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114290

Orchard Gate, Dibden Purlieu

Response to Thomas Callaway (HCC, LLFA) Proof of Evidence

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Content

Response to Thomas Callaway (HCC, LLFA) Proof of Evidence:

1 Introduction

1.1 Please refer to my 'Proof of Evidence, relating to Matters of Drainage', for details of my experience as well as my involvement with the client (AJC Developments LTD) and the development overall.

1.2 This report will provide a response to key points raised by Thomas Callaway BSc (Hons), Hampshire County Council (Lead Local Flood Authority) within his Proof of Evidence.

2 Comments and Response

2.1 Item 3.1 to 3.6 relating to the Initial Surface Water Drainage Proposals: This section covers the requirement for further infiltration testing (To BRE Digest 365) and ground water monitoring, both to be carried out during the winter period. This was undertaken and led directly to the redesign proposing the contested drainage strategy.

2.2 Item 4.2: *'Further infiltration testing had been undertaken, with suitable rates for infiltration found in some parts of the site but not others. A strategy relying on soakaways had been drawn up and subsequently discounted as the emptying time was not quick enough during the design storm events. The proposal for two large soakaways may have contributed to the poor results, where more numerous smaller soakaways with a better surface area to volume ratio may have shown improved results. Groundwater levels were not confirmed however, so any infiltration or partial infiltration strategy would require further evidence prior to planning approval'.*

Response: A detailed assessment of the viability of an infiltration only solution has been undertaken and is shown in 'Section 6' of my Proof of Evidence. This exercise concluded that *'an infiltration only solution has been demonstrated to be unviable for the development, even when designing to optimum parameters and standards. This is due to the low infiltration rates being achieved by the proposed infiltration tanks and the lack of any infiltration at shallower depths negating the use of permeable paving as an infiltration method'.*

We would dispute the assessment that any of the infiltration rates recorded during the wintertime testing could be described as suitable, with the best result being 3.3x10-6 m/s, recorded at a depth of 1.7m. This is very low for an infiltration rate and reflects the high clay content present in the soils. Shallow infiltration testing carried out to assess the performance of permeable paving systems at a depth of 0.7m, failed to produce any usable infiltration rates.

2.3 Item 5.3: *'The foul sewer is specifically referred to in The SuDS Manual as an option that should not be considered for surface water drainage. Planning Practice Guidance refers only to a combined sewer rather than a foul sewer [CD 9-12].'*

Response: Once a surface water connection is made into a public foul water sewer it becomes a public combined sewer. This is not an uncommon practice and is subject to approval by the governing water authority. It is first necessary to follow the steps laid out in the SuDS hierarchy before pursuing this option, available capacity will also be a factor. Had an existing surface water connection to the public foul water sewer already existed from the site, then it would be a simple matter to reuse that connection, even though the public foul sewer is currently at capacity, allowing for an appropriate betterment on the existing off-site flow rates. This was mentioned within the correspondence received from Southern Water. The Water authority do have a responsibility to provide drainage infrastructure for new developments and will explore a surface water connection into a public foul water sewer if no other alternatives are available.

2.4 Item 5.4: *'The Building Regulations do not specifically refer to a type of sewer in the hierarchy but do refer to combined (rather than foul) sewers in Approved Document H, and separate surface water and foul drainage systems being preferred more generally. The drainage proposals for the site do rely on separated systems, it is the discharge location for both systems that is the same [CD 9-14].'*

Response: Whenever a combined discharge connection is to be made, both the foul and surface water drainage networks are to be kept separate until the final point of connection. The networks should then combine within the site via a common chamber before discharging to the public combined sewer via a common lateral connection. This methodology has been used for the proposed development.

2.5 Item 5.5: *'The LLFA considered that the later infiltration test results should allow for infiltration drainage on the site, even if the whole site could not be drained by infiltration. This may allow for a reduced loading on the foul sewer if a connection was still required to drain the remainder of the site. Further information on peak groundwater levels would be required to support this strategy.'*

Response: As noted in Section 2.2 an infiltration only solution has been assessed and shown to be unviable. A partial infiltration system could be utilised making use of the low infiltration rates available however it will not eliminate the need for a positive connection elsewhere, in this case a connection into the Public Foul Water Sewer. Should partial infiltration be implemented it will not help reduce the surface water flow rate discharging to the Public Foul Water Sewer, as flows are being controlled by a surface water Pump Station (due to the shallow depth of the public sewer). The total volume of surface water leaving site would be marginally affected however with the rate of infiltration being so low compared to the pump rate the gain would be limited.

The proposed pump rate has been set to 2.0 l/s, which is considered the lowest flow rate practically achievable using a surface water pump station. Therefore, even with a small allowance for infiltration, the off-site flow rate will not be affected as it is already set as low as it can be. It is also noted that installing any attenuation tanks as hybrid infiltration tanks will allow for silt migration into the tanks from the underlying soils, causing future maintenance and performance risks which could also elevate flood risk. This risk would need to be assessed against any practical gain in the total volume of surface water leaving site.

2.6 Item 5.7: *'Correspondence relating to a Highways issue (Bellamy Roberts, ITR/557/sk, 4/8/23) was provided to the LPA and uploaded to the website on 7/8/23. This document included a drawing titled 'Access' (5577/002 A) showing the site boundary and highway boundary in relation to access details. The topographic survey can be seen on this drawing and shows a ditch feature within the eastern boundary of the site extending to the existing footway in the highway (Appendix A). Evidence of this ditch has also been found on a HCC highway adoption plan (Appendix B) – note that this ditch is not an adopted highway feature. '*

Response: This ditch was identified on the topographical survey for the site and appears to serve no practical part of the existing surface water drainage system serving the development. The ditch follows an existing line tree line running partially along the site boundary. No inlet or outlet connection have been identified that would suggest the ditch forms part of a larger drainage system. The base of the ditch sits around 400mm below the adjacent on-site levels with a side slope around 1:3.

This ditch would appear to be more consistent with a topographical feature rather than a drainage feature, with the ditch serving to channel any surface water falling within its footprint towards the trees planted within the base. It would serve little function to drain the site given the flat levels of the plot overall and the surface ponding reported on-site, highlighted within Section 5.4 of the 'Proof of Evidence Relating to Matters of Drainage. On-site testing has also demonstrated that the upper shallower ground formations have a higher clay content and a lower infiltration rate making surface features such as ditches and swales ineffective for infiltration. The ditch also sits within an extensive catchment of tree protection meaning that little to no modification can be made to it.

An extract of the topographical survey showing the existing ditch in blue and the site boundary in red has been included in Appendix A.

2.7 Item 6.1: *'In summary, partial infiltration (if not full infiltration) may be possible on this site with suitably designed soakaways, subject to peak groundwater levels not rising to within one metre of the base of any proposed infiltration structures.'*

Response: As highlighted in Section 2.2, An infiltration only solution has been assessed and found to be unviable. As noted in Section 2.5 a partial infiltration system could be implemented however it would not reduce the off-site surface water flow rate, only reducing the total volume of surface water discharging to the Public Foul Water Sewer. There would also be a risk of fines migrating from the underlying soils into the hybrid attenuation / infiltration tanks which could impact on performance and elevate flood risk. Ground water was not encountered during the wintertime testing however this was largely due to the clay content within the ground restricting the flow of ground water.

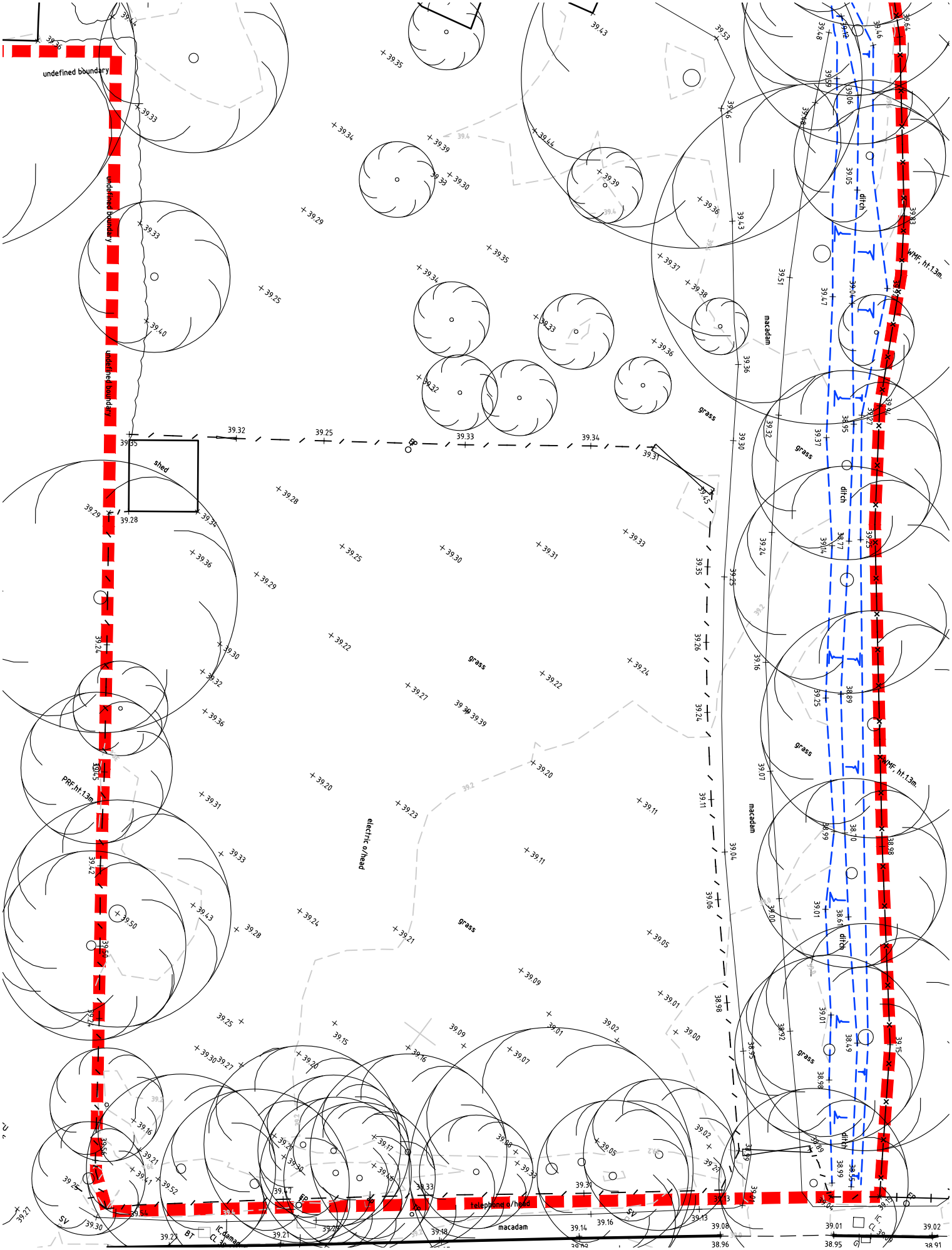
2.8 Item 6.3: *'The whole site could also be drained at rates not exceeding greenfield runoff rates to a watercourse that exists within the site, a strategy that was not considered possible by the applicant in all previous correspondence. The LLFA would accept this as a drainage strategy if it is proposed by the applicant'.*

Response: As noted in Section 2.6, the existing on-site ditch constitutes a topographical feature with no evidence that it forms part of a watercourse or surface water drainage system. Its only purpose appears to be a boundary treatment that also funnels surface water to the treeline running within the base. It is also insufficient in depth to assist with draining the site, as its base sits only 400mm below the adjacent ground levels.

2.9 Item 6.4: *'It is not anticipated that a connection to the foul sewer will be required to drain surface water runoff from the site.'*

Response: I believe it is essential that a new connection is made into the existing public foul water sewer as all other options have been explored following the steps of the SuDS Hierarchy and found to be unviable. This will also be necessary, as demonstrated within this response, should a partial infiltration system be used to make use of the little infiltration achievable on-site as a positive connection will still be required.

A – Topographical Survey Extract, Showing Existing On-site Ditch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