




From: Paul Cann
Sent: 05 June 2017 11:18
To: 'John Whittle'

Subject: RE: Proposed Development at East St/Fitzalan Rd, Littlehampton: Planning Ref. LU/127/17/DOC

John

Please could you provide a copy of the Peter Brett Associates assessment that you refer to. Subject to reviewing this document, I would like to confirm the following;

1. Can you advise the depth to the chalk to the west of the proposed new building. Both TP2 and TP3 did not achieve sufficient depth, to identify the depth of the chalk. If chalk is present at an acceptable depth then this will provide an opportunity for further percolation testing. The tests will need to sufficiently penetrate the chalk layer to make the best of any infiltration potential.
2. It is noted that TP1 and TP4 both penetrated the chalk, but are located beneath the proposed building. TP1, in which the test was carried out, only penetrated 200mm into the chalk. Despite this a reasonable infiltration rate was achieved (be it outside the winter period). TP4 penetrated 400mm into the chalk but no testing was carried out. Further trial holes/percolation testing can be carried out in areas that soakaways could be installed (ensuring 5m from buildings, outside of root protection areas, etc) ie. to the east and south of the new building.
3. Our normal requirements are for percolation tests to be carried out in the winter months. As previously suggested, I would recommend that the tests are carried out asap, in order to confirm whether infiltration is viable or not. If poor results are achieved now, then they will be worse in the winter.
4. It is important that these tests sufficiently penetrate the chalk layer, but being mindful of potential groundwater levels. These trial holes/tests will need to be carried out at agreed locations/depths and witnessed by ourselves.

If infiltration, proves not to be feasible, then the only other option is to discharge to the public combined sewer in Fitzalan Road/East Street. This will require agreement with Southern Water and you will need to submit a fully detailed drainage scheme/calculations and confirmation from Southern Water of an acceptable discharge rate. This option is the least favourable, in terms of national guidance and the known flooding issues downstream.

Every effort should be made to fully investigate infiltration in order to satisfy our requirements, before other methods of disposal are considered.

Regards

Paul Cann
Senior Engineer (Drainage & Coastal)

Paul Cann | Senior Engineer (Drainage & Coastal), Engineering Services, Arun District Council | Location: Second Floor, Arun Civic Centre, Maltravers Road, Littlehampton, BN17 5LF
Internal: 37819 | External: +44 (0) 1903 737819 | Fax: +44 (0) 1903 716019 | E-mail: Paul.Cann@arun.gov.uk
Arun is Working in Partnership with Chichester District Council
Visit Arun's web site at <http://www.arun.gov.uk/> and www.chichester.gov.uk



Save the environment - think before you print.

From: John Whittle [REDACTED]
Sent: 23 May 2017 14:14
To: Paul Cann
[REDACTED]

Subject: Proposed Development at East St/Fitzalan Rd, Littlehampton: Planning Ref. LU/127/17/DOC

FAO Paul Cann - Senior Engineer (Drainage & Coastal) Arun District Council

cc Anita Gardner – Principal Planner, Arun District Council
Paul Cleare – Churchill Retirement Living
Ben Hatt – Planning Issues
Mark Hobbs – ABMH

Our Ref. JHW/jw/CCL02814.028

Dear Mr Paul Cann,

Proposed Development at East St/Fitzalan Rd, Littlehampton
Planning Ref. LU/127/17/DOC
Planning Application Ref. LU/173/16/PL

We have recently received a copy of your e-mail dated 16 May 2017, as issued to Anita Gardner – Principal Planner, Arun District Council (included below) and note that you have raised some issues relating to our Geotechnical Assessment Report No. CCL02814.CD70, dated May 2017. We clarify these matters below.

1. Background Information

Prior to the above report, we prepared a Desk Study Appraisal Report (January 2016) and a Ground Investigation Report (March 2017). Both of these reports considered SuDs drainage solutions, with specific reference to soakaway drainage. Both reports concluded that very low to low permeability strata (as defined in CIRIA C750:2016) were evident at the site.

It is acknowledged that the National Planning Policy Framework (NPPF) and Building Regulations Approved Document H:2015 recommends that priority be given to the use of SuDs drainage solutions and that infiltration/soakaway drainage is preferred, where reasonably practicable. Where infiltration is precluded by low permeability ground conditions, a SuDs-compliant drainage solution is provided by attenuation storage and a restricted discharge. This approach to the drainage assessment and design was set out in the Drainage Impact Assessment by Peter Brett Associates (PBA) dated 17 June 2016. A subsequent e-mail issued by Tom Callaway (Drainage) Arun District Council dated 1 September 2016 and issued to the local planning authority confirmed a number of requirements required for the design of soakage structures and appended a copy of the Council's standard advice: Supplementary Requirements for Surface Water Drainage Proposals.

We understand that the assessment by Peter Brett Associates is compliant with the above. It is noted that this approach has now been implemented, as outlined below.

2. Ground Conditions and SuDs

With reference to both our Ground Investigation Report and Geotechnical Assessment Report, it is noted that the ground conditions across the site comprise Brickearths (clay) underlain by River Terrace Deposits (predominantly clays). It is acknowledged that the River Terrace Deposits include some sands. However, these sand horizons are observed to be thin, discontinuous and include significant clays/fines that significantly reduce permeability/infiltration. Hence, the superficial deposits are shown to be of very low to low permeability strata. This is confirmed by the low infiltration value recorded by the in situ test (trial pit TP2). We note that it is accepted that the superficial deposits are of very low to low permeability strata, such that soakaway drainage is impracticable in these strata.

Below the superficial deposits, highly weathered chalk strata are present. The depth to the chalk strata varies widely across the site, from 1.8 m to depths in excess of 5 m. Such variations occur over short distances, and it is evident that chalk is present at shallow depth only in very restricted areas (which are located below the proposed building).

At 4 of the 6 locations where chalk has been recorded, the chalk comprises clayey Grade Dm strata, water infiltration along fissures/joints is precluded in such structureless chalk. As outlined in CIRIA C574:2002, permeability values in such material is generally less than 1×10^{-7} m/s, and soakaway drainage is impracticable in such strata.

It is noted that Grade Dc chalk has been observed at (only) 2 isolated locations within the site, and which included the infiltration test in trial pit TP1, where an infiltration rate of 3×10^{-6} m/s is recorded. Unfortunately, both of these locations are below the area of the proposed building, such that soakaway drainage is precluded at these positions.

Even if the development were to be reconfigured, it is noted that the areas of the site are very small where more permeable Grade Dc chalk has been identified, such that it is impracticable to provide the required size of soakaway drainage systems within such strata.

Groundwater observations to date indicate groundwater to be located at approximately 4 m below the site. The presence of the overlying clays has the result that a groundwater depth of approximately 4 m provides a significant

constraint on infiltration drainage solutions (with or without an allowance of potential winter groundwater fluctuation). Again, it is apparent that a practicable soakaway solution is not provided.

In view of the observed site conditions, as outlined above, it is evident that very low to low permeability strata characterise the ground conditions below the site, such that the use of infiltration drainage systems/soakaways is effectively precluded.

3. Planning Requirement – Condition 4

It is noted that Condition 4 requires surface water drainage design to follow the hierarchy of preference for water disposal systems, as outlined in the Building Regulations Approved Document H etc. As set out above, we believe that this procedure has been followed.

Condition 4 also states a requirement for the monitoring of highest/winter groundwater levels and percolation testing to BRE 365 or similar approved. However, it is stated that these requirements relate to the *design of infiltration drainage systems*. As such infiltration drainage systems are not practicable and are not included in the proposed design, it is apparent that these requirements are not applicable to the drainage design as now prepared (with attenuation etc).

We trust that the above details clarify the matters raised such that the proposed water drainage scheme may now be accepted.

Yours sincerely

John H Whittle BSc MSc FGS MICE CEng SILC

Crossfield
CONSULTING
GEOTECHNICAL ENVIRONMENTAL
The Granary, White Hall Farm
Long Itchington, Warwickshire, CV47 9PU

www.crossfield-consulting.co.uk

Registered Office: The Granary, White Hall Farm, Long Itchington, Warwickshire, CV47 9PU. Registered in England: 3320421

DISCLAIMER: This email and any attachments may contain private and confidential information and should only be read by the named recipient(s). If this email has been incorrectly directed, please notify the sender and then delete this email and any attachments. If you are not the intended recipient, you must not copy, print, disclose or distribute this email, nor may you rely upon its contents.

This email and any attachments are believed to be free of viruses. However, it is the responsibility of the recipient to ensure that they are virus free.

From: Paul Cann
Sent: 16 May 2017 14:17
To: Anita Gardner
Subject: RE: LU/127/17/DOC - Discharge of drainage conditions

Hi Anita

I am not familiar with past discussions regarding this development, that Tom may have had with yourself or the applicant, however, I can see from the correspondence below that Tom was requesting percolation test data.

From reading their geotechnical report, it appears that they have undertaken two percolation tests, one in TP1 and one TP2. It is noted that these have not been undertaken in the winter period and have only had one test done in each trial hole (as opposed to three in each). The results in TP1 are ok, whilst those in TP2 are not. The better result was achieved in the trial hole that penetrated the chalk layer (as you would expect).

At this stage, and with the information provided, it is not possible to dismiss the use of soakaways, and therefore I would suggest that more investigations are carried out with the excavation of further trial holes (at the location of potential soakaways and sufficiently penetrating the chalk layer), and further percolation tests undertaken, in the winter period.

Since winter is a long way off, they may wish to undertake these works now so we can get more idea of what test results to expect, bearing in mind they are likely to be worst in the winter. Although, this should not be treated as a replacement for winter testing. If they proceed with this idea, then they are advised to discuss this further with us, in order to agree the proposed trial hole locations/depths.

Once completed, we can then have more discussions with regards to the potential use of soakaways.

High groundwater is not thought to be an issue in this location, so should not affect any agreed soakaway design.

Regards

Paul Cann
Senior Engineer (Drainage & Coastal)