm dia plastic lid or 600 mm x 600 mm square galvanised lid
- Optional turrets for housing control sets/weir housing or where tank is being installed deeper underground
- Facility to fit additional lid if required
- Manufactured in the UK
- Guaranteed for 10 years

Lid: **Choose An Option**

Choose An Option

Quantity: 1

ADD TO BASKET

ADD TO QUOTE BASKET

RAINHARVESTING SYSTEMS DATA SHEET RAINHARVESTING SYSTEMS DATA SHEET

Saphir UV DISINFECTION UNITS

- Suitable for a range of domestic and commercial applications.
- Available in various sizes to suit required flow rates.
- Effective microbiological protection.
- Uses no chemicals & produces no by-products.
- Economical, safe & reliable
- Lamp operation indicator.
- Does not affect taste or odour.
- Long life lamps require only annual replacement.
- Simple to install & maintain.
- *Saphir+* version now available with additional telemetry.

Why use UV treatment?

The quality of untreated rainwater is such that it cannot be classified as potable or 'wholesome' and therefore is not fit for drinking. Even though it is widely used for drinking, bathing etc. in various parts of the world, it is not deemed acceptable practice for the UK.

Untreated rainwater is not considered safe for personal use due to the contamination risk, particularly from bird droppings. To be sure that any 'unwholesome' water is fit to drink it should therefore be treated, and the simplest and most reliable way of doing this on a small scale is to use Ultra-Violet (UV) sterilisation. The water to be treated must first be free of even microscopic particles, so it is usually necessary to fit sediment pre-filters prior to the water entering the UV unit.

How does it work?

UV disinfection works by destroying the DNA of potentially damaging micro-organisms, thus rendering them harmless. This process is instant, effective and reliable. No chemicals are involved and the process does not affect the taste of the water in any way. UV radiation is part of natural sunlight, and a UV lamp emits a particular wavelength at high concentration to destroy bacteria, viruses and cysts.

Saphir UV unit

Saphir UV

Standard units have:
- Stainless steel chamber
- High-output low-pressure UV lamp
- Lamp on indicator
- IP55 rated controls
- Control module can be chamber or wall mounted
- Chamber can be mounted vertically or horizontally
- Up to 10 bar pressure
- UK manufactured

Saphir+

The + version of the Saphir unit has several additional features:
- Micro processor control
- Lamp status indicator to show when the lamp needs changing
- Alarm & processor reset button
- volt-free contacts for remote alarm output.

UV treatment is safe, reliable and simple to maintain. It is generally deemed to be ecologically preferable to chlorination and reverse osmosis (RO). However, please note that UV treatment alone will not remove discolouration or bad taste.

Several models available to suit most applications

Model	flow rate @ 40mJ/cm²	flow rate @ 25mJ/cm²	inlet / outlet size	Power consumption	Length mm
Saphir 1	13.5 l/min.	20 l/min.	¾" bsp	15w	405
Saphir 2	22.5 l/min.	36.5 l/min	¾" bsp	25w	554
Saphir 3	40 l/min.	63 l/min	¾" bsp	40w	554
Saphir 4	46.5 l/min.	73 l/min	1" bsp	36w	962
Saphir 7	89 l/min.	140 l/min	1" bsp	36w	962
Saphir 10	120 l/min.	183 l/min	1 ½" bsp	75w	962

** mJ/cm² = millijoules per cm² at end of lamp life*

Data Sheet UV/17/01

SEDIMENT PRE-FILTERS FOR USE WITH UV UNITS

- For use with pressurised water supplies.
- Sediment removal down to 5 microns.
- Available in a range of sizes to suit different flow rates.
- Replaceable polypropylene cartridges or bags.
- Simple cartridge changing.
- Nitrate and Carbon filters also available.

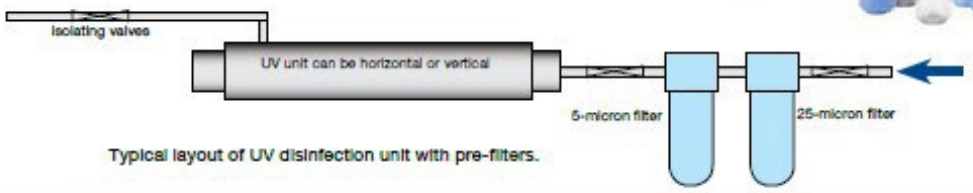
When using *Saphir* UV units to disinfect rainwater we recommend that additional filtration is added prior to the water passing through the UV chamber. It is important that the water to be treated is as clean as possbile, otherwise small particles can create a 'shadow' which the UV light cannot penetrate. We recommend that water is cleaned down to 5 microns prior to UV treatment.

The filters require pressure in order to work effectively so are suitable only for pumped supplies. The cartridges require regular replacement, frequency of which will vary according to the nature of the water they are treating.

Water is normally pumped through 25-micron and 5-micron wound sediment filters to ensure that sufficient material is removed. These are available in a range of sizes to suit different flow rates. For larger UV units where a higher flow rate is required, a single 5-micron 'bag' filter is sufficient.

Filters are selected to match the flow rate of the UV unit

UV Unit	25-micron pre-filter	5-micron pre-filter	Connection size
Saphir 1	10" standard wound cartridge	10" standard wound cartridge	¾" bsp
Saphir 2	20" standard wound cartridge	20" standard wound cartridge	¾" bsp
Saphir 3	10" 'Big Blue' wound cartridge	10" 'Big Blue' wound cartridge	¾" bsp
Saphir 4	10" 'Big Blue' wound cartridge	10" 'Big Blue' wound cartridge	1" bsp
Saphir 7	N/A	10" 'Big Blue' bag filter	1" bsp
Saphir 10	N/A	10" 'Big Blue' bag filter	1½" bsp



Typical layout of UV disinfection unit with pre-filters.

Distributor:

Rainharvesting Systems Ltd.

The Green Shop
Calf Way, Bisley,
Stroud, Gloucestershire GL6 7BX
Tel: 0845 223 5430
Fax: 01452 772008
E-mail: sales@rainharvesting.co.uk
Website: www.rainharvesting.co.uk