CampbellReith
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Land Adjacent to 23 Carol Street, NW1 0HT

Basement Impact Assessment Audit

For

London Borough of Camden

Project Number: 12727-34
Revision: F1

April 2018

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Document History and Status

Revision	Date	Purpose/Status	File Ref	Author	Check	Review
D1	February 2018	Comment	AGgk-12727-34-080218-23 Carol Street-D1.doc	AG	GK	GK
D2	April 2018	Comment	AGgk-12727-34-080218-23 Carol Street-D2.doc	AG	RM	RM
F1	April 2018	Final	AGgk-12727-34-180418-23 Carol Street-F1.doc	AG	RM	RM

Document Details

Last saved	18/04/2018 15:28
Path	AGgk-12727-34-180418-23 Carol Street-F1.doc
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Project Number	12727-34
Project Name	Land Adjacent to 23 Carol Street, NW1 0HT
Planning Reference	2017/5590/P

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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 Land Adjacent to 23 Carol Street, NW1 0HT (planning reference 2017/5590/P). The basement is considered to fall within Category C 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 authors of the BIA and the associated documents have qualifications which are in compliance with the requirements of CPG4.

1.5. The BIA confirmed that there is no evidence of basements to the neighbouring properties.

1.6. The site is not situated in a conservation area and that there are no listed building neighbouring the site.

1.7. The proposed new build construction consists of a three storey reinforced concrete frame building constructed over a single storey reinforced concrete basement. There are currently no buildings on the site.

1.8. It is proposed to install temporary sheet piled retaining walls, propped at the top to provide stability in the temporary condition. The basement will be constructed bottom up, with reinforced concrete raft slab, permanent basement retaining walls and ground floor slab. The BIA notes the heave potential of the London Clay and that the raft slab will be design to resist heave pressures.

1.9. From a single borehole drilled on site the ground conditions are indicated to be 1.5m of Made Ground overlying the London Clay, designated unproductive strata. Groundwater was encountered during the ground investigation at 8m below ground level. One round of subsequent monitoring did not record groundwater. It is accepted that there will be no impacts to the wider hydrogeological environment. The BIA recommends that the contractor make an allowance for temporary dewatering of any perched water encountered.

1.10. Factual ground investigation data is presented, with geotechnical values interpreted from the data.

1.11. A ground movement assessment has been produced which predicts a worst-case damage category of 0 for the neighbouring properties. While the calculation method does not follow the quoted guidance it can be accepted that no greater than damage category 1 will occur.

1.12. The BIA notes the proximity of Thames Water assets and confirms the position of these assets in relation to the prosed construction. It is accepted that they will not be impacted by the proposed works.

1.13. A movement monitoring proposal has been provided, this should be agreed with owner of neighbouring assets. A Construction Management Plan and programme of works has not been provided. It is noted that it has been agreed with the Planning Officer that this will be provided if planning permission is granted.

1.14. There will be an increase in impermeable site area as a result of the proposed development. It is proposed to implement attenuation SUDS and it is accepted that there will be no impact to the wider hydrological environment.

1.15. It is accepted that the risk of flooding is very low there are no slope stability concerns regarding the proposed development.

1.16. Three Category C trees will removed from site by the proposed development. The retained trees on adjacent plots are unlikely to be impacted by or impact the proposed development.

1.17. A conceptual model has been presented indicating the proposed changes to the site in the context of the ground and groundwater conditions and the adjacent structures / infrastructure, noting potential risks and impacts and proposed mitigation.

1.18. A non-technical summaries is included within the BIA.

1.19. It can be confirmed that the proposal adheres to the requirements of CPG4.

2.0 INTRODUCTION

2.1. CampbellReith was instructed by London Borough of Camden (LBC) on 15 January 2018 to carry out a Category C Audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for Land Adjacent to 23 Carol Street, London, NW1 0HT, reference 2017/5590/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.
- Local Plan 2017, Policy A5 Basements.

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 *"Erection of a three storey plus basement building to provide live-work unit (Class Sui Generis) comprising artist's studio with 2 bedroom flat (Sui Generis use) at 1st and 2nd floor with terrace at 1st floor, balcony at 2nd floor (east elevation), service yard and associated landscaping and access works."*

The Audit Instruction also confirmed that the proposed development did not involve, nor was neighbour to, any listed buildings.

2.6. CampbellReith accessed LBC's Planning Portal on 18 January 2018 and gained access to the following relevant documents for audit purposes:

- Basement Impact Assessment Report (BIA) Revision 03, dated 20th September 2017 by soiltechnics.
- Structural Engineer's Design Statement for Planning (SEDS), dated 25 September 2017 by engineersHRW.
- Arboricultural Pre-App Survey and Comments dated 27 April 2015 by Marcus Foster.
- Arboricultural Report: Summary of findings for Root Investigation Trial Trench by Marcus Foster dated 28 July 2017.
- Architects Proposals including:
    - Existing Elevations and Sections
    - Existing Site Plan
    - Location Plan
    - Proposed Elevations
    - Proposed Plans
    - Proposed Views
    - Design Statement
    - Site Photographs
- Planning Statement, dated October 2017 by Firstplan.
- SuDS Assessment and Drainage Statement, dated July 2017 by Infrastruct CS Ltd.

2.7. In response to CampbellReith's request for further information the following documents were provided:

- Ground Investigation Report Revision 01, dated 20th September 2017 by Soiltechnics
- Basement Impact Assessment Report (BIA) Revision 05, dated 16th February 2018 by soiltechnics.
- Structural Engineer's Design Statement for Planning (SEDS), Revision 1, dated 12th February by engineersHRW.
- AGgk-12727-34-080218-23 Carol Street-D1 - eHRW Comments BIA Audit Tracker 130218

3.0 BASEMENT IMPACT ASSESSMENT AUDIT CHECK LIST

Item	Yes/No/NA	Comment
Are BIA Author(s) credentials satisfactory?	Yes	
Is data required by Cl.233 of the GSD presented?	No	A work programme for construction has not been included. However it is noted that it has been agreed with the planning officer that the Construction Management Plan can be provided once planning permission is granted.
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	

Item	Yes/No/NA	Comment
Is a conceptual model presented?	Yes	A conceptual model indicating the proposed changes to the site in the context of the ground / groundwater conditions and adjacent structures, noting potential risks / impacts and proposed mitigation is presented.
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	Yes	
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	Yes	
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	Yes	
Is factual ground investigation data provided?	Yes	Limited investigation, not in accordance with GSD G2.
Is monitoring data presented?	Yes	One round.
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	Text describes LC as stiff; design line considered optimistic and inconsistent with SPT / lab data; interpretation in accordance with GSD G3 required.
Does the geotechnical interpretation include information on retaining wall design?	No	As above.

Item	Yes/No/NA	Comment
Are reports on other investigations required by screening and scoping presented?	Yes	SUDS, hydrogeological review.
Are 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	Stability impacts require further consideration.
Are estimates of ground movement and structural impact presented?	Yes	
Is the Impact Assessment appropriate to the matters identified by screen and scoping?	Yes	
Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme?	No	Intent and feasibility of proposed SUDS accepted.
Has the need for monitoring during construction been considered?	Yes	
Have the residual (after mitigation) impacts been clearly identified?	No	
Has the scheme demonstrated that the structural stability of the building and neighbouring properties and infrastructure will be maintained?	Yes	
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?	Yes	

Item	Yes/No/NA	Comment
Does report state that damage to surrounding buildings will be no worse than Burland Category 1?	Yes	Damage category 0 predicted
Are non-technical summaries provided?	Yes	

4.0 DISCUSSION

4.1. The Basement Impact Assessment (BIA) has been carried out by Soiltechnics Environmental and Geotechnical consultants, with the Structural Engineer's Design Statement carried out by engineersHRW. Supporting assessment is presented by Chord Environmental Ltd. The qualifications of the authors of the BIA and the associated reports are in compliance with the requirements of CPG4.

4.2. The BIA includes screening, scoping, site investigations and impact assessment stages as defined and required in the LBC Planning Guidance document 'Basements and Lightwells (CPG4)', dated July 2015.

4.3. The land adjacent to 23 Carol Street is currently an undeveloped site previously used as a garden area. 43 Carol Street is to the west of the site and houses a number of warehouse units. The rear of the site is bounded by St Martins Gardens and to the east of the site is 23 Carol Street, an end of terrace house. The BIA confirmed that there is no evidence of basements to the neighbouring properties.

4.4. The BIA Audit Instruction confirmed that the site is not situated in a conservation area and that there are no listed building neighbouring the site.

4.5. The proposed new build construction consists of a three storey reinforced concrete frame building constructed over a single storey reinforced concrete basement, to a depth of approximately 4.85m below ground level (bgl).

4.6. It is proposed to install temporary sheet piled retaining walls, propped at the top to provide stability in the temporary condition. The basement will be constructed bottom up, with reinforced concrete raft slab, permanent basement retaining walls and ground floor slab. The BIA notes the heave potential of the London Clay and that the raft slab will be design to resist heave pressures.

4.7. Reference is made to a 'silent piling method'. Information has been provided on the proposed piling method and an indicative pile design has been provided.

4.8. A limited site investigation has been undertaken, which is not fully in accordance with LBC guidance (Guidance for Subterranean Development (GSD) Appendix G2). From a single borehole drilled on site the ground conditions are indicated to be 1.5m of Made Ground overlying the London Clay, designated unproductive strata. Groundwater was encountered during the ground investigation at 8m below ground level. One round of subsequent monitoring did not record groundwater. It is accepted that there will be no impacts to the wider

hydrogeological environment. The BIA recommends that the contractor make an allowance for temporary dewatering of any perched water encountered.

4.9. Although factual ground investigation data is presented in the form of a borehole log, with interpretive engineering values provided. The design line presented summarising interpreted insitu undrained shear strengths is considered optimistic and not representative of typical SPT N / Cu correlation values, while it is accepted that feasibility of the proposal has been demonstrated this should be reviewed during the detailed design stage.

4.10. The BIA notes the proximity of Thames Water assets. A site plan identifying the location of utility infrastructure running within the adjacent pavement and highway has been provided. It is accepted that the proposed works will not have an adverse impact on this infrastructure.

4.11. A ground movement assessment (GMA) has been undertaken, which is stated to be in accordance with C580 and C760. The GMA indicates the potential damage to neighbouring properties as no higher than Category 0 (Negligible) on the Burland Scale. However, the GMA has not been undertaken fully in accordance with the referenced method and has calculated a diagonal strain within the wall panels of the impacted buildings, rather than calculating the vertical and horizontal strains separately for use within the method as described in CIRIA 760. However it is accepted that the damage category predicted is likely to be within the maximum permitted damage category of 1.

4.12. Sheet piling methodology has been be confirmed and associated impacts (e.g. vibration, ground loss from jetting or pre-auguring etc) should be assessed. A specialist however preliminary proposals have been provided will carry out the final piling design.

4.13. A movement monitoring proposal has been provided, this should be agreed with owner of neighbouring assets. There will be an increase in hardstanding and drained areas as a result of the proposed development. A drainage strategy for the proposed scheme has been provided in the SUDS Assessment and Drainage Statement. It is proposed that surface water will be discharged via a gravity drainage system utilising a new connection to the combined water sewer within Carol Street. The discharge will be attenuated via a tank and limited to 5l/s. It is accepted that although the overall impermeable area of the site will increase following the proposed works, sufficient mitigation measures are in place and there will be limited impact to the wider hydrological environment.

4.14. It is accepted that the risk of flooding of the proposed development is very low.

4.15. It is accepted that there are no slope stability concerns regarding the proposed development.

4.16. Three Category C trees will removed from site by the proposed development. The retained trees on adjacent plots are unlikely to be impacted by or impact the proposed development.

4.17. Non-technical summaries should be included in any updated BIA submissions.

5.0 CONCLUSIONS

5.1. The authors of the BIA and the associated documents have qualifications which are in compliance with the requirements of CPG4.

5.2. It is proposed to install temporary sheet piled retaining walls. The basement will be constructed bottom up, with reinforced concrete raft slab, permanent basement retaining walls and ground floor slab.

5.3. The proposed sheet piling methodology should be confirmed and the length of piles and outline retaining wall design has been provided.

5.4. The ground conditions are indicated to be Made Ground overlying the London Clay, designated unproductive strata. It is accepted that there will be no impacts to the wider hydrogeological environment.

5.5. Interpretative geotechnical information is provided which is not considered appropriately conservative. This should be revisited during the details design stage.

5.6. The ground movement assessment (GMA) has not been undertaken in accordance with the referenced guidance, however it is accepted that it provides similar predictions of ground movements.

5.7. The presence of underground infrastructure / utilities has been confirmed. It is accepted that the proposed development will have limited impact these services.

5.8. A movement monitoring proposal has been provided, this should be agreed with owner of neighbouring assets. It is proposed to implement attenuation SUDS and it is accepted that there will be no impact to the wider hydrological environment.

5.9. It is accepted that the risk of flooding is very low there are no slope stability concerns regarding the proposed development.

5.10. It can be confirmed that the proposal adheres to the requirements of CPG4.

Appendix 1: Residents' Consultation Comments

None

Appendix 2: Audit Query Tracker

Audit Query Tracker

Query No	Subject	Query	Status	Date closed out
1	Stability	Interpretative geotechnical information including design parameters to be presented, as GSD G3	Closed	April 2018
2	Stability	Sheet piling methodology to be confirmed. The length of piles and outline retaining wall design should also be provided.	Closed	April 2018
3	Stability	Presence of adjacent infrastructure / utility assets should be confirmed.	Closed	April 2018
4	Stability	GMA to be updated, to be consistent with guidance adopted, and assess impacts from sheet piling. Impacts to and protection of infrastructure assets should be agreed with asset owners.	Closed	April 2018
5	Stability	Once the geotechnical and structural design elements have been confirmed and the GMA updated, the monitoring strategy should be considered further. If appropriate, an outline monitoring plan should be provided to demonstrate that works will be controlled to protect surrounding structures / assets.	Closed	April 2018
6	Impact Assessments	A conceptual model should be presented indicating the proposed changes to the site in the context of the ground and groundwater conditions and the adjacent structures / infrastructure, noting potential risks and impacts and proposed mitigation.	Closed	April 2018
7	BIA Format	Non-technical summaries should be included in any updated BIA submissions.	Closed	April 2018
8	Stability	The GMA is to be carried out in accordance with the method proposed to be adopted.	Closed	April 2018

Appendix 3: Supplementary Supporting Documents

None

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