[redacted]

Dear Mr Tulloch,

As per Hanna's email below, please see attached:

- Atelier One letter to Hanna summarising the structural concerns with the proposed development at 7 Branch Hill.
- Detailed geotechnical comments from our geotechnical consultant

The submitted planning proposal has potential to cause significant structural damage to The Priory as the proposal includes excavating a depth of soil of 4.9m below the foundation level of the north-west corner of the property.
Although it is may be possible to carry out the proposed work at 7 Branch Hill with only very slight damage to The Priory, careful consideration of construction methodology, detailed monitoring and a skilled groundworks contractor are required. We have not received sufficient information within the engineering reports received to confirm that this is the case.

We are happy to meet to discuss the structural concerns with the proposed development, and are happy to discuss with a third party engineer if required.

Best regards,

Chris Matthews

Atelier One

Chris Matthews

cid:DD9C2E2E-E88A-4432-B38C-4C48084CD2

3 Charlotte Mews
London W1T 4DZ

d: +44 (0)20 3031 1706
t: +44 (0)20 7323 3350
f: +44 (0)20 7636 3350

email: cm@atelierone.com
web: www.atelierone.com

[redacted]

ATELIER ONE

D
ear Chris

I am putting you directly in touch with the Planning Officer from Camden, Rob Tulloch
who kindly visited our house today to try to get an idea of the effect any movement will have on this house [redacted] if the project goes ahead as submitted by owners of 7 BRANCH HILL, NW3

Please will you send your report on this matter directly to him as per above
Mr Tulloch has indicated that he will take very seriously your opinions, but it is likely he might have to call in a third party structural engineer to adjudicate

Your original report to me is thus very important for him to have on his desk as soon as you are able to email it with any additions you might feel appropriate

very best and thank you

Hanna

--

[redacted]

5 Upper Terrace

Effect of proposed construction of new level of basement at 7 Branch Hill

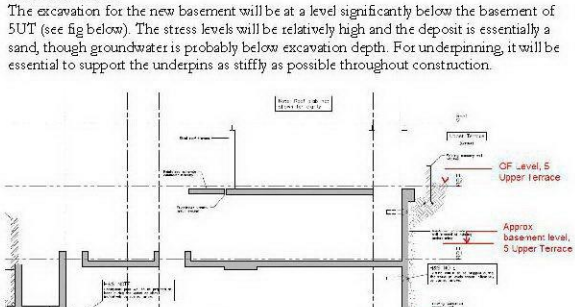
1. General comments

The documents presented suggest that the project has not reached the detailed design stage. Many of the comments below refer to matters which need to be dealt with before construction, but which may not need close attention at the planning stage.

There are a number of unusual aspects of the proposed development which make it more than usually important that the project design and construction team demonstrate that they have taken them into account and understand them.

a) The two buildings are at a skew angle to each other, which means there will be a tendency for the basement work to induce some rotation in the structure of [redacted] The commonly used criteria for structural damage are based on in-plane distortion of buildings and it must be supposed that the building would be more sensitive with this skewed orientation to the planned works. Most of the large number of basement schemes in Central London are constructed within terrace properties where the structural walls of neighbouring buildings are parallel or perpendicular to the new development. Hence damage criteria need to be used with some caution.

b) The excavation for the new basement will be at a level significantly below the basement of 5UT (see fig below). The stress levels will be relatively high and the deposit is essentially a sand, though groundwater is probably below excavation depth. For underpinning, it will be essential to support the underpins as stiffly as possible throughout construction.



2 SJ Drg P007 – Monitoring specification

There are a few criticisms of the proposed specification:

a) The monitoring interval of 1 week is significantly too long when the work is at a critical stage – i.e constructing the underpins in the walls leading to the corner adjacent to 5UT. It should be no longer than 48 hours during this period. If some remote reading instrumentation (in the form, say, of electrolevels) were installed, this would be a substantial benefit.

b) The trigger values are too high. They should be agreed after a fuller assessment of the possible ground movement (see below), but should probably be amber: 4mm and red 6mm.

c) In conjunction with the monitoring specification, the trigger value actions need to be fully worked-out contingencies, described in detail in the construction method statement.

3 SJ Drg P008 – Predicted ground movements

These are solely based on CIRIA C580. A more rigorous analysis should be carried out to determine the ground response. The heave resulting from unloading of vertical stress needs to be estimated. Damage criteria should be based on the attached table and graph and must take into account the distortion of the building as well as the strain. The figures given on Drg P008 suggest a horizontal strain of about 0.15% in the walls close to the corner of 5UT. This is high and should be considered in more detail.

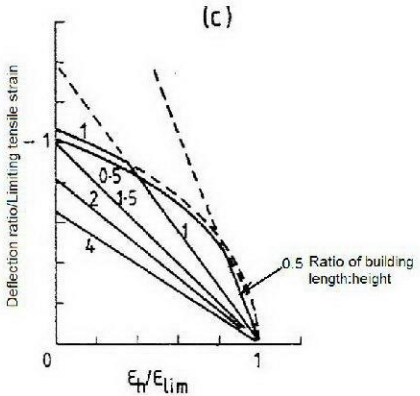


Table 2.5 *Classification of visible damage to walls (after Burland et al, 1977, Boscardin and Cording, 1989: and Burland, 2001)*

Category of damage		Description of typical damage (ease of repair is underlined)	Approximate crack width (mm)	Limiting tensile strain ε_{lim} (%)
0	Negligible	Hairline cracks of less than about 0.1mm are classed as negligible.	< 0.1	0.0 - 0.05
1	Very slight	Fine cracks which can easily be treated during normal decoration. Perhaps isolated slight fracture in building. Cracks in external brickwork visible on inspection.	< 1	0.05 - 0.075
2	Slight.	Cracks easily filled. Re-decoration probably required. Several slight fractures showing inside of building. Cracks are visible externally and some repointing may be required externally to ensure weathertightness. Doors and windows may stick slightly.	< 5	0.075 - 0.15
3	Moderate	The cracks require some opening up and can be patched by a mason. Recurrent cracks can be masked by suitable linings. Repointing of external brickwork and possible a small amount of brickwork to be replaced. Doors and windows sticking. Service pipes may fracture. Weathertightness often impaired.	5 to 15 or a number of cracks > 3	0.15 - 0.3
4	Severe	Extensive repair work involving breaking-out and replacing sections of walls, especially over doors and windows. Windows and frames distorted. Floor sloping noticeably. Walls leaning or bulging noticeably, some loss of bearing in beams. Service pipes disrupted.	15 to 25 but also depends on number of cracks	> 0.3
5	Very severe	This requires a major repair involving partial or complete rebuilding. Beams lose bearings, walls lean badly and require shoring. Windows broken with distortion. Danger of instability.	usually > 25 but depends on number of cracks.	

Notes:

- In assessing the degree of damage account must be taken of its location in the building or structure.
- Crack width is only one aspect of damage and should not be used on its own as a direct measure of it.

Figure 2.18 *Relationship between damage category, deflection ratio and horizontal tensile strain (after Burland, 2001)*

Reinforced concrete framed structures are more flexible in shear than masonry structures and are consequently less susceptible to damage. Nevertheless, for the purposes of a stage 2 assessment of potential damage, all structures should be treated as masonry structures.

4 Other comments

a) There is a sheet pile wall which is shown on some drawings (eg P007) but not on others (eg P020). The presence of this wall needs to be clarified, in particular the toe level, if it is already in existence, as is stated on P006.

b) The construction method statements must describe the groundworks in detail and demonstrate that the whole of the construction team understands what the work entails and the associated risks. Only very well qualified and experienced underpinning contractors should be used. If possible, they should have considerable experience of working in the Bagshot Beds.

atelier one

3 Charlotte Mews, London W1T 4DZ
Telephone: 0207-323 3350
E-MAIL: mail@atelierone.com

July 25th 2013

[redacted]

Dear Mrs Klein,

PLANNING PROPOSAL FOR 7 BRANCH HILL

We have reviewed the following engineering reports on the proposed redevelopment of 7 Branch Hill:

- 7922/SDCS/TM/Rev - Structural Design and Construction Statement
- 7922/BIA/TM/Rev - Basement Impact Assessment
- GEA Site Investigation and Basement Impact Assessment Report

There is significant potential of damage to your property from the proposed work.

A retaining wall currently retains two storeys of earth to the north-east of 7 Branch Hill and 1 storey to the south-west. This retaining wall is less than 1 m from the north-west corner of The Priory. When The Priory was built, the foundations in this corner were deepened to avoid any additional load surcharging the retaining wall.

The proposal includes removing the existing restraint to the retaining wall provided by the current building at 7 Branch Hill, replacing this restraint with props and then excavating 4.9m below the current retaining wall level. The proposed works will remove earth within the bearing region of the corner foundation, with significant risk of settlement or loss of support.

Within the "Structural Design and Construction Statement", the predicted damage to The Priory has been identified as "category 2 – slight", as classified by Burland et al. Predicted damage includes:

> "Cracks easily filled. Redecoration probably required. Recurrent cracks can be masked by suitable linings. Cracks may be visible externally and some repointing may be required to ensure weather-tightness. Doors and windows may stick slightly. Typical crack widths up to 5 mm."

The analysis that has been carried out so far is preliminary only. The level of damage predicted is sufficient to warrant more detailed, building specific analysis with the structural details of The Priory taken into account. The following factors cause The Priory to be particularly susceptible to damage:

- A large area of glazing has been included within The Priory. Cracked glazing or windows jamming is a risk even if settlement is minimal.
- A 5mm crack is sufficient to breach the integrity of the basement swimming pool at the centre of the Priory.
- The buildings sit at a skew angle to each other in plan. This could cause rotation of The Priory foundations in plan, causing greater damage than typical perpendicular ground movements. Most

basement schemes are constructed within existing terraced properties where the effected walls are parallel or perpendicular to neighbouring properties.

The building specific analysis should be in accordance with the more rigorous Boscardin and Cordin scale, 1989. The strain and distortion caused to the building must be taken into account. The construction methodology should be revised to reduce the category of damage to "category 0 –negligible" or "category 1 – very slight". These calculations must be submitted for checking by a third party. A survey should be agreed between the developer and yourselves before and after construction work, and any damage to your property repaired by the developer.

The movement monitoring outline specification, detailed in drawing 7922/P007, is not sufficiently rigorous to provide advance warning of damage to The Priory. We would recommend the following alterations:

- During work on the retaining wall, monitoring should be carried out at intervals of no longer than 48 hours, with results available for inspection by yourself.
- The trigger levels for monitoring of the retaining wall should be negotiated after a more thorough assessment of ground movement has been carried out. More typical trigger levels would be amber at 4mm and red at 6mm.
- Contingencies should be set for each trigger level.

In conclusion, although it may be possible to carry out the proposed work at 7 Branch Hill with only very slight damage to [redacted]areful consideration of construction methodology, detailed monitoring and a skilled groundworks contractor are required. We have not received sufficient information within the engineering reports to confirm that this is the case.

Yours sincerely,

Christopher M. Matthews

Chris Matthews