Unit 301: Understand the fundamental principles and requirements of environmental technology systems

Worksheet 9: Rainwater harvesting and greywater re-use (Tutor)

Using your notes and the internet (refer to Resource 1, 'Micro-renewable energies') answer the following questions:

1. In small groups and using the internet, discuss the planning requirements, including Building Regulations for rainwater harvesting systems.

Planning permission generally not required but check with the local authority if installing in a listed building or an area of outstanding natural beauty or a World Heritage Site.

If installing in a new build or major renovation project, then, the granting of planning permission is likely to be enhanced if the plans include rainwater harvesting (and greywater reuse) as Building Regulations Part G (April 2010) makes 125 litres per person per day of mains water consumption the maximum and the Code for Sustainable Homes targets 103 litres for level 3.

The underground tank should not be installed any closer to a house than a line drawn at a 45-degree angle from the base of the house. It usually works out that the closest part of the tank should not be closer to the building than the overall height of the tank. For example, a tank 2-metres deep from its base to turret should not be closer than 2 metres from the side of the tank to the side of the house.

Building regulations also apply to other aspects of the work such as electrical installation and plumbing work.

2. What is the purpose of the calming inlet on a rainwater harvesting system?

Prevents the water entering the storage tank from creating turbulence within the tank thus preventing sediment in the tank from being stirred up.

3. When a rainwater harvesting or greywater reuse system has a mains water back-up, why is it necessary for there to be an AA air gap at the mains water inlet?

This is a requirement of water regulations to provide backflow protection to prevent contamination of the water mains from the rainwater or greywater.

4. List **five** advantages of rainwater harvesting systems.

- **Saves money by reducing water usage.**
- **A volume of water is kept out of the storm-water management system, thereby helping to reduce flooding risks.**
- **Gains eco-homes rating points for your property.**
- **Rainwater is better for your garden as it has a balanced pH and is free of chemicals such as chlorine.**
- **In its agricultural application rainwater harvesting has also been used to provide drinking water for livestock and irrigating crops.**

5. List **five** disadvantages of rainwater harvesting systems.

- **High cost when retro fitting to an existing property.**
- **Requires some maintenance to filtration.**
- **Requires separate pipe work to be installed.**
- **Unpredictable rainfall.**
- **Vulnerable water quality.**

6. List **four** advantages of greywater reuse.

- **Conserves wholesome water.**
- **Indirectly reduces energy consumption and reduces carbon emissions.**
- **A wide range of system options exist.**
- **Greywater is free, so for buildings where a water meter is fitted the annual cost of water will be reduced.**

7. List **four** disadvantages of greywater reuse.

- **Payback periods can be long.**
- **Not always straightforward to install in an existing building.**
- **There is a risk of contamination or cross-connection.**
- **Only certain types of outlet and appliance can be supplied using greywater.**