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# Water Management and Maintenance Plan for Rainwater Harvesting System

Ransoms, Station Road, Pulborough West Sussex

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# Background

Planning has been granted for the construction of 8no dwellings and related parking in April 2024. As part of this a management plan for the water harvesting system is required, with the following planning condition:

*10 Pre-Commencement (Slab Level) Condition: No development above ground floor slab level shall commence until a management and maintenance plan for the rainwater harvesting system has been submitted to and approved in writing by the Local Planning Authority. The management and maintenance plan shall include the following details:*
*- The sampling regime and parameters etc, recognising that the sampling will need to be undertaken a DWI certified sampler and analysed by a UKAS accredited lab.*
*- Detail on how any failure of any samples will be investigated and managed.*
*- Details, including a plan or schematic, showing the supply - storage tanks, treatment etc, and means to record the total water consumption of each unit*
*- Detail on what type of treatment that will be installed on the supply with information clearly indicating that it is appropriate for the amount of water being used.*
*- Detail on how the treatment system, pipework, tanks etc will be cleaned and maintained and who will maintain them for the lifetime of the development. This should include any re-activation of the system after it has been out of use due to lack of rainfall/use.*
*- The completion and sharing of the Regulation 6 risk assessment by a suitably competent person (as required by the Private Water Supply (England) Regulations 2016) prior to the water supply being put into use.*
*- Detail on the continuity of supply during dry periods extending beyond 35 days.*
*- Arrangements for keeping written records of all sampling, results of analysis, inspection, cleaning, and maintenance.*
*- Details of contingency plans to ensure any failure's or reported concerns with the supply are investigated and rectified as soon as possible, including timeframes. This should include notification of the investigation and corrective actions to the local authority.*
*The management and maintenance plan shall be operated in full at all times. No alterations or revisions to the approved management plan shall be implemented without the written approval of the Local Planning Authority.*
*Reason: To ensure the development is water neutral to avoid an adverse impact on the Arun Valley SACSPA and Ramsar sites in accordance with Policy 31 of the Horsham*

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*District Planning Framework (2015), Paragraphs 186 and 187 of the National Planning Policy*

# Management Plan

## Sampling Plan

Note that sampling is only required where water enters the human pathway.

### Sampling Regime and Parameters

Sampling is to be undertaken by a UKAS accredited laboratory. Many countries, including the UK, have laws and regulations in place that require regular water testing to ensure compliance with safety standards.
Relevant British Standards: BS EN ISO 9308-1:2014 – Microbiology of water. Enumeration of Legionella bacteria. Part 1: Detection and enumeration of Legionella pneumophila BS 8558:2015 – Legionella control. Code of practice ACOP L8: Legionnaires' disease: The control of legionella bacteria in water systems

**The current proposed test system will test for:**
Microbiological, culture testing:
Legionella
Indicator Parameters & Pathogens:
Colony count 22°, Colony count 36°, coliforms
Microbiological Parameters (Water Supply Regulations) & Pathogens:
E.coli, Enterococci
Metals and heavy metals:
Aluminium, Arsenic, Barium, Bismuth, Cadmium, Chromium, Cobalt, Copper, Gadolinium, Gallium, Lead, Nickel, Palladium, Scandium, Selenium, Silver, Strontium, Thallium, Uranium, Yttrium, Zinc
Minerals and substances causing hardness:
Beryllium, Boron, Calcium, Chloride, Iron, Lithium, Magnesium, Manganese, Sodium, Potassium, Phosphorus (Orthophosphate), Sulphate, Water hardness (mg/l calcium carbonate)
Nitrogen compounds:
Ammonium, Nitrite, Nitrate, Total nitrite/nitrate
Salts and Esters:

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Bromide, Fluoride, Phosphate
Other values tested:
Total anions, pH value, electrical conductivity

It should be done by a DWI certified sampler and analysed by a UKAS accredited lab for example:

https://ivario-lab.co.uk/products/water-test-kit-premium

## Sampling Failures

In case a failed test result has been received, the switchover valve should be activated immediately to avoid any failed water entering the property. The only supply in such a condition will be main water supply.
Professional help should be sought immediately to rectify the situation before the rainwater is used again.
The local authority should be informed as soon as is practical, and kept up to date on rectifying the supply.

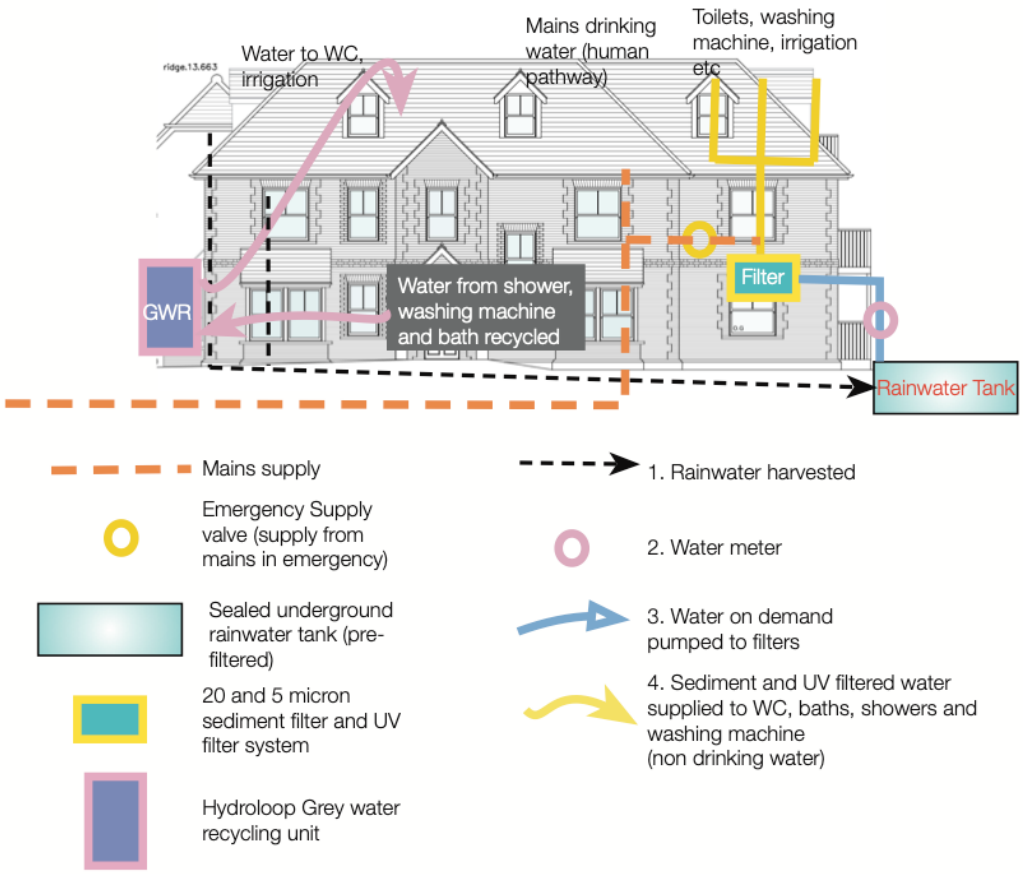
## System Schematic and Measurement

The system has been designed as follows:

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**Stormsaver: Micro StormStation Rainwater Harvesting System Schematic**

**1.** Rainwater is collected from roof area
**2.** Rainwater passes through pre-tank filter
**3.** Micro StormStation with suction filter
**4.** Overflow from storage tank and NRV
**5.** Control panel and booster pump
**6.** Local power supply
**7.** 50mm Black & Green MDPE boosted rainwater supply to points of use
**8.** Pressure vessel
**9.** Mains cold water supply (top up)
**10.** UV recirculation
**11.** Optional micron filtration
**12.** Points of use

**Disclaimer**

This schematic is to be used as a general overview of a typical Stormsaver Water Reuse System layout. It is not site specific and should not be relied upon for technical submittal or installation guidance.




## Filter Systems

The Hydra Rainmaster Filter System can filter up to 5,500 litres per hours, significantly more than the system requires.
Please see the appendices in the Water Neutrality Statement for more details.

## Contingency measures

### *Failure*

A valve from the mains supply can replace harvested water after the filter system to ensure continuity of supply during failure or maintenance of the harvesting system.

### *Concerns*

Any concerns about the system should in the first instance be addressed in writing to the homeowner, who has to respond within 28 days. If the concern is raised by the homeowners themselves, this should be notified to the local authority.

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*Reporting*

The local authority should within reasonable time, but no longer than 28 days after reporting of a concern, be notified in writing of the report, corrective action, and follow up review including possible system improvements.

## Record Keeping

*Sampling:*

A record should be kept in writing, accessible to any user of the system as well as any maintenance worker, of all samples taken as well as its results.

*Results of analysis,*

Results should be filed if everything passes. Any failures should be notified to the local authority and rectified immediately.

*Inspection,*

Annual inspection of the system by an appropriately knowledgeable person should be undertaken, including checking for leaks, deterioration, contamination and general condition.

*Cleaning, and maintenance.*

The tank should be cleaned every 3 years by an appropriately qualified person and the record of cleaning be kept.

# Maintenance Plan

## Cleaning

Filters are to be cleaned according to manufacturer recommendation, as well as after any dry running. Tanks should be cleaned every 3 years.

## Maintenance

Annual inspection of the system by an appropriately knowledgeable person should be undertaken, including checking for leaks, deterioration, contamination and general condition.

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## Continuity of Supply

An emergency switchover valve is supplied which can replace harvested rainwater in an emergency.

## Reactivation Process

If the system has been run dry / deactivated, it should be recommissioned according to the manufacturer instructions, taking note of any new instructions in case parts or elements of the system have been replace.

## Regulation 6 Risk Assessment

Each local authority must carry out a risk assessment of each private water supply system in its area1 at least every five years. Details can be found here: http://www.dwi.gov.uk/private-water-supply/local-auth/risk-assessment.html
A risk assessment must be completed as soon as is reasonably practicable once any new private water supply has been commissioned.

# Appendices

*Records and Testing Register*

| **Record of Annual Inspections** | | | | |
|---|---|---|---|---|
| **Date** | Done By | No leaks | No malfunction | No loose items |
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| **Record of Water sampling** | | | | |
|---|---|---|---|---|
| **Date** | Taken By | Sent to laboratory on | Results received on | If pass = OK, if fail = go to LA records below |
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| **Record of notification to LA (Local Authority)** | | | |
|---|---|---|---|
| **Date of report** | Description of issue | System Repaired? | Date Recommissioned |
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|---|---|---|---|
| **Filter Replacement Record** | | | |
| **Date** | Replaced by | Notes | System OK? |
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| **3 yearly tank cleaning** | | | |
| **Date** | Cleaned by | Notes | System OK? |
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*Risk Assessment Regulation 6*

To follow below

*Water Neutrality Statement*

To follow below