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Geotechnical – Geoenvironmental
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Our ref. G1808/22L24/CPA1
Your ref. 2020/0927/P

24th November 2022

Camden Planning Authority
London Borough of Camden 2nd Floor,
5 Pancras Square
c/o Town Hall, Judd Street
London
WC1H 9JE

Dear Sirs,

Planning Ref. 2020/0927/P - 31 Willoughby Road NW3 1RT

I have been asked to respond to the letter dated 9th September from the Geotechnical Consulting Group (GCG) contained in the supplementary agenda for the 15th September planning committee meeting. Responses are provided with reference to the letter's subheadings.

Flooding Risk

This point was raised previously by GCG and answered briefly in Supplementary Note G1808-SN-01-E1 dated 27th January 2021. It seems more is needed.

Essentially, the GCG comment linking surface water flood risk in Willow Cottages to water penetrating the ground does not account for the conditions affecting the application.

Naturally occurring surface water flood happens quickly after rainfall as water flows over impervious or sparingly absorbent ground to accumulate in an area from which it cannot readily escape. Willow Cottages rear access is a confined area with a concrete paved surface and the probability of the area being affected by surface water flood depends on the adequacy of its drainage system, not on water draining into the ground. Surface water from 31 Willoughby Road will drain. as at present, to the public sewer and will not affect Willow Cottages.

Elsewhere, surface water which does penetrate the ground becomes groundwater. It drains down through unsaturated ground to the water surface at "groundwater level" below which the ground is fully saturated. Unless the ground is a large area of free draining gravel or coarse sand, the drainage is a slow process; much too slow to influence the occurrence of surface water flood due to rainstorms. There are no such large free draining areas of land near Willoughby or Willow Roads. Instead, there is ground of low permeability and there are considerable areas of quite steeply sloping impervious surfaces, which carry rainwater away to lower ground.

In these circumstances, the notion that diminishing the water storage capacity of ground above groundwater level by the volume of the basement will affect surface water flood risk at Willow cottages or elsewhere is wrong.

Groundwater flood only happens when the groundwater level rises above the ground surface. The BIA flood risk assessment concludes that is unlikely to occur naturally in the area relevant to the application. The BIA also shows that installing the proposed basement will cause a maximum local rise in groundwater level of 22mm on the upstream side and that this rapidly diminishes with distance from the basement location. The effect of that on groundwater flood risk will be negligible.

The proposal for 31 Willoughby Road does not increase the risk of flood in Willow Cottages or elsewhere, which complies with the requirement of Camden Planning Policies.

Burland scale and its applicability:-

-to existing brickwork of Willow Cottages

GCG raise doubt by suggesting, in a rather circumspect manner, that if the walls of Willow Cottages were in some way not constructed in accordance with the type of brickwork on which Burland based his research, his method might be inapplicable to the case.

Built in the 1850s of London stock bricks in what seems to have been lime mortar, and as a commercial investment, it is reasonable to suppose that the walls do differ from those on which Burland based his estimate of what may be thought of as a limiting wall flexure. But it has long been observed that lime mortar brickwork can sustain more flexure without visible damage than modern brickwork. That certainly does not preclude use of the method: it simply makes the results more conservative.

Burland recognised this and made clear that it was reasonable to increase the limiting flexure for such construction and still apply the same scale of damage. However, he omitted to point out also that the numerical adjustment would require the same validating research as he had undertaken for modern brickwork and concrete. Consequently, it is normal for the original analytical limits suggested by Burland to be applied to lime mortar brickwork in the knowledge that they are conservative.

-to the structural arrangement of Willow Cottages

Item 3.6 on page 14 of the BIA is devoted to a preliminary assessment of the Willow Cottages structure. Paragraph 48 states “The front and rear walls of the houses are not overly perforate, and they are restrained by the party walls at regular intervals Some distortion has occurred, however, seemingly necessitating the installation of tie bolts, which are evident on the face of some units. One resident’s objection also refers to a surveyor’s opinion that expansion of front and rear walls has caused damage to one of the end houses.” My brief external inspection revealed nothing to prevent normal assessment of damage risk.

The damage risk assessed by the Burland method in the BIA report is Category 0, or negligible. Use of the Cording method in G1808-SN-01-E1 found the same category for the rear wall and a borderline case between Categories 0 and 1 for an internal cross wall. As stated in the above Supplementary Note, the effect of the wall foundation will be to reduce the risk to Category 0.

From this and the previous section, it may be concluded that the application proposal represents a negligible risk of damage for Willow Cottages.

-to the retaining wall

I agree with GCG that the Burland method, and for that matter, the Cording method also, are usually unsuited to estimation of damage risk to retaining walls. However, in this case the lateral ground movement is expected to relieve pressure on the retaining wall whilst an extremely small vertical and longitudinal distortion affects the wall. In these circumstances it is reasonable to illustrate the risk of damage to the wall that the basement construction represents using one of the above two methods. In this case the Cording method gave the more onerous result and showed the risk of damage to be Category 0.

Heritage aspect of wall

I cannot comment on the officer's report but on a previous matter some years ago, I was given to understand by lawyers that attempting to impose a zero damage condition introduces significant legal complexity and may not be possible. Certainly, there has been no attempt to impose such a condition on planning consents affecting listed neighbouring property with which I have been concerned elsewhere in Hampstead.

However, the assessed Category 0 risk of damage to the listed building and wall appears to nullify the issue in this case.

Propping of wall

There is no intention or need to prop the brick stem of the retaining wall due to an inherent risk of instability. More particularly, there is no intention to prop the wall, as GCG states, from within the Willow Cottages rear access.

It follows that the alarming situation described by GCG will not exist.

Further, stability of the boundary wall next to the proposed lightwell is currently significantly enhanced both by the brick storage enclosure built against the wall opposite No.38 Willow Rd and the cross wall in Willow cottages rear passage between Nos. 38 &39.

Hand excavation in No.31 next to the wall will remove all earth forces pressing against it and further improve its overall stability during construction.
The nature and state of the hidden back face of the wall are unknown and provision has been made for temporary bracing of the exposed wall to guard against accidental damage if that is found to be necessary.

During excavation lower than the wall footing, stability of the wall and its supporting ground in the temporary state will be preserved, as is usual in such circumstances, by trench sheeting inserted into ground and below the excavation depth at the back of the wall footing and braced by a horizontal waling.

On completion of the basement wall, the trench sheeting, the wall footing and its supporting ground will be braced against the basement wall with concrete and the void between the walls will be filled with soil. The presence of the basement will, in the final state, cause calculated earth pressures on the retaining wall adjacent to the light well to be less than they currently are.

Thus, the situation described by GCG will not exist and the completed basement will enhance the stability of the retaining wall next to the lightwell.

Growth Area

It is only opposite 38 Willow Road that the retaining wall will be close to the proposed basement, and there the BIA shows a proposal to pave the gap between the retaining wall and basement lightwell.

I am unable to comment upon use of the land in 31 Willoughby Road next to the non-structural boundary with 33 Willoughby Road, but the retaining wall hazard described by GCG will not exist.

Yours faithfully,

Michael Eldred MSc CEng FIStructE MICE
Eldred Geotechnics Ltd