

Supporting Statement for Stormwater Soakaway

Land to the South of Sundown Littleheath Road Fontwell BN18 0SR

Introduction

This information is issued to discharge condition 3 under Application Reference AL/66/21/PL

“3 The dwelling shall not be occupied until full details of the proposed surface water drainage scheme have been submitted to and approved in writing by the Local Planning Authority. The design should follow the hierarchy of preference for different types of surface water drainage disposal systems as set out in Approved Document H of the Building Regulations, and the recommendations of the SuDS Manual produced by CIRIA. Winter groundwater monitoring to establish highest annual ground water levels and winter Percolation testing to BRE 365, or similar approved, will be required to support the design of any Infiltration drainage. No building / No part of the extended building shall be occupied until the complete surface water drainage system serving the property has been implemented in accordance with the agreed details and the details so agreed shall be maintained in good working order in perpetuity.”

on land to the South of Sundown, Littleheath Road Fontwell West Sussex BN18 0SR.



Aerial Image (Site within Red Line)

The application site is a parcel of land which formed a portion of the garden to Sundown located at the semi rural junction of Littleheath Road and Dukes Road in the Parish of Aldingbourne.

The site has two distinct levels, an upper level for the front portion (West) of the site and a lower section to the rear (East) which has a number of tall self-seeded trees and a steep bushed embankment.

The lower level is to accommodate the surface water drainage soakaway (Refer to drawing 17-1197- PL D 701) issued to support the application to discharge the condition.



View Eastwards



View Westwards

The site is also confirmed to be within a Flood Zone 1 with no specific flood issues.



Site Location Plan (Application Site noted with red boundary and shading)

A programme of winter ground water table monitoring has been undertaken from 25 November 2019 to 11 April 2020. Two locations were chosen, and these are plotted on drawing 17-1197-PL D701, one on the upper level and one in the lower level with the depth of the access pipe being 2.4m below current site ground level. A series of 9 checks were carried out to check the position of any ground water. The result of the monitoring was that no water was encountered within the test pipe holes.

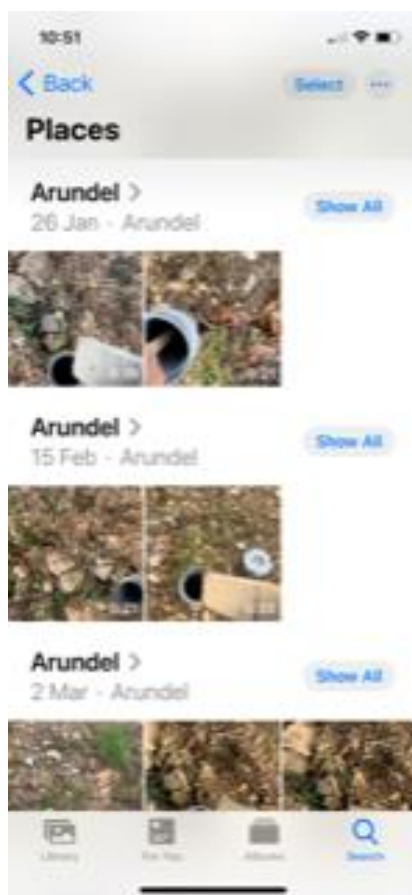
Surface Water Drainage Proposal Checklist

Ground Investigation Results				
Results Required		Results Provided?		
Winter groundwater monitoring results (Please refer to guidance note 1 below)		Yes	☒	No
Period of winter groundwater monitoring Note 1		From	28/11/2019	
		To	11/04/2020	
Maximum recorded groundwater level		None Encountered mAOD None Encountered mBGL		
Winter infiltration test results Note 2		Yes	☒	No
Date of winter infiltration testing		28-11-2019 Start 19-12-2019 27-12-2019 08-01-2020 26-01-2020 15-02-2020 02-03-2020 13-03-2020 11-04-2020 Finish		

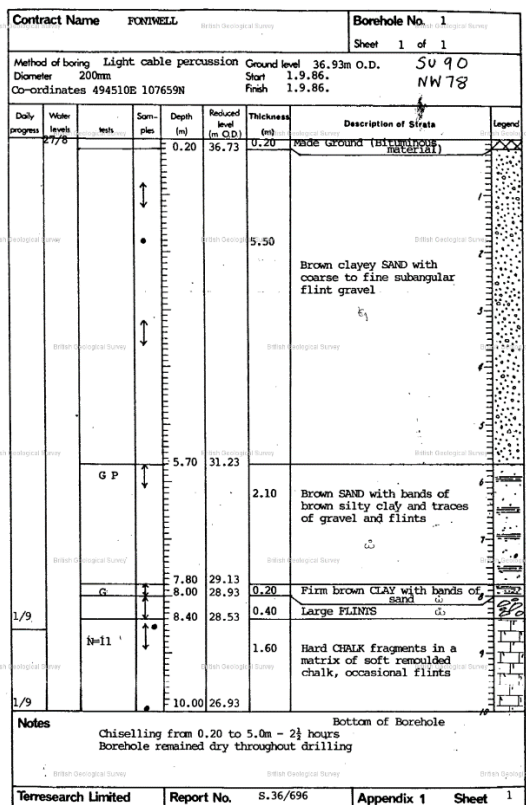
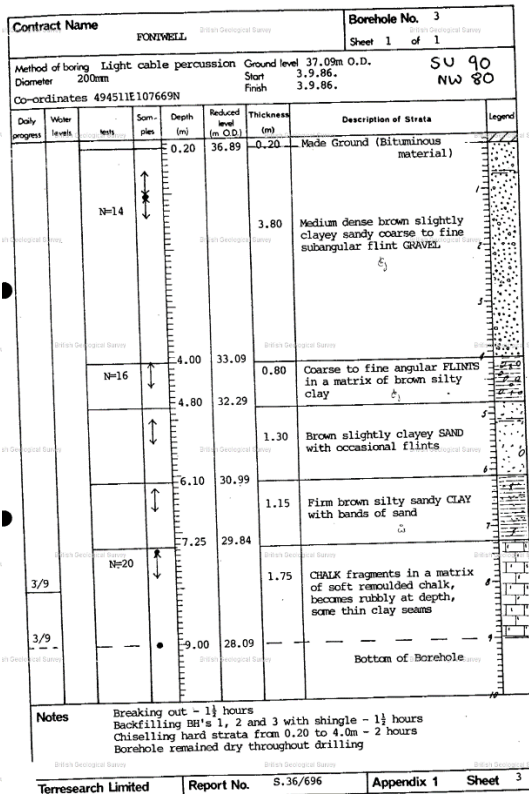
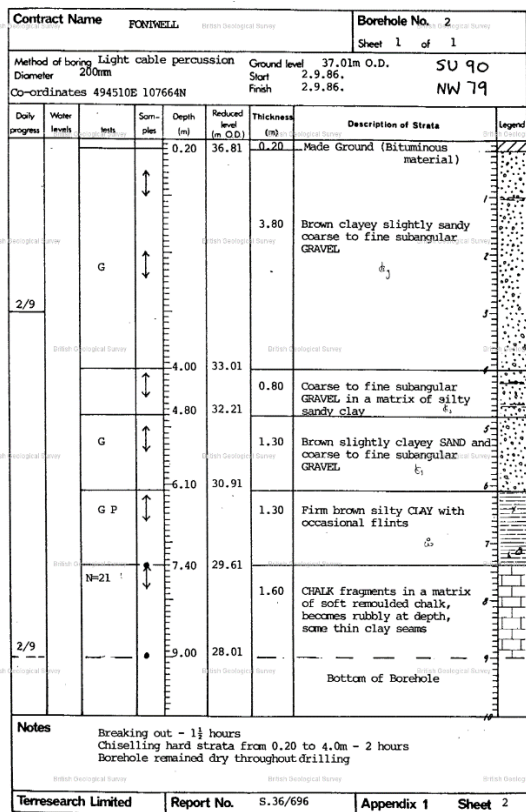


Winter Ground Water Dates and Image of installation of monitoring pipe (1 of 2 pipes installed)
 (See drawing 17-1179-PL 401A for location)

A series of videos and mobile phone images were captured and some are noted below

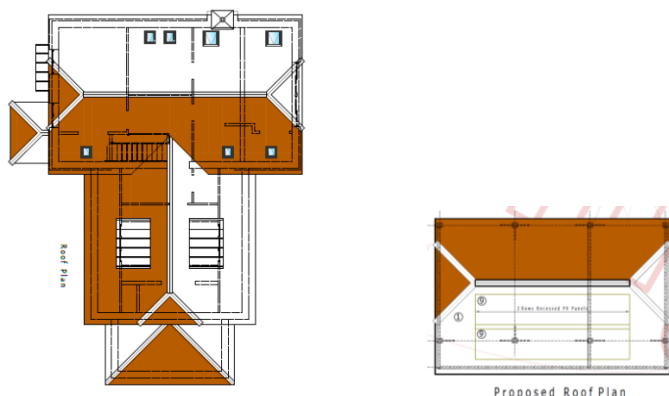


The results are also backed up by historic BGS data logs for the area which note that the boreholes taken in 1986 resulted in a dry borehole to a depth of 9.0m. You can see the AOD depth is relative to the site level (See drawing 17-1197-PL D701) AOD 37.10 at the main access gate location.



Item	Roof Slope Area (m ²)	Urban Creep (10%) (m ²)	Total (m ²)
House	234.5	23.5	258
Garage	88	9	97
Total	322.5	26	355

The above table tabulates the impermeable roof area and includes 10% Urban Creep and the area is the slope area of the roof. The figure of 355m² has been used in the soakaway BRE365 spreadsheet to calculate the soakaway required using Wavin Aquacells (see separate sheet). The Wavin Eco AquaCell has been used due to the remote location at the end of the garden (Refer to manufacturers details).



Proposed Roof Plan for Dwelling and detached Garage

(Refer to application drawings for full details)

It is also proposed to install a GRAF rainwater harvester (or equal approved) to store and reuse some of the rainfall water for garden uses. The final harvester is yet to be confirmed, A provisional size of 3000 Litres has been used based on the data inputted into the Graf online sizing calculator (Roof areas indicated above). Prior to the roof rainwater harvester a manhole with a silt trap is positioned and a second silt trap located at the point of entry into the soakaway. It's position will stop the harvester from becoming silted, thus the overflow from the harvester and the second ensure the life of the soakaway is maximised. This will ensure the minimum amount of silt is deposited into the aquacell soakaway. The volume of the harvester has not been included within the volume of the soakaway, thus allowing for a degree of attenuation. This also assists in reducing the amount of surface water discharging back to the soil and assists in reducing the amount of potable water used by each occupant.

The drive is to be of a migratory gravel (thus a permeable surface), therefore no allowance for this has been included in the soakaway design. Any paths will discharge into the surrounding soil, as will the deck to the rear of the dwelling.

On the 14th January 2022 a full BRE DG365 test was undertaken by Your Environment Ref YEX3290 and a copy is included within the application to discharge condition 3.

The worst case soil infiltration rate was 9.6×10^{-5} m/s, and applying a FOS of 2 provides a design rate of 4.8×10^{-5} m/s, which is used in conjunction with a 10% urban growth, a 1:100 year events and a 40% climate change and a rainfall ratio (r) of 0.35.

The climate change 40% basically increases the r ratio and rainfall amount. The sized soakaway is illustrated on drawings 17-1179-PL D701 with details PL D702.

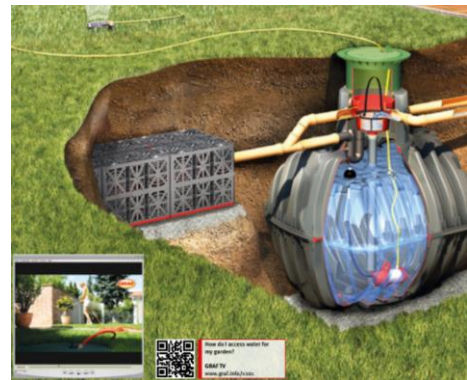
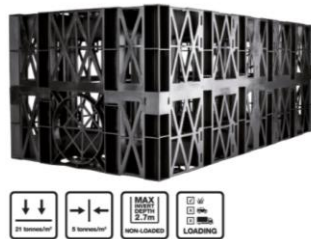
AquaCell Eco

AquaCell Eco is manufactured from specially reformulated, recycled material and has been specifically designed for use in shallow, non-trafficked areas such as domestic gardens and similar landscaped sites. It is not suitable for locations subject to high water tables.

It is suitable for installations to a maximum depth of 2.68m, with a minimum cover depth of 0.3m in best soil conditions.

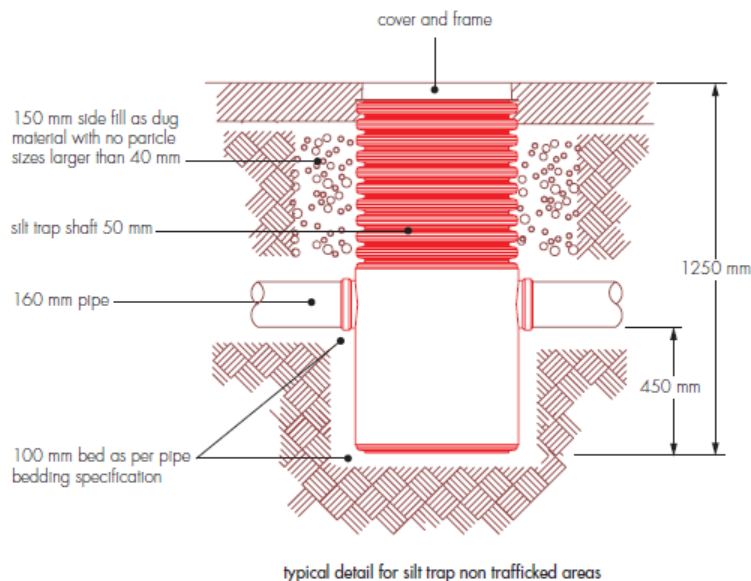
Approved by the British Board of Agrément under Certificate No 03/4018. AquaCell Eco has a proven vertical loading of 21.3 tonnes/m² and a lateral loading of 5.2 tonnes/m².

[Download Eco Product Info PDF](#)



Soakaway Aquacells by Wavin or equivalent

GRAF Rain Harvester tank (3000 litre tank) (or similar available tank)



Silt trap before harvester and soakaway by Wavin or equivalent

(Dimensions may vary depending on levels and manufacturer)



Due to the trees on site a tree impact assessment has been undertaken with trial trenches excavated under the supervision of a qualified arboricultural consultant (Beechdown) to ensure that the drainage trench roots and the soakaway and field drain do not impact on the trees RPA's (Root protection Areas) and that mitigation is in place to protect the trees during the construction phase.

Conclusion

The presented documents (*this statement, "Your Environment" site infiltrating testing and report, drawings and calculations*) provide evidence that Policy ECC SP1(g) of Section 13 Design of the Adopted Arun Local Plan 2011 – 2031 (July 2018) has been fully considered and complied with, to ensure that surface water is safely dealt with and will not cause issues for adjoining properties and provides for future climate change and additional growth at the property, along with a SuDs sustainable reuse of some of the rainfall water from the buildings roof elements.