

# SUSTAINABLE DRAINAGE SYSTEM (SuDS) FILTRATION TEST

The Gatehouse, Warbury Lane, Woking, Surrey GU21 2TX

Filtration Test Date: 4th January 2020

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## INTRODUCTION

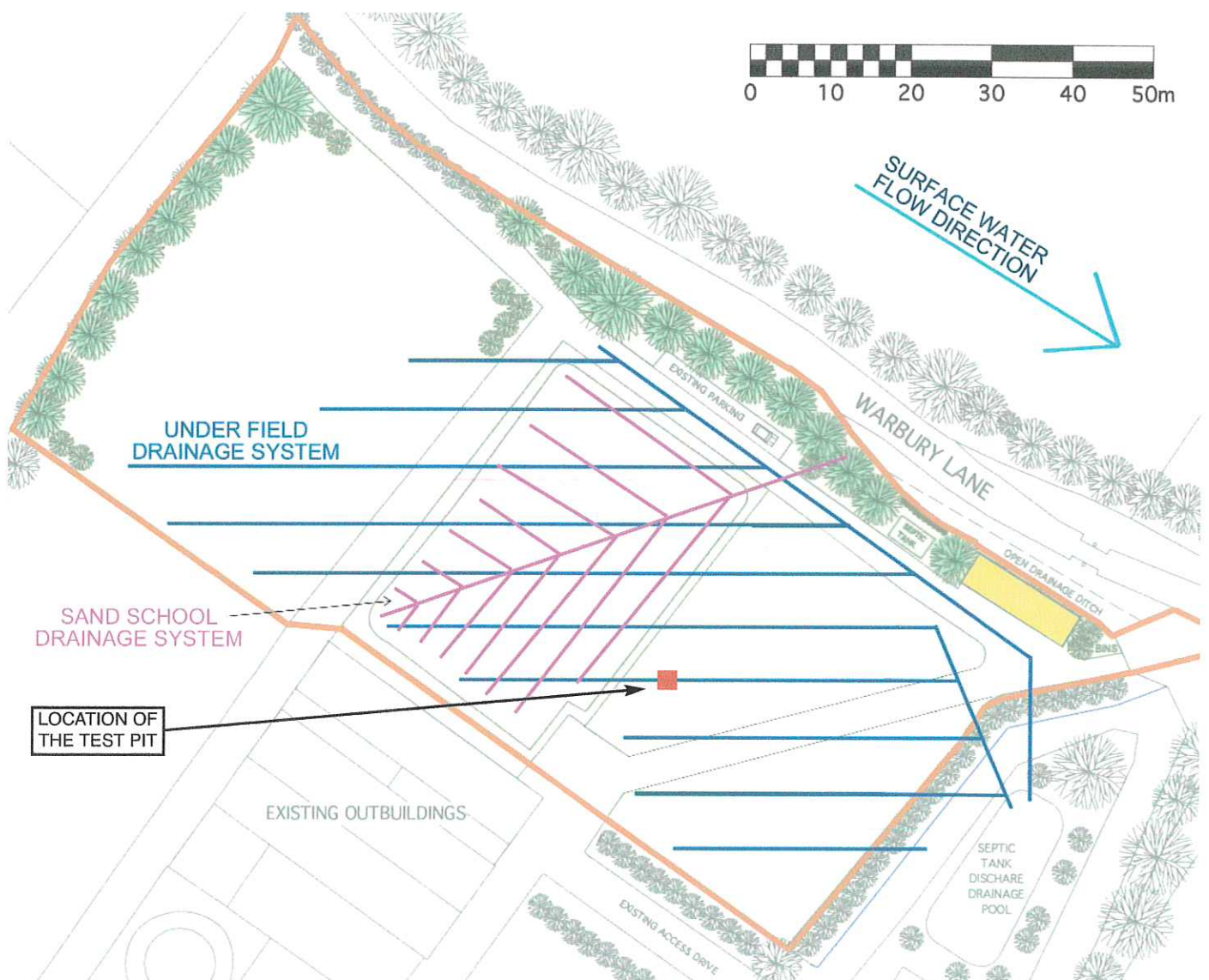
This report covers a filtration test of the existing SuDS drainage system. The test does not test any other soil filtration due to the fact that the site has a SuDS system installed that reflows, slows down and holds surface water caused by rainfall.

The percolation (soil porosity) existing drainage system test was conducted on 4th January 2020.

The location of the test area is shown in Figure 1 below. The test area is located directly over one of the many existing SuDS flow channels that are dug in a 45 degree angle to the natural flow of the rainfall surface water through the site.

The following pages and photographs explain the test methodology and results.

FIGURE 1: The existing SuDS system at The Gatehouse, Warbury Lane, Knaphill, Woking



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## THE TEST

The test was to determine the efficiency of the existing SuDS system to drain rainwater from the site surface ground area.

The test records the speed of filtration into the existing SuDS system of a volume of water that is 300mm wide, 300mm long and 150mm deep in line with Section H2, Building Regulation Approved Document H 'Drainage and Waste Disposal' 2002

Figure 2 below shows the test pit intercepting a flow channel of the existing SuDS system marked between the white lines

Existing  
gravel flow  
channel



FIGURE 2: Time 14.39 - The test area over the SuDS channel between the white line markings

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The measuring rule shows the test pit width at 300mm.



FIGURE 3: Time 14-40 - Test pit width is 300mm

The measuring rule shows the test pit length at 300mm.



FIGURE 4: Time 14-41 - Test pit length is 300mm

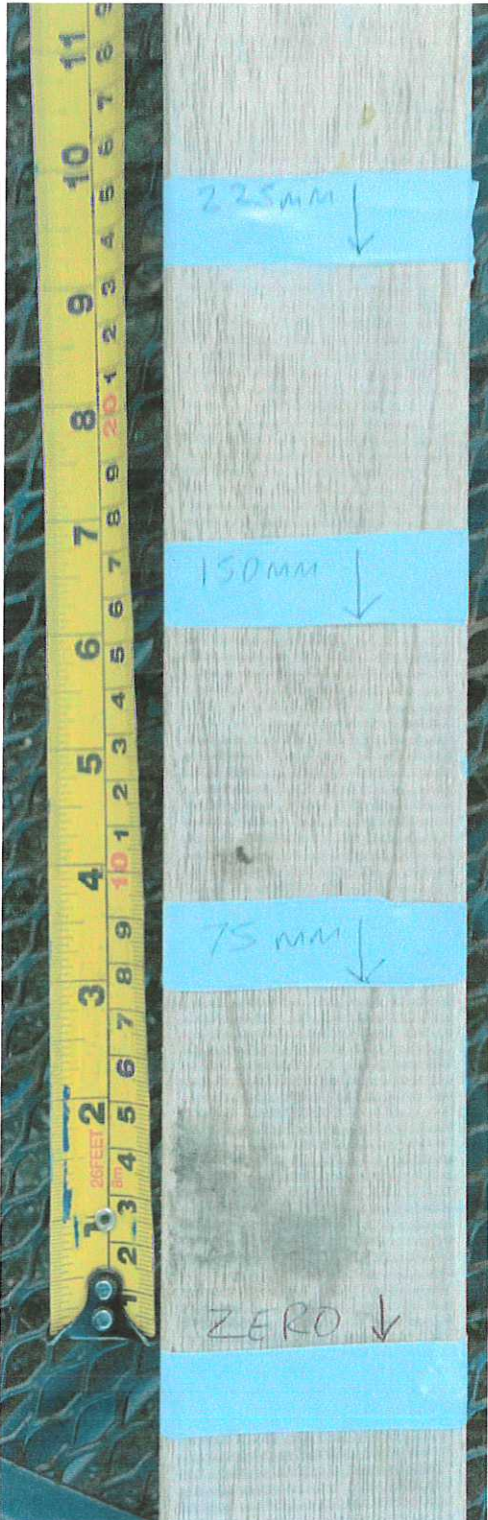
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FIGURE 5:  
Measuring stick marked in 75mm sections



The measuring rule shows the measuring stick marked at 75mm levels.

The test pit is filled with water up to the 300mm water level then allowed to empty to the 225mm level to 'start' the filtration test time recording. The time recording 'end' is when the water is at the 75mm level.

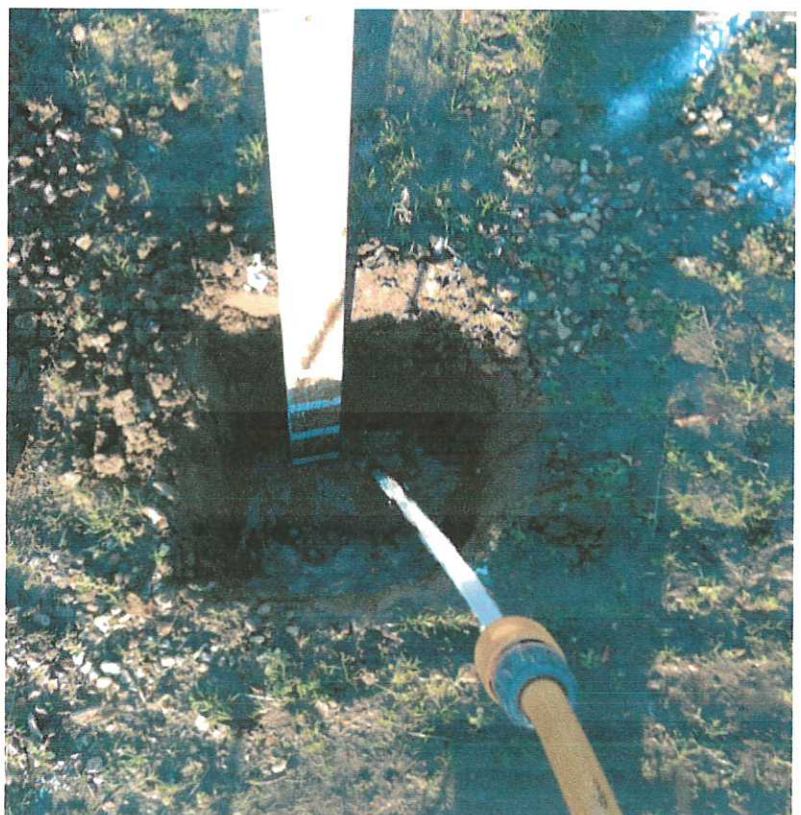


FIGURE 6: Time 14-49 - Test pit is filled with water

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FIGURE 7: Time 14-54 - Level of water at 225mm (START)



FIGURE 8: Time 14-55 - Level of water at 150mm



E 9: Time 14-56 - Level of water at 75mm (END)



FIGURE 10: Time 14-59 - Water drained from test pit

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## **METHODOLOGY**

This test was to record the filtration time of the existing SuDS system on site.

In line with Section H2, Building Regulation Approved Document H 'Drainage and Waste Disposal' 2002, a test pit of 300mm deep by 300mm wide and 300mm long was dug over an existing SuDS flow channel.

The test pit was filled with water to the 300mm level.

When the water level reached the 225mm level (75% full), the time of filtration was recorded until the level reached 75mm (25% full).

The recorded time was then divided by 150 (the depth of water drained through the SuDS system) to obtain the average filtration time in seconds ( $V_p$ ).

$V_p = (\text{drainage time divided by } 150)$

The filtration rate = ( $f$ )

$$f = \frac{10^{-3}}{2V_p}$$

## **RESULTS**

150 mm depth drainage time = 60 seconds.

$V_p = 60 \text{ divided by } 150 = 0.4 \text{ seconds}$

$f = 0.00125$

## **CONCLUSION**

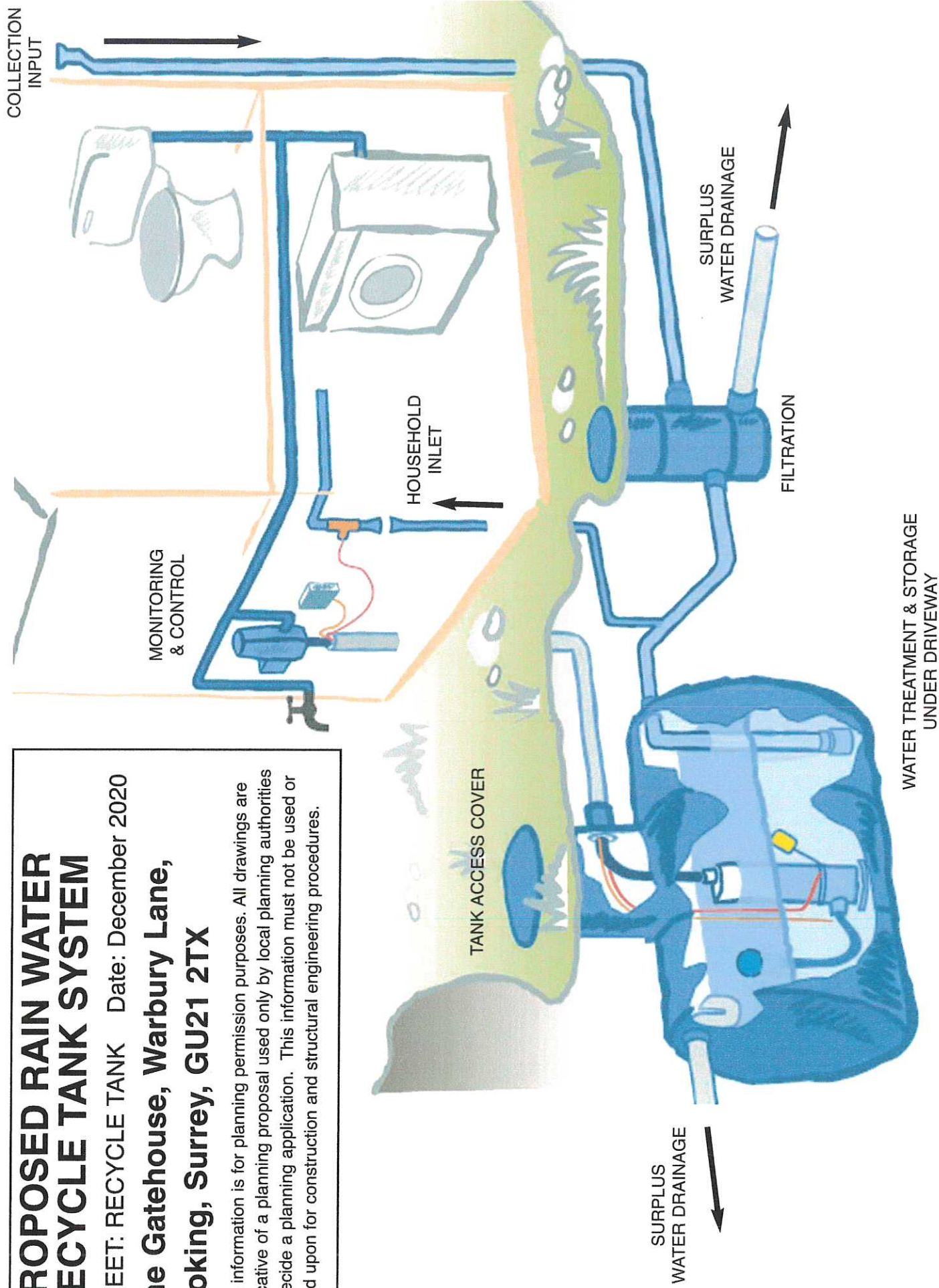
The existing SuDS system filtration rate ( $f$ ) = 0.0125

# PROPOSED RAIN WATER RECYCLE TANK SYSTEM

SHEET: RECYCLE TANK Date: December 2020

**The Gatehouse, Warbury Lane,  
Woking, Surrey, GU21 2TX**

This information is for planning permission purposes. All drawings are indicative of a planning proposal used only by local planning authorities to decide a planning application. This information must not be used or relied upon for construction and structural engineering procedures.



# PROPOSED SOLAR PANEL DETAIL

The Gatehouse, Warbury Lane, Woking, Surrey, GU21 2TX

SCALE 1:100 @A4

DATE: December 2020

## Solar Panels

There will be eight solar panels units mounted on the north west roof face to generate electricity for non essential battery powered lighting and to heat water. The solar panels image below (x2 panels shown in the photograph) have dimensions of: 1040mm wide by 2040mm high and a maximum of 150mm protrusion from the roof tile.

