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Your ref
Our ref G1206/13H16OF1
16th August 2013

Mr Oliver Froment
10 Pilgrims Lane
London NW3 1SL

Dear Mr Froment

Planning Application 2012/5825/P for a Basement Extension of 8 Pilgrims Lane

I refer to your 7th August instruction to make a further review of information related to this application.

The planning application documents were extensively criticised by both Dr Michael De Freitas' and my own reports at the end of 2012. Camden then appointed Card Geotechnics Ltd (CGL) to prepare an independent review of the application; this is referenced CG/08264 and dated 4th March this year. The applicant submitted further information to support the application in July. The CGL review and this additional information are the principal subjects of this letter.

CGL reviewed the application and considered whether or not the scheme complied with the fundamental requirements of relevant Camden Planning Policies. Their independent conclusion agrees with the concerns and criticisms expressed about these basic requirements in my report G1206-RP-01-E1. With regard to land stability, their review concludes that the "information provided **does not** adequately address the potential risk of damage to party wall properties and additional information and analysis is required". In short, the application reviewed failed to comply in so many ways with a fundamental planning requirement that it could not have been granted.

Whilst I agree in general with the CGL table of perceived construction impact on party wall structures, there is a misleading statement in the first item dealing with the western section of the party wall with No.6. Other foundations exposed in this part of the building are 0.4m and 0.5m deep, not 1.0m and 1.2m. Without better information this heightens the chance of damage to the party wall.

The new information, listed according to the Camden references, comprises:

a) 3221855: Engineers' drawing for temporary support of rear column of No 10 Pilgrims Lane;
b) 3221859: FREW software analysis of the 5m deep underpinning at the rear;
c) 3221869: FREW software analysis of the shallow underpinning at the front;
d) 3221877: PLAXIS software report of analysis made of the effect of excavating close to the party wall with No 6 Pilgrims Lane without earth support;
e) 3221879: PDISP software analysis of ground heave within the excavated basement;
f) 3221881: An untitled freehand sketch that I interpret as related to 5221877;
g) 3221889: FREW software analysis of the piled wall close to No 10 Pilgrims Lane.

Item a) shows an idea for temporarily supporting the rear brick column that holds up your flying freehold at No 10 Pilgrims Lane. It does not show how the column is to be permanently resupported. It cannot, because no one has found out what the column stands on. A note on the drawing implies that the work shown can support the column temporarily while someone finds out what to do about supporting it permanently in a way that can be made to satisfy Party Wall Surveyors. DP27 does not seem to be considered.

The scheme shown assumes that steel beams can be inserted on either side of the column and that either bolts can be used to transfer load from the column into the beams or that a hole can be made through the column to allow a beam through to bridge the column load between the main beams. The feasibility of connecting the column to the beam system in either of these ways has not been justified.

The drawing offers no information about what is intended to be done about supporting the front column.

It seems that the drawing has been prepared as an attempt to counter CGL criticism about the absence of information concerning construction method. It fails to do so and leaves the matter of preserving the stability of No 10 Pilgrims Lane unresolved in any way, let alone to the degree required by Camden planning policy.

The illustrations in items b), c) and g) were included in the original application; the new submission provides the input used to create them and numerical results.

Item d) is a report of a load versus deformation finite element analysis of the effect of lowering the ground in the front of the building next to the party wall with 6 Pilgrims Lane without supporting the earth face. It comprises 53 pages of input and illustrations, and concludes with the calculated maximum vertical settlement of the wall.

It is meaningless because it does not show what depth of excavation beside the wall has been modelled and because, as CGL point out, the required depth below the wall footing is not known anyway. The investigations made at the site did not find out for certain how deep the party wall footing is. (The freehand sketch item e) does show an excavated depth of 400mm but there is no way of knowing if that value was used in the analysis.)

The analysis also avoids the question of whether or not the soil below the footing would be strong enough to sustain the forces exerted during excavation. My report considered the ground would not be strong enough for the worst credible conditions suggested by the investigation data.

Item e) is new and responds to a CGL comment about the need for ground heave to be considered. The results show suggested contours of heave resulting from removal of load from the ground by basement excavation and extending below neighbouring properties. The amounts of heave calculated are quite small but if the ground properties used in calculation were changed to those found by case history and suggested by CIRIA C580, the calculated heave would be increased by about 75%.

The following table examines the extent to which this new information ameliorates the risks which made CGL regard the application as inadequate. The items should be read in conjunction with the table in the CGL review that relates to the RKD Consultant information. The review also contains a table relating to the Arup information but, as pointed out in my report, although the application splits engineering responsibility in a confusing way, all matters relating to stability are eventually referred to RKD.

Section	Are the perceived risks suitably ameliorated?
2.2 – A note on heave	No. The heave prediction requires adjustment and has not been accounted for in the overall analyses.
2.3 Design of underpinning and piled walls	No. There are six parts of this section specifically addressed by CGL and the new information does not satisfy any of them. In considering Arup BIA sections 7.4.2 and 7.4.3 CGL point out that Arup rely on RKD to deal with stability. This has not been done. The original application presented diagrams indicating forces to be resisted by temporary supporting structures but gave no indication of how that was to be achieved. The new information fails to consider this in any way. Essentially, the application still proposes making deep excavations next to other property without providing any form of support for the sides.
2.4 Workmanship	No. There is no new information offered.
3.2 Underpinning movements	No. There is no new information offered.
3.3 Piled wall movement	No. There is no new information offered.
4.1 Basement excavation results; 3 points addressed	Reported lateral movements: No. The information requested by CGL has been provided, allowing them to consider the point further. The analyses have not changed since the original application, though, and fail to model the deep underpinning construction in a practical way.
	Plaxis analysis. No. As stated above any such analysis is meaningless until more information is provided about the party wall foundations and the stressed state of the soil following excavation.
	Ground movement contours. No. The new information is not sufficient to give confidence in the RKD predictions.

My conclusion is that the revised application does not allay the concerns expressed independently by the CGL review. It still fails to comply with the stated requirements of Planning Policy DP27 insofar as risk of damage to neighbouring property is concerned. No other legitimate interpretation is possible.

In their necessary generality, DP27 and it CPG4 use the Burland scale to indicate an acceptable probability of damage. My previous report extended to consider potential consequences of failing to comply with DP27 that are relevant to this particular situation. They give an informal insight to level of risk; (risk level being the product of probability of an event and its consequence). I think it is appropriate to draw fresh attention to three of them and to add a fourth.

The first is the sensitivity of the flying freehold of your house, No.10. At present, the scheme designers have no clear idea or plan of how to support the front and

rear columns. When part of a wall foundation settles, the load it previously carried is distributed in to other parts of the wall, reducing the damaging effect. That does not happen if a column settles; significant damage is more likely. Given the lack of information and apparent will to improve matters, the probability of unacceptable settlement, both during construction and after, is high. The consequence in terms of not just cracking but also weather penetration, visible distortion and possible weakening of structural members could be severe.

The second concerns the presence of at least one sewer buried in concrete partly above basement floor level in Mr Owens' house, No 6, and joined to the party wall structure. The basement is used for storage and a children's' play room. Consequences of party wall distortion or damage at this location could be damage to the drain making the basement uninhabitable, requiring opening up and replacement of the sewer, and making extensive structural repair and re-tanking of the basement necessary.

The third relates to your boiler house, which is entered from the car port. No proposals have been made either in the original application or following my first report to provide continuous access to the gas fired boiler plant for maintenance and emergency. This would be difficult during construction of part of the piled wall and possibly during support of the flying freehold. Lack of access at a critical time could result in explosion and structural damage; not a routinely considered source of DP27 risk, but one that is important and could also result in injury.

Fourth is the possibility of structural movement causing the large areas of glass in your house to shatter. This is really an extension of the sensitivity discussed above. It might be that the glazing was bedded to give tolerance for movement but that is not certain. Also, even if tolerance once existed, normal building movement might since have reduced the tolerance to a critical point. The case in Chelsea that you report might have been such an instance, and the potential for shattering glass to cause injury makes the risk severe.

The situations I have described approach the worst credible cases. The reality might be better, but the point is that nobody knows and until those responsible take whatever steps are necessary to reduce the probability of damaging events to an acceptable level, it is the worst case that has to be considered. In each case the consequences extend far beyond the issue of cracked walls.

As a final point, item a) of the new information assumes that the Party Wall etc Act can be used to resolve matters that have not been properly controlled at planning stage. The Act does not have that purpose and cannot be used in default to exert controls relevant to planning legislation. Party wall surveyors do not have the power to make design decisions or to regulate the way work is carried out. They are, however, empowered to prevent work commencing until the designers have produced design drawings calculations and detailed method statements for a solution which can be agreed as acceptable by all parties concerned.

Allowing a situation to proceed as envisaged by item a) rather than defining and controlling the risk at planning stage goes against planning regulations, fails to reassure those whose property is at risk and, at commercial level, is likely to be very expensive for a developer.

Yours sincerely

MICHAEL ELDRED
ELDRED GEOTECHNICS

FIRST STEPS LTD

Mr. O. Froment,
10 Pilgrim's Lane,
Hampstead,
London NW3 1SL

16th August 2013

Dear Mr. Froment,

Planning Application 2012/5825/P for 8 Pilgrim's Lane NW3 1SL

Review of the Independent Assessment of the Application by Card Geotechnics Ltd; March 2013

Summary

1. Card Geotechnics Ltd (CGL) was commissioned by Camden Council to provide a 3rd party independent review of the Application following technical objections from First Steps Ltd and Eldreds.

2. CGL's review highlights that further work is necessary to quantify and avoid unwanted ground movement – a subject of considerable sensitivity to the structure of the suspended flying freehold of No.10 and the large quantity of glass panels in No.10

3. The review is incomplete in as much as it contains no evidence of having considered the documents submitted by First Steps, and hence has not reviewed the technical questions that need to be answered before the proposal can be considered workable.

4. As such the review fails to satisfy the Council's own requirements.

5. The applicant says that more work than usual has been done already – however that is irrelevant – it is the quality of the work that counts and its usefulness in avoiding unwanted consequences from excavation that matters. The independent review shows that more work is required.

6. With regard to ground water levels it should be noted that CPG4 (Section 2.26) clearly explains that water levels measured at one time need not represent those which exist at other times, and so measurements over time may be required. Mr Tulloch has implied to Mr Owen (e-mail 5th July 2013) that CPG4 has been complied with because boreholes have been drilled and water level measurements made over a number of years; Mr Tulloch may not appreciate that it is wrong to interpret the data in this way as satisfying CPG4. The first boreholes were drilled in November 2010 and water levels measured then and those for the second were drilled in February 2012 and water levels measured then, and twice in March and once in April. This sporadic data does not provide the evidence required by CPG4 2.26, especially as these boreholes were commissioned after a period of prolonged dryness and completed in periods without rain. Only measurements of water levels at intervals that are sufficiently short to show how water level responds to rainfall in winter and summer will provide what CPG4 2.26 is asking from sites where groundwater flow can vary considerably, as in sites on slopes such as this one. That data is lacking.

(Summary continued over)

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6. The whole Independent Review exercise raises the fears expressed in other correspondence with Camden that the Procurement of an Independent Review fails to recognise the technical difficulties that have to be addressed, the time it takes to address them and the cost such time requires. Here the procurement policy could very easily work against the very thing the Council is trying to achieve – viz. the

resolution of different expert opinions. The Independent Review was not meant to be a box ticking exercise confirming that subjects that should be considered have been considered, but one that judges whether subjects have been considered adequately and how those subjects in contention can be resolved. **In this case, the review highlights one area where a subject has not been considered adequately and ignores each and every contentious issue based on the facts supplied by the applicant and raised in technical reports.**

7. Given this situation Planning Permission should not be considered until such work as is needed has been done.

Review

1.0 Card Geotechnics Ltd (CGL) has clearly read the Applicant's supporting documents from Arup and RKD Consultants. However I see no evidence of CGL having also read the documents submitted by First Steps. As such the Independent Review required by Camden has not been completed.

1.1 With regard to the report from First Steps of 28th November 2012, the evidence for claiming it has been ignored is as follows.

- There are 15 direct questions on groundwater at this site, itemised and justified in paragraphs 2.2 to 2.20 for which no comment is made in CGL's Review. Did they agree? Disagree or just have no Comment to make – in which case why?

- Mr Tulloch has commented on this with reference to the period over which holes were drilled and the measurements of water level made in them (e-mail to Mr Owens 5 July 2013) but his understanding of the relevance of the data obtained is flawed and potentially misleading. It should be noted that one set of water level data was obtained during a period of extreme dryness and the other data on a day without rain. Mr Tulloch says that CGL have this data but no comment is made on it even though the BIA written by ARUP (14th June 2012) and accompanying the application says (Section: 6.2.4): "*all* (water) *level monitoring data coincide with a very dry period – two dry winters in a row have given rise to generally low groundwater levels. Groundwater levels might be expected to rise in wetter periods.*" No comment is made in CGL's Review. Did they agree? Disagree or just have no Comment to make – in which case why?

- There are 10 direct questions on the character and strength of the ground at this site, itemised and justified in paragraphs 3.3 to 3.12 for which no comment is made in CGL's Review. Did they agree? Disagree or just have no Comment to make – in which case why?

- There are 6 direct questions arising from bringing the details for this site together as to form an overall opinion of how well the ground there is understood and these are explained in paragraphs 4.2 to 4.7 for

which no comment is made in CGL's Review. Did they agree? Disagree or just have no Comment to make – in which case why?

1.2 Were these documents provided? The Panning Officer Mr Tulloch's e-mail to Tim Owens (05 July, 2013 10:11) says they were. If so, where are CGL comments on them?

- If comments were made they have not been passed on and
- if they have not been made there has to be a reason for that and no reason is given.

1.3 As it stands the Independent Review is incomplete because it has ignored your own concerns and those of your technical advisers. This is serious because they were not just opinions but reasoned geotechnical judgements based on the facts presented about the ground in the Application.

Outcomes

2.0 CGL are very clear about their findings from the documents they reviewed; I reproduce their Summary of these conclusions, verbatim, because it is important to appreciate their implications.

2.1 *Summary*

On the basis of the information provided, the risks to the party wall structures have been adequately identified, however there is not sufficient information to make an informed judgement on the adequacy of the analyses undertaken. Further more there are omissions and assumptions within the analysis which will potentially affect the predicted ground movements.

The documents reviewed do not set out construction methodology in sufficient detail to limit the potential for damage to the party wall structures. This includes a review of the Construction Management Plan, which sets out a requirement for monitoring but makes no reference to trigger limits and associated contingency/action plans to control movements and damage during construction.

Our conclusions may be summarised as follows;

Consideration	***Conclusion***
Surface Water Flow and Flooding	*Information provided is appropriate and risks can be adequately controlled*
Subterranean (groundwater) Flow	*Risks have been appropriately considered and can be adequately controlled subject to final design*
Land Stability	*Information provided* ***does not*** *adequately address the potential risk of damage to party wall properties and additional information and analyses is required*

Implications

3.0 CGL says the risks from ground water have been appropriately considered but
- the review supplied by First Steps disagrees and
- gave reasons for disagreeing including
  i) not knowing the ground water level response of this site to rainfall and ii) not knowing the value for key parameters required for calculating flow around the proposed works.
- These reasons have not been considered by CGL.

3.1 Further CGL conclude that the risks from groundwater can be adequately controlled subject to final design – but as the First Steps review points out
- this is not just a subject of final design.
- The way the ground is going to respond during construction is affected by ground water and how well the site is prepared to manage it.

3.2 This latter point is directly relevant to CGL's conclusions on Land Stability where the Independent Review identifies shortcomings exist. There is a considerable range of values to chose from for calculating ground response and these are related to the moisture content of the ground – that is why ground water and its management is so important to this site.

3.3 Land Stability (or how the ground responds) is an area where CGL reports that the information submitted **does not** (their emphasis) adequately address the problem.

3.4 So one of the conclusions of the Independent Review demonstrate that the issues of ground water raised by First Steps and which are germane to ground response do need further attention.

The position for Planning Approval

4.0 The Planning Committee have to appreciate that in much of Camden there is a direct and real link between ground water and land stability because the amount of water in the ground and its pressure affect its mechanical properties. Ground water is not just a question of "flow"; that is not appreciated in the Planning System..

4.1 A proper assessment of ground response requires two things; a competent assessment of groundwater and a well considered system for its control. Both these are not aspects that should be left to Final Design because they are fundamental to ground movement and hence the outcomes of a BIA.

4.2 In other words a BIA as required by Camden cannot be completed until these issues are resolved.

4.3 Mr Tulloch's e-mail (27 march 2013 15:51) should be treated with caution as it gives quite the wrong impression

From: Tulloch Rob
Sent: 27 March 201315:51
To: 'Richard Ball
Subject:8 Pilgrim'Ls ane

Hi Richard,
Thank you for your response. From my understanding you are stating that the proposal is acceptable in Terms of its impact on surface water and ground

waterflow (subject to detailed design), but more work Needs to be done in terms of assessing the proposal's impact in the stability/integrity surrounding buildings."

This e-mail oversimplifies the situation by believing that ground response can be separated from ground water flow and it cannot.

4.4 Finally, the documents recently submitted add nothing to our knowledge of the ground than those submitted originally and from which a string of questions emerge as noted above. Those questions remain unaddressed and unanswered. They question:-

the levels of ground water to be expected – these remain undefined
the strength and stiffness of the ground, and
the flow of water through the site.
and how these influence the answers to the following questions.

1. What stiffness profile will be taken as representative of the ground?
2. What evidence is considered to support that profile?
3. How might that profile change with a change in moisture content arising from the removal of vegetation and the insertion of a drainage blanket?

Conclusion

5.0 The recently submitted data adds nothing towards completing the very basic requirements set by Camden before Planning Permission for such work is given.

5.1 A substantial number of technical questions remain unanswered about the ground that have direct bearing on the design and construction of the works, as described in my report of November 28th 2012.

5.2 Ground water and ground response are inseparable; if one needs attention, as CGL says, so does the other.

5.3 For this reason the proposal remains unacceptable.

Michael de Freitas. DIC. PhD. CGeol
UK Registered Ground Engineering Adviser

References

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