

Rainwater Harvesting: Environmental and Regulatory Aspects

A white Paper from RainWaterHarvesting.co.uk

1. Scope of this paper

Equipping homes with tanks, pumps and filters to capture rain water off the roof and store it for future use is becoming as popular in the UK as it has already become in Germany and more arid countries, notably Australia. Commercial and agricultural use of rainwater is also on the increase as metered water costs rise and droughts become more unpredictable but more frequent.

RainWaterHarvesting.co.uk has developed a reputation with its clients for straight talking and relevant information. We list the price of every item, we put sensible kits together and list their exact contents, we keep a large stock for immediate delivery rather than forwarding orders to the manufacturer, and we give our customers email and phone support before and after the sale.

Now of course, our clients ask us about the building regulations or whether there are incentives for installing rainwater harvesting equipment. While we can never become experts in some of the more complex areas of regulation and environmental issues, we do compile available information and communicate with authorities and experts on these issues. This first version of our white paper on environmental and regulatory aspects of rainwater harvesting is to invite comments from experts and reactions from those affected in the field.

This paper includes some interpretation of, and comment on, the applicable regulations. As such, it should not be taken as authoritative. Any interested party should make their own research into the source material or take professional advice. RainWaterHarvesting.co.uk and the authors cannot be held responsible for the result of applying information in this paper without checking.

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2. Why do people install rainwater harvesting?

a) In the home and garden, the average person in the UK uses 160 litres of tap water every day. That's water which has been collected, treated, purified, stored and pumped at high pressure through miles of pipes to the home. 50% of this need not be drinking quality especially in the case of businesses like truck fleets and farms. So using any water which is readily available on site, i.e. off the roof, is common sense for many people.

b) Garden use of mains water is wasteful. A hose uses 1000 litres an hour. There's lots of scope to attach that hose to a rainwater source.

c) Water is a scarce resource. Whatever one's point of view about global warming it also makes sense not to waste water. Using water off the roof is, as a principle, a way of putting available water to better use.

d) More and more homes in the UK have water meters so that their supplier can bill for the amount used. In these cases there can be savings on the water bill for those that use rainwater for the 50% of usage which does not have to be drinking water. The cost of installing the equipment has to be amortised over some years to be able to show an overall saving period of time, so, certainly, our company does not encourage consumers to think of rainwater harvesting as an overall economy. On the farm, one cow drinks between 15 and 30 litres a day and can cost £70 in water a year; here the savings can be significant.

e) Rainwater harvesting provides a stock of water from which the garden can continue to be watered during droughts and hosepipe bans. This is, in our experience, the biggest driver of purchases from individuals.

3. The UK Government and rainwater harvesting. Summary

Rainwater harvesting is being imposed and encouraged by authorities in five ways. Compared to other countries like Germany it would appear that the UK regime is more "stick" than "carrot", i.e. the incentives are sparse and not applicable to consumers.

In this white paper we give some detail on these five principal levers:

- a) The **Code for Sustainable Homes** now puts pressure on builders to install rainwater harvesting in new-builds (4 below).
- b) As of December 2007 councils give expeditious and sympathetic handling of **planning permission** to applications which include rainwater harvesting (5 below).
- c) **Flood Attenuation.** Planners now encourage and impose rainwater harvesting to alleviate flood threats
- d) Businesses can benefit from the **Enhanced Capital Allowance** scheme to get a tax rebate (6 below).
- e) New legislation will give water boards greater **hosepipe ban** powers during water shortages. Hosepipes will be banned for topping up pools, hot tubs and decorative ponds, as well as for watering gardens and outdoor cleaning (7 below).
- f) **DEFRA** can impose even more severe drought restrictions at any time (8 below).

4. UK Government : Code for Sustainable Homes

The **Code for Sustainable Homes** now puts pressure on builders to install rainwater harvesting in new-builds.

Rainwater harvesting is just one of the many options being encouraged in the building industry towards a more sustainable future. The Code for Sustainable Homes (introduced in April 2007) set a target of reducing drinking water consumption per person per day from the current average of 150 litres to an optimum 80 litres. It is easier to push for these targets in the social housing rather than private sector: meeting category 3 of this code (105 litres a day) is now the minimum for grant qualification, and rainwater water harvesting is listed as a means to achieve this.

See Code_for_Sustainable_Home_techguide.pdf pages 70 to 84.

On page 78, point 4, it says

“Only RW recycling systems providing water for internal use are dealt with here. RW collection for watering gardens is covered in Wat 2 – External Potable Use.”

As of 1 May 2008, this Code is mandatory:

“A rating against the Code for Sustainable Homes, which measures nine categories of sustainable design including energy, water and waste, will be required for all new homes. Homes which exceed the sustainable standards in existing Building Regulations will be awarded up to six stars. Those homes that have not been assessed against the Code will score a nil-rating”

The Code for Sustainable Homes applies to new homes only and it is not obligatory for builders to follow the code. However all buyers must now be given, by the builder, info on the sustainability of the home.

Either the builder can have home assessed according to code and give buyer a certificate with points total for HIP. Extra points if 30% of water used is rainwater or grey water.

Or builder applies for nil rating certificate.

<http://www.communities.gov.uk/planningandbuilding/buildingregulations/legislation/englandwales/codesustainable/faqs/faqs/sustainablehomes/?id=713857#>

5. UK Government: Planning Applications with rainwater harvesting are favoured.

Planning Policy Statement: Planning and Climate Change,
Supplement to Planning Policy Statement 1

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Site	Planning, building and the environment
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As of December 2007 councils give expeditious and sympathetic handling of **planning permission** to applications which include rainwater harvesting, as follows:

"40. An applicant for planning permission to develop a proposal that will contribute to the delivery of the key Planning Objectives set out in this PPS should expect expeditious and sympathetic handling of the planning application".

"42. In their (i.e. planners) consideration of the environmental performance of the proposed development

- give priority to sustainable drainage systems, **paying attention to the potential contribution to be gained from water harvesting from impermeable surfaces** and encourage layouts to accommodate grey water recycling"

<http://www.communities.gov.uk/documents/planningandbuilding/pdf/ppscclimatechange.pdf>

Following severe flooding during the summer of 2007 and 2008, Point 42 above was reaffirmed on 1 October 2008 when planning regulations on hardstands were changed:

"From 1 October 2008 the permitted development rights (see Glossary) that allow householders to pave their front garden for hardstanding without planning permission have changed. Planning permission is now required to lay traditional impermeable driveways that allow uncontrolled runoff of rainwater from front gardens onto roads, because this can contribute to flooding and pollution of watercourses.

If a new driveway or parking area is constructed using permeable surfaces such as permeable concrete block paving, porous asphalt or gravel, or if the water is otherwise able to soak into the ground you will not require planning permission. The new rules will also apply where existing hardstandings are being replaced. The new rules apply to hard surfaces exceeding 5 square metres in area."

"What are the options? (see section 2 page 9)

Water from a paved surface can be dealt with using three main approaches:

- Soaking into ground (soakaway)
- Rainwater harvesting (see Glossary) or storage for later use
- Flowing to the drains, but this should be the last option considered and might not be permitted development

From "Guidance on the permeable surfacing of front gardens"
Communities and Local Government publication :

<http://www.communities.gov.uk/documents/planningandbuilding/doc/969973.doc>

6. UK Government: Enhanced Capital Allowance

Businesses can benefit from the **Enhanced Capital Allowance** scheme to get a tax rebate. This allows a business to write-off against tax liability the 100% cost of installing water conservation plant and machinery. Rainwater harvesting products registered on the Water Technology List qualify for this. Claims are made to the Inland Revenue.

To get a product on this **Water Technology List**, an application has to be made to DEFRA. The same product may be registered more than once by different distributors. It is not necessary to register the product again if another distributor has already done so. It won't, however, be listed under the company name of a second distributor.

To find out if a product is on the **Water Technology List**, go to <http://www.eca-water.gov.uk> and click on >products and Claims >product search. If you have difficulty with the categories (sub technologies) as this is an unsuitably organized database, email support@rainwaterharvesting.co.uk to find out if the product you're claiming for is listed. You'll need to register to see the listings.

See www.eca.gov.uk Criteria and Applications. Helpline 0800 585794

7. UK Government: Water Boards and Hosepipe Bans

New legislation will give water boards greater **hosepipe ban** powers during water shortages. Hosepipes will be banned for topping up pools, hot tubs and decorative ponds, as well as for watering gardens and outdoor cleaning.

DEFRA announced on 22 October 2007 that a law will be updated that will give water boards the discretionary rights to impose more stringent restrictions during hosepipe bans (e.g., filling swimming pools, fountains, hot tubs, outdoor cleaning). We spoke to DEFRA 10 December 2007: this legislation is unlikely to come into effect before summer 2008. It depends when an opportunity arises to have it passed.

8. UK Government: DEFRA and Hosepipe Bans

However, DEFRA can at any time make a new Drought Direction that supercedes Water Board powers, which could impose these extended hosepipe bans at any time, and extend the ban to some commercial uses such as washing boats and public transport vehicles.

However, even under a Drought Direction, newly constructed pools could be filled up. However, there would be a time limit to prevent topping up at later stage.

See www.defra.gov.uk/news/2007/071022 for results of consultation paper

9. UK Government: Water Efficiency Standards

These are still in consultation stage and will underpin targets set out in Code for Sustainable Homes.

P.21 however says

“Grey water recycling and rainwater harvesting are potential alternative sources of supply which we do not propose to bring within scope of these regulations as purpose of this consultation is to reduce demand for drinking water”

Presumably it would come within these regs when there could be possible link with mains systems.

www.communities.gov.uk/publications/planningandbuilding/mandatingwaterefficiency

The most important regulations that a RWH system has to comply with are The Water Supply (Water Fittings) Regulations 1999, Section 6. This section covers Backflow protection to protect mains water from contamination by “unwholesome water”. As rainwater is normally categorised as “Fluid 5”, that is to say the worst water (water storage for agricultural purposes), this backflow protection has to be a “type AA air gap” i.e. an “air gap with unrestricted discharge which means a non-mechanical backflow prevention arrangement of water fittings where water is discharged through an air gap into a receptacle which has at all times an unrestricted spillover to the atmosphere.”



So any RWH system has to conform to this wherever there is a mains top up to the RW system. A tundish (such as the one pictured right) meets the type AA reg. A tundish is supplied as standard with the System 2 Mains Water Backup kits (float switch and mains solenoid valve) from RainWaterHarvesting.co.uk.

www.defra.gov.uk/environment/water/industry/wsregs99/guide/section_6

Rainwater harvesting and grey water systems definitely have to conform to EN1717: European Standard on Backflow Protection by an air gap: see page 7 on

www.dwi.gov.uk/research/reports/DW170-2-168_Public.pdf

Draft Clarification for output on DEFRA and WRAS websites (see first point).

10. Further references

WRAS Guidance

For WRAS (Water Regulations Advisory Scheme) guidance notes on rainwater harvesting, look at:

http://www.wras.co.uk/PDF_Files/IGN%209-02-04%20Reclaimed.pdf

ENVIROWISE Guidance

Other information from the government advisory agency Envirowise can be found at:

<http://www.envirowise.gov.uk/uk/Our-Services/Publications/EN896-Reducing-mains-water-use-through-rainwater-harvesting.html>