BASEENERGY
Building Assessments for a Sustainable Environment

North
44 Canal Street
Bootle
Liverpool
L20 8QU

South
117 Knyvett House,
Watermans Business
Park, The Causeway,
Staines-upon-Thames,
TW18 3BA

Water Neutrality Strategy Rev2

Former Newbrook Stables,
Pound Lane,
Upper Beeding,
West Sussex,
BN44 3JD

8 March 2023

Contents

Appendices

Appendix A - Existing Plans and Elevations
Appendix B - Proposed Plans and Elevations
Appendix C - Natural England Position Statement – September 2021
Appendix D - Part G Water Efficiency Calculation
Appendix E - Rainwater Harvesting Details

Prepared by	Checked by	Date
Carina Hassall BSc (Hons)	Shirley Hunter	8 March 2023

This document has been prepared solely as a Water Neutrality Strategy for Stringer and Kitson. Base Energy accepts no responsibility or liability for any use that is made of this document other than by the Client for the purposes for which it was originally commissioned and prepared.

1. Introduction

This Water Neutrality Strategy has been prepared to support the planning application for the proposed replacement dwelling at the former Newbrook Stables, Pound Lane, Upper Beeding, BN44 3JD (**Figure 1**).

The existing plans and elevations are shown in **Appendix A**, and the proposed plans and elevations are shown in **Appendix B.**

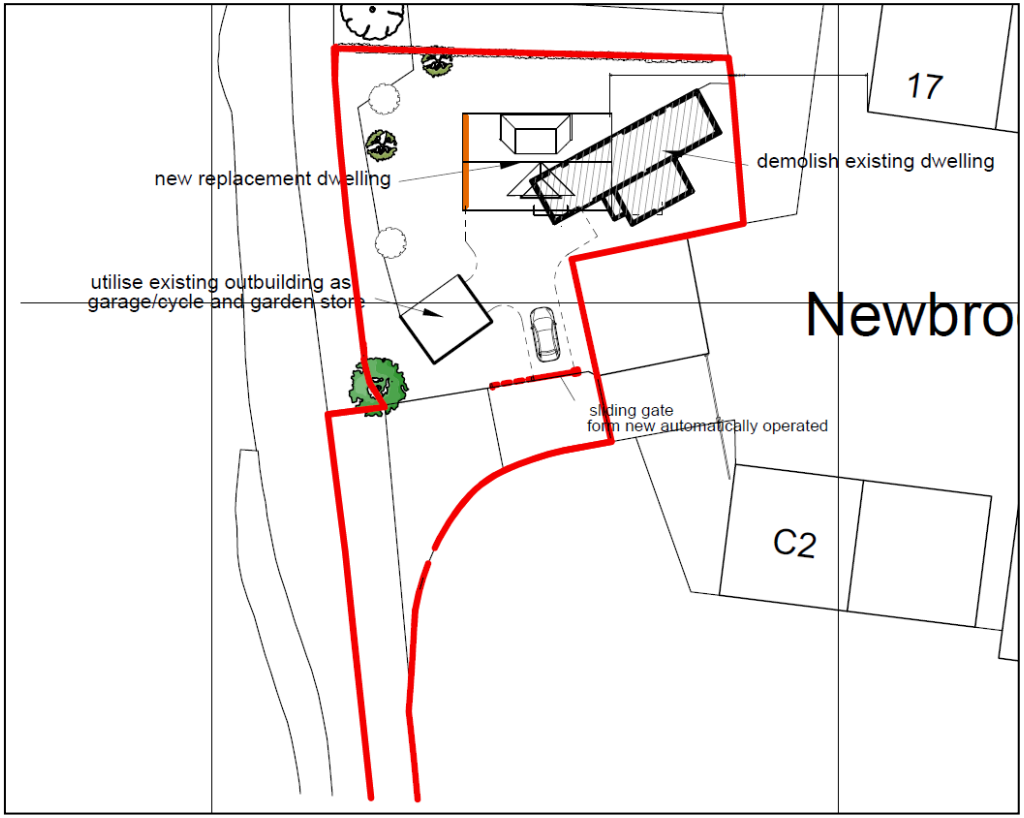


Figure 1 - Site Location

Water Neutrality Strategy Background

Natural England

In September 2021, Natural England issued a Position Statement to Horsham, Crawley and Chichester District Councils about the impact developments are having on water abstraction within the Sussex North water supply zone.

In short, these planning authorities have been told that applications within the zone cannot be determined until a water neutrality strategy is produced. Where a planning application is of critical importance, it can only be determined where it demonstrates water neutrality.

A copy of Natural England's Position Statement is provided in **Appendix C.**

Horsham Council

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

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.

At the time of writing, Horsham District Councils (HDCs) website states:

> *All development proposals that consume mains water are potentially impacted by the Natural England Position Statement. Horsham District Council has though screened out all householder planning applications (with the exception of those proposals for annex accommodation and swimming pools), and all development granted under Schedule 2 Parts 1 and 2 of the General Permitted Development Order from having a likely significant impact on the Arun Valley, as there is no evidence that extensions or minor alterations to dwellings will directly result in an increase in water consumption.*

All other development proposals that consume mains water are now required to demonstrate water neutrality. This includes all development other than that mentioned above granted under the General Permitted Development Order- see below for further details on this. All applications for Reserved Matters must also now demonstrate water neutrality. Applications made under s.73 of the Town and Country Planning Act must consider water neutrality- this is discussed in more detail below.

Applications to discharge conditions and make amendments under s.96A of the Town and Country Planning Act are not impacted, unless the amendment would clearly increase likely water consumption. Such an amendment would be considered a material change.

As a general guide, we would expect a Water Neutrality Statement to cover the following elements:

Introduction

Explain the purpose of the statement and the reason for its submission.

Background

Outline the background to the statement. This includes details of the site, including its existing or most recent use, any extant permissions, and details of the current proposal.

Baseline Calculations

It is critical that the statement clearly establishes what the baseline water consumption rate is for the existing or most recent use. Where historic water bills for the site are not available, alternative data using the Building Regulations Part G or BREAM water calculators should be used, along with appropriate occupancy rates and consumption data for any industrial processes being undertake at the site. The data should be presented in litres per person per day. It is critical that existing baseline consumption is fully evidence to give certainty of the actual mains water being use at a site. Metered water bills are the best way to achieve this certainty.

Proposal Demand

This section will calculate what the water demands will be from the proposed development. The data should be presented in litres per person per day and reflect the average occupancy of the development. For business uses, the proposed consumption data must include consumption used for any proposed industrial processes

Water Reduction Measures

Where the proposed water consumption is higher than the baseline consumption, you must first consider reducing water consumption in the proposed development through installing more water efficient fixtures and appliances. Completion of the Part G or BREEAM water calculators will help demonstrate the savings to be made. Where highly efficient appliances are to be installed, details of an appliance that meets that high standard of water consumption should be submitted to demonstrate the efficiencies are achievable.

Once all efficiency opportunities have been exhausted, water re-use through rainwater harvesting and/or greywater/blackwater recycling should be then considered. Further details below.

Offsetting measures

The use of efficiencies and rain/grey water harvesting technologies alone will be unlikely to make some developments water neutral. In most such cases, such as new build on greenfield sites, offsetting measures to reduce water consumption on other land and property will be required in order to achieve water neutrality. Where offsetting on third party land, full details and evidence of the third party landowner's existing water consumption must be submitted, along with the full details of the efficiencies to be implemented and how the efficiencies will be maintained in future (this could be through a maintenance contribution to the landowner for instance). This can include existing water bills and evidence of the efficiency of the existing fixtures and appliances. Where offsetting is to be carried out on third party land, that landowner will be required to enter into a legal agreement to install and retain the measures in perpetuity.

Offsetting cannot be carried out on third party land that does not take its water from the same North West Sussex Supply Zone.

/

Conclusion

It is important the conclusion summarises the water figures in a clear manner and sets out clearly the detail of any mitigation strategy necessary to achieve neutrality.

2. Water Neutrality Strategy

Baseline Calculations

Horsham Council states 'For residential schemes, we will expect to see water consumption calculations for any existing use of the site, and the proposed use. These must be set out in litres per person per day (l/p/d). For residential uses, copies of recent metered water bills within the last three years is the best evidence of existing consumption. Our preferred alternative approach is for the calculations to reflect the average occupancy rate of a dwelling of that size. This creates a fair and consistent way to calculate water consumption for a dwelling'. 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*

Horsham Council also states '*In terms of per person water consumption data, work carried out for our new Local Plan has used water company data to calculate that existing water consumption rates average at **135 l/p/d**. These are the best figures to use as they are based on known data and enable a consistent approach to be made'.*

The existing dwelling (which is two-bedroomed) is within the boundary of Newbrook Business Park. The dwelling and the units within the business park are all served off 1 single water main. As such, there are no metered water bills which apply solely to the existing dwelling.

On this basis, and in lin with Horsham Councils guidance, the average existing water consumption rate is assumed to be 135 litres/person/day, which based on a two-bedroom dwelling (1.88 occupants) is 253.8 litres/day.

Proposal Demand

3 Bedroom Residential Dwelling

The proposed replacement dwelling will have 3 bedrooms, and therefore an average occupancy of 2.47.

In order to calculate the proposed water usage from the dwellings, a Part G Water Efficiency Calculation has been carried out (**Appendix D**), which is based on the following rates to be achieved through highly efficient fixtures and fittings:

Basin Tap	Flow Rate (litres/ min)	6.0
Bath	Capacity to Overflow (litres)	180
Shower	Flow Rate (litres/ min)	10.0
Toilet	Flush volume (litres)	4.0
Dishwasher	Flow Rate (litres /place setting)	1.0
Washing Machine	Flow Rate (litres/ Kg Dry Load)	6.2
Sink tap	Flow Rate (litres/Min)	8.0

On this basis, the proposed water consumption has been calculated as 108.7 litres/person/day.

The total daily water consumption from the proposed replacement dwelling is 268.48 litres/day.

Water Reduction Measures – Rainwater Harvesting

The specifications proposed are based on highly efficient fixtures and fittings.

Approved Document Part G states:

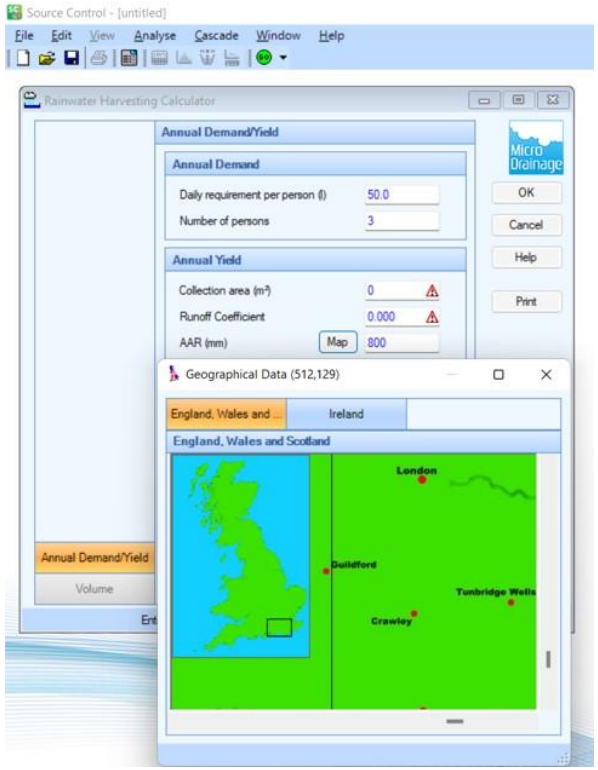
'In some cases rainwater harvesting and greywater recycling may be used as a means of reducing water consumption to achieve higher water efficiency performance levels. This may be needed where options for improving the efficiency of terminal fittings (taps, WCs etc.) have been maximised and further savings are still needed:

Where rainwater is to be used, the following calculation method should be followed….the intermediate approach from BS 8515: a) Calculate the volume of water collected using the collection area, yield coefficient and hydraulic filter efficiency and average rainfall with guidance from BS 8515. b) Calculate the daily rainwater collection in box (d) using the collection area, yield coefficient, hydraulic filter efficiency and rainfall. c) Enter the number of occupants into box (e), which can be based on two occupants in the first bedroom and one occupant in each additional bedroom. A studio flat should assume two occupants

….using the detailed approach as described in BS 8515, enter details of the total daily rainwater collection (litres) and the number of occupants to calculate the daily rainwater per person (litres)'.

BS8515 states:
'to apply the intermediate approach to sizing the rainwater harvesting system for non-potable domestic use, storage capacity should be calculated from the following equations and should be the ***lesser*** *of 5% of the annual rainwater yield or 5% of the annual non-potable water demand'.*

In the first instance, reference has been made to Micro Drainage Source Control as this provides the most current rainfall data for the UK (800mm AAR for Horsham).



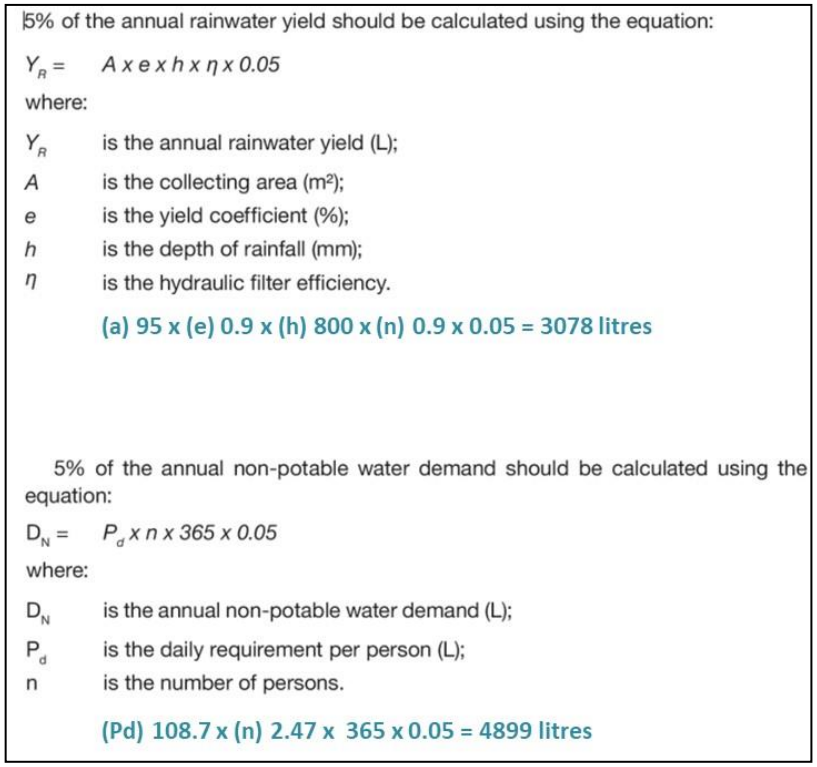
The intermediate approach storage capacity calculations are provided in **Figure 2**.

Therefore, in line with BS8515, a rainwater harvesting volume of 3078 litres would be required.

Rainwater Harvesting Details

The client has confirmed that they are seeking to install GRP potable water storage tanks from Environmental Construction Solutions Ltd. Given Part G calculations on the previous pages, the tanks will provide more than enough storage plus *drought storage providing for at least 35 days of supply*.

A copy of the full details, including the UV disinfection units, is provided in **Appendix E**.



5% of the annual rainwater yield should be calculated using the equation:

$Y_R = A \times e \times h \times \eta \times 0.05$

where:

Y_R is the annual rainwater yield (L);
A is the collecting area (m²);
e is the yield coefficient (%);
h is the depth of rainfall (mm);
η is the hydraulic filter efficiency.

(a) 95 x (e) 0.9 x (h) 800 x (n) 0.9 x 0.05 = 3078 litres

5% of the annual non-potable water demand should be calculated using the equation:

$D_N = P_d \times n \times 365 \times 0.05$

where:

D_N is the annual non-potable water demand (L);
P_d is the daily requirement per person (L);
n is the number of persons.

(Pd) 108.7 x (n) 2.47 x 365 x 0.05 = 4899 litres

Figure 2 - BS 8515 Intermediate Approach Calculations

Offsetting measures

The final step to achieving water neutrality is offsetting any residual demand by making savings in the existing local community. Importantly, these savings must be made within the same water resource zone.

However, in this instance the proposed development is achieving water neutrality through the specification of highly efficient fixtures, and rainwater harvesting.

Therefore, offsetting measures would not be required.

3. Conclusions

This Water Neutrality Strategy has been prepared to support the planning application for the proposed replacement dwelling at the former Newbrook Stables.

The existing dwelling (which is two-bedroomed) is within the boundary of Newbrook Business Park. The dwelling and the units within the business park are all served off 1 single water main. As such, there are no metered water bills which apply solely to the existing dwelling. Therefore, in line with Horsham Councils guidance, the average existing water consumption rate is assumed to be 135 litres/person/day, and 253.8 litres/day for a two-bedroom dwelling (1.88 occupants).

The proposed replacement dwelling will have 3 bedrooms, and therefore an average occupancy of 2.47.

In order to calculate the proposed water usage from the dwellings, a Part G Water Efficiency Calculation has been carried out. Based on highly efficient fixtures and fittings the proposed water consumption has been calculated as 108.7 litres/person/day. The total daily water consumption from the proposed replacement dwelling is 268.48 litres/day.

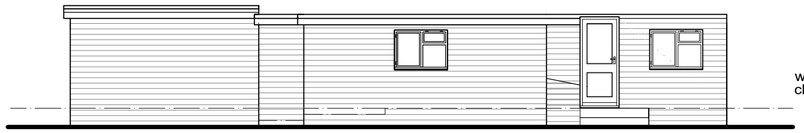
The BS8515 intermediate approach storage capacity calculations have been carried out and in order to offset the proposed water use from the replacement dwelling a rainwater harvesting volume of 3078 litres would be required.

The client has confirmed that they are seeking to install GRP potable water storage tanks from Environmental Construction Solutions Ltd. Given Part G calculations on the previous pages, the tanks will provide more than enough storage plus drought storage providing for at least 35 days of supply. UV disinfection units will also be installed.

Through highly efficient fixtures and fittings, and rainwater harvesting, water neutrality is achieved.

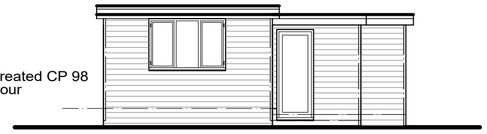
Appendices

Appendix A - Existing Plans and Elevations



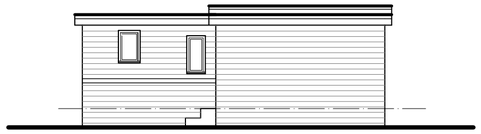
FRONT ELEVATION

weather boarding treated CP 98
chestnut brown colour

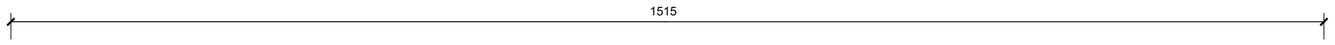


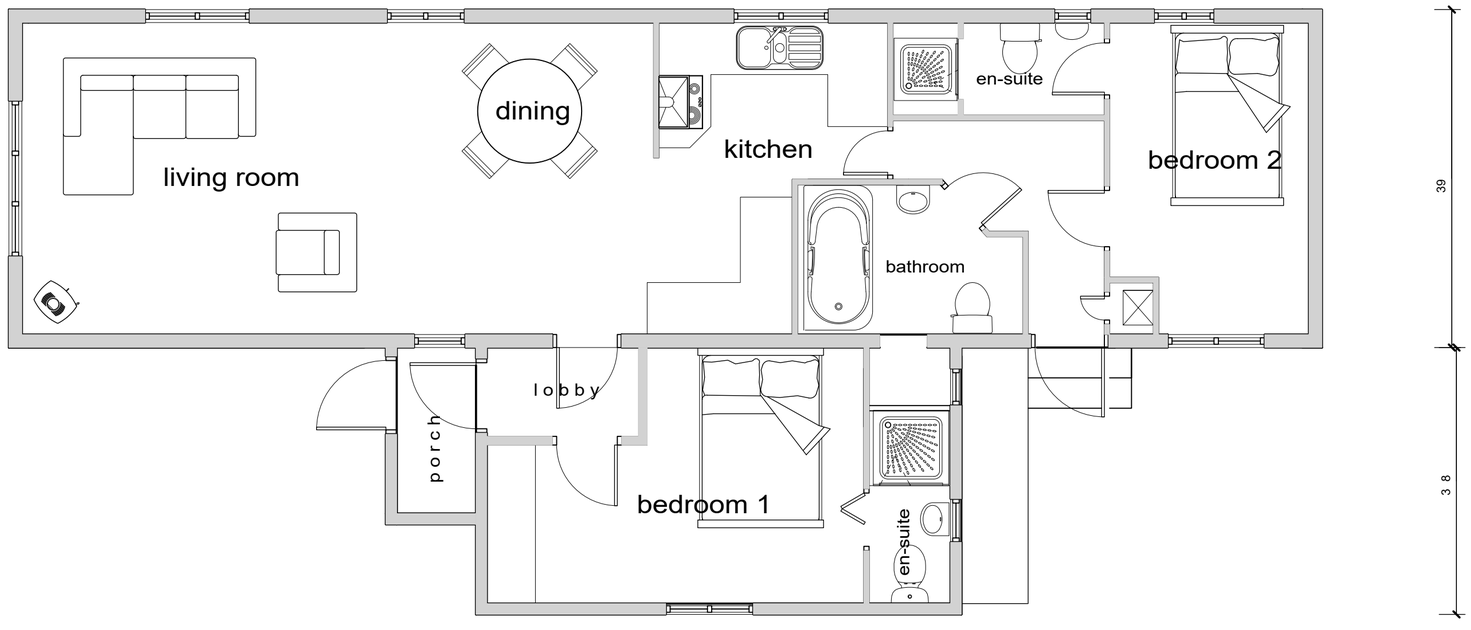
END ELEVATION

REAR ELEVATION



END ELEVATION





FLOOR PLAN

1 2 3 5 7 8 9 1 1:1
1 2 3 5 1:5

A		
	Date	Revisions

Les Humphrey Associates
Architecture Chartered Surveyors Designers

The Studio - The Rocks
Ivy Dene Lane
Ashurst Wood
West Sussex RH19 3TN

telephone: 13 2 3152 fax: 13 2 31398
email: les leshumphreyassociates.co.uk

RICS

Client
MR SIMON STRINGER

Job Title
Existing Residentail dwelling at:
Former Newbrook Stables,
Pound Lane,
Upper Beeding,
West Sussex.
BN 3JD

Drawing Title
DETAILS AS EXISTING
Floor Plan Elevations

Scale 1 : 5 - 1 : 1

Date 25- 8-2 22

Drawn by l.a.h.

Drg. No. 25 822- 2

Rev

Appendix B - Proposed Plans and Elevations

0 1 2 3 4 5 6 7 8 9 10 1:100

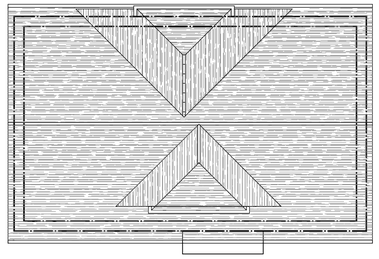
0 1 2 3 4 5 1:50

END ELEVATION (east)

cedral boarding in dark grey colour

local stock brick facings, multi-red

REAR ELEVATION (north)

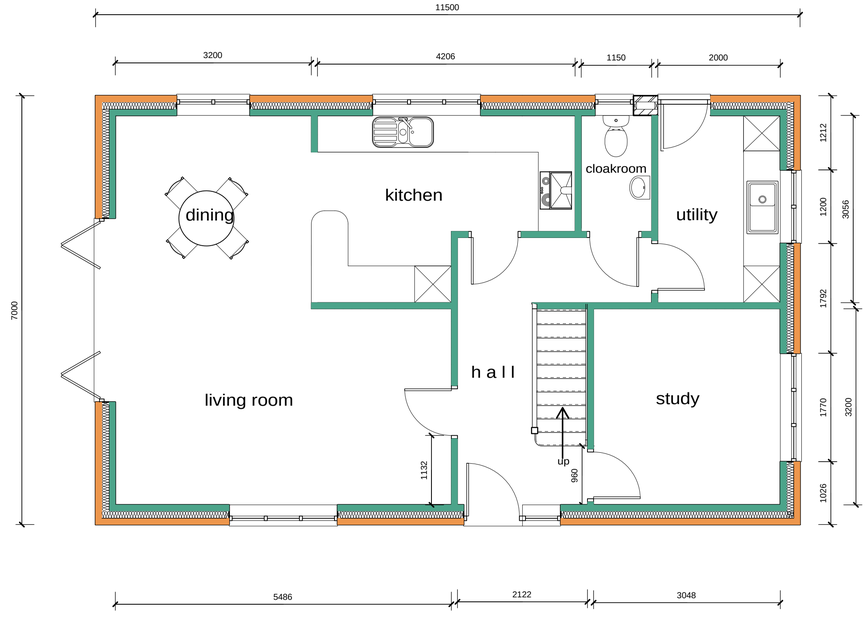


ROOF PLAN

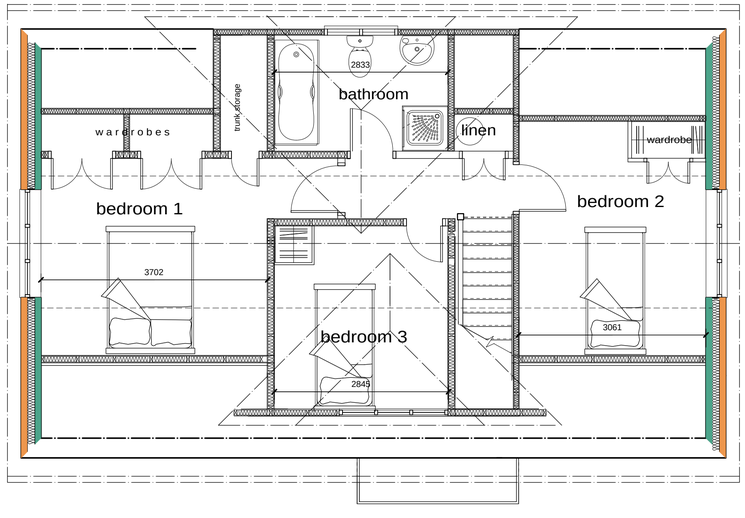
FRONT ELEVATION (south)

plain machine made clay tiles in brindle colour

END LEVATION (west)



GROUND FLOOR PLAN



FIRST FLOOR PLAN

A	24.02.23	amended dormer widow treatment
	Date	Revisions

Les Humphrey Associates
Architecture Chartered Surveyors Designers

The Studio - The Rocks
Ivy Dene Lane
Ashurst Wood
West Sussex RH19 3TN

telephone: 01342 315206 fax: 01342 313984
email: les@leshumphreyassociates.co.uk

RICS

Client

MR SIMON STRINGER

Job Title

Replacement Dwelling at:
Former Newbrook Stables
Pound Lane,
Upper Beeding,
West Sussex,
BN44 3JD

Drawing Title

Planning Application Details:

Floor Plans
Roof Plan
and Elevations

Scale 1 : 50 - 1 : 100 printed @ A1

Date December 2022 | Drawn by lah

Drg. No. 250822 - 03 | Rev A

Appendix C - Natural England Position Statement – September 2021

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.**

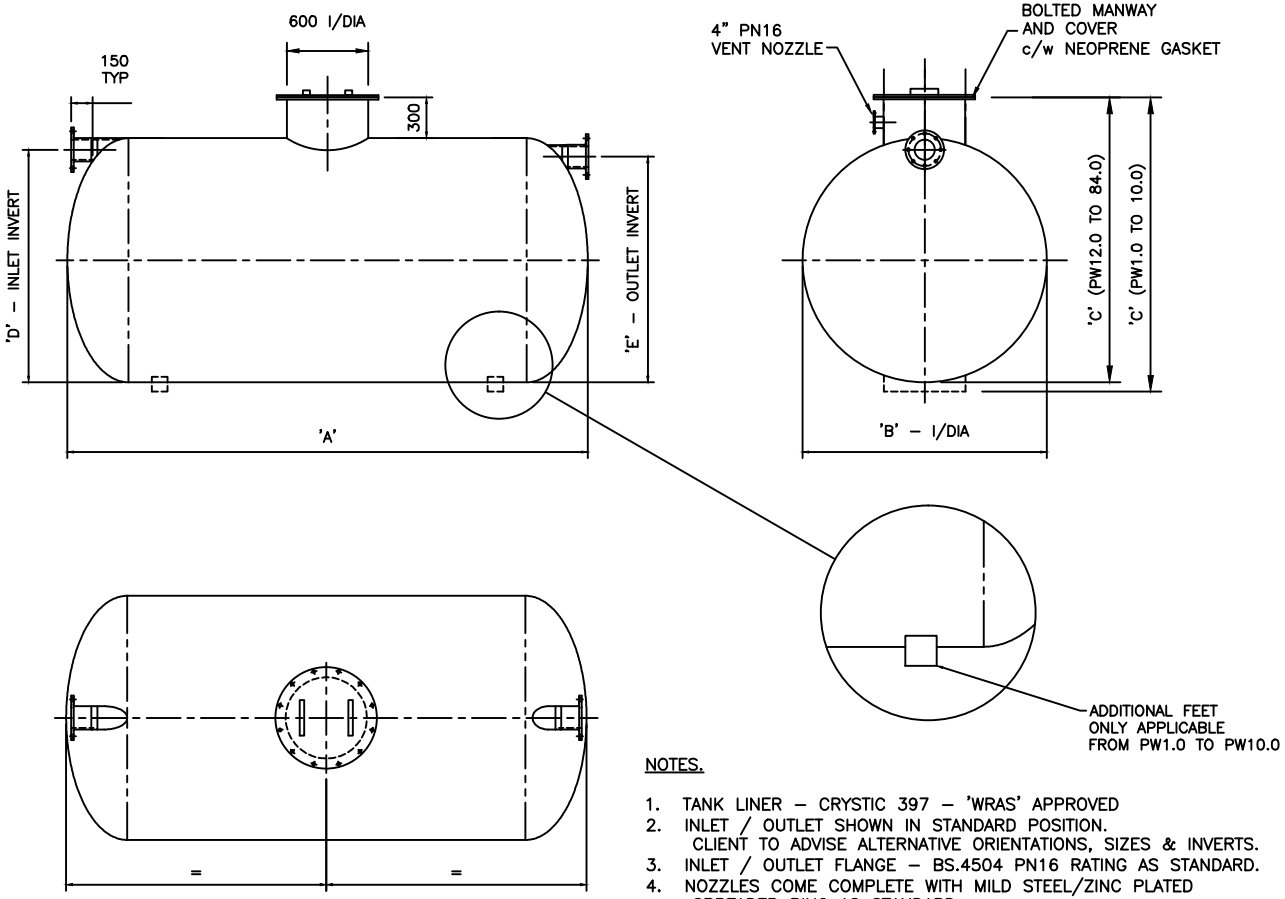
Appendix D - Part G Water Efficiency Calculation

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)	4.00	4.42	0.00	17.68
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)	6.00	1.58	1.58	11.06
Bath (where shower also present)	Capacity to overflow(litres)	180.00	0.11	0.00	19.80
Shower (where bath also present)	Flow Rate(litres / minute)	8.00	4.37	0.00	34.96
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)	8.00	0.44	10.36	13.88
Washing Machine	(Litres/kg dry load)	6.20	2.1	0.00	13.02
Dishwasher	(Litres/place setting)	1.00	3.6	0.00	3.60
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)			114.00
	(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)			103.74
	(10)	External water use			5.0
	(11)	Total water consumption (Building Regulation 17.K) =(9)+(10)(litres/person/day)			108.7

Installation Type	Make/Model (mandatory)	Litres/Person/Day
WC (multiple fittings)		17.68
Taps		11.06
Baths (shower(s) present)		19.80
Showers (bath(s) present)		43.70
Kitchen Taps		13.88
Washing Machines		13.02
Dishwasher		3.60

Terms and Conditions
System Requirements

Appendix E - Rainwater Harvesting Details



TANK CODE	CAPACITY	'A'	'B'	'C'	'D'	'E'
PW1.0	1000	1440	1000	1350	CLIENT TO ADVISE SPECIFIC INVERT	CLIENT TO ADVISE SPECIFIC INVERT
PW2.0	2000	1969	1200	1550		
PW3.0	3000	2853	1200	1550		
PW4.0	4000	2510	1500	1850		
PW5.0	5000	3070	1500	1850		
PW6.0	6000	3640	1500	1850		
PW7.0	7000	4202	1500	1850		
PW8.0	8000	4768	1500	1850		
PW9.0	9000	5344	1500	1850		
PW10.0	10000	5900	1500	1850		
PW12.0	12000	5016	1800	2100		
PW14.0	14000	5800	1800	2100		
PW16.0	16000	6588	1800	2100		
PW18.0	18000	4118	2500	2500		
PW20.0	20000	4525	2500	2800		
PW22.0	22000	4910	2500	2800		
PW25.0	25000	5544	2500	2800		
PW27.0	27000	5950	2500	2800		
PW30.0	30000	6560	2500	2800		
PW32.0	32000	6970	2500	2800		
PW36.0	36000	7784	2500	2800		
PW40.0	40000	8598	2500	2800		
PW45.0	45000	9616	2500	2800		
PW50.0	50000	10636	2500	2800		
PW54.0	54000	11450	2500	2800		
PW60.0	60000	12765	2500	2800		
PW65.0	65000	13660	2500	2800		
PW70.0	70000	14710	2500	2800		
PW75.0	75000	15730	2500	2800		
PW80.0	80000	16730	2500	2800		
PW84.0	84000	17560	2500	2800		

NOTES.

1. TANK LINER – CRYSTIC 397 – 'WRAS' APPROVED
2. INLET / OUTLET SHOWN IN STANDARD POSITION. CLIENT TO ADVISE ALTERNATIVE ORIENTATIONS, SIZES & INVERTS.
3. INLET / OUTLET FLANGE – BS.4504 PN16 RATING AS STANDARD.
4. NOZZLES COME COMPLETE WITH MILD STEEL/ZINC PLATED SPREADER RING AS STANDARD.
5. 'PW60' AND ABOVE TO HAVE 2 X 600 DIA ACCESS'S. 1250mm IN FROM EACH END OF THE TANK.
6. SHELLS AVAILABLE IN BOTH CLASS 1 (GRANULAR INSTALL) & CLASS 2 (CONCRETE INSTALL).

TANK CODE EXAMPLE –

GRANULAR INSTALL (CLASS 1 SHELL) – PW22.0/1

CONCRETE INSTALL (CLASS 2 SHELL) – PW22.0/2

PREMIER TECH AQUA

REV.	DATE	BY	CHKD.	APPD.	DESCRIPTION
5	04/06/15	RP	KB	RP	COMPANY NAME CHANGE
4	28.11.13	KB	PJ	PJ	LINER RESIN CHANGED
3	25.10.07	R.U.	PB	RP	PW4.0 LENGTH AMENDED
2	19.01.07	R.U.	RP	CPG	ISSUED TO SALES DEPT FOR INFO

TITLE: 'PW' POTABLE WATER RANGE – GENERIC

DRAWN BY	CHKD.	APPD.	SCALE	DRAWING No.	REVISION
R.U.	RP	CPG	N.T.S.	PW – GENERIC	5
DATE 30/5/02	DATE 30/5/02	DATE 30/5/02			

A3

DO NOT SCALE
IF IN DOUBT ASK
ALL DIMENSIONS IN MM

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

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.	3/4" bsp	15w	405
Saphir 2	22.5 l/min.	36.5 l/min	3/4" bsp	25w	554
Saphir 3	40 l/min.	63 l/min	3/4" 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 1/2" bsp	75w	962

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

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 & processer reset button
- volt-free contacts for remote alarm output.

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.

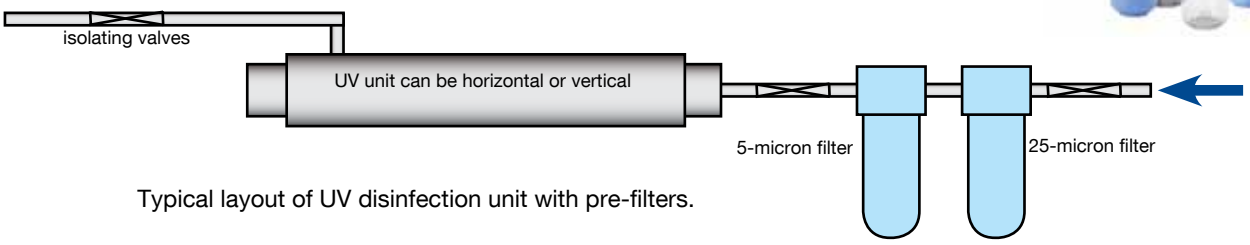
When using *Saphir* UV units to disinfect rainwater we recommend that additional filtration is added prior to the water passing through the UV chamber. It is important that the water to be treated is as clean as possbile, otherwise small particles can create a 'shadow' which the UV light cannot penetrate. 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	3/4" bsp
Saphir 2	20" standard wound cartridge	20" standard wound cartridge	3/4" bsp
Saphir 3	10" 'Big Blue' wound cartridge	10" 'Big Blue' wound cartridge	3/4" 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	1 1/2" bsp



Typical layout of UV disinfection unit with pre-filters.

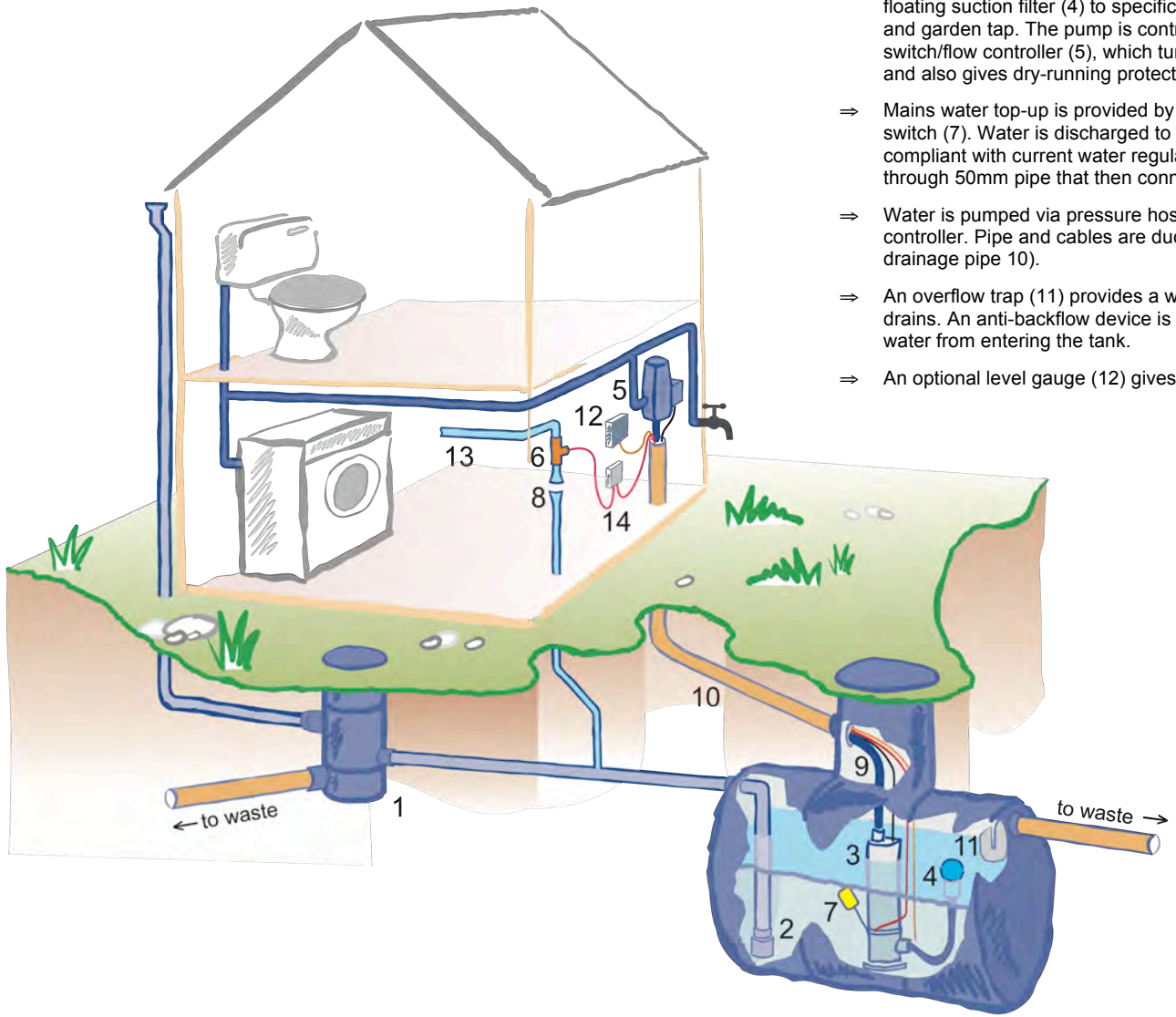
Distributor:

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

RAINHARVESTING · SYSTEMS

Typical direct (pressurised) rainwater harvesting system with GRP tank for domestic applications



⇒ Rainwater is collected from the roof drainage system by the underground Wisy WFF vortex filter (1). This filters out the debris from the water and diverts about 95% of it into the storage tank. The remaining water goes to soakaway or storm drain in the usual manner, as does the excess water from the tank. As water enters the tank it passes through a calmed inlet (2) which calms the flow of water and prevents disturbance of the float switch and any sediments.

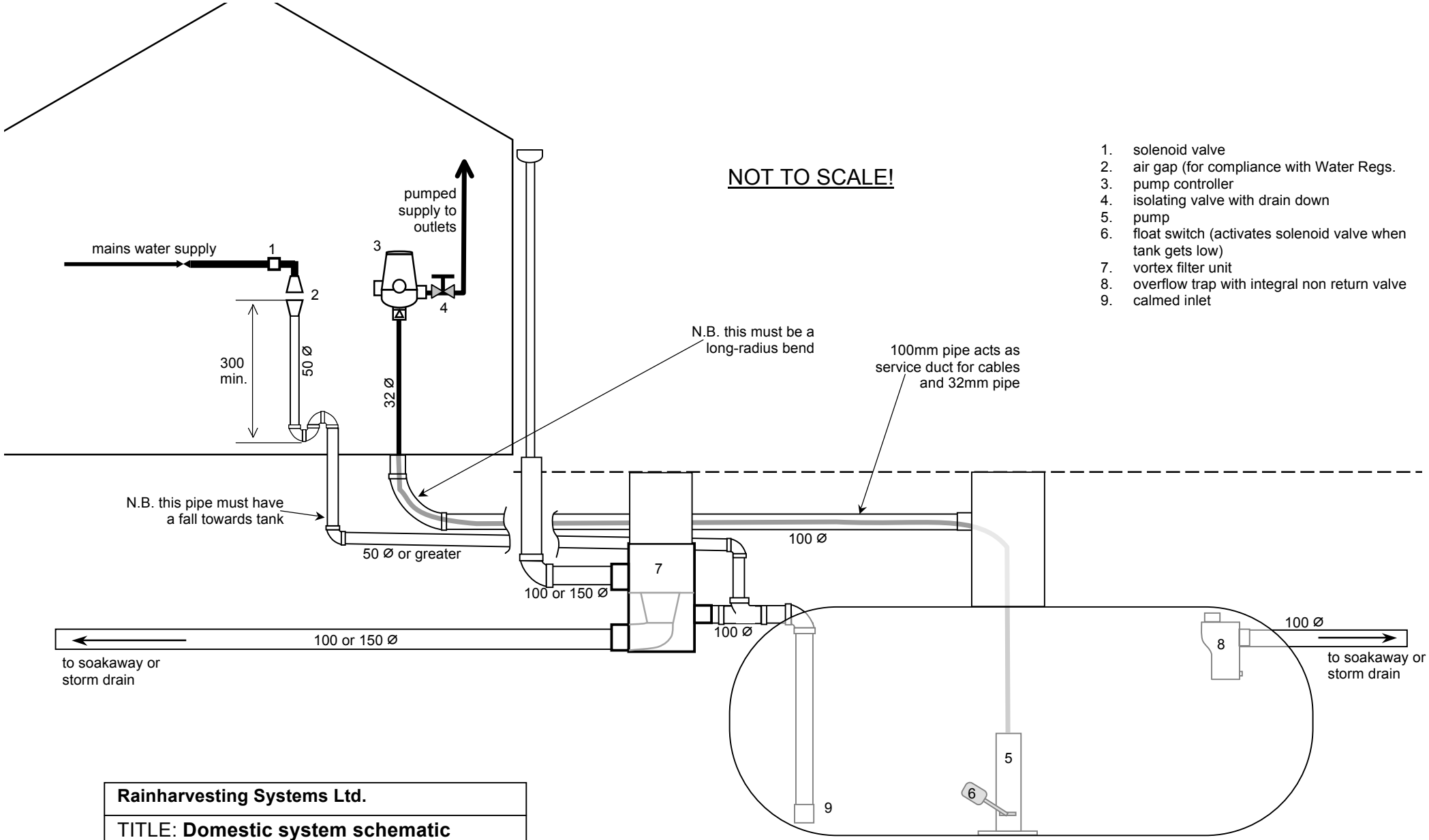
⇒ Water is then supplied on demand by the submersible pump (3) through a floating suction filter (4) to specific outlets, usually WCs, washing machine and garden tap. The pump is controlled by a combined pressure switch/flow controller (5), which turns the pump on and off when required and also gives dry-running protection to the pump if it should be necessary.

⇒ Mains water top-up is provided by a solenoid valve (6) controlled by a float switch (7). Water is discharged to the tank via a type AA air gap tundish (8) compliant with current water regulations. This gravity-feeds to the tank through 50mm pipe that then connects to the outlet pipe from the filter.

⇒ Water is pumped via pressure hose and 32mm MDPE (9) up to the flow controller. Pipe and cables are ducted to the house through a 110mm drainage pipe 10).

⇒ An overflow trap (11) provides a water seal against any foul odours from drains. An anti-backflow device is built in to prevent any contaminated water from entering the tank.

⇒ An optional level gauge (12) gives a visual indication of tank water level.

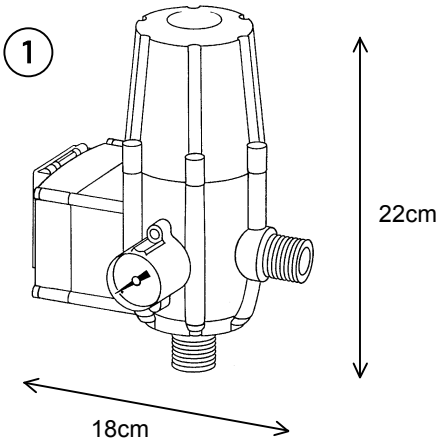


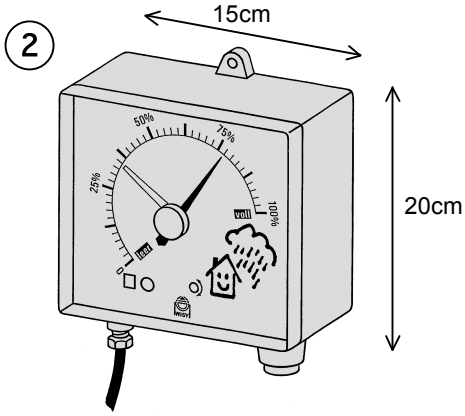
NOT TO SCALE!

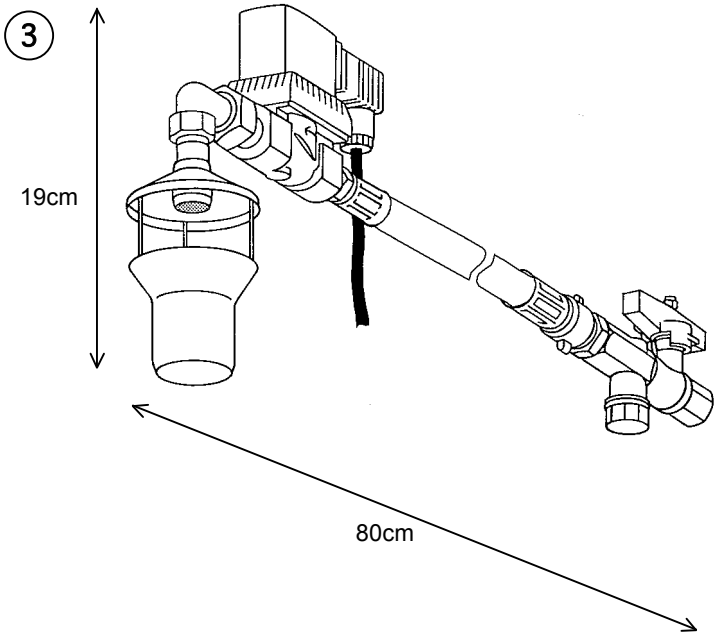
1. solenoid valve
2. air gap (for compliance with Water Regs.
3. pump controller
4. isolating valve with drain down
5. pump
6. float switch (activates solenoid valve when tank gets low)
7. vortex filter unit
8. overflow trap with integral non return valve
9. calmed inlet

Rainharvesting Systems Ltd.	
TITLE: **Domestic system schematic**	
FILE NAME: **RH152**	
DRAWN BY: **DH**	
DATE: August 10	
SIZE: **A4**	

DOMESTIC RAINWATER HARVESTING SYSTEM CONTROLS







Three components are fitted located within the building. In a house this would normally be the utility room or similar, or if necessary, the kitchen or ground floor cloakroom.

These are the systems controls and as they are separate components they can be arranged to best fit the space available. The dimensions shown are of the units themselves, additional space must also be allowed for connecting pipework. It is possible to fit these controls into a limited space but we would recommend allowing about one square metre of wall space.

1. *Controlmatic* pump controller. This switches the pump on and off and also provides it with protection against dry-running. Requires 10amp 230v supply (also supplies pump).

2. Tank level gauge (optional). This gives a visual read-out of available water in the storage tank, in percentage terms. Available in manual or electric versions. The latter requires 1amp 230v supply.

3. Mains water top-up assembly. This delivers mains water back to the storage tank as and when required. The assembly consists of a solenoid valve attached to a tundish, connected to a 50cm length of $^1/_2$" pipe with a manual isolating valve and dirt strainer at the other end. The pipe is flexible so can be adjusted to fit the space. Connection is $^1/_2$" bsp. Requires 1amp 230v supply.

VORTEX FILTER - type WFF100

- **Suitable for roof areas up to 200m²**
- **Connects to standard storm water pipes below ground**
- **Virtually all debris, moss, leaves, insects, etc. is washed through the uniquely constructed vertical filter by self-cleaning action**
- **Unique oxygen-enriching function**
- **No restriction or obstruction of water flow through the appliance (conforms to DIN1986)**
- **More than 95% efficient**
- **Minimum maintenance**
- **Tough polyethylene housing**
- **High quality stainless steel filter mesh**
- **50cm extension tube can be trimmed to length to suit invert level**
- **Can also be wall-mounted**

WFF filters can be used where rainwater from the roof is channelled through a horizontal underground pipe. The unit filters and diverts rainwater to a storage tank or cistern. Leaves, moss and other debris are washed through to drain or soakaway.

Rainwater enters the inlet connection in the side of the WFF unit. The inlet is designed to swirl the water in a vortex-like action around the surface of the stainless steel filter below. The rainwater is drawn through the vertical mesh walls of the fine filter by adhesion, then collected and fed through the outlet to the storage tank. Debris and particles too large for the filter are flushed through to the drain outlet by the action of water flowing down the surface of the filter. More than 95% of the rainwater entering the WFF is filtered and collected by this principle, .

Pitched roofs of slate, clay or concrete are the most suitable for collecting rainwater. Flat roofs can also be utilised but the volume of water collected is reduced. Planted roof areas or thatch are less suitable due to the low collection efficiency and discolouration of the collected water.

UNIQUE FEATURES OF THE VORTEX FILTER

- Vortex filters have a vertical filter mesh. This makes the filter insert virtually self-cleaning by the action of water flowing over the it. As debris enters the chamber, it simples drops or gets washed off by the incoming water.
- The action of water passing through the vertical mesh oxygenates as it flows. This has the effect of saturating the water with air as it passes to the tank, thus enhancing the quality of the water.
- There are no restrictions or obstructions on which debris can collect. The full cross-section of the rainwater drainage system is maintained right through the filter, so that excess rainwater is led directly to the storm drains or soakaway. This is especially important in hail storms and torrential rainfall. Even in such extreme cases much of the filtered water is transferred to the storage tank.

larger units are available to suit commercial and industrial applications

VEHICLE DUTY 30t GVW

5 YEAR WARRANTY!

We are the UK's sole supplier of Wisy products for rainwater utilisation

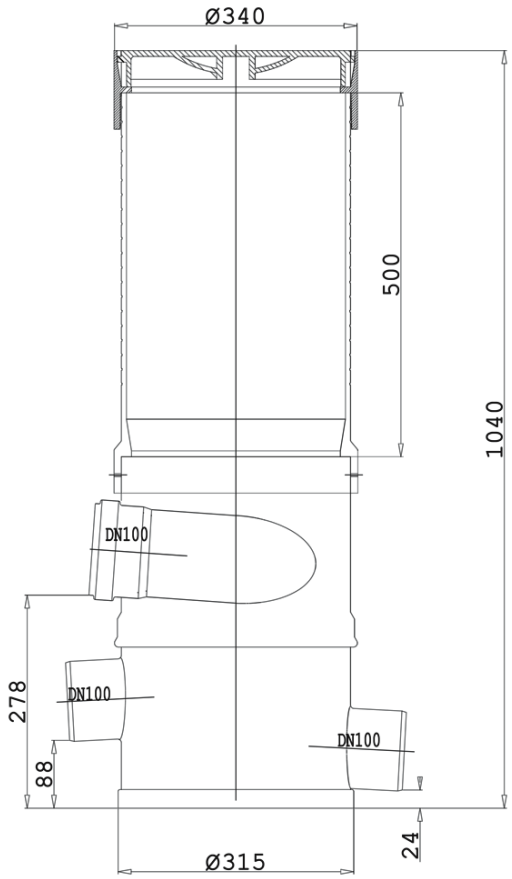
QUALIFIED WATER TECHNOLOGY LIST WWW.ECA-WATER.GOV.UK

Products shown with this logo are included on the Water Technologies List making them eligible for Enhanced Capital Allowance.

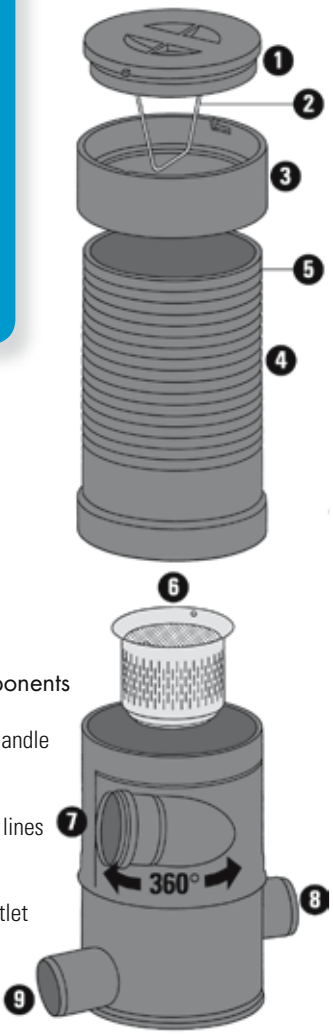
VORTEX FILTER - type WFF100

The WFF-100 Vortex filter:

- Polypropylene housing
- Stainless steel filter insert
- Rainwater inlet DN 100 (110mm pipe)
- Storage tank outlet DN 100 (110mm pipe)
- Drain outlet DN 100 (110mm pipe)
- Storage and drain outlets fixed at 180˚ to each other
- Rainwater inlet rotates through 360˚
- 0.44mm or 0.28 mm mesh versions
- Supplied with 50cm extension tube and 30cm lifting handle

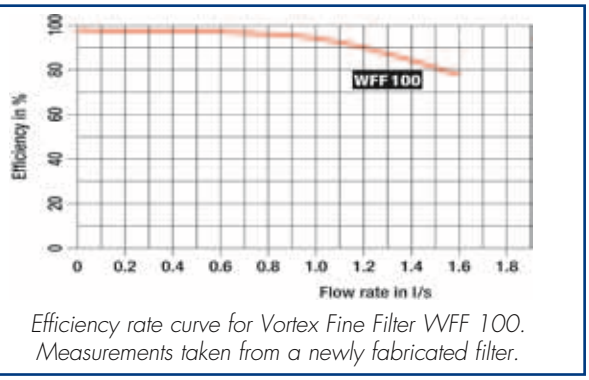


Dimensions of the Vortex filter unit with 500mm extension tube fitted. Note the tube can easily be cut to length to suit invert depth.



WFF filter components

1 - Lid
2 - Filter removal handle
3 - Upper ring
4 - Extension tube
5 - Parallel cutting lines
6 - Filter insert
7 - Rainwater inlet
8 - Clean water outlet
9 - drain outlet



Efficiency rate curve for Vortex Fine Filter WFF 100. Measurements taken from a newly fabricated filter.

WFF FILTER Accessories

50cm extension tube

For installations where the filter connects to a deep storm drain additional extension tubes are available. Easily cut to length due to the moulded-in parallel lines.

Extended filter handles

For use where one or more full lengrh extension tubes are used. The longer handles enable easy removal of the filter insert for cleaning purposes. Available in 63cm and 100cm lengths.

Stainless-steel wall bracket

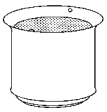
For mounting the unit to a wall, where the filter is used internally or is supplying an above-ground tank

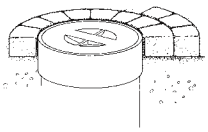
Stainless-steel strainer basket

Fits inside the WFF filter to prevent debris from passing to waste. Requires regular inspection to empty the contents.

Blind Insert

For maintenance purposes, a blind insert is available. This can be used in place of the filter insert to divert all flow to the soakaway.





Paving can be laid around the end ring. The lid simply twists to remove.

Distributor:

Rainharvesting Systems Ltd.

The Green Shop
Calf Way, Bisley, Stroud,
Gloucestershire GL6 7BX
Tel: 01452 772000
Fax: 01452 772008
E-mail: sales@rainharvesting.co.uk
Website: www.rainharvesting.co.uk

RAINWATER STORAGE TANKS

- Designed specifically for use in rainwater harvesting systems
- UK manufactured to BS 4994
- One-piece GRP underground tanks in a wide range of sizes
- Calmed inlet, pump platform and overflow trap pre-fitted
- Complete with secure access cover and frame
- Lightweight and easy to handle
- Bespoke options available
- Delivery anywhere mainland UK

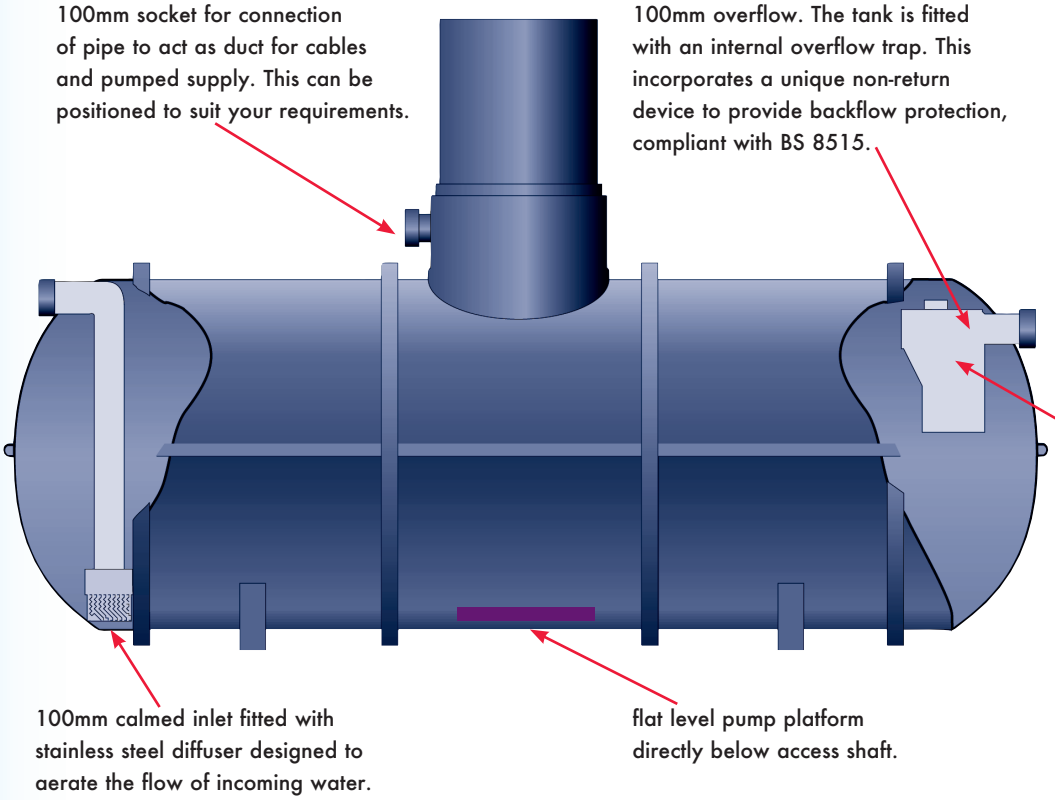
RainSava GRP 'submarine' tanks for underground installation are manufactured in the UK to BS 4994 and are available in a variety of sizes to suit most domestic and commercial needs.

RainSava tanks are designed specifically for use in rainwater harvesting systems, with in-built flow calmer, pump platform and overflow unit.

The British Standard for Rainwater Harvesting BS 8515:2009 states that all rainwater tanks must be protected against back-flow from the storm drain.

Our tanks are supplied pre-fitted with a unique anti-surcharge device which provides secure and effective protection.

The vertical shaft can be trimmed on site to suit invert levels. Tanks are supplied complete with a pump platform directly below the shaft and a pedestrian-duty inspection cover.

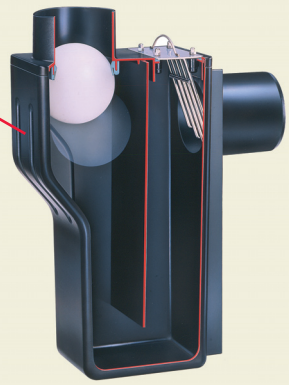


Flexible System Design

Our comprehensive range of specialist items has been developed specifically for Rainwater Harvesting Systems. Because the range consists of separate components, it has exceptional flexibility.

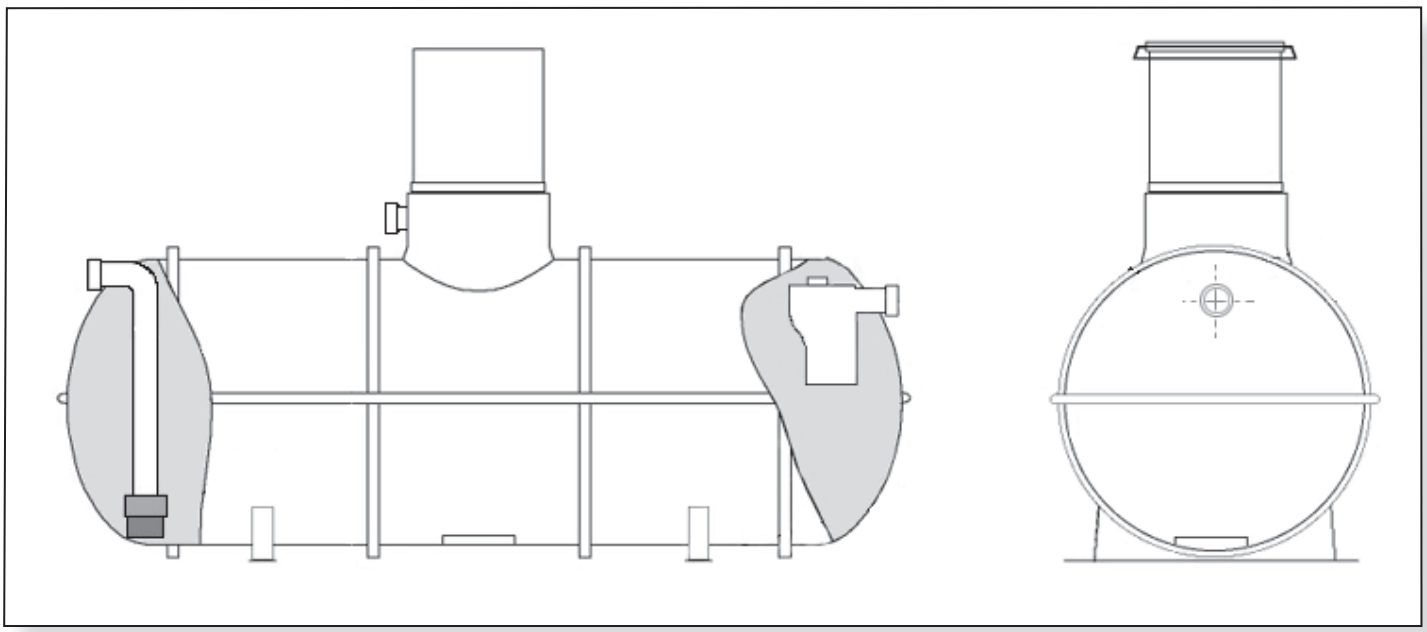
We supply equipment suitable for almost any system design, whether you're planning a system for a small house, school or large industrial or commercial premises.

We are the UK distributor and main stockist of *Wisy* products for rainwater utilisation



Unique overflow unit with anti-backflow device and optional vermin barrier

RAINSAVA TANKS FOR DOMESTIC & LIGHT COMMERCIAL USE



NOMINAL VOLUME (litres)	1500	2000	2400	3000	3500	4000	4500	5000	6000	7500
DIAMETER (mm)	1200	1200	1200	1500	1500	1500	1500	1650	1800	1800
LENGTH (mm)	1600	2100	2450	2000	2300	2600	2750	3080	3250	2650

The tank is illustrated in its standard layout, with inlet and overflow pipes at opposite ends and the duct connection in the shaft facing the same direction as the inlet.

Different layouts can be arranged when ordering to suit individual requirements. Other sizes can also be accommodated and additional connections and access shafts can also be fitted at time of manufacture if required.

Please call us if you need further information or if you wish to discuss particular requirements.

Tanks can be supplied suitable for either concrete or granular backfill, ground conditions permitting. All tanks must be installed on a 300mm concrete base.

If subject to vehicular traffic a heavy duty inspection cover should be used in place of the standard pedestrian duty one supplied and a reinforced slab should be cast over the tank.

All tanks are built to order and as such are subject to a lead time of approximately 3 weeks.

Please note that tanks are delivered on a flat-bed vehicle unless otherwise arranged and off-loading is the responsibility of the customer.

Distributor:

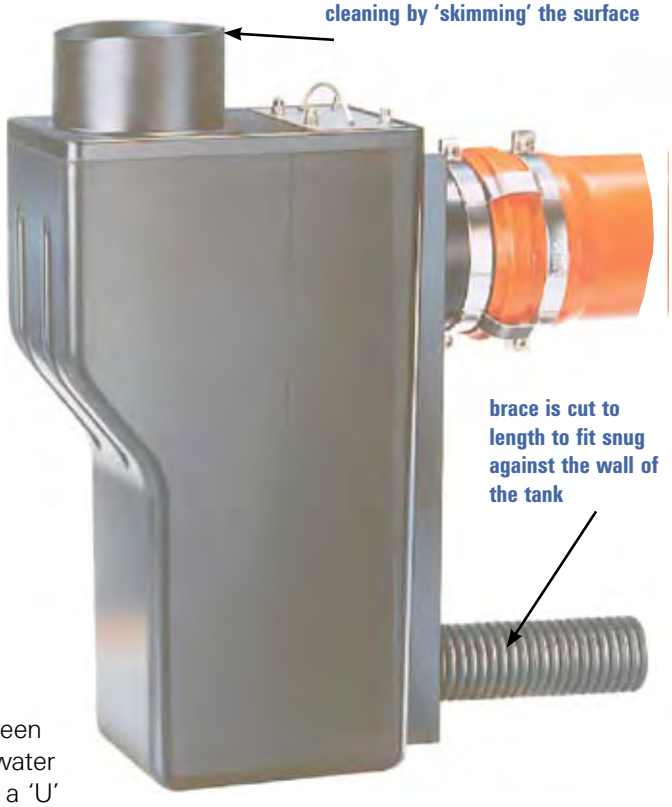
Rainharvesting Systems Ltd.

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

RAINWATER HARVESTING

MULTISIPHON OVERFLOW UNITS

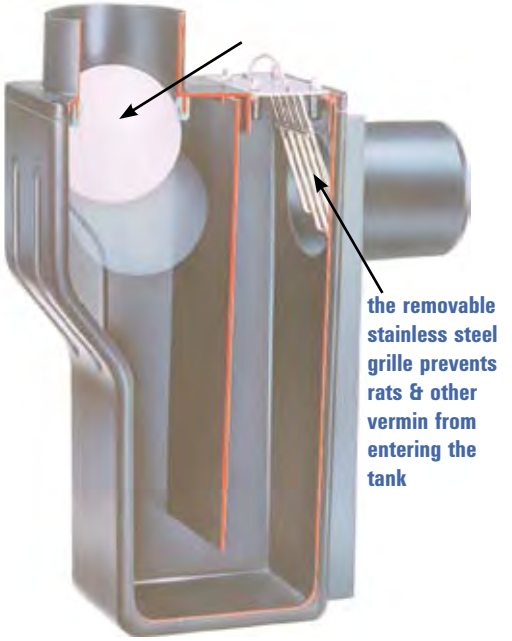
- **Fits standard 110mm pipe**
- **Horizontal opening maximises skimming effect**
- **Seals against unpleasant odours**
- **Polyethylene and stainless steel construction**
- **Manufactured by WISY**
- **Low maintenance**
- **Corrosion proof**
- **Optional anti-backflow device**
- **Optional anti-vermin device**



The Multisiphon overflow unit has been designed specifically for use in rainwater storage tanks. The unit is effectively a 'U' bend,providing a water seal. This acts as a barrier to unpleasant smells from the drain that the connects to the overflow, which could otherwise taint the water.

The unit also performs the important function within the tank of removing the floating debris from the surface of the water. This is achieved by the design of the units' inlet, which is so shaped that when overflow conditions occur the water is 'skimmed" rapidly into the horizontal opening. This is important in keeping the tank clean and maintaining the quality of stored water.

The unit is supplied with an adjustable brace to stabilise the unit against the inside of the tank.



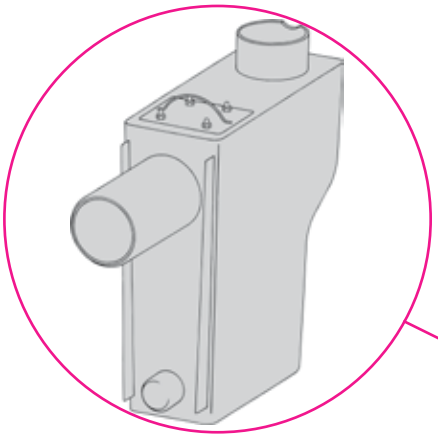
Model US1002 - for use where the tank must overflow to a sewer

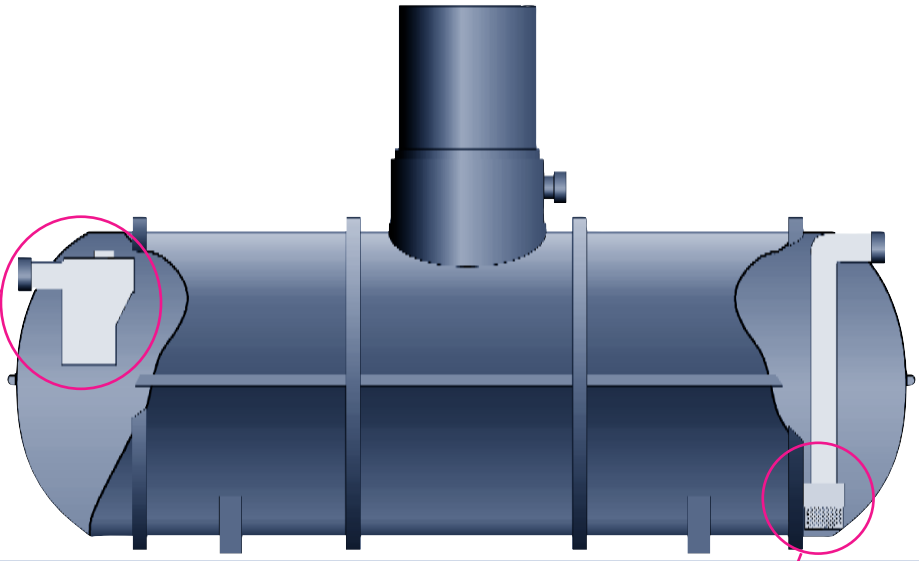
Article nos.

US1005	Mutisiphon trap
US1004	with backflow prevention
US1003	with vermin prevention
US1002	with vermin & backflow prevention

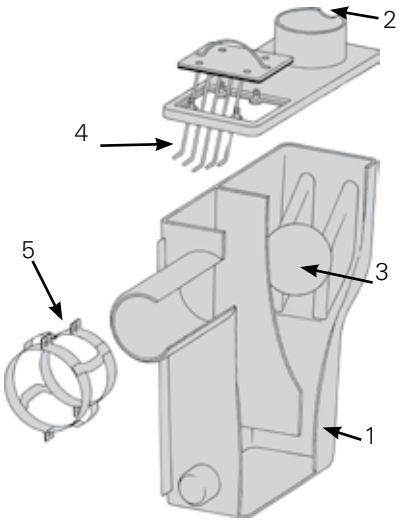
TYPICAL TANK OVERFLOW INSTALLATION

(pump and pipework from tank to building omitted for clarity)





Rainsava water storage tanks can be supplied by us with Multisiphon overflow trap & smoothing inlet pre-fitted, thus saving on valuable installation time on site.



Model US1002 Component parts

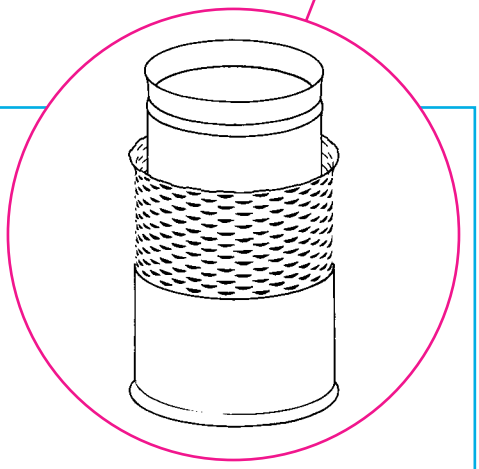
1 - Main housing
2 - Shaped opening for skimming
3 - Ball float
4 - Vermin barrier, stainless steel
5 - Pipe clamp , stainless steel

The attention to detail in the design of any rainwater system is an important factor in its' performance and in the quality of the water produced.

Wisy 'Multisiphon' overflow traps and the 'smoothing inlet' have been designed to ensure water is stored under the best possible conditions. Like all Wisy products, these units have been developed specifically for use in rainwater harvesting systems.

SMOOTHING INLET

For installation in rainwater storage tanks



A stainless steel 'flow-calming' device to fit on to standard110mm drainage pipe.

The unit is designed to eliminate turbulence of the incoming water as it enters the tank.

It is fitted to the open end of the inlet pipe at the base of the tank, which means that the fresh water enters from below the current water level.

The water thus gently percolates up from the base, causing no disturbance of the beneficial sediment layer in the base of the tank. Disturbance to any float switches or other controls are also minimised.

Article no. EB0300

NB continuous development may necessitate change in these details without notice E&OE

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

Distributor:

wisy®.de

Rainwater harvesting
The complete system

NEW PRODUCT!
Reduces CO_2 emissions!

ZETA 02 PUMP controller

- Suitable for use with all standard pumps
- Reduces CO_2 emissions by up to 97%
- Reduces energy consumption by up to 132 kWh/year
- Cuts energy costs
- Electronic control circuit can be retro-fitted to all series SA06 pump controllers
- The pump controller starts the pump automatically to meet water demand
- German utility model 2020 13011 190.9

... use WISY technology to cut CO_2 emissions"

WISY AG develops energy-efficient pump controller.

WISY AG based in Kefenrod Germany has developed a new pump controller for controlling pumps, pressure booster systems, domestic pressure boosting and rainwater units. This innovative product consumes much less power in standby mode than conventional pump controllers. Its high energy-saving potential also helps to reduce CO_2 emissions.

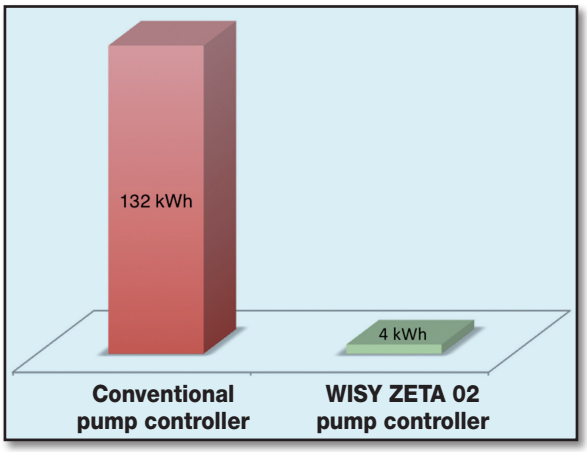
WISY ZETA 02 pump controller

Working in partnership with the Centre for Research and Transfer at the Mittelhessen University of Applied Sciences, WISY AG has succeeded in developing a pump controller for rainwater units which operates much more efficiently than conventional pump controllers. Thanks to its innovative electronic circuitry, the controller consumes only 0.2 watts in standby mode, a significant reduction when compared to other commercially available controllers which draw between 6 and 15 watts from the grid. Products currently available on the market consume power continuously, using as much as 132 kilowatt-hours (kWh) per year in standby mode. The WISY product uses no more than 4 kWh over the same period.

Great for the environment and great for the user – lower CO_2 emissions and lower energy bills!

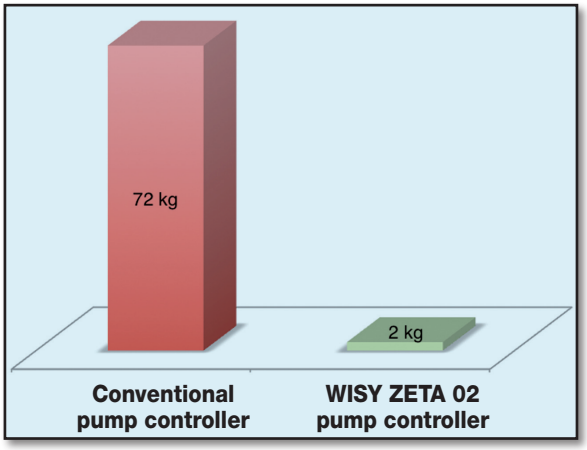
With this new product, WISY has opted to satisfy the strict new requirements of the Ecodesign Directive drawn up by the European Union which states that the standby power usage of many products used in domestic or office environments must not exceed 0.5 watts. While the exacting standards laid down in this directive do not yet apply to pump controllers, WISY has developed a product which is already compliant!

POWER CONSUMPTION
per year



The high power usage of conventional pump controllers in standby mode is best illustrated by comparing them to other electrical devices: For example, a modern standard pump controller consumes even more power per year than a large flat-screen television. The financial advantage to users of the new WISY pump controller is obvious - a reduction in power consumption means much cheaper energy bills.

CO_2 EMISSIONS
per year
(CO_2 emissions based on mix of fuels used to generate electricity in Germany)

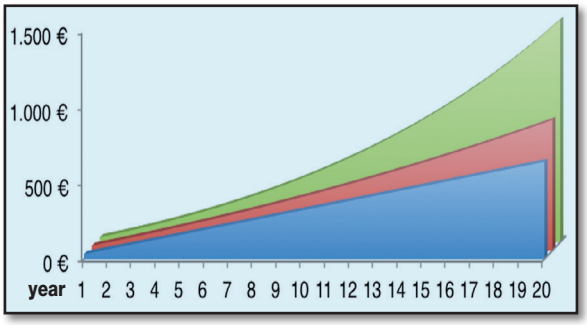


By developing such an energy-efficient product, WISY is also helping to reduce CO_2 emissions by up to 97% compared to those of conventional pump controllers. To express this as a number, WISY's new ZETA 02 pump controller reduces CO_2 emissions by 70 kg per year. Assuming that around 1,000,000 pumps currently in use can be converted to operate on the new pump controller, a potential reduction in CO_2 emissions of 70,000 tonnes per year could be achieved.

Out of love for the environment – choose WISY!

COST SAVINGS
over 20 years
(at 0.25 euro cents per kWh)

- **Saving with annual price increase of 0%**
- **Saving with annual price increase of 3%**
- **Saving with annual price increase of 8%**



Technical data:

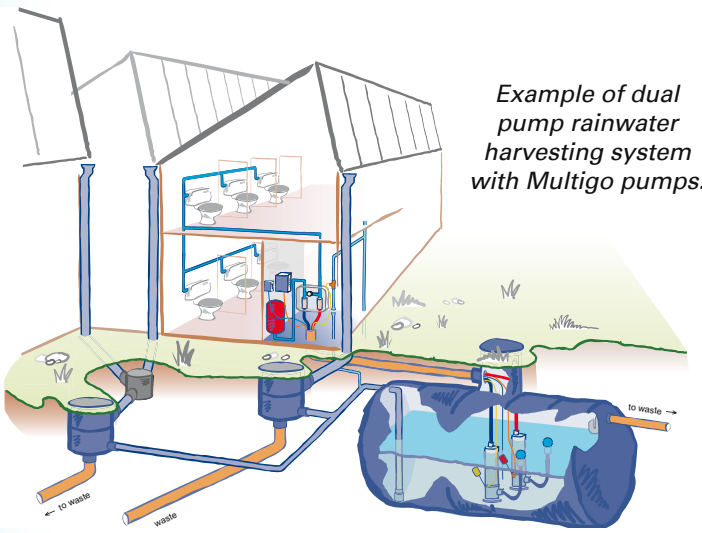
Voltage:	110 - 240 V
Frequency:	50/60 Hz; single-phase
Power consumption	
Standby mode:	0,2 W
Cut-in pressure:	1,5 bar
Maximum pressure:	10 bar
Flow rate:	160 l/min
Connections:	1" outside thread

WISY AG
D-63699 Kefenrod, Oberdorfstraße 26
Telefon +49 (0) 60 54-91 21-0
Fax +49 (0) 60 54-91 21-29
Internet: www.wisy.de
E-Mail: info@wisy.de

MULTIGO PRESSURE PUMPS

- Normal suction, multi-stage
- Submersible to 20m depth
- Water-cooled motor
- Stainless steel housing in AISI 304
- $1^1/_4$ " bsp inlet and outlet
- 20m pre-fitted cable
- IP58 protection class
- Virtually silent
- Wide range of models available, both 1 & 3-ph.
- Rubber mounts for stability & anti-vibration
- Rot-proof lifting rope with stainless steel spring clip
- Can be fitted with fixed or floating suction filters

Multigo Series pumps can be used in a wide range of applications. Vertical multi-stage centrifugal units, they can be used as either submersible or surface pumps. The asincronous 2-pole motor is cooled by the water being pumped, and double mechanical seals ensure long working life. Their excellent output characteristics makes the range particularly suitable for rainwater harvesting, and also for irrigation work, water features, and for pressure boosting in domestic and commercial situations. They are also excellent well pumps.



Example of dual pump rainwater harvesting system with Multigo pumps.

Suction filters

The use of fixed or floating suction filters are recommended with Multigo pumps for most applications. The suction filter fits to the $1^1/_4$" inlet; it protects the pump from drawing in any particles and improves the reliability of the installation. Standard models with or without non-return valves are designed for use with 1" suction hose. Larger models are also available for use with higher flow pumps. *For further details please see separate data sheet.*

Flexible System Design

Our comprehensive range of specialist items has been developed specifically for rainwater harvesting systems. Because our range consists of separate components, it has exceptional flexibility.

We stock equipment suitable for almost any system design, whether you're planning a system for a small house or a large housing development.

A wealth of experience

We have been supplying rainwater harvesting systems throughout the UK since 1995 and have accumulated vast experience in this specialist field. With our large stocks of equipment and our excellent technical expertise, we offer an unrivalled level of service to our clients.

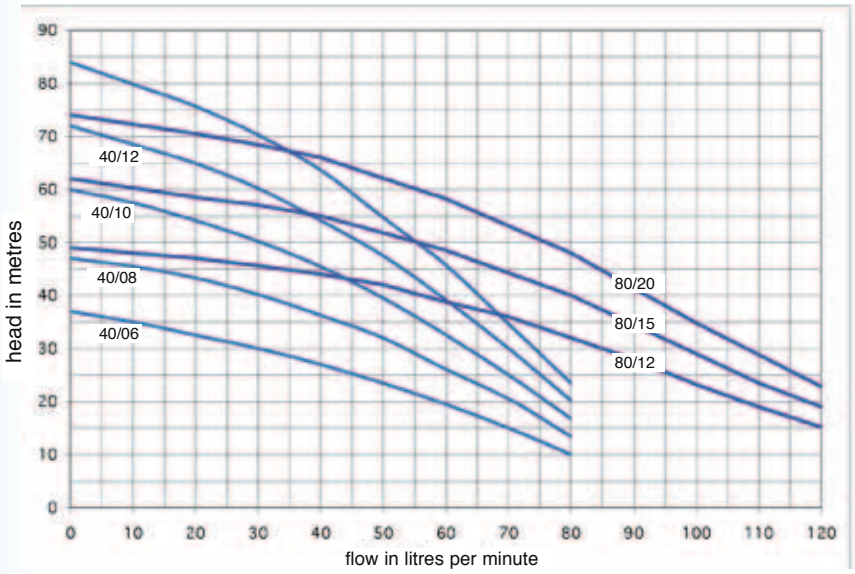
UKRHA FOUNDER MEMBER

We are founder members of the UK Rainwater Harvesting Association.

wisy®

We are the UK's sole agent and distributor of *Wisy* products for rainwater utilisation.

Data sheet UP/14/01



Multigo pump data

Output curves at: 2800 rpm
Water Temp: 20 deg. C
Output: ISO 2548

DIMENSIONS & WEIGHTS

Data for all models is given without pump connections.

Width: 150mm
Height: from 565 to 650mm
Depth: 170 mm
Weights: from 13.4 to 17.1kg

IMPORTANT

The pump should be protected with a 16 A fuse and isolating switch.

Model no.	P1 kW	P2 kW	Absorbed current (A)		Max head (m)	Pumping output in;							
						l/min	20	30	40	60	80	100	120
			1-Ph	3-Ph		cu.m/Hr.	1.4	1.8	2.4	3.6	4.8	6.0	7.2
40/06	0.80	0.45	3.4	n/a	37	With a pumping height of (m)	32.5	30.0	27.0	19.5	10.0		
40/08	1.00	0.60	4.3	1.9	47		43.3	40.2	36.3	26.1	13.4		
40/10	1.25	0.75	5.7	2.2	60		54.1	50.2	45.4	32.6	16.8		
40/12	1.42	0.90	6.8	2.4	72		64.9	60.2	54.5	39.2	20.2		
40/15	1.80	1.10	7.3	3.0	84		75.7	70.3	63.6	45.7	23.5		
80/12	1.33	0.90	6.4	2.3	49		47.0	45.6	44.0	38.8	32.0	23.2	15.2
80/15	1.80	1.10	7.5	3.1	62			57.0	55.0	48.5	40.0	28.0	19.0
80/20	2.50	1.50		3.5	74			68.4	66.0	58.2	48.0	34.8	22.8

PUMP CONTROL OPTIONS

Multigo pumps are frequently used with a single or dual pump control panel. These units can accept signals from float switches or pressure switches and have an integral fault indicator as well as volt-free contacts for an external alarm.

Dual pump control panels can provide duty/standby or duty/assist performance and all panels can be integrated into a Building Management System. We can also supply fully assembled pump switch boards with all necessary valves and pressure switches pre-fitted.

Alternatively pumps can be supplied with inverter drive controllers for variable speed operation, reducing energy consumption and providing improved efficiency.


Pump control panel


Dual pump switchboard


Press-O-Matic Inverter


E-Drive Inverter

RAINHARVESTING SYSTEMS Ltd.
BISLEY, GLOS.
0845 223 5430
www.rainharvesting.co.uk

MAINS WATER TOP-UP UNITS

- Designed specifically for use in rainwater harvesting systems.
- Available in various sizes to suit required flow rates.
- Reliable hammer-free solenoid valve
- Isolating valve with built-in dirt strainer
- Quality stainless steel tundish
- Built-in laminar flow device for splash-free operation
- Flexible stainless steel braided hose
- Operated by signal from float switch
- Maintenance free

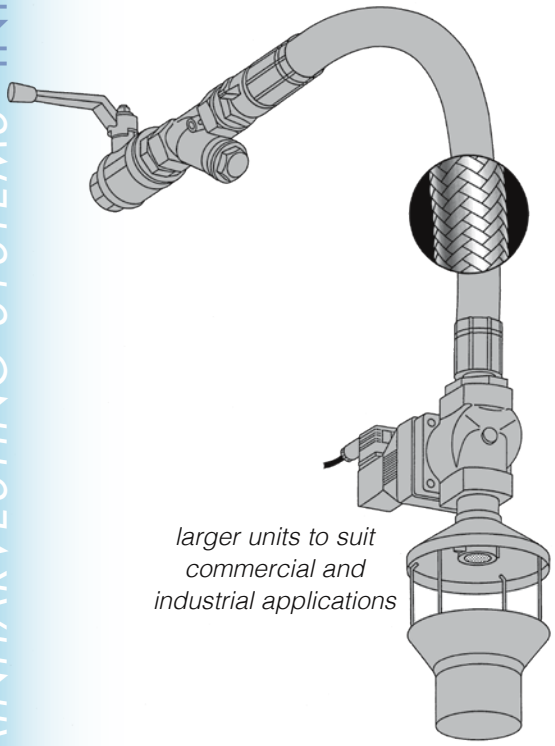
½" top-up unit with 50mm tundish, suitable for domestic applications

This special assembly is designed to provide an automatic mains water back-up supply to any vessel that is used to hold non-potable or 'unwholesome' water. The unit consists of a length of flexible braided hose with a manual isolating valve at one end and a solenoid valve and tundish at the other. The purpose of the tundish is to comply with the current UK Water Regulations.

The Regulations prohibit any direct connection between the mains water supply and untreated rainwater, and therefore the mains water connection must be protected against the risk of back-flow.

The air-gap which the tundish provides prevents this back-flow, and is essential in any rainwater harvesting system in the UK where mains water is incorporated.

The tundish is designed to fit into standard 50mm ID pipe and it incorporates a laminar flow device to reduce the risk of splashing. The IP65 solenoid valve is activated normally by a low-level float switch and thus provides mains water when the rainwater storage tank is low. The manual isolating valve incorporates a dirt strainer to prevent any debris from restricting the solenoid valve.



larger units to suit commercial and industrial applications

Several models are available to suit most applications

inlet size	maximum flow rate at 3bar	hose length	tundish size
½"	2.64 m³/hr	50cm	50mm
¾"	6.48 m³/hr	50cm	50mm
1"	8.64 m³/hr	75cm	70mm
1½"	20.52 m³/hr	75cm	100mm
2"	34.92 m³/hr	100cm	100mm

Flexible System Design

Our comprehensive range of specialist items has been developed specifically for rainwater harvesting systems. Because our range consists of separate components, it has exceptional flexibility.

We stock equipment suitable for almost any system design, whether you're planning a system for a small house or a large housing development.

A wealth of experience

We have been supplying rainwater harvesting systems throughout the UK since 1995 and have accumulated vast experience in this specialist field. With our large stocks of equipment and our excellent technical expertise, we offer an unrivalled level of service to our clients.

We are founder members of the UK Rainwater Harvesting Association.

We are the UK's sole agent and distributor of *Wisy* products for rainwater utilisation.

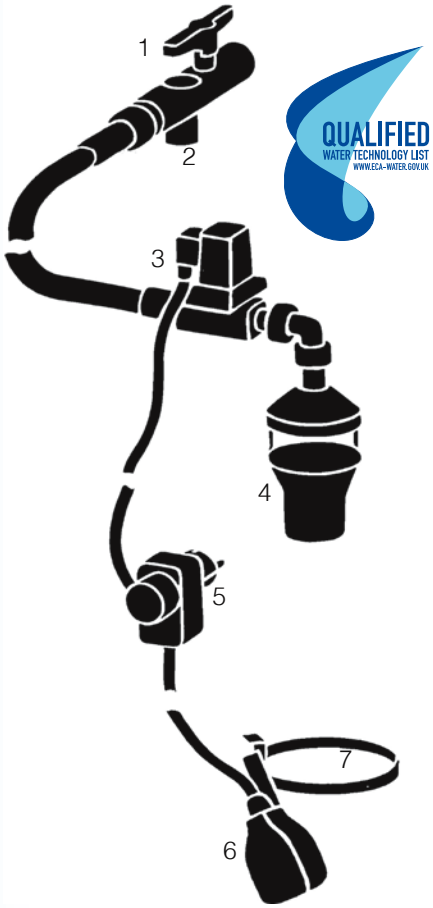
RAINHARVESTING SYSTEMS INFO SHEET RAINHARVESTING SYSTEMS INFO SHEET

MAINS WATER TOP-UP KITS

We also supply kits for use as part of a rainwater harvesting system, for conrolling the topping-up of tanks with mains water in compliance with the current Water Regulations. All metal parts are of stainless steel.

Each kit comprises of four items:

- the top-up assembly as shown overleaf
- special float switch assembly
- special 'piggy-back' plug
- adapter for UK 3-pin socket



Components
1 - manual isolating valve
2 - dirt strainer
3 - solenoid valve
4 - tundish - provides type AA air gap
5 - 'piggy-back' switching plug
6 - float switch
7 - worm-drive clamp

OPTIONS:
3, 10, & 20m boxed kits

For automatic mains water top-up control in domestic rainwater harvesting systems. Available with either 3m, 5m or 20m float switch cables. Float switch on 100-140mm diameter clamp. Tundish fits standard 50mm pipe.

The one-way float switch is attached to a stainless steel worm-drive clamp, which enables it to be securly fixed to a pump body or a vertical inlet pipe. The unit can be used either way up and gives precise switching points at either 4 or 9cms. The clamp will fit diameters from 100 - 140mm

The special 'piggy-back' unit is a two-pin European device that has a cable entry to accept the lead from the float switch and a two-pin socket to accept the plug from the solenoid valve. This provides a very simple 'plug and play' method of connecting the components together, enabling the float switch to activate the mains water solenoid valve.
We supply this with an adapter to fit a standard UK 3-pin socket.
Alternatively the two cables could be 'hard-wired' into a fused outlet.
The device can also be used to connect a float switch and pump.

We also stock a range of header (break) tanks for use in rainwater harvesting systems. These are supplied complete with pre-fitted control float switches and connections for pumped supply & 50mm tundish.

RAINHARVESTING SYSTEMS Ltd.
BISLEY, GLOS.
0845 223 5430
www.rainharvesting.co.uk


Private housing


Social housing


Gardens


Agriculture


Industrial


Commercial

Summary of work requirements in connection with installation for a domestic pressurised system

The work required in installing a typical rainwater harvesting system falls into 3 categories; the groundworks - normally carried out in conjunction with the building drainage, the plumbing connections & electrical connections. The following gives a brief précis of the work involved. All work should be carried out in compliance with *BS 8515 Rainwater Harvesting Systems – Code of Practice.*

Groundwork:

- Excavate hole for rainwater storage tank and vortex filter unit.
- Install tank and filter unit.
- Connect underground drainage; inlet to filter, outlet from filter to tank, overflow connections to storm drain.
- Lay 100mm duct from tank to plant room (utility room etc.) ensuring unbreakable draw-cord is laid in duct.
- Lay 50mm pipe from plant room to join into the pipe that connects the filter unit to the tank. Note this pipe must have a fall from end to end.
- Backfill as appropriate (refer to tank installation document)

Mechanical connections:

a) at tank end:

- Fit float switch and suction filter to submersible pump.
- Fit brass fittings and rubber pressure hose to pump.
- Install services in 100mm duct: MDPE pipe, pump cable, float switch cable and pneumatic tube for tank gauge.
- Lower pump assembly into position and connect hose to MDPE pipe.
- Lower pneumatic tube with sensor into tank.

b) at house end:

- Fit pump controller to wall surface in plant room.
- Fit mcw top-up unit to wall surface and to 50mm pipe laid previously.
- Connect 15mm mains water supply to top-up unit.
- Fit tank contents gauge to wall surface.
- Connect MDPE pipe to pump controller.
- Connect pneumatic tube to tank gauge.

Electrical connections:

- Connect pump cable to pump controller (note plug and socket).
- Connect float switch cable to ‘piggy-back’ plug.
- Connect solenoid cable to ‘piggy-back’ plug (plug and socket).
- Connect pump controller and mcw top-up unit to separate fused, switched mains power supplies. Can be hard-wired or plugged into sockets on ring main.

RAINHARVESTING SYSTEMS LTD. - TERMS & CONDITIONS OF SALE

1. GENERAL

1.1 These terms and conditions apply in preference to and supersede any terms and conditions referred to, offered or relied on by the Buyer whether in negotiation or at any stage in the dealings between the seller and the Buyer. Without prejudice to the generality of the foregoing, the Seller will not be bound by any standard or printed terms furnished by the Buyer in any of its documents, unless the Buyer specifically states in writing separately from such terms that it intends such terms to apply and the Seller acknowledges such notification in writing.

1.2 These terms and conditions shall not be affected by any previous dealings between the Seller and the Buyer. Each particular contract shall be regarded as a separate and new contract having no relation to other contracts between the Buyer and Seller.

1.3 These terms and conditions apply to all goods sold from time to time by the Seller to the Buyer ("the goods").

2. VARIATION

2.1 Neither the Buyer nor the Seller shall be bound by any variation, waiver of, or addition to these terms and conditions except as agreed by both parties in writing and signed on their behalf.

2.2 These terms and conditions cannot be varied by any person acting or purporting to act as an employee or agent of the Seller. They can be varied only by a Director of the Seller in writing.

3. DESCRIPTION

3.1 The description of the goods has been given by way of identification only and the use of such description shall not constitute a sale by description.

4. SAMPLE

4.1 Notwithstanding that a sample of the goods may have been exhibited to and inspected by the Buyer, it is hereby declared that such sample was so exhibited and inspected solely to enable the Buyer to judge for itself the quality of the bulk, and so not as to constitute a sale by sample.

5. EXCLUSIONS

5.1 No liability whatsoever shall be incurred by the Seller in respect of any representation made by the Seller or it's agents to the Buyer or the Buyer's agents before the contract was made where such representation related or referred in any way to (i) the correspondence of the goods to any description or (ii) the quality of the goods or (iii) the fitness of the goods for any purpose.

5.2 No liability whatsoever (other than as expressly set out in these terms and conditions) shall be incurred by the Seller to the Buyer in respect of any term in the contract whether a condition, warranty or intermediate stipulation (including any liability arising from the breach of such term) where the said term relates or refers in any way to (i) the correspondence of the goods to any description, (ii) the quality of the goods or (iii) the fitness of the goods for any purpose.

5.3 All implied terms conditions or warranties whether statuary or otherwise as to be (i) the correspondence of the goods to any description or (ii) the merchantable quality of the goods or (iii) the fitness of the goods for any purpose (whether made known to the Seller or not) are hereby excluded from the contract (other than as maybe expressly set out in these terms and conditions).

5.4 Any design performed by the Seller is for the use of the Seller only. It is the responsibility of the Buyer or the Buyers consultant to ensure that equipment supplied is suitable for its' proposed use.

5.5 The Seller does not seek to exclude liability for death or personal injury caused by the Sellers negligence.

6. PRICE

6.1 All quotations and estimates issued by the Seller are, unless otherwise stated, valid only for the period stated on the quotation (typically 90 days).

6.2 The seller reserves the right to impose a surcharge in the event of any significant and unexpected fluctuations in the exchange rate between Sterling and the Euro.

6.3 Any variation to prices quoted as a result of government taxes or levies will be for the Buyer's account.

6.4 The price is exclusive of any applicable value added tax, which the Buyer shall be additionally liable to pay the Seller

7. PAYMENT

7.1 Payment for goods supplied to account holding customers is due **30 days** from the date of invoice (unless otherwise agreed in writing by a director of the Seller).

7.2 Payment for goods supplied to non account customers will be on pro forma invoice. No goods will be despatched until full payment has been received.

7.3 The Buyer agrees that the Buyer will not be entitled for any reason to make any deduction from or withhold payment due to the Seller.

7.4 Time for payment of all sums payable to the Seller shall be of the essence of the contract.

7.5 If payment of the price is not made in full by the due date for payment whether the same be demanded or not the Seller shall be entitled (without prejudice to any other rights it may have):

7.5.1 to charge interest on the outstanding amount at the rate of 3% per annum above the base rate of HSBC Bank Plc from time to time in force and accruing daily; and

7.5.2 to require payment in advance of delivery of undelivered goods; and

7.5.3 to refuse to make delivery of any undelivered goods whether ordered under the contract or not and without incurring and liability whatsoever to the Buyer for non delivery or any delay in delivery; and

7.5.4 to terminate the contract.

8. DELIVERY

8.1 The goods are delivered to the Buyer when the Seller makes the goods available to the Buyer or any carrier (who will be the Buyer's agent whoever pays his charges) at the Sellers premises or other delivery point if agreed by the Seller in writing.

8.2 The Seller has the right to deliver the goods by instalments in any sequence.

8.3 If the goods are delivered by instalments;

8.3.1 each instalment will be deemed to be the subject of a separate contract; and

8.3.2 any default or failure by the Seller in respect of one or more instalments will not vitiate the contract in respect of the goods previously delivered or undelivered goods.

8.4 The seller may deliver to the buyer and the Buyer must accept in satisfaction of the contract a lesser sum than the number of the goods ordered. The Seller will give credit for any undelivered goods.

8.5 Any dates stated by the Seller for the delivery of the goods are approximate only and do not form part of the contract and the Buyer agrees that the Buyer will have no regard to quoted delivery dates. Time of delivery shall not be in the essence of the contract, the goods may be delivered by the Seller in advance of any quoted delivery date upon giving reasonable notice to the Buyer.

8.6 If the Buyer fails to take delivery of the goods (or any part of them) the Seller will be entitled upon giving written notice to the Buyer to store (or arrange storage of) goods and upon such written notice to render an invoice in respect of the said goods (such invoice to be payable within 28 days of invoice). Risk in the goods will pass to the Buyer at such the time of issue of such invoice and the Buyer will pay to the Seller on demand all costs and expenses (including but not limited to storage and insurance charges) arising from the failure to take delivery.

8.7 The Seller will not be liable for any penalty loss injury damage or expense arising from any delay or failure in delivery performance from any cause at all nor will such delay or failure entitle the Buyer to refuse to accept any delivery or performance of or to repudiate the contract.

9. RISK

9.1 Risk in the goods will pass to the Buyer when they are delivered to the Buyer whether by being made available at the Seller's premises or other delivery point agreed by the Seller.

10. PROPERTY

10.1 The property in the goods will not pass to the Buyer until payment of the price for the goods has been made in full. Until such time;

10.1.1 the Buyer will hold the goods as the Seller's bailee and fiduciary agent; and

10.1.2 the Buyer will store the goods separately from other goods so that they can be identified as the Seller's property and will keep the same protected and insured.

10.2 Until such time as property in the Goods passes to the Buyer the Seller shall be entitled at any time to require the Buyer to deliver up the goods to the Seller and, if the Buyer fails to do so forthwith to enter upon any premises of the Buyer or any third party where the goods are believed to be stored and repossess the goods.

11. DEFECTS IN GOODS/NON-DELIVERY-CLAIMS

11.1 Any claim for non-delivery of any goods must be notified by the Buyer to the Seller within three days from the date on which the Buyer receives an invoice for those goods.

11.2 Any claim that the goods have been delivered in a damaged state or are not of the current quantity or do not comply with their description must be notified to the Seller within three days of delivery.

11.3 Any alleged defects in goods must be notified by the Buyer to the Seller within three days of the delivery of the goods.

11.4 The Buyer shall in each notification as is referred to in sub-clauses 11.1 to 11.3 above give full details of the claim.

11.5 The Buyer must afford the Seller reasonable opportunity and facilities to investigate any claims made by the Buyer and if requested in writing by the Seller must promptly return any goods which are subject to a claim (together with any packaging) securely packed and carriage paid to the Seller for examination.

11.6 The Seller will have no liability whatsoever in respect of claims made otherwise than in accordance with the provisions of sub-clauses 11.1 to 11.5 above.

12. DEFECTS IN GOODS/NON-DELIVERY-REMEDIES

12.1 Subject to clause 12.3 and provided that clause 11 has been complied with, if the Buyer proves that any goods have not been delivered, or are delivered damaged or are not of the correct quality or do not comply with their description the Seller will at its option replace the same with similar goods or allow the Buyer credit for their invoice value or repair damaged goods.

12.2 Subject to clause 12.3, and provided that clause 11 has been complied with, if the Buyer proves that any goods are defective the Seller shall at its option replace the same with other goods or repair the goods or allow the Buyer credit for their full invoice value, or to the extent that any goods are not of the Seller's manufacture assign to the Buyer (so far as the Seller is able to do so and at the cost of the Buyer) all such rights against the manufacturer in respect of the goods as the Seller may have.

12.3 Under no circumstances will the Seller be liable for:

12.3.1 defects or damage resulting from wear and tear or improper use by the Buyer or failure by the Buyer to comply with the instructions or advice of the Seller of the goods or neglect of any other description;

12.3.2 goods which have been adjusted, altered, adapted or required by any other party other than the Seller;

12.2.3 defects or damage resulting from the Buyer failing to ensure that goods are installed correctly and in strict accordance with the manufacturers instructions;

12.3.4 variations in the quantities or dimensions of any goods or changes in specifications or substitution of any material or components if the variation does nor materially affect the characteristics of the goods and the substituted materials or components are of a quality equal or superior to those originally specified;

12.3.5 any defect arising from any design or specification provided or made by the Buyer or if any adjustments, alterations, adaptations or other work has been done to the goods by any person other than the Seller.

13. TERMINATION

13.1 The Seller may (without prejudice to its other rights) in its absolute discretion suspend or terminate the supply of any goods if the Buyer fails to make punctual payment of any sum due or becomes insolvent or if the Seller reasonably believes that any of the said events may occur.

14. CHANGES IN SPECIFICATION

14.1 The Seller reserves the right to make any changes in the specification of the goods which are required to conform with any applicable safety or other statutory requirements or, where the goods are to be supplied to the Seller's specification, which do not materially affect their quality or performance.

15. CANCELLATION

15.1 No order which has been accepted by the Seller may be cancelled by the Buyer except with agreement in writing of the Seller and on terms that the Buyer shall indemnify the Seller in full against all loss (including loss of profit), costs (including the cost of all labour and materials used), damages, charges and expenses incurred by the Seller as a result of cancellation.

16. DRAWINGS, SPECIFICATIONS ETC.

16.1 Any drawings, specifications, plans or designs supplied by the Seller to the Buyer shall remain the property of the Seller and any information derived therefrom or otherwise communicated to the Buyer in connection with the contract shall be kept secret and shall not be published or disclosed to any third party. All drawings, specifications, plans or designs supplied by the Seller must be returned to the Seller on fulfilment of the contract unless otherwise agreed.

17. BUYER'S PREMISES

17.1 The Buyer acknowledges that it is the responsibility of the Buyer to ensure that the part of the Buyer's premises intended to be the location for the goods is suitable for the same, and in particular to ensure (if necessary by consulting professional engineers or other advisors as appropriate) that the intended location is able to support the goods. The Buyer acknowledges that the Seller does not accept any liability of whatever nature caused or contributed to by the said location being unsuitable for the goods.

18. FORCE MAJEURE

18.1 If delivery is delayed by strikes, lockouts, fire, accidents. Defective materials, delay in receipt of raw materials or bought-in goods or components or any other cause beyond the reasonable control time for delivery shall be granted and the Buyer shall pay such reasonable extra charge as shall have been occasioned by the delay.

19. LAW

19.1 These terms and conditions shall be governed by and constructed according to English law and the parties to the contract hereby submit to the jurisdiction of English courts.