671-Stable House

Date	Rev	Issue
12/06/2024	/	Issued for Planning

Water Neutrality

1.0 Introduction

This statement is being submitted to planning in support of planning application DC/24/0694 Stable House's pool extension.

2.0 Background

Address: Stable House, Marlands Park, Horsham RH13 0BF

The property falls within Horsham District inside of Sussex North Water Resource Zone. A Swimming pool was previously approved on application DC/22/1040 dated 28.10.2022. The original pool was an outdoor pool.

The proposal comprises the construction of a basement swimming pool and associated facilities to the South of the existing dwelling. The pool complex will be dug into the sloping landscape setting taking up the same level as the existing lower ground level extension which was built in accordance with planning consent reference no. DC / 14 / 1358

The proposed basement pool dimensions are 4m x 12m from 1.2 to 1.8m deep depths with 77.5m^3 with a total capacity of 77,500 litres.

3.0 Pool Water Calculations

3.1 Baseline calculations

Pool Surface Area: 48 m^2
Pool Capacity: 77,500 litres
SPATA states that an average of 3mm in 24hours is lost in an uncovered indoor pool: 140 litres/day or 1,680 litres/year.
Backwashing: There is no need for backwashing, as the pool will have a cartridge filter that simply requires to be removed from the pool and rinsed with a garden hose, reducing water consumption.
Cover: The pool will be covered when is unused lowering the level of evaporation in the pool.

Pool Usage: SPATA suggest that 0.72 litres per person each time they exit the swimming pool. If the pool is used 26 weeks of the year (182 days) with an average of 4 people, exiting 4 time each. (182 days x 4 people x 4 exits)/365 days = 6 litres/day average.
Initial Water Supply: The water used for the initial pool fill will be collected from outside the Sussex North Water Resource Zone.
On going water supply: Evaporation losses and water lost on exiting will be replaced from a 5,000L rainwater harvesting thank installed adjacent to the pool which will be supplied by surface water run off from the house.

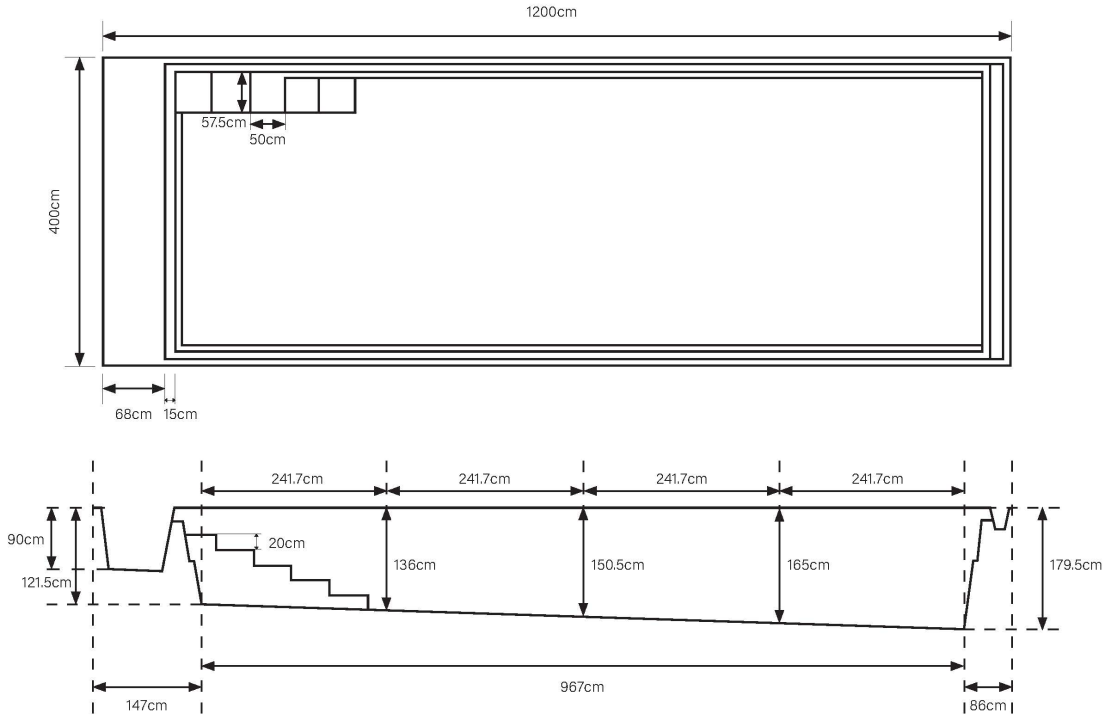
Pool Dimension:

The Cube Definitive 12

Dig Sheet

LEISURE POOLS
SWIMMING IN QUALITY AND STYLE

Pool Dimensions



3.2 Regular maintenance.

Cartridge Filters:



Cartridge Pool Filters have a corrosion-resistant, injection-molded, fibreglass-reinforced, polypropylene filter tank featuring superior strength and reliability. The cartridge assembly uses four non-woven, polyester cartridges.

These cartridges are made up of several layers of interwoven paper webs. As water passes through the filter, particles are trapped in between these paper layers. Due to their tight interwoven design, cartridge filters are able to filter down to around 10 microns; effectively filtering out everything except for certain types of pollen.

Unlike sand filters, there is no need for backwashing. Simply remove the cartridges and rinse with a garden hose, reducing water consumption. It is a fine filtration with minimum maintenance. It is also a perfect match with variable speed pumps.

Cartridge filters can screen out twice as much dirt and debris as a sand filter. Its larger filtration area allows the water to progress through the cartridge removing smaller particles. Maintenance is much easier in that there is no need for a back-washing step.

Features:

- Durable injection-molded tank
- Single-piece base and body design for more stability
- Integrated Continuous High Flow TM Internal Air Relief
- 4 cartridge elements for an increased filter area and a better dirt capacity
- 100% drain clean-out port
- Balanced hydraulic flow

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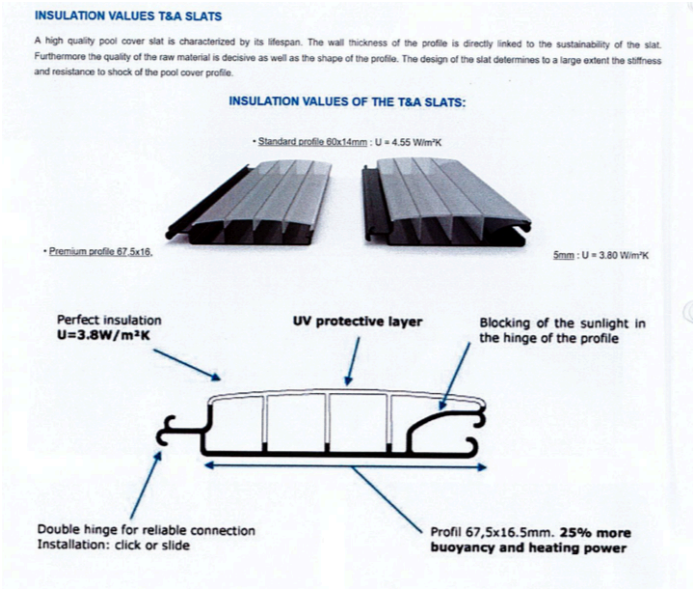
3.3 Pool Cover:

The cover will be an automatic polycarbonate slats, offering higher shock resistance and a better resistance to lower and higher temperatures.



3.4 Water Evaporation

During the months of October to March, the pool is less used and openings will be remained closed, which means there should be little to no evaporation loss. However, during the rest of the year when the pool is in use and there is a high risk of maximum evaporation if the pool is uncovered.

In the worst case scenario, the pool will only be uncovered for an average of 3 hours per day, meaning the risk of maximum evaporation is limited to those hours. According to SPATA Standards, an average pool will lose 1,095mm of water yearly due to evaporation, without a cover. For Stable house, this amount would be **1,095 mm - 86%** (21 hours of pool cover per day) **= 153mm yearly**.

To sum up, the expected pool evaporation for the year would be around **153mm.** This equates to a volume of **7.34m³**, which is equivalent to a yearly loss of **7,340 litres** of water with an average of **20 litres** per day.

3.5 Total water Usage

Initial Fill: 77,500L
Annual Evaporation: 7,340L
Annual Water Loose from Usage: 2,190L

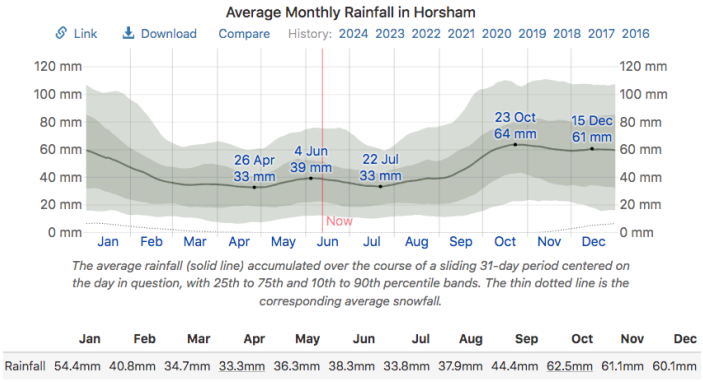
Total: 87,030 first year
Total: 9,530L second year and on.

3.6 Water offsetting

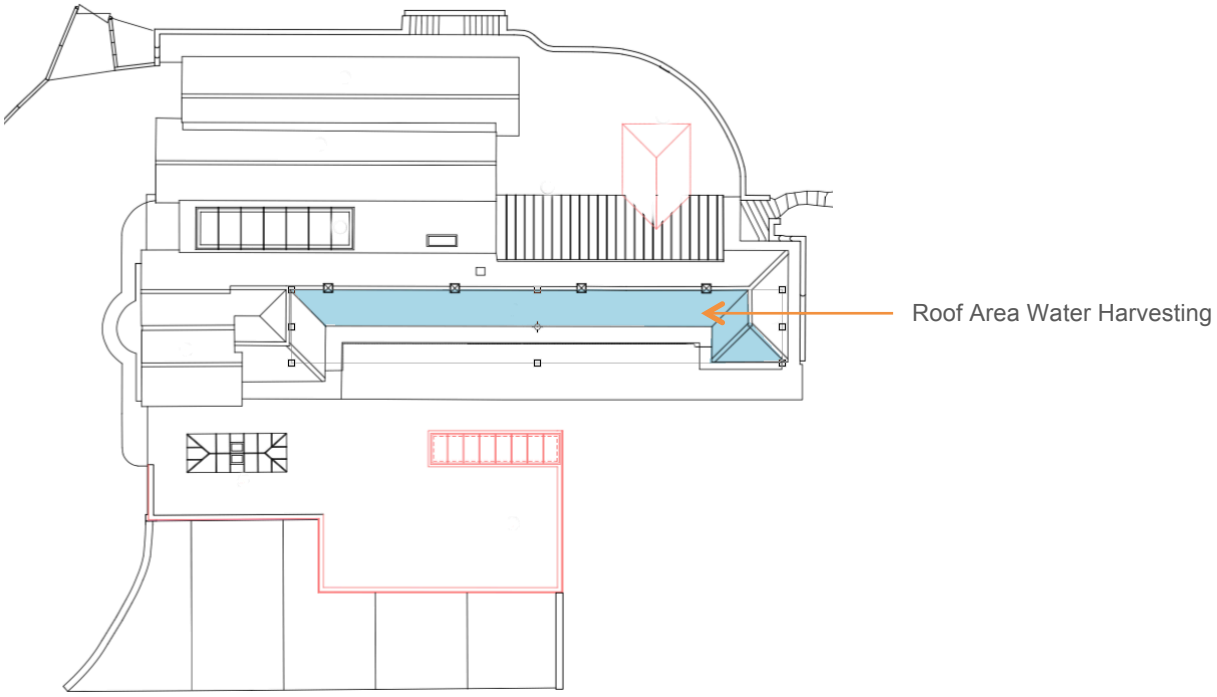
It is proposed that a 5,000L rainwater-harvesting tank will collect water, which is then used to pump feed the auto top-up system of the swimming pool.

Note that the house will have a surface area 76m² for rainfall catchment – **this equates to 76 litres of water captured and harvested per every 1mm of rainfall.**

According to Southern Water information on average long-term rainfall patterns for West Sussex, the data shows a 45mm average per month. This gives the potential to use the proposed scheme to harvest and capture 3,420 litres per month and 41,040 per year, with the potential of harvest the 5,000 L tank around eight times a year, more than the needed capacity for annual top-up. In conclusion after the fist year there will be no increase of water consumption for Stable House.



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Rainfall	54.4mm	40.8mm	34.7mm	33.3mm	36.3mm	38.3mm	33.8mm	37.9mm	44.4mm	62.5mm	61.1mm	60.1mm



3.7 Site







