

Nomination for SWIG Awards 2015. Domestic Building Category

The landscaped grounds of a new Stately Home in Herts.- Watermatic Ltd



Introduction

It is a rare thing- a newly built mansion house, if not a stately home.

Standing at a total of 46500 sq. ft. on 317 acres, the sheer scope and scale of the project is exceptional and is an inspirational exemplar of what can be achieved.

It is situated at the lowest point within a 317 acres woodland site.

A labyrinth of ditches culminates at this low point together with several natural springs and all are channelled to one location where the entire property's rain water and spring water is harvested, stored and filtered. No groundwater is pumped as all of the input is gravity fed.

This water is used on a green roof and for very complex landscape irrigation demands. This results from the complex planting schemes which vary across different plant eco systems ranging from bedding plants to mature trees in large numbers. Precision irrigation is matched to individual plant groups needs to supply exactly the right amounts of water at the optimum times for each group or individual tree.

Define What - Define what the project aimed to achieve and highlight the innovations used, describing how the water saving system(s) work.

The aim is to ensure the constant availability of water for the landscaped grounds and to be independent of using mains water supply for any external use.

All available water from springs, and rainwater is collected and processed into a large 22000 litre underground storage tank via two very large underground silt traps for filtering purposes. Only excess water is discharged back into its original brook.

Then the water only needs to be pumped from the storage tank to the irrigation system which covers the entire landscaped area.

Define Why. Describe why the project was undertaken and what limitations were met.

The house is in a water stressed area of Hertfordshire. The client's brief was zero demand on potable water whilst ensuring the lush landscaped areas would have an independent, reliable, low risk water supply.

Define How - Provide details on how each element of the project contributes to the sustainability of water and what the overall outcome of the system has been.

- Avoiding any use of potable water at all whilst keeping the landscape fully watered.
- Designing a gravity fed collection system.
- Installing 'state of the art' low consumption, variable speed pumps.
- Designing the right irrigation method for each different application.

How Much - If water savings have been achieved please state in m³ and compare to an industry benchmark if one exists.

To irrigate a site like this, the overall water demand in one season would reach over 1,400,000 litres. By capturing and utilizing free water we are eliminating the usage of potable water altogether.

Therefore the saving is in the order of 1 million litres per year and approximately £3000 per year

Do the water saving measures result in reduced CO₂ emissions than if you had used mains water? Please provide details.

The potable cold water carbon footprint is equivalent to 0.07kg of CO₂ per 000 litres. Avoiding using 1,400.000 litres of water, we are saving 98000 kg CO₂ emissions.

Calculate payback periods of the technologies used.

Rainwater harvesting components total cost £40000

Total annual saving £ 3500

Payback period 11.4 years

1. Silt trap;



2. Excavation for 22 000 litre tanks



3. Secondary silt trap



4. Storage tanks

