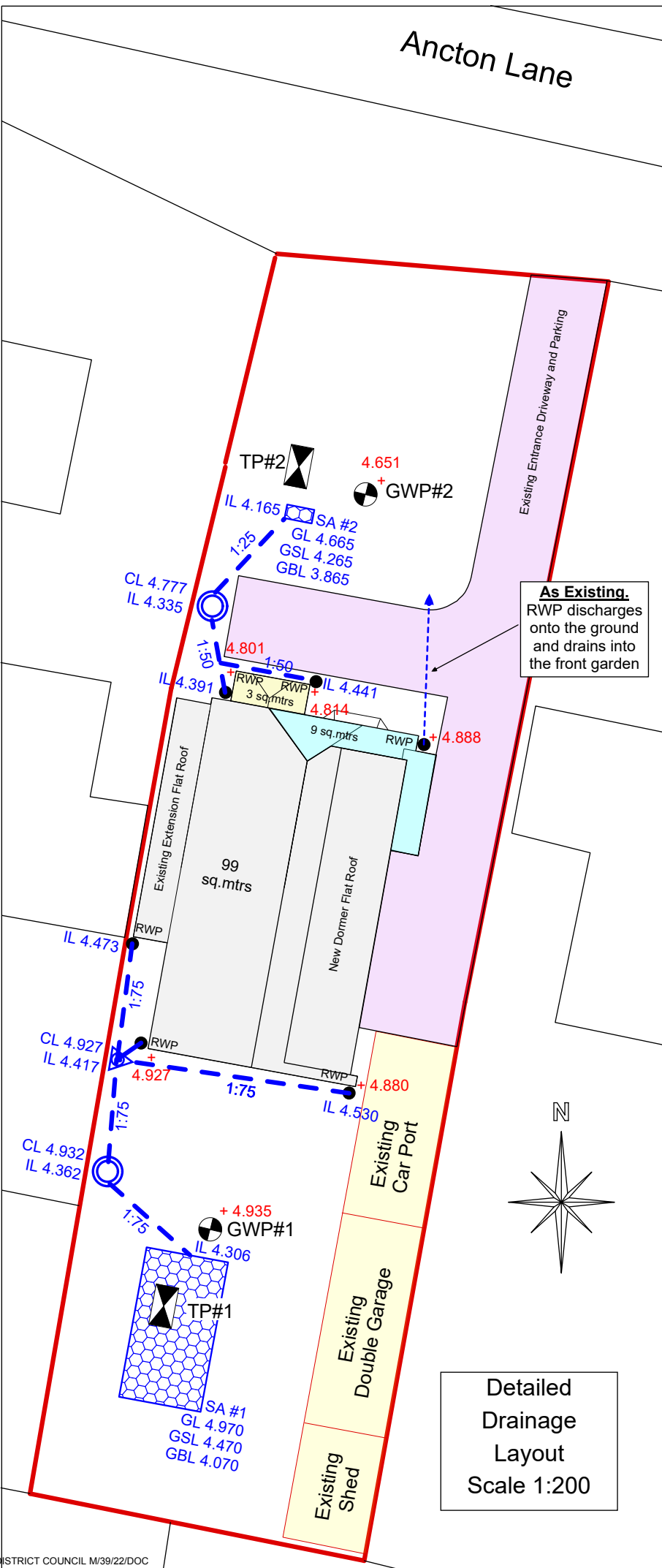


Ancton Lane



Detailed
Drainage
Layout
Scale 1:200

Surface Water Drainage Design Notes

As detailed from the British Geological Survey, the Superficial Geological ground conditions here indicates River Terrace Deposits (undifferentiated) of sand, silt and clay over Bedrock of the Lewes Nodular Chalk Formation usw. The bedrock was not encountered in either the Groundwater Monitoring BoreHoles or the Percolation Test Trial Pits.

In early February 2022 a BoreHole was augered, at the approximate position of the proposed rear soakaway, to a depth of 2020mm below ground level (BGL), at 2.915 AOD, and groundwater was encountered at 1650mm BGL, rising to 1450mm BGL, within approximately 30 minutes. Groundwater was monitored 8 times from early February 2022 to end February 2022. During the monitoring period, the highest level of groundwater of 1148mm BGL at 3.787 AOD was recorded on 16th February 2022, and the second highest level of groundwater of 1208mm BGL at 3.727 AOD was recorded on 21st February 2022. A second groundwater monitoring BoreHole was augered at he same time, at the approximate position of the proposed front soakaway, to a depth of 1935mm BGL, at 2.716 AOD, level and groundwater was not encountered. During the monitoring period, the highest level of groundwater of 1311mm BGL at 3.340 AOD was recorded on 16th February 2022, and the second highest level of groundwater of 1430mm BGL at 3.221 AOD was recorded on 21st February 2022. At other sites monitored the peak groundwater levels occurred around early January 2022 so it is to be expected that groundwater levels, here, at this time, would have been higher than the maximum recorded. This informs the use of infiltration to a typical depth of 900mm BGL whilst still maintaining some freeboard.

A BRE365 a trial pit of size 1020mm long by 370mm wide and to a depth of 810mm was excavated at the approximate location of the proposed rear soakaway and a BRE365 a trial pit of size 1010mm long by 340mm wide and to a depth of 825mm was excavated at the approximate location of the proposed front soakaway.

The drainage design is based on percolation tests carried out in mid February 2021 to BRE365 principles within these two trial pits. The Soil Infiltration Rates obtained are detailed in the table below. Testing produced a range of Infiltration Rates, and a minimum soil infiltration rate of 1.211 E-05 metres / second was obtained in rear trial pit TP#1. Whilst a minimum soil infiltration rate of 9.375 E-06 metres / second was obtained in front trial pit TP#2. A Factor of Safety of 2 has been applied to each rate in the design, where the consequence of failure is "no damage / minor inconvenience".

As a result of investigations, it transpires that the front bay window just drains onto the small flower bed – this remains as existing. The front barn end plus the front half of the east pitched roof, of a combined roof area of 20 square metres, discharges onto the driveway where it runs off into the front garden. The design takes just over half of this area into the proposed rear soakaway leaving only the barn end and a small area of roof discharging as before. The rear half of the east pitched roof, of area 12 square metres, discharges onto the rear section of the driveway where it runs into a small gully – (investigations show this gully is piped northwards down the driveway to an unknown soakage point) – the design takes all this roof area to the proposed rear soakaway. The rear barn end discharges onto the existing rear flat roofed extension, where it in turn, discharges onto the west side long narrow extension. In addition the west side pitched roof also discharges onto this same long extension. This total combined roof area of 61 square metres then is guttered to drain into the foul drain, which in turn discharge into the Public Foul Water Sewer – the design removes all of this roof water, from the foul, to drain into the proposed rear soakaway. The small rear corner conservatory drains to the rear garden into an unknown structure – this is to be abandoned. The actual increase of impermeable roof area, for the proposed planning application, is very small, however it is very difficult to split out the changes to roof structures and this majority of the existing roof area which drains into the foul system ideally has to be removed. The proposed front porch, of roof area of 3 square metres, only will drain into a small soakaway in the front garden. The design achieves all of the requirements, with betterment to all the existing roof areas, such that the property now achieves current drainage standards and requirements. The existing double garage is of prefabricated construction sitting on a 100mm thick base slab in turn supported on 150mm thick concrete blocks along its perimeter – this has minimal foundations.

Two 400mm deep, rectangular geocellular soakaways have been designed. One in the rear garden, 5.50 metres long x 3.00 metres wide, with a cover of 500mm, which will be suitable to drain all of the proposed changed roof areas, totalling a combined full Roof Area of 99 square metres. A small soakaway, in front garden, has been designed, 1.00 metre long x 0.50 metres wide, with a cover of 400mm, to drain the proposed front porch of 3 square metres, both without flooding above ground level on a 1 in 100 year rainfall return event plus 40% climate change addition.

Both soakaways should be sited a minimum of 5 metres from any habitable building to avoid any saturation of the ground and settlement affecting the building structure. Best Practice has also been applied to maintain 2½ metres distancing to any boundary.

KEY

-  GWP Groundwater Monitoring Test Point.
-  TP Soil Infiltration Testing BRE365 Trial Pit.
-  Proposed 250mm diameter surface water inspection chamber. Osma shallow IC or similar approved. Cover & Frame loading class A15 to BS EN 124
-  Proposed silt trap inspection chamber. Polypipe Ridgiform Basic or similar approved. Minimum Sump Depth to be 435mm Cover & Frame loading class A15 to BS EN 124
-  Proposed surface water drainage. 100mm diameter PVC pipe. Minimum fall of 1:100 Or as detailed on the layout.
-  Proposed Geocellular Soakaway. S/A #1 (rear) to be 5m50 x 3m00 x 400mm deep. Having a footprint area of 16½ square metres. S/A #2 (front) to be 1m00 x 0m50 x 400mm deep. Having a footprint area of ½ square metre. PolyStorm-R PSM1A GeoCells each of 1000mm x 500mm x 400mm or similar approved.
- GL #### Ground level at detailed items
- CL #### Cover level of surface water chambers
- IL #### Invert level of surface water drains
- GSL #### Soffit (top) level of Geocell infiltration structure
- GBL #### Base level of Geocell infiltration structure
- + 5.999 All levels are to AOD unless otherwise stated

NOTE

This drawing had been produced for discharge of planning conditions only. All levels and details to be checked for Building Regulations approval and construction purposes.

Winter Soil Infiltration Testing Results

TP#1 BRE365 Trial Pit
1020mm long x 370mm wide x 810mm deep

February 23rd 2022 -- 2.649 E-05 m/s
February 23rd 2022 -- 1.211 E-05 m/s
February 24th 2022 -- 1.271 E-05 m/s

The Minimum Rate used in the calculations from the three tests within the Trial Pit TP#1 was 1.211 E-05 metres / second. Test #2 was started within 30 minutes of completion test #1.
A Factor of Safety of 2.0 was used in the calculations for the design.

TP#2 BRE365 Trial Pit
1010mm long x 340mm wide x 825mm deep

February 24th 2022 -- 2.202 E-05 m/s
February 24th 2022 -- 9.375 E-06 m/s
February 25th 2022 -- 1.188 E-05 m/s

The Minimum Rate used in the calculations from the three tests within the Trial Pit TP#2 was 9.375 E-06 metres / second. Test #2 was started within 60 minutes of completion test #1.
A Factor of Safety of 2.0 was used in the calculations for the design.

Mate GeoTechnic Services

02	Final	RC	02-04-22
01	Original	RC	05-03-22
Rev.	Description	Drn.	Date

Project
**Proposed :-
Two Storey Rear Extension
and Other Works.
"Briarfield" Ancton Lane
Middleton-on-Sea
PO22 6NL**

Client
**Mr David Cook &
Ms Charlotte Carter**
Drawing
Title
Surface Water Drainage

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Scale
As Shown
Drawing
Original
A3

Drawing
Number
MGS -- M/141/21 -- rev02