CampbellReith
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11-12 Grenville Street
London, WC1N 1LZ

Basement Impact Assessment Audit

For

London Borough of Camden

Project Number: 12466-31

Revision: D1

December 2016

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1.0 NON-TECHNICAL SUMMARY

1.1. CampbellReith was instructed by London Borough of Camden, (LBC) to carry out an audit on the Basement Impact Assessment submitted as part of the Planning Submission documentation for 11-12 Grenville Street, WC1N 1LZ (planning reference 2016/4372/P). The basement is considered to fall within Category B as defined by the Terms of Reference.

1.2. The Audit reviewed the Basement Impact Assessment for potential impact on land stability and local ground and surface water conditions arising from basement development in accordance with LBC's policies and technical procedures.

1.3. CampbellReith was able to access LBC's Planning Portal and gain access to the latest revision of submitted documentation and reviewed it against an agreed audit check list.

1.4. The qualifications of the authors are generally in compliance with CPG4, other than the authors not identifying suitable expertise in engineering geology and hydrology.

1.5. Relevant information screening and scoping as defined and required in the LBC Planning Guidance document 'Basement and Lightwells (CPG4)' has been provided.

1.6. It is proposed to demolish the existing garage to the rear of the property, to allow for the construction of a new residential property consisting of a new basement with two storeys above ground. The proposed basement is to be constructed adjacent to the existing basement of 11 Grenville Street. It is to be formed by constructing reinforced concrete retaining walls along the front and two side boundaries, using top down construction sequence and underpinning the adjoining basement wall from within the existing basement. Finally the new ground floor and basement reinforced concrete slabs are cast to form a reinforced concrete box. The proposed basement is slightly deeper that the existing basement.

1.7. The BIA states that all neighbouring properties have existing basements. Downing Court abuts the proposed basement in the NW corner, however the structure is independent.

1.8. The ground investigation identifies the new formation level is likely to be founded in the Lynch Hill Gravels.

1.9. It is accepted that the excavation level is unlikely to be below groundwater level or impact on groundwater flows. However further groundwater monitoring is advised to investigate perched water levels.

1.10. The proposal explains clearly the construction sequence, temporary propping requirements and the importance of quality and experienced contractors to construct a robust structure without

significant adverse impacts on adjoining properties and to limit ground movements, both during and after construction.

1.11. Preliminary design calculations for the reinforced concrete box structure should be provided.

1.12. The BIA provides an assessment of vertical and horizontal ground movements, however the CIRIA C580 Methodology for damage impact has not been followed correctly and the assessment is incomplete. This is to be revised.

1.13. A monitoring strategy is proposed which should be confirmed with the Party Wall Surveyor.

1.14. Commentary is requested regarding the proximity of LUL Northern Line running tunnels to the development site.

1.15. It is accepted that there is a negligible increase in the hardstanding area that will not significantly increase surface water runoff or impact on the wider hydrogeology of the area.

1.16. It is accepted that there are no slope stability concerns regarding the proposed development and it is not in an area prone to flooding.

1.17. Queries and requests for further information arising out of this initial audit are discussed in Section 4 and summarised in Appendix 2.

2.0 INTRODUCTION

2.1. CampbellReith was instructed by London Borough of Camden (LBC) on 15/11/2016 to carry out a Category B Audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 11-12 Grenville Street, WC1N 1LZ, 2016/4372/P.

2.2. The Audit was carried out in accordance with the Terms of Reference set by LBC. It reviewed the Basement Impact Assessment for potential impact on land stability and local ground and surface water conditions arising from basement development.

2.3. A BIA is required for all planning applications with basements in Camden in general accordance with policies and technical procedures contained within

- Guidance for Subterranean Development (GSD). Issue 01. November 2010. Ove Arup & Partners.
- Camden Planning Guidance (CPG) 4: Basements and Lightwells.
- Camden Development Policy (DP) 27: Basements and Lightwells.
- Camden Development Policy (DP) 23: Water.

2.4. The BIA should demonstrate that schemes:

a) maintain the structural stability of the building and neighbouring properties;

b) avoid adversely affecting drainage and run off or causing other damage to the water environment;

c) avoid cumulative impacts upon structural stability or the water environment in the local area, and;

evaluate the impacts of the proposed basement considering the issues of hydrology, hydrogeology and land stability via the process described by the GSD and to make recommendations for the detailed design.

2.5. LBC's Audit Instruction described the planning proposal as *"Change of use of upper floor offices (B1) to residential (C3) use to provide 5 x residential units (3 x 1 bed and 2 x 2 bed), demolition of existing rear garage and erection of a replacement 2 storey 2 bed mews dwelling with basement extension, consolidation of the existing ground floor retail (A1) and cafe (A3) units to provide a replacement retail/restaurant (A1/A3) unit, external alterations to the main elevation, mansard roof extension with parapets/chimneys and dormer windows, replacement*

double glazed sash windows, replacement shopfront, alterations to ground floor entrances and a 1st to 3rd floor rear infill extension with new window openings."

The Audit Instruction also confirmed 11-12 Grenville Street is not a listed building, the nearest listed building is 12 metres to the north of the development.

2.6. CampbellReith accessed LBC's Planning Portal on 06/12/2016 and gained access to the following relevant documents for audit purposes:

- Design Study & Basement Impact Assessment Report (BIA) -TWS, issued August 2016
- Draft Construction Management Plan – July 2016
- Design & Access Statement – Garnett + Partners, issued August 2016
- Planning Statement – JLL, issued August 2016
- Planning Application Drawings consisting of

  Location Plan - Garnett + Partners, Rev. B dated 03.08.16

  Existing and Demolition Plans and Elevations, Garnett + Partners, most recent issued August 2016

  Proposed Plans and Elevations, Garnett + Partners, most recent issue August 2016
- Planning Comments and Response (None relevant to basement construction)

3.0 BASEMENT IMPACT ASSESSMENT AUDIT CHECK LIST

Item	Yes/No/NA	Comment
Are BIA Author(s) credentials satisfactory?	No	
Is data required by Cl.233 of the GSD presented?	Yes	
Does the description of the proposed development include all aspects of temporary and permanent works which might impact upon geology, hydrogeology and hydrology?	Yes	
Are suitable plan/maps included?	Yes	
Do the plans/maps show the whole of the relevant area of study and do they show it in sufficient detail?	Yes	
Land Stability Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	
Is a conceptual model presented?	Yes	
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	Yes	
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	Yes	

Item	Yes/No/NA	Comment
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	Yes	
Is factual ground investigation data provided?	Yes	
Is monitoring data presented?	Yes	
Is the ground investigation informed by a desk study?	Yes	
Has a site walkover been undertaken?	Yes	
Is the presence/absence of adjacent or nearby basements confirmed?	Yes	
Is a geotechnical interpretation presented?	No	Refer to section 4.12
Does the geotechnical interpretation include information on retaining wall design?	No	Designs have not been included, refer to section 4.12
Are reports on other investigations required by screening and scoping presented?	Yes	
Is the baseline conditions described, based on the GSD?	Yes	
Do the base line conditions consider adjacent or nearby basements?	Yes	
Is an Impact Assessment provided?	Yes	However, inaccurate and requires revision. Refer to section 4.13
Are estimates of ground movement and structural impact presented?	Yes	However, inaccurate and requires revision. Refer to section 4.13
Is the Impact Assessment appropriate to the matters identified by screen and scoping?	Yes	
Has the need for mitigation been considered and are appropriate	Yes	

Item	Yes/No/NA	Comment
mitigation methods incorporated in the scheme?		
Has the need for monitoring during construction been considered?	Yes	
Have the residual (after mitigation) impacts been clearly identified?	Yes	
Has the scheme demonstrated that the structural stability of the building and neighbouring properties and infrastructure will be maintained?	No	Inaccurate GMA provided, requires revision. Refer to section 4.13
Has the scheme avoided adversely affecting drainage and run-off or causing other damage to the water environment?	Yes	
Has the scheme avoided cumulative impacts upon structural stability or the water environment in the local area?	No	GMA inaccurate.
Does report state that damage to surrounding buildings will be no worse than Burland Category 2?	Yes	However, inaccurate and requires revision. Refer to section 4.13
Are non-technical summaries provided?	Yes	

4.0 DISCUSSION

4.1. The Basement Impact Assessment (BIA) has been carried out by, Taylor Whalley Spyra (TWS), consultant engineers and the individuals concerned in its production have suitable structural qualifications. However, it is not clear if a Chartered Geologist (C.Geol) has been consulted with respect to the appraisal of groundwater flow or land stability.

4.2. The BIA submissions include Land Stability, Hydrogeology and Hydrology screening and scoping, relevant site investigations and impact assessments as defined and required in the LBC Planning Guidance document 'Basement and Lightwells (CPG4)'.

4.3. The LBC Instruction to proceed with the audit identified that the basement proposal neither involved a listed building nor was adjacent to listed buildings, however it stated that the nearest listed building is 12m to the North of the site. The Planning Statement identified that 11-12 Grenville Street is located in the Bloomsbury Conservation Area, it is not a listed building however there are several listed building to the rear of the site including, 'The Brunswick Centre' (Grade II), Nos. 11-24 and 27 Bernard Street (Grade II) and Nos. 75-82 Guildford Street (Grade II).

4.4. 11-12 Grenville Street forms part of a Georgian terrace of town houses. The existing building is four storeys with an existing basement plus a garage to the rear. The property spans over the 'Colonnade' passage way, which runs from the front to the back of the building at ground level.

4.5. It is proposed to refurbish the existing structure, extend the rear of the building over the 'Colonnade', and demolish the existing garage to the rear of the property, to allow for the construction of a new residential property consisting of a new basement with two storeys above ground. The proposed basement is to be constructed adjacent to the existing basement of 11 Grenville Street. It is to be formed by constructing reinforced concrete retaining walls along the front and two side boundaries, underpinning the adjoining basement wall and constructing new ground floor and basement reinforced concrete slabs to form a reinforced concrete box. The current basement FFL is 20.670 and the proposed basement SSL is 19.970, approximately 0.7m deeper that the existing.

4.6. The proposed basement is bordered by, Downing Court to the North East, 11 Grenville Street to the East (part of the development), the rear of Downing Court to the West; the BIA states that all properties have existing basements. Downing Court abuts the proposed basement in the NW corner, however the structure is independent.

4.7. A ground investigation (GI) has been undertaken at the site by Risk Management on 01 June 2016. These investigations comprised of a foundation trial pit, to a depth of 1.2m and a borehole to the depth of 6.0m.

4.8. The GI identifies the ground conditions as 1.8m of Made Ground overlaying Lynch Hill Gravel to 3.6m bgl, over London Clay. The formation level of the proposed basement will be approximately 3.0m bgl, therefore it is likely to be founded in the Lynch Hill Gravels. However if the levels of the strata vary, and the basement is founded in the Weathered London Clay, the high shrinkage potential will need to be considered and the design reviewed.

4.9. The GI notes that groundwater was not encountered during boring or within the standpipe during monitoring visits. However the monitoring was carried out during the summer period and additional monitoring should be carried out during wet periods, to monitor the perched water accumulating above the London Clay. Temporary dewatering may be required during construction and the reinforced concrete box should be designed to account for the water pressures.

4.10. It is accepted that the excavation level is unlikely to be below groundwater level or impact on groundwater flows.

4.11. The final construction sequence is to be agreed with the contractor. The proposed sequence involves underpinning the existing wall from inside the existing basement, constructing the reinforced concrete retaining wall in a top down sequence, installing lateral propping as the excavation proceeds to basement formation level. The ground floor and basement reinforced concrete slabs are then completed to form the reinforced concrete box. The above ground structure is built off the ground floor slab and the retaining walls. The basement construction sequence has been described in detail within the BIA. The proposal explains clearly the construction sequence, temporary propping requirements and the importance of quality and experienced contractors to construct a robust structure without significant adverse impacts on adjoining properties and to limit ground movements, both during and after construction.

4.12. Preliminary design calculations for the reinforced concrete box structure should be provided, clearly outlining the interpretation of the geotechnical values utilised.

4.13. The BIA provides an assessment of vertical and horizontal ground movements and indicates the potential damage to neighbouring properties would be no higher than category 1 on the Burland Scale, risk of Very Slight damage only. However the CIRIA C580 Methodology for damage impact has not been followed correctly and the assessment is incomplete. This should be rectified.

4.14. A monitoring strategy is proposed which should be confirmed with the Party Wall Surveyor and should be updated with any updates to the structural design, damage impact assessment or temporary works proposals, following agreement of the construction strategy with the contractor.

4.15. It is apparent that the development site is in close proximity to LUL Northern Line running tunnels and commentary is requested regarding this.

4.16. It is accepted that there is a negligible increase in the hardstanding area that will not significantly increase surface water runoff or impact on the wider hydrogeology of the area.

4.17. It is accepted that there are no slope stability concerns regarding the proposed development and it is not in an area prone to flooding.

5.0 CONCLUSIONS

5.1. The Basement Impact Assessment (BIA) has been carried out by Taylor Whalley Spyra (TWS), consultant engineers, by individuals who have suitable structural qualifications, other than the authors not identifying suitable expertise in engineering geology and hydrology.

5.2. The BIA submissions include Land Stability, Hydrogeology and Hydrology screening and scoping, relevant site investigations and impact assessments as defined and required in the LBC Planning Guidance document 'Basement and Lightwells (CPG4)'.

5.3. It is proposed to demolish the existing garage to the rear of the property, to allow for the construction of a new residential property consisting of a new basement with two storeys above ground. The proposed basement is to be constructed adjacent to the existing basement of 11 Grenville Street. It is to be formed by constructing reinforced concrete retaining walls along the front and two side boundaries, using top down construction sequence and underpinning the adjoining basement wall from within the existing basement. Finally the new ground floor and basement reinforced concrete slabs are cast to form a reinforced concrete box. The proposed basement is slightly deeper that the existing basement.

5.4. The proposed basement is bordered by, Downing Court to the North East, 11 Grenville Street to the East (part of the development), the rear of Downing Court to the West, the BIA states that all properties have existing basements. Downing Court abuts the proposed basement in the NW corner, however the structure is independent.

5.5. The ground investigation identifies the new formation level is likely to be founded in the Lynch Hill Gravels.

5.6. It is accepted that the groundwater was not encountered during boring or within the standpipe during monitoring visits. However monitoring was carried out during the summer period and it is advised that additional monitoring should be carried out during wet periods, to monitor the perched water.

5.7. It is accepted that the excavation level is unlikely to be below groundwater level or impact on groundwater flows.

5.8. The proposal explains clearly the construction sequence, temporary propping requirements and the importance of quality and experienced contractors to construct a robust structure without significant adverse impacts on adjoining properties and to limit ground movements, both during and after construction.

5.9. Preliminary design calculations for the reinforced concrete box structure should be provided, clearly outlining the interpretation of the geotechnical values utilised. The basement should be designed to resist hydrostatic pressures and heave forces where applicable.

5.10. The BIA provides an assessment of vertical and horizontal ground movements and indicates the potential damage to neighbouring properties would be no higher than category 1 on the Burland Scale, risk of Very Slight damage only. However the CIRIA C580 Methodology for damage impact has not been followed correctly and the assessment is incomplete. This should be rectified.

5.11. A monitoring strategy is proposed which should be confirmed with the Party Wall Surveyor.

5.12. Commentary is requested regarding the proximity of LUL Northern Line running tunnels to the development site.

5.13. It is accepted that there is a negligible increase in the hardstanding area that will not significantly increase surface water runoff or impact on the wider hydrogeology of the area.

5.14. It is accepted that there are no slope stability concerns regarding the proposed development and it is not in an area prone to flooding.

Appendix 1: Residents' Consultation Comments

None

Appendix 2: Audit Query Tracker

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Audit Query Tracker

Query No	Subject	Query	Status	Date closed out
1	Hydrology	Confirm author's qualification.	Open	
2	Stability	Outline calculations to validate, floor slab, retaining walls and underpinning required.	Open	
3	Stability	Ground movement assessment to be clarified and revised in accordance with C580 Methodology.	Open	
4	Stability	Proximity to LUL Northern Line tunnels.	Open	

Appendix 3: Supplementary Supporting Documents

None

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