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33665G.L.002.RJM
16th February 2016

John Nicholls
Regeneration & Planning
London Borough of Camden
Town Hall
Judd Street
London
WC1H 8ND

Dear John,

BIA ADDENDUM FOR EXTENSION TO EXISTING BASEMENT
8 ANTRIM GROVE, NW3 4XR

1. *Introduction and description of the as-built extension in relation to the original approved basement footprint.*

A Basement Impact Assessment (BIA) & Site Investigation report was prepared by Knapp Hicks & Partners for 8 Antrim Grove February 2012. The BIA was based upon the Beyond Architecture Drawing Refs 1115/101-105 dated January 2012 and was subsequently approved by London Borough of Camden (LB Camden).

Following planning approval, the basement was constructed by Drop Box Ltd, a basement contractor, with no further input by Knapp Hicks & Partners or the original architect.

The original design was trapezoidal in shape with the eastern (No6) side being shorter than the western (No10) side to take account of a Tree Protection Order in force at that time for a mature sycamore tree in a neighbouring garden to the north east of the site (129 Haverstock Hill). The rear wall of the basement was therefore supposed to be constructed obliquely across the rear garden to accommodate the Root Protection area of the tree, as defined by BS5837:2005 'Trees in relation to construction – Recommendations' (Refer also Drawing Ref. 1115/110/H, dated January 2015).

In addition, the side walls of the basement were originally designed to step in along most of the boundary shared with No. 10 and at the rear corner of the boundary shared with No. 6. Along the east side, the original design featured a lowered light well along most of the boundary which was later permitted to be roofed over and added to the internal floor space.

Depth of excavation was greater to the rear of the property as the rear garden of No8, prior to construction, was approximately 0.8m higher than the ground level around the property. The same applies to No6 and No10 Antrim Grove to either side of the subject site.

During construction, however, the basement footprint was modified by the contractor such that the final as-constructed layout was 'squared-off', meaning that the east wall alongside No6 became extended to the same length as the west (No10) side. In so-doing, the floor area of the basement was increased by 14.4m^2 and impinged upon the Root Protection Area as defined at the time of the original planning consent. As a result, the side walls were taken to the site boundary along their full length. This modification was not approved by London Borough of Camden and was subsequently identified by a Planning Enforcement issued by LB Camden.

Since completion of the non-compliant basement construction, the ownership of the house has changed.

During the transfer of ownership, the waterproofing of the original basement was found to be defective and this has recently (2014) been remediated on behalf of the new owner by Dampcoursing Ltd.

A new tanking/cavity membrane system directs all permeating groundwater into the original basement drainage system through a series of floor drains and gully's, and a service agreement is in place to maintain this sytem.

This letter report has been prepared as an Addendum to the original BIA to confirm that the unapproved extension to the basement has not created any additional impacts over-and-above what was defined in the originally approved BIA.

2. Review of Original BIA

2(a) Review of SI information available from No6, No8 and No10 Antrim Grove

The original BIA for 8 Antrim Grove included a site investigation carried out under the supervision of Knapp Hicks & Partners. This included 2 hand dug pits to confirm the existing foundation details and 3No window sampler boreholes which were installed with monitoring wells. This included one borehole in the front garden, a borehole along the rear wall of the lean-to extension which was present at that time, and a borehole in the rear garden.

In addition to the subject basement at No8, a basement of similar extent has been constructed below No10 Antrim Grove (west side) and a Planning Application for another similar basement has been approved at No6 Antrim Grove (east side).

Site Investigation records for No6, No8 and No10 are available on the LB Camden Planning website.

The original planning application for No10 was granted planning approval before the requirement for BIA came into force. However a BIA was submitted 'for extension to an existing basement' at the front of the property, and this was approved (Report Ref. 32026.R.001A.RJM, dated October 2013, by knapp Hicks & Partners Ltd). The BIA for No10 included a site investigation report prepared by Site Analytical Services (Report Ref. 11/17630, dated April 2011). This investigation included 2No boreholes: one on the front garden and one in the rear, with monitoring wells in each.

Following commencement of basement construction at No8, a site investigation was carried out at No6 Antrim Grove (2014), and a Basement Impact Assessment and Site Investigation Report was submitted to LB Camden (Report Ref. 32027A/R/001A/RJM, dated February 2015). This BIA was audited by GEA in November 2014 and, after further investigations including a deep hand dug pit in the rear garden of No6 and further boreholes and monitoring wells. An Addendum BIA was submitted to LB Camden in June 2015 (Ref: 32027A/L/003/RJM) and it is understood that this has been granted planning approval. The BIA Addendum for No6 included a Ground Movement Assessment prepared by Gabriel GeoConsulting Ltd and a Groundwater Flow Screening and Scoping BIA Assessment prepared by Stephen Buss Environmental Consulting Ltd.

The site investigations have confirmed a geology of Head Deposits overlying London Clay. The depth of the Head Deposits varies from east to west with the greater depth being close to the rear boundary between No6 and No8.

Perched groundwater is present in the Head Deposits and this has been assessed in greater detail by the Groundwater Flow Assessment BIA provided for No6 Antrim Grove which was based on monitored groundwater levels following the construction of the basement at No8.

The BIA produced for No6 indicated that the basement at No6 would not create any adverse impacts on No8 and No4 Antrim Grove. The Ground Movement Assessment and Damage Category Assessment determined

that as the basement at No8 was founded at a similar depth to the proposed basement at No6, no damage category assessment was required.

Ground movements and Burland damage category classification for the boundary between No4 and No6 were calculated to be Category 0, i.e. 'Negligible'.

Given that the site situation, structure and geology at the boundary between No8 and No6 was essentially very similar to that which currently exists between No6 and No4, we propose that the changes made to the rear of the No8 basement will have caused negligible impact upon the neighbouring properties.

Furthermore, we are unaware of any damage having occurred to either of the neighbouring properties either during construction or in the period since. We consider that this provides important evidence that potential structural impacts have indeed been negligible.

The only significant impact would have been upon the mature tree which was the subject of a Tree Protection Order and was the reason for the Root Protection Area which necessitated the oblique wall detail in the first place. This is discussed under 2(b) below.

2(b) Review of original arboriculture report which dictated the original basement shape, and subsequent changes which have granted permission for the tree to be removed

During the period following approval of the BIA for No8 Antrim Grove, the mature tree to the rear, north east corner, of the site suffered storm damage and was reduced in size. This storm damage occurred before any construction works at No8 Antrim Grove was commenced.

During preparation of the BIA for 6 Antrim Grove, the tree was re-inspected by a specialist arboriculturalist and the LB Camden Tree Officer. These reports are listed as References to this letter report for information and are available on the LB Camden planning webpages. The outcome of these inspections is that permission has been granted to the owner of 129 Haverstock Hill for the tree to be removed. As a result, the Root Protection Area has been reduced sufficiently that the rear wall of the proposed basement at No6 has been pushed towards the rear of the garden so that it is now in line with the rear of the as-constructed basement at No8.

It may be concluded that there are now no tree-related impacts associated with the as-constructed basement at No8 Antrim Grove.

2(c) Overview of recent supplementary works undertaken to waterproof the basement and remediate issues with the original basement construction.

Following an inspection of the property by Dampcoursing Ltd, it was confirmed that the original construction had incorporated a Newton Membrane basement waterproofing system, but there was obvious penetration between the steel beams supporting the roof with additional concerns about damp readings in the floor which were not associated with dripping from higher level.

Their observations are described in greater detail in the attached report.

Dampcoursing Ltd were appointed to provide a BS8102 compliant replacement system, incorporating new insulation and drainage measures which could be guaranteed in its entirey and assumes a head of groundwater pressure to the full retained height of the basement at some stage during the lifetime of the structure. Incorporation of cavity drainage is essential to ensure that water pressure does not bear against the system.

Photographs of the replacement waterproofing and drainage are appended to this letter report for information and plans/sections of the drainage are also appended.

3. BIA screening - BIA questionnaires

The London Borough of Camden has ruled that all new basement developments within their area are to be subject to the assessment process described in CPG4 Basements and Lightwells, adopted April 2011 and which has been reviewed and updated since, most recently July 2015. This policy has been developed so that permission will only be granted for new basements which do not:

- Cause harm to the built and natural environment and local amenity;
- Result in flooding; or
- Lead to ground instability

This letter report is for an unapproved extension to an approved new basement for a property did not previously have one. The extension work was carried out contemporaneous with the main basement construction. The extension adds an additional 14m2 at to the area of basement below the rear garden.

The original Basement Impact Assessment was approved by LB Camden, although some minor revisions to the design were granted approval in 2013 without a requirement for the BIA to be updated.

This addendum to the BIA re-visits the screening stage of the proposal and is supplemented by the findings of recent remedial works to the waterproofing.

The screening process is described in CPG4 and includes 3 flowcharts as follows:

- Surface flow and flooding
- Subterranean (groundwater) flow
- Slope Stability

Potential impacts linked to the screening flowcharts are provided in CPG4 and in the associated Camden geological, hydrogeological and hydrological study – Guidance for subterranean development..

Each of the flow charts provided in the original BIA, and updated responses taking account of the unapproved element of the basement extension, are presented on the following pages of this report.

A. Surface flow and flooding screening flowchart

Question		Yes (Y), No (N), Unknown (U) (see also notes provided at base of table)
1.	Is the site within the catchment of the pond chains on Hampstead Heath?	N
2.	As part of the proposed site drainage, will surface water flows (e.g. volume of rainfall and peak run-off) be materially changed from the existing route?	N
3.	Will the proposed basement extension result in a change in the proportion of hard surfaced / paved external areas relative to the originally proposed basement?	Y
4.	Will the proposed basement result in changes to the profile of the inflows (instantaneous and long term) of surface water being received by adjacent properties or downstream watercourses?	N
5.	Will the proposed basement result in any changes to the quality of surface water being received by adjacent properties or downstream watercourses?	N

Notes

Q1 - By inspection of Figure 14 of CPG4

Q2 – Existing surface water pipes are not shown on the survey but it is unlikely that this development will materially change existing routes

Q3 – The as-built extension of the development has increased the originally approved basement area by 14m^2. The area over the basement extension has been finished with a combination of decking and paved areas, with occasional planters. The area over the basement drains to a manhole chamber to the rear of the basement. The volume of the chamber is approximately 5m3 plus a 450mm diameter x 450mm deep sump from which the water is pumped to a surface water manhole in the front garden area of the site.

B. Subterranean (groundwater) flow screening flowchart

Question		Yes (Y), No (N), Unknown (U) (see also notes provided at base of table)
1a.	Is the site located directly above an aquifer?	N
1b.	Will the proposed basement extend beneath the water table surface?	Y
2.	Is the site within 100m of a watercourse, well (used/disused) or potential spring line?	N
3.	Is the site within the catchment of the pond chains on Hampstead Heath?	N
4.	Will the proposed basement development result in a change in the proportion of hard surfaced/paved areas?	Y
5.	As part of the site drainage, will more surface water (e.g. rainfall and run-off) than at present be discharged to the ground (e.g. via soakaways and/or SUDS)?	N
6.	Is the lowest point of the excavation (allowing for any drainage and foundation space under the basement floor) close to, or lower than, the mean water level in any local pond (not just the pond chains on Hampstead Heath) or spring line?	N

Notes

Q1a – The site is located on the London Clay which is a non-aquifer

Q1b – Groundwater was encountered in recent site investigation holes above the proposed depth of the basement.

Q3 – By inspection of Figure 14 CPG4, the site is approximately 1km south east from the Hampstead Heath Extension Chain Catchment

Q4 – The as-built extension of the development has increased the originally approved basement area by 14m^2. The area over the basement extension to the rear of the property has been finished with a combination of decking and paved areas, with occasional planters. The area over the basement extension drains to a manhole chamber to the rear of the basement. The volume of the chamber is approximately 5m^3 plus a 450mm diameter x 450mm deep sump in the base from which the water is pumped to a surface water manhole in the front garden area of the site.

Q5 – Less water is discharged to the ground than previously.

Q6 – There are no surface water features located within 240m of the site.

C. Slope stability screening flowchart

Question		Yes(Y),No(N), Unknown (U) (see also notes provided at base of table)
1.	Does the existing site include slopes, natural or manmade greater than 7deg. (approx. 1V in 8H)?	N
2.	Will the proposed re-profiling of landscaping at site change slopes at the property boundary to more than 7deg.?	N
3.	Does the development neighbour land, including railway cuttings and the like, with a slope greater than 7deg.?	N
4.	Is the site within a wider hillside setting in which the general slope is greater than 7deg.?	N
5.	Is the London Clay the shallowest strata at the site?	N
6.	Will any trees be felled as part of the proposed development? Are any works proposed within any tree protection zones?	N
7.	Is there a history of seasonal shrink-swell subsidence in the local area, and/or evidence of such effects at the site?	N
8.	Is the site within 100m of a watercourse or a potential spring line?	N
9.	Is the site within an area of previously worked ground?	N
10.	Is the site within an aquifer? If so, will the proposed basement extend beneath the water table such that dewatering may be required during construction?	N N
11.	Is the site within 50m of the Hampstead Heath ponds?	N
12.	Is the basement extension situated within 5m of a highway or pedestrian right of way?	N
13.	Will the proposed basement significantly increase the differential depth of foundations relative to neighbouring properties?	Y
14.	Is the site over (or within the exclusion zone of) any tunnels, e.g. railway lines?	N

Notes

Q12 – the overall site is within 5m of Antrim Grove. However, the extension which is the subject of this addendum is to the rear of the property and therefore the subject area is more than 20m away from the nearest highway / pedestrian right-of-way.

Q13 – At No10 a basement of similar extents has been constructed and the basement at No8 is understood to have had minimal impact upon it. To the other side, at No6, there have been no records of damage or impact to either property, and it is understood the owner of No6 has been granted approval for a basement which will extend alongside that of No8, which should further reduce the potential impacts in terms of stability.

4. Discuss results and identify if the screening process is sufficient.

The screening process has not identified any significant impacts from the basement in terms of slope stability or groundwater flow.

The only impact that is raised is in relation to surface water management, in that there has been a change in the permeable/impermeable ratio compared to the original proposed scheme.

Given that the property has changed ownership, and significant structural remedial works have been undertaken which were not the subject of any planning requirements or building control, we do not consider it inappropriate that the new owner has opted to amend the rear garden area from a sedum roof as per the original design to a mix of decking and planters.

The surface water from the rear terrace and decking areas overlying the basement amounts to approximately 50m^2 of which 14m^2 is the area addressed by this addendum report. This equates to an approximate discharge of 0.7litres/sec of which 0.2 litres/sec is accounted for by the additional 14m^2.

The discharge rates given above are based on the expected 30 year storm rainfall of 50mm/hour which is the standard usually adopted by Building Regulations. Discharge is based on the following calculation:

Discharge Rate (litres/second) = Area x 2.78 x Precipitation

- Area (hectares)
- 2.78 (Flow Factor coefficient derived from the Modified Rational Method)
- Precipitation (mm/hr)

This surface water discharges to a manhole at the rear of the basement. The manhole is approximately 5m^3 volume, with a 450mm deep sump in the base.

Based on a 1 hour storm and the rainfall from a 1 in 30year storm, the total 50m^2 area generates a 2.5m^3 volume which is approximately half the storage volume provided by the manhole chamber at the rear of the basement. For comparison, it may be noted that a more severe 1 in 100 year storm would generate 3.75m^3, and a 1 in 100 year storm adjusted by +30% for climate change would generate 4.25m^3, both of which are less than the storage provided by the rear manhole. It should also be noted that the above figures take no account of the additional attenuation effects that the decking, planters etc will also provide.

A pump in the manhole transfers the water to a surface water manhole at the front of the property (Pump discharge rate is likely to be in the region of 2litres/second which is greater than the discharge rate from the new basement). The pump is activated when the water reaches a predetermined level. Therefore, Knapp Hicks conclude that the manhole provides adequate storage for the surface water from the rear of the site, and will effectively attenuate discharge from the basement extension to the mains sewers, with no increase in the peak storm water discharge (i.e. the rate of pumping from the manhole).

Knapp Hicks conclude that the impacts associated with the as-constructed variations to the originally proposed design are relatively minor and we propose that the Planning Enforcement be discharged.

5. Conclusions & Recommendations

On behalf of the new owner of this property, and based on the findings of this letter report, we propose that the additional 14m2 of basement extension which was constructed at the same time as the approved basement extension does not represent a hazard as the potential impacts on neighbouring property and the surrounding area is negligible.

33665G/L/002/RJM (ADDENDUM TO BIA)
Date: 16th February 2016

We trust that this letter and associated references and attachments provides sufficient information for the council to lift the Planning Enforcement which is currently in place, and we request that LB Camden grant full Planning Approval.

Please do not hesitate to contact the undersigned if further information is required.

Yours sincerely
For and on behalf of

Richard Moore
Geotechnical Engineer

cc Mario Garcia
Dominic Tuck

Encs

REFERENCES (Refer to relevant Planning Applications on LB Camden website)

BIA & Site Investigation Report, 8 Antrim Grove, February 2012, incorporating Beyond Architecture Drawings 1115/101-105

BIA Addendum 10 Antrim Grove(incorporating SI Report by SAS, April 2011), 32026A/R/001A/RJM, dated October 2013

Envirocheck Geology Report (10 Antrim Grove), April 2010

BIA & Site Investigation Report, 6 Antrim Grove, 32027A/R/001A/RJM, dated February 2015

Sycamore Tree in rear garden of 129 Haverstock Hill, London NW3: Letter Ref. ha/letrpt1/6antrimgrove, dated 3rd March 2015 by ACS Consulting Urban & Rural Tree Management

Variation or Removal of Condition Granted, Letter Ref 2013/5428/P, dated 14th November 2015, by LB Camden

ATTACHMENTS (CD)

BIA & SI Report, 8 Antrim Grove (Ref.30452.R.001A.RJM, February 2012)

DT360 Drawing Reference 1509-P-01

Dampcoursing Ltd Letters dated 12th November 2014 and 12 December 2014