

From: Amanda Scholes on behalf of Planning.Responses
Sent: 15 December 2021 07:50
To: Planning Scanning
Subject: FW: Littlehampton academy - DRAINAGE STRATEGY - REF: LU/116/21/PL
Attachments: LP2688 Elmgrove Drainage Update.pdf

AMANDA SCHOLES
PLANNING RECEPTIONIST



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From: Anita Gardner
Sent: 14 December 2021 12:00
To: Planning.Responses <Planning.Responses@arun.gov.uk>
Subject: FW: Littlehampton academy - DRAINAGE STRATEGY - REF: LU/116/21/PL

Anita Gardner
Principal Planner



Arun District Council, Civic Centre, Maltravers Rd, Littlehampton, West Sussex, BN17 5LF
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From: Oliver Woolf
Sent: 10 December 2021 15:38
To: Anita Gardner
Cc: Bryony Stala
Subject: RE: Littlehampton academy - DRAINAGE STRATEGY - REF: LU/116/21/PL

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Dear Anita,

Further to my email below we have received some initial feedback on Paul's comments from our ground engineering consultant who has provided the belowground evidence submitted on the application. We find it strange that Paul sets out that the drainage design should not be informed by existing data gathered by the Environment Agency and to disregard the guidance, as set out in the attached letter from LEAP dated 24 November 2021. I feel it is important to point out that should the base of any soakaway be extended to the top of the existing groundwater, any resilience within the drainage system would be removed. This is especially important in the context of the NPPF and the requirement to adapt to the anticipated impacts of climate change, which for a coastal town a rise in groundwater level could reasonably be anticipated.

I feel like we are at a point where further monitoring to satisfy Paul could be conditioned.

Best regards,

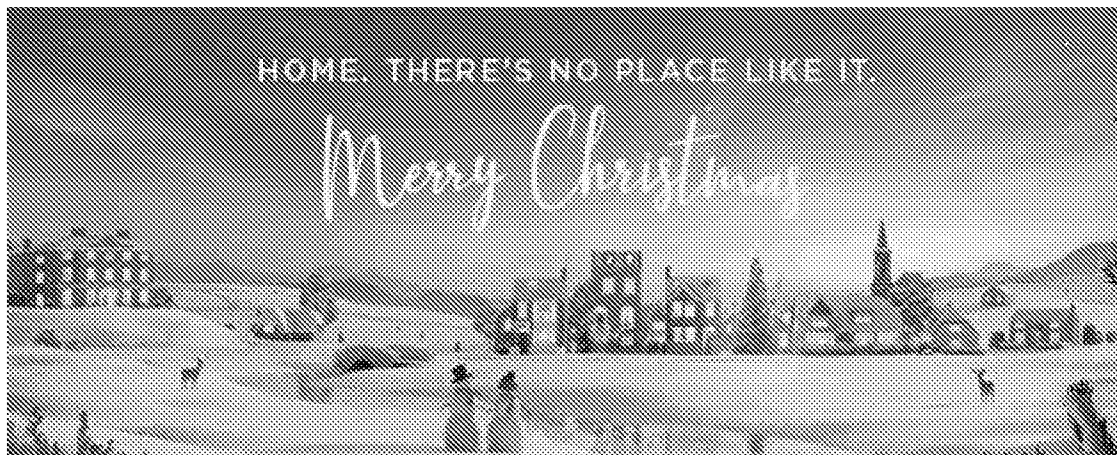
Oliver

Oliver Woolf MRTPI
Senior Planner
Planning

Savills, Mountbatten House, 1 Grosvenor Square, Southampton SO15 2BZ



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From: Oliver Woolf

Sent: 10 December 2021 09:53

To: Anita Gardner [REDACTED]

Cc: Bryony Stala [REDACTED]

Subject: RE: Littlehampton academy - DRAINAGE STRATEGY - REF: LU/116/21/PL

Dear Anita,

Thank you for the email and for sending Paul's latest comments over. We shall review.

We really appreciate your efforts in pushing Paul for a meeting date and hope that you can keep pressing him for one.

Best regards,

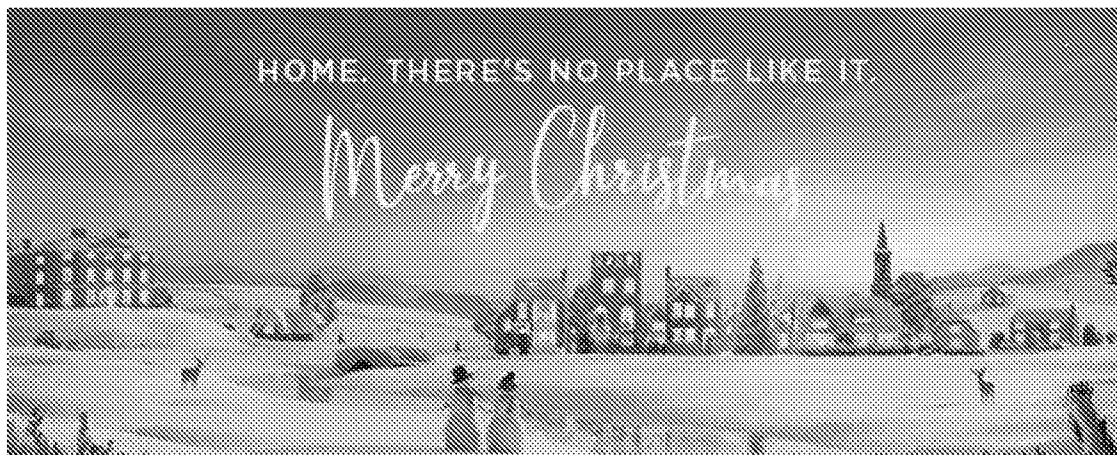
Oliver

Oliver Woolf MRTPI
Senior Planner

savills



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From: Anita Gardner [REDACTED]
Sent: 10 December 2021 09:46
To: Oliver Wool [REDACTED]
Subject: FW: Littlehampton academy - DRAINAGE STRATEGY - REF: LU/116/21/PL

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Dear Oliver,
Please see the latest comments from the Engineering Services Manager below. Please can you share these details with your client who was seeking an update yesterday.
I don't have any provisional dates for a meeting yet.
Regards
Anita

Anita Gardner
Principal Planner



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From: Roger Spencer [REDACTED]
Sent: 08 December 2021 20:03
To: Anita Gardner [REDACTED]
Cc: Paul Cann [REDACTED] Tim Hickling [REDACTED]
Subject: RE: Littlehampton academy - DRAINAGE STRATEGY - REF: LU/116/21/PL

Dear Anita,

Paul has managed to look at the latest info and his comments are as follows.

1. He believes the existing monitoring (late Dec 20 to Mid Feb 21) needs to be extended to cover entire site at required depth and whole winter period;
2. The drainage design should be informed by, and based upon, onsite monitoring; the Environment Agency data should not therefore be relied upon.
3. 1m freeboard in C753 is guidance only. We have our own published guidance which requires base of soakaways not to be lower than the peak GWL recorded at that location
4. Subject to further GW monitoring and infiltration testing (say Jan/Feb) at agreed depths, there is possible scope to infiltrate into the upper layers of the chalk but this can only be confirmed by further investigation. With the data to hand, this is feasible at borehole locations 3, 7 and 8.
5. It is clear that additional boreholes are required to capture the GW levels across the entire site.

The Applicant cites the permission granted by Southern Water to discharge to the combined public sewer – Southern Water says there is currently adequate capacity in the local combined sewerage network to accommodate a surface water flow of 4 l/s at manhole reference TQ03024502. The letter of 22 March 2021 goes on to say that:

“Although capacity in the surface water network has been identified, in all situations where surface water is being considered for discharge to our network, we require the below hierarchy for surface water to be followed which is reflected in part H3 of the Building Regulations....

Moreover, the consultation response from WSCC, as the LLFA, said:

“Further information is required to show that the drainage hierarchy has been fully followed. In January 2021 Paul Cann, the District Council’s Principle Drainage Engineer, requested full winter groundwater monitoring to take place between October and March...

We are therefore, seeking groundwater / infiltration monitoring, so that a number of relevant bodies can be satisfied that infiltration has been fully explored.

Regards,

Roger Spencer
Engineering Services Manager, Place



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From: Anita Gardner [REDACTED]
Sent: 03 December 2021 17:00
To: Roger Spencer <[REDACTED]>
Subject: FW: Littlehampton academy - DRAINAGE STRATEGY - REF: LU/116/21/PL

Here is the letter

Anita Gardner
Principal Planner



Arun District Council, Civic Centre, Maltravers Rd, Littlehampton, West Sussex, BN17 5LF
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From: Oliver Woolf [REDACTED]
Sent: 05 November 2021 18:28
To: Anita Gardner [REDACTED]
Cc: Bryony Stala [REDACTED]
Subject: RE: Littlehampton academy - DRAINAGE STRATEGY - REF: LU/116/21/PL

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Dear Anita,

Thank you for the response and confirmation, which is really helpful. We look forward to Paul's comments and your view of the application in light of them before any decision is issued.

If Paul continues to object, I hope that you are able to give due consideration in the planning balance to the benefits of the scheme and the site layout, which was the result of great thought and care in considering how to respond to the surrounding context of the site to deliver high quality design and landscaping that would genuinely enhance the character of the area through provision of a sustainable new community. I also hope that you recognise that as much as possible has been done with drainage design given the complicated geology underneath the site. The site is not at risk of flooding and Southern Water have confirmed capacity to accommodate discharge from the proposed development as per the attached letter. The drainage design has followed the hierarchy of drainage within that letter and other guidance but unfortunately, as there are no watercourses or storm sewers serving the site, the drainage design has had to make use of the combined sewer to the south of the site. I believe this letter was submitted as part of the drainage information that supports the application and wanted to make sure you have it to hand.

I believe it would be a missed opportunity should the proposal reach a decision for refusal. Any future scheme may not be able to deliver the same benefits and could be at risk of appearing out of character and contrived in the local area, which is close to the town centre and characterised by tightly knit development.

Please be aware that our client has contacted Karl Roberts in respect of the application who may request to discuss it. I also note more positive letters of support have been uploaded on the application webpage.

Following Paul's comments, should you still be minded to refuse the application please let us know before a decision is issued so that we might seek certainty on the reasons for refusal and have the opportunity to withdraw the application.

Thank you,

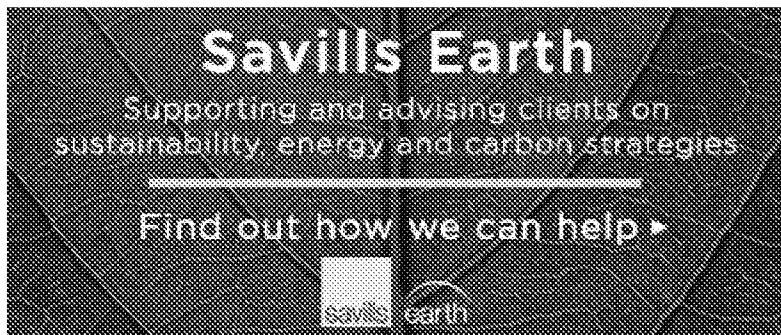
Oliver

Oliver Woolf MRTPI
Senior Planner
Planning

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From: Anita Gardner [REDACTED]
Sent: 04 November 2021 14:20
To: Oliver Woolf [REDACTED]
Subject: RE: Littlehampton academy - DRAINAGE STRATEGY - REF: LU/116/21/PL

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Dear Oliver,
Hope you are well too. I acknowledge receipt of the attached letter and I have forwarded it on to Paul Cann. I will come back to you when he has responded.
Regards
Anita

Anita Gardner
Principal Planner



[REDACTED]
Arun District Council, Civic Centre, Maltravers Rd, Littlehampton, West Sussex, BN17 5LF
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From: Oliver Woolf [REDACTED]
Sent: 04 November 2021 13:25
To: Anita Gardner [REDACTED]
Cc: Juan Baeza [REDACTED] Bryony Stala [REDACTED] Paul Cann [REDACTED]
Subject: RE: Littlehampton academy - DRAINAGE STRATEGY - REF: LU/116/21/PL

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Dear Anita,

I hope you are well today. Further to discussions with our client and the project team, please find attached a letter that responds to Paul's comments and presents a solution that we believe would address the requirements of further monitoring on the site.

Please consider this information and respond to us on its contents prior to any decision being issued so that we might make a decision as to how to proceed.

Thank you,

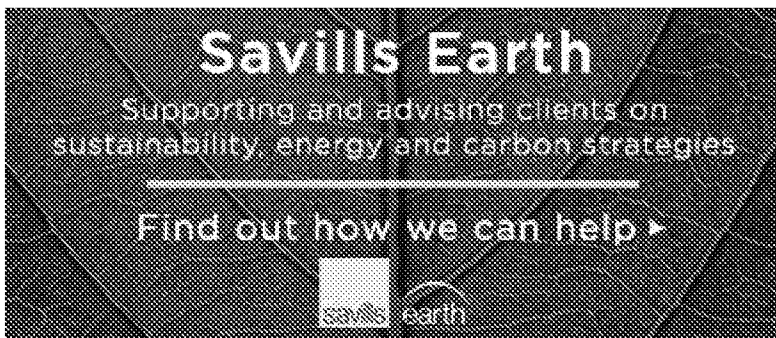
Oliver

Oliver Woolf MRTPI
Senior Planner
Planning

Savills, Mounthatten House, 1 Grosvenor Square, Southampton SO15 2BZ



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From: Anita Gardner [redacted]
Sent: 01 November 2021 10:56
To: Oliver Woolf [redacted]
Cc: Juan Baeza <[redacted]>
Subject: RE: Littlehampton academy - DRAINAGE STRATEGY - REF: LU/116/21/PL

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Dear Oliver,

From our Engineer's response it is clear that the layout can't be agreed at this stage.

He states that "in terms of the way forward, and now knowing that the chalk may provide an infiltration solution and suggests that further infiltration testing/groundwater monitoring is undertaken this winter, so that a robust design can be drawn up. This will dictate as to whether the proposed development layout can suitably accommodate a satisfactory drainage scheme. For this reason, it is not possible to condition the planning application to cover the drainage scheme at this time, as there are too many unknowns. Certainly the very detailed design can be conditioned but that is further down the line.

Further groundwater monitoring should take place between October and March – I suggest we agree the borehole locations ie. in addition to the ones you already have, so we can get a full understanding of groundwater across the entire site.

Further infiltration testing into the chalk as discussed below will need to be undertaken in say January, at agreed locations and depths."

The application cannot remain live whilst the necessary monitoring is undertaken. I therefore request that the current application is withdrawn and re-submitted after March next year when the drainage groundwater monitoring results can hopefully demonstrate the proposed layout is acceptable.

Unfortunately, If the application is not withdrawn by the end of this week it will proceed to refusal by 12-11-2021.

Regards

Anita

Anita Gardner
Principal Planner



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From: Oliver Woolf [REDACTED]
Sent: 29 October 2021 09:29
To: Anita Gardner [REDACTED]
Cc: Bryony Stala [REDACTED]
Subject: RE: Littlehampton academy - DRAINAGE STRATEGY - REF: LU/116/21/PL

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Hi Anita,

I hope you are well. I was on leave earlier in the week when the exchanges between Paul and Lydia took place, but am now up to speed on this matter. For your information there is a meeting arranged at the beginning of next week between the client's drainage consultant and ground investigation team to consider Paul's emails in detail. However, I was wondering whether we might be able to catch up on this matter in the context of the overall planning application? It would be great to have a quick discussion.

Thank you,

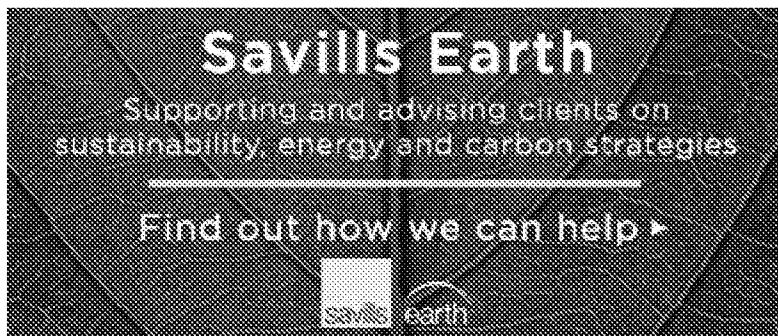
Oliver

Oliver Woolf MRTPI
Senior Planner
Planning

Savills, Mounthatten House, 1 Grosvenor Square, Southampton SO15 2BZ



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From: Paul Cann <[REDACTED]>
Sent: 27 October 2021 14:52
To: Whitaker, Lydia <[REDACTED]>
Cc: Anita Gardner <[REDACTED]> Oliver Woolf <[REDACTED]> Clare Richards <[REDACTED]>
[REDACTED] Nicholls, Alexander <[REDACTED]>
Subject: RE: Littlehampton academy - DRAINAGE STRATEGY - REF: LU/116/21/PL

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Hi Lydia

In respect to my item 8, my comment is based upon page 8 of the LEAP report dated 20th Sept 2021, however, specific advice should be sought from your geotechnical engineer.

In terms of the way forward, and now knowing that the chalk may provide an infiltration solution, I would suggest that further infiltration testing/groundwater monitoring is undertaken this winter, so that a robust design can be drawn up. **This will dictate as to whether the proposed development layout can suitably accommodate a satisfactory drainage scheme.** For this reason, it is not possible to condition the planning application to cover the drainage scheme at this time, as there are too many unknowns. Certainly the very detailed design can be conditioned but that is further down the line.

Further groundwater monitoring should take place between October and March – I suggest we agree the borehole locations ie. in addition to the ones you already have, so we can get a full understanding of groundwater across the entire site.

Further infiltration testing into the chalk as discussed below will need to be undertaken in say January, at agreed locations and depths.

At present, I don't see a need for a meeting unless any of the above is unclear.

Regards

Paul Cann
Principal Drainage Engineer
Engineering Services



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From: Whitaker, Lydia [REDACTED]
Sent: 25 October 2021 16:48
To: Paul Cann [REDACTED]
Cc: Anita Gardner [REDACTED] Oliver Woolf [REDACTED] Clare Richards
[REDACTED] Nicholls, Alexander [REDACTED]
Subject: RE: Littlehampton academy - DRAINAGE STRATEGY - REF: LU/116/21/PL

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Hi Paul,

Thanks for your comments – we have now had time to go through them in greater detail.

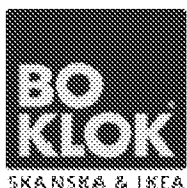
There seem to be a few areas where our consultants' advice and your advice differ, for example, the distance we can install infiltration structures from buildings – we have been advised 10m, but your comments below suggest 5m.

I am by no means a technical expert so would be really grateful of a meeting with you, AKSWard, LEAP and BoKlok to get some clarification on these points, agree the parameters in which we are working and how we take this forward. Would you be able to provide some dates when you have availability? As you would expect, we are very keen to come up with a solution as quickly as possible.

Anita / Oliver – would it be useful for you to attend the meeting as well (assuming Paul is happy to have one)?

Best regards,

Lydia Whitaker
Senior Planning Manager



BoKlok UK

From: Paul Cann [REDACTED]
Sent: 22 October 2021 16:04
To: Whitaker, Lydia [REDACTED]
Cc: Anita Gardner [REDACTED]; Oliver Wool [REDACTED] Clare Richards
[REDACTED] Nicholls, Alexander [REDACTED]
Subject: RE: Littlehampton academy - DRAINAGE STRATEGY - REF: LU/116/21/PL

Hi Lydia

I have now reviewed all the information, my comments are below;

1. I have summarised my thoughts on the test results, in the table below;

Test Pit	Depth (m)	Geology at depth	Infiltration Rate (m/s)	Comments
DTP1	4.0	Clayey sand	7.97×10^{-6}	Infiltration reasonable. Explore infiltration into chalk. Water table 5.83m bgl in this area.
DTP2	4.0	Chalk	1.11×10^{-6}	Infiltration poor. Explore to greater depth in chalk. Water table 5.83m bgl in this area.
DTP3	4.0	Gravelly sand	1.01×10^{-6}	Infiltration poor. Explore infiltration into chalk. Water table 5.83m bgl in this area.
DTP4	4.0	Stiff silty clay	2.45×10^{-7}	Infiltration very poor but not surprising when testing in 'stiff' material. Explore infiltration into chalk. Water table 5.83m bgl in this area.
DTP5	4.0	Very stiff gravelly clay	1.78×10^{-7}	Infiltration very poor but not surprising when testing in 'very stiff' material. Explore infiltration into chalk. Water table level to be determined to ensure testing above.
DTP6	4.0	Clayey sand	1.7×10^{-6}	Infiltration poor. Explore infiltration into chalk. Water table level to be determined to ensure testing above.
DTP7	2.8	Sandy clay	No Test	-
DTP7A	4.0	Silty sand	1.44×10^{-6}	Infiltration poor. Explore infiltration into chalk (above water table). Water table 4.76m bgl in this area.
DTP8	4.0	Silty sand	1.17×10^{-4}	Infiltration very good but also explore infiltration into chalk in case this is an anomaly in the sandy soil.
DTP9	4.0	Silty sand	1.41×10^{-6}	Infiltration poor. Explore infiltration into chalk. Water table level to be determined to ensure testing above.
DTP10	4.0	Chalk	7.24×10^{-6}	Infiltration reasonable.
DTP11	4.0	Chalk	8.91×10^{-5}	Infiltration good.
DTP12	1.4	Firm silty clay	No test	-
DTP12A	4.1	Clayey sand	1.11×10^{-6}	Infiltration poor. Explore infiltration into chalk. Water table level to be determined to ensure testing above.

TP301	1.0	Made ground	No test	Explore infiltration into chalk. Water table level to be determined to ensure testing above.
TP302	1.6	Firm sandy clay	3.69×10^{-7}	Infiltration very poor but not surprising when testing in 'firm' material. See comments for DTP1.
TP303	0.5	Made ground	No test	See comments for DTP2.
TP304	1.7	Clayey sand	1.09×10^{-6}	Infiltration poor. Explore infiltration into chalk. Water table level to be determined to ensure testing above.
TP305	1.5	Dense clayey gravelly sand	1.03×10^{-6}	Infiltration poor but not surprising when testing in 'dense' material. See comments on DTP5 and DTP6.
TP306	1.7	Firm sandy clay	3.85×10^{-6}	Infiltration poor. Explore infiltration into chalk. See comments on DTP7A.
TP307	1.6	Sand	1.03×10^{-6}	Infiltration poor. Explore infiltration into chalk. Water table level to be determined to ensure testing above.
TP308	1.6	Clayey sand	1.14×10^{-6}	Infiltration poor. See DTP10.
TP309	1.6	Sand & sandy clay	7.38×10^{-5}	Infiltration good but also explore infiltration into chalk in case this is an anomaly in the sandy soil.

2. As recognised, infiltration rates will be worse in winter and as previously stated, winter testing will be required to confirm. Infiltration testing to be carried out at the location of any proposed infiltration structures at a suitable/agreed depth. A full understanding of water table levels is required across the entire site and the testing depths informed accordingly.
3. The worst infiltration rates in each pit/hole to be used for design.
4. I note from the report that solution features are not seen as an issue.
5. No comments from the Environment Agency have been provided at this time.
6. Further groundwater monitoring/additional boreholes is/are required as previously advised to cover the winter period and ensure that the entire site area is explored/understood.
7. All structures should not incorporate impermeable liners as all infiltration must be utilised, no matter how minimal.
8. All infiltration structures except permeable paving to be kept 5m from buildings. Any diffuser units associated with permeable paving also to be kept 5m from buildings.
9. Southern Water will require all infiltration structures a specified distance from any existing/adoptable sewers. They may also resist permeable paving over such sewers, whether they have impermeable liners or not.
10. Open suds features are encouraged.

The recent testing has provided very limited insight into the infiltration potential of the chalk across the entire site and has only really looked at the chalk infiltration potential in a portion of the site, on the northern boundary. Whilst the sandy soils have some infiltration potential in places, the scheme is going to rely on connectivity with the chalk, whilst utilising all other potential infiltration no matter how minimal.

In summary, I am not currently convinced that a total infiltration system is not possible (ie. no need to connect any flows to the combined sewer), however, this is dependent on further infiltration testing into the chalk/groundwater monitoring/etc.

The proposed development layout may also be influenced by further infiltration testing results in order to make full use of the areas with better infiltration. It should be recognised that the development layout must not prejudice an acceptable drainage solution.

I hope this all makes sense.

Regards

Paul Cann
Principal Drainage Engineer
Engineering Services



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From: Whitaker, Lydia [REDACTED]
Sent: 12 October 2021 14:00
To: Paul Cann [REDACTED]
Cc: Anita Gardner <[REDACTED]>, Oliver Woolf <[REDACTED]>, Clare Richards <[REDACTED]>, Nicholls, Alexander <[REDACTED]>
Subject: RE: Littlehampton academy - DRAINAGE STRATEGY - REF: LU/116/21/PL

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Hi Paul,

I hope you had a good break.

Further to our email exchange below I attach the following documents in relation to application reference LU/116/21/PL:

- Drainage Strategy Addendum (LTH-AKS-XX-XX-RP-C-00004_P01) – this sets out the changes we have made to the drainage design and our rationale for making these changes.
- Supporting Drawings / Results:
 - Draft Drainage Layout Sheet 01 – LLA-AKSW-XX-XX-DR-C-9201-P06
 - Draft Drainage Layout Sheet 02 – LLA-AKSW-XX-XX-DR-C9202-P06
 - Trench Soakaways to Parking Plots 104_112 – Results
 - Trench Soakaways to Parking Plots 95_103 – Results
 - Trench Soakaways to Rear Gardens – Results
- LEAP's infiltration report (LP2688 Elmgrove Drainage Report) – this has already been provided to you but I have attached to this email for ease of reference.

We look forward to your review and comments. As you know we are keen to resolve this matter as soon as possible so if there is anything I can do support the process, such as setting up a meeting between you and our drainage engineer Clare Richards to run through the plans, please let me know.

Best regards,

Lydia Whitaker

BoKlok UK

From: Paul Cann [REDACTED]
Sent: 01 October 2021 14:52
To: Whitaker, Lydia [REDACTED]
Subject: Littlehampton academy

Hi Lydia

I have just heard your voicemail, as I have been on site all day and still am on site. Unfortunately, I will not be able to look at it until some time after I return from leave. At the moment I can't say when exactly that will be as I have a backlog of other work.

Regards

Paul Cann
Principal Drainage Engineer

<http://www.arun.gov.uk>

DX 57406 Littlehampton

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Alex Nicholls

BoKlok Housing Ltd
Maple Cross House Denham Way,
Maple Cross,
Rickmansworth,
WD3 9SW
United Kingdom



24th November 2021

Our ref. RB/21/LP2688

Re: LP2688 Elmgrove Road, Littlehampton - Additional Infiltration Information

Dear Alex,

1 Introduction

Further to recent meetings with the project team and subsequent correspondence from the Local Authority (LA), it has become apparent that the information provided by LEAP to date in respect of infiltration drainage at the above site may not have been fully or correctly assimilated and might benefit from some further explanation.

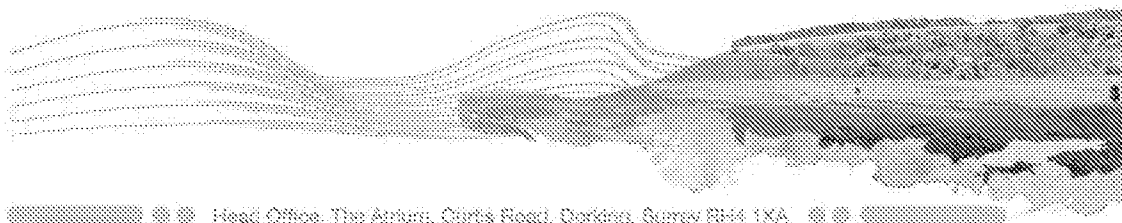
LEAP has consistently reported that the geological and hydrogeological conditions at the site are complex and that overall the site is not generally suited to widespread conventional soakaway drainage. That said, we fully understand and support the planning hierarchy to employ sustainable drainage systems wherever possible. To that end, LEAP has recently been involved in the publication of new guidance to support the testing regimes for soakaways.

With that in mind, we have summarised, and depicted, herein what the current soil and groundwater conditions are with a view to further explaining the limitations of the geological conditions at the site and our reservations regarding soakaway drainage at the site.

2 Site Conditions and Constraints

Ground conditions have been found to be variable across the site but broadly corresponding to a sequence of made ground over superficial sandy gravelly Clays over weak weathered Chalk. Locally, notably in the east of the site, interbedded lenses of loose gravelly Sands were encountered overlying the Chalk. Infiltration rates in the loose sands (e.g. DTP7A and 8) were, not surprisingly, much higher than in the clays but with some significant variations (two orders of magnitude) even between tests at the same location which may be reflective of the limited lateral extent of these sandy lenses. Similarly, the tests which penetrated the top of the chalk (e.g. DTP2, 10 and 11) were also very variable (one order of magnitude).

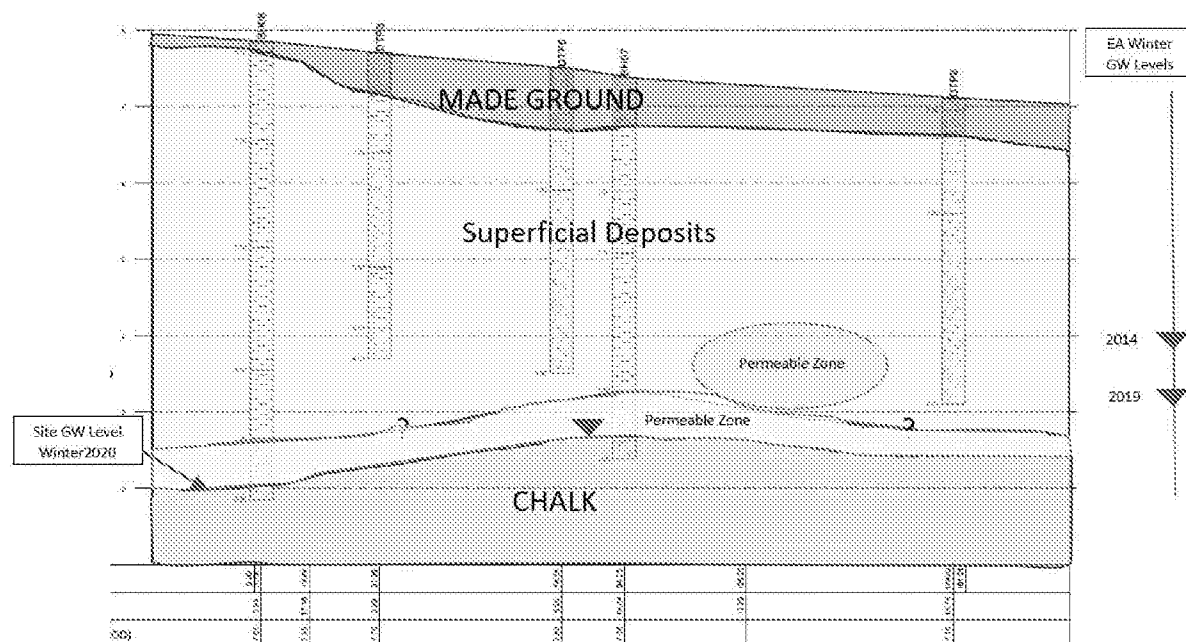
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Further winter monitoring is currently underway, but groundwater levels to date have been identified at depths of around 4.3 to 5.8m below ground level (~2 to 2.7mAOD) in the deeper wells. Long term monitoring from nearby EA records indicates that, since 2015, winter levels rise to around 3.5m AOD in the local area and in the very wet winter of 2014 rose as high as 4m AOD.

Overall, even when taking a positive and proactive approach to implementing sustainable drainage, this gives a severely constrained picture for the site, as evidenced by the following indicative section, taken West to East through the centre of the site and showing the extents of exploitable permeable soils from an infiltration point of view. Current measured groundwater and historic peak groundwater from EA records are also shown. It should be noted that the vertical scale on the drawing has had to be exaggerated (by a factor of around 10) to make the relevant information visible:



3 Pragmatic Approach to Design

It can be seen from the above that the soils that could currently be exploited are very limited in extent and if historic groundwater levels are replicated may be almost fully saturated which would contravene the LA requirement of keeping discharges above the highest recorded groundwater level and in the worst case could result in flooding. Furthermore, it is noted that CIRIA C753 states that “the base of the proposed infiltration component should be at least 1m above the maximum anticipated groundwater level (taking in to account any seasonal variations in levels and any underlying trends)”. Compliance with that requirement would essentially negate any of the currently identified permeable soils from being exploited for soakaway drainage.

4 Conclusions and Recommendations

LEAP has consistently cautioned about the limitations of soakaway drainage for this site due to the natural geological and hydrogeological conditions. Given the variable permeability of the chalk and the potential for it to be fully saturated during high groundwater conditions, it is not recommended as a suitable discharge medium for soakaway drainage and further testing is not considered to be appropriate. The limited lateral extent of the permeable sands should also be taken into account in design.

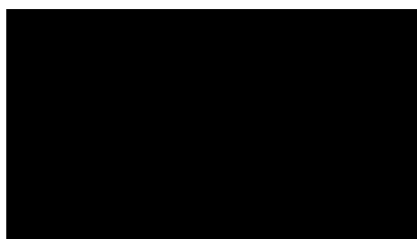
Soil strength testing has indicated that whilst chalk solution features are not considered to be prevalent across the site and hence a 20m buffer between soakaways and structures is not required. However, locally loose soils pervade – notably in the east - and pockets of deep made ground are also present (presumed to be the result of relict foundations). As such, it has been recommended that settlement should be anticipated and that soakaways should be kept at least 10m remote from structures. This has been corroborated by the settlement that has already occurred at the soakage test locations.

Soakage into any made ground should be completely avoided. Regulatory consent will be required for any soakaway drainage scheme, noting in particular the potential lack of unsaturated zone beneath the lowest discharge level.

Finally, it should be noted that all tests to date have been undertaken in summer, following a generally dry period, and whilst the tests have been set to sit above the previous winter high groundwater level, it should be assumed that winter infiltration rates could be lower and / or storage further limited by higher groundwater conditions.

Please do not hesitate to contact the undersigned if you require any further information.

Yours faithfully,



Richard Brinkworth

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Leap Environmental Ltd has used all reasonable skill, care and diligence in the design and execution of this report, taking into account the manpower and resources devoted to it in agreement with the Client. Although every reasonable effort has been made to obtain all relevant information, all potential contamination, environmental constraints or liabilities associated with the site may not necessarily have been revealed.

This report is generally consistent with the Eurocode requirements for a Ground Investigation Report, noting the limitations on brief to provision of pile design information only. However, the laboratory testing has been carried out on samples which do not comply with the Eurocode classifications as identified in tables 2 and 3 of EN ISO

22475-1. This report should not be deemed as a Geotechnical Design Report, and where any calculations have been made, these are not Eurocode compliant and are for indicative purposes only.

The conclusions reached in this report are necessarily restricted to those which can be determined from the information consulted, and may be subject to amendment in the light of additional information becoming available. These conclusions may not be appropriate for alternative schemes.

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