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Basement Impact Assessment
Audit

For

London Borough of Camden

Project Number: 12985-33
Revision: F1

March 2019

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Appendix

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 (BIA) submitted as part of the Planning Submission documentation for 56 Dartmouth Park Road (planning reference 2018/6140/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 LBC Instruction to proceed with the audit identified that the basement proposal neither involves, nor is neighbouring to, a listed building.

1.5. The proposed development is the deepening and expansion of an existing basement. The formation level will be at or above existing underpinned foundation depth to the front / side walls. Underpinning to internal walls and approximately 3m of side wall will be in the order of 0.6m to 1.0m deep.

1.6. Following a query of the previous version of the audit, the BIA has been reviewed by qualified individuals in accordance with the requirements of LBC guidance.

1.7. Desk study information is provided within the SI report and BIA, broadly in accordance with LBC guidance.

1.8. Although the BIA includes a Screening Assessment, a Scoping Section has not been provided for the 'yes' responses to Screening. However, the impacts for each of the matters of concern identified in the screening stage have been discussed and reviewed by a professional holding the required qualifications.

1.9. A site investigation has been undertaken indicating shallow Made Ground over London Clay. The proposed basement will be founded within the London Clay.

1.10. A summary of geotechnical parameters for the retaining wall design is presented in the site investigation report. Outline temporary and permanent structural information is provided.

1.11. A qualitative assessment related to potential ground movement generated by the proposed development indicates that damage to neighbouring structures will be Negligible to Very Slight

(Category 0 to 1). Considering the modest proposals (depth, extent) and the proposed sequencing and propping, this is accepted.

1.12. The site investigation report concludes that desiccation could locally be expected below the proposed excavation level and that foundations may be deepened to 3.35m bgl along the southern edge of the basement. If the foundation depths increase, the BIA should be updated to assess any impacts to neighbouring structures.

1.13. The BIA states that a flood risk assessment is not required. However, adoption of standard flood risk mitigation measures is recommended with due regard to assessment of flood risk from reservoirs.

1.14. An outline construction programme has been provided as requested in the previous version of the audit.

1.15. Queries and requests for information are discussed in Section 4 and summarised in Appendix 2. Considering the supplementary information provided, the BIA meets the requirements of CPG Basements.

2.0 INTRODUCTION

2.1. CampbellReith was instructed by London Borough of Camden (LBC) on 31 December 2018 to carry out a Category B Audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 56 Dartmouth Park Road (planning reference 2018/6140/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: Basements, 2018.
- 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 *"Excavation of existing basement level and front lightwell with planter, to single family dwelling (Class C3)."*

2.6. The audit instruction also confirmed that the proposal does not involve any listed building.

2.7. CampbellReith accessed LBC's Planning Portal on 06 February 2019 and gained access to the following relevant documents for audit purposes:

- Basement Impact Assessment by Alan Conisbee and Associates Limited (Conisbee) (ref: 180447/H Hawker), dated October 2018.
- Site Investigation Report by Ground Engineering Limited (ref: C14561), dated October 2018.
- Basement Design Statement by Edwards Rensen Architects, dated December 2018.
- Edwards Rensen Architects drawings, dated December 2018:
  - Existing Plans (P-02 to P-07)
  - Existing Elevations (P-08 to P-11)
  - Existing Sections (P-11 to P-13)
  - Proposed Plans (BP-14 to BP-16)
  - Proposed Front Elevation (BP-17)
  - Proposed Sections (BP-18 and BP-19)

2.8. The following revised information was received from LBC on 6 March 2019 in response to the queries raised in the initial (rev. D1) BIA audit report. All the documents are available on the planning portal and have therefore not been included on Appendix 3.

- BIA Statement by Ground Engineering Limited, dated 21 February 2019.
- 56 Dartmouth Park Road. Construction Programme by Conisbee.

3.0 BASEMENT IMPACT ASSESSMENT AUDIT CHECK LIST

Item	Yes/No/NA	Comment
Are BIA Author(s) credentials satisfactory?	Yes	Following the previous version of the audit, it has been demonstrated that the BIA has been reviewed by qualified individuals in accordance with the requirements of LBC guidance.
Is data required by Cl.233 of the GSD presented?	Yes	A work programme for construction has been presented.
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	Appendix D of the BIA.
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	Data sources are presented in Appendix D. Justification is provided for 'No' answers.
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	As above.
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	As above. Note EA data indicates potential reservoir flood risk.
Is a conceptual model presented?	Yes	A conceptual model has been described from the site investigation findings in the BIA. See Section 2.0 and 3.0 of the BIA and the site investigation report.

Item	Yes/No/NA	Comment
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	Yes	Although a scoping section has not been included, the impacts for each of the matters of concern identified in the screening stage have been discussed in the BIA.
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	Yes	Although a scoping section has not been included, the impacts for each of the matters of concern identified in the screening stage have been discussed in the BIA.
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	Yes	Although a scoping section has not been included, the impacts for each of the matters of concern identified in the screening stage have been discussed in the BIA.
Is factual ground investigation data provided?	Yes	A site investigation factual report has been provided.
Is monitoring data presented?	Yes	Three groundwater monitoring visits were undertaken as part of the site investigation.
Is the ground investigation informed by a desk study?	Yes	Desk study information is presented at the beginning of the site investigation report.
Has a site walkover been undertaken?	Yes	A walkover was undertaken by Conisbee in June 2018.
Is the presence/absence of adjacent or nearby basements confirmed?	No	Not confirmed.
Is a geotechnical interpretation presented?	Yes	Comments on the ground conditions in relation to foundation design are considered in the site investigation report.
Does the geotechnical interpretation include information on retaining wall design?	Yes	Appropriate for the scale of development.
Are reports on other investigations required by screening and scoping presented?	N/A	

Item	Yes/No/NA	Comment
Are the baseline conditions described, based on the GSD?	No	Presence or absence of neighbouring property basements not confirmed.
Do the base line conditions consider adjacent or nearby basements?	No	As above.
Is an Impact Assessment provided?	Yes	See Section 10 of the BIA.
Are estimates of ground movement and structural impact presented?	Yes	Qualitative statement, see Section 10 of BIA.
Is the Impact Assessment appropriate to the matters identified by screening and scoping?	Yes	
Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme?	Yes	Construction sequencing, propping and mitigation.
Has the need for monitoring during construction been considered?	Yes	Section 9.0 of the BIA.
Have the residual (after mitigation) impacts been clearly identified?	N/A	
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	
Does report state that damage to surrounding buildings will be no worse than Burland Category 1?	Yes	
Are non-technical summaries provided?	Yes	Section 11 of the BIA.

4.0 DISCUSSION

4.1. The Basement Impact Assessment (BIA) was undertaken by Conisbee. The individuals concerned in its production hold MSc, IEng, MIStructE and AMIStructE qualifications. The previous audit requested that the BIA be reviewed by qualified individuals in accordance with CPG Basements 2018. A letter signed by the Director of Ground Engineering Ltd, who holds the required qualifications, has been submitted. The letter confirms the validity of the geotechnical and hydro-geological assessment presented in the BIA.

4.2. The LBC Instruction to proceed with the audit identified that the basement proposal neither involves, nor is neighbouring to, a listed building.

4.3. The application site is 56 Dartmouth Park Road, a two-storey, double fronted detached Victorian house with a back rear garden. A 'T' shaped basement is located underneath the entrance hall and part of the living room. The proposals include the extension of the basement underneath the full footprint of the living room and the construction of a lightwell to the front of the building.

4.4. The enlarged basement will have a lower floor level than the existing, such that some internal cellar walls will require underpinning. The formation level will be at or above existing underpinned foundation depth to the front / side walls. Underpinning to internal walls and approximately 3m of side wall will be in the order of 0.60m to 1.00m deep.

4.5. Desk study information is provided within the SI report and BIA, broadly in accordance with LBC guidance. Although the BIA includes a Screening Assessment, a Scoping Section has not been provided for the 'yes' responses to Screening. However, the impacts for each of the matters of concern identified in the screening stage have been discussed and reviewed by a professional holding the required qualifications.

4.6. It is accepted that the percentage of hardstanding areas will not increase as result of the proposed development. There will be no impacts to the wider hydrological environment.

4.7. It is accepted the site is in an area at low risk of flooding from rivers and seas, or from surface water. The BIA states that a flood risk assessment is not required. However, adoption of standard flood risk mitigation measures is recommended with due regard to assessment of flood risk from reservoirs.

4.8. A ground investigation undertaken by Ground Engineering Ltd in October 2018 identified Made Ground to a maximum of 2.00m bgl underlain by London Clay which was proven to 10.00m bgl. Groundwater seepages were recorded within deep boreholes at 7.50 and 8.20m bgl. Monitoring standpipes, which were installed within the London Clay to a depth of 4.00m bgl, where found

to be dry during the subsequent monitoring visits. However, the BIA states that should any water ingress the excavation, this will be collected into its own dedicated sump and will be pumped and discharged.

4.9. As the basement will be founded within the London Clay, considered to be hydrogeologically unproductive, it is accepted that there will be no impacts to the wider hydrogeological environment.

4.10. During the ground investigation, trial pits have revealed the presence of deep (to approximately 2.50m below ground level (bgl)) concrete foundations to the front / south corner of the building. It appears to have been formed by underpinning to support the structure against the potential for ground movements caused by the presence of large mature trees nearby. To the rear, the trial pits have exposed concrete foundations to a depth of approximately 1.00m bgl. The proposal is to underpin the existing internal walls to a depth of approximately 0.60m to 1.00m to match the existing underpinning level of the front. Lateral propping is proposed in the temporary case to restrict movements and maintain stability. Liner walls and floor slabs will be constructed to provide permanent props.

4.11. A summary of geotechnical parameters for the retaining wall design is presented in the site investigation report. Although values for the bulk density, effective shear strength and angle of shearing resistance for the Made Ground and London Clay are reported, the geotechnical interpretation does not include values for undrained shear strength and Young's Modulus for such strata. Values for the allowable bearing capacity are presented in the ground investigation report and adopted in the structural calculations.

4.12. The BIA states that ground movements caused by the proposal will be within Category 1 (Very Slight) of the Burland Scale. Considering the modest proposals, and that the development will not extend below the depth of the existing underpinned foundations, the qualitative assessment presented is accepted. Should proposals change and the foundation depths increase, the BIA should be updated to assess any impacts to neighbouring structures, including a quantitative assessment of ground movements.

4.13. It should be noted that many of the neighbouring properties in the area as well, as the subject property, have experienced damage to the structures due to subsidence of the ground and that foundations have been underpinned to mitigate against future movements. The site is reported to be in area of moderate to high risk from shrink-swell clays. The site investigation confirmed the London Clay to have a high volume change potential and revealed the presence of a moisture deficit indicative of desiccation to 2.50m bgl due to the presence of a semi-mature London Plane tree approximately 6m away from the front of the property. The site investigation report concludes that desiccation could locally be expected below the proposed excavation level and that foundations may be deepened to 3.35m bgl along the southern edge of the basement.

As stated in 4.13, if foundation depths are proposed to be increased, additional impact assessment should be undertaken.

4.14. An outline construction programme was requested as in the previous version of the audit. This has been presented.

5.0 CONCLUSIONS

5.1. Further to the previous audit request, it has been demonstrated that the BIA has been reviewed by qualified individuals in accordance with the requirements of LBC guidance.

5.2. It is accepted that there will be no impacts to the wider hydrological and hydrogeological environments.

5.3. A site investigation has been undertaken indicating shallow Made Ground over London Clay. The proposed basement will be founded within the London Clay.

5.4. A summary of geotechnical parameters for the retaining wall design is presented in the site investigation report. Outline temporary and permanent structural information is provided.

5.5. A qualitative assessment indicates that damage to neighbouring structures will be a maximum of Category 1 (Very Slight), which is accepted.

5.6. The site investigation report indicates that foundations may be deepened to 3.35m bgl along the southern edge of the basement. If the foundation depths increase, the BIA should be updated to assess any impacts to neighbouring structures.

5.7. Adoption of standard flood risk mitigation measures is recommended with due regard to assessment of flood risk from reservoirs.

5.8. An outline construction programme was previously requested. This has been presented.

5.9. Queries and requests for information are summarised in Appendix 2. Considering the supplementary information provided, the BIA meets the requirements of CPG Basements.

Appendix 1: Residents' Consultation Comment

Residents' Consultation Comments

Surname	Address	Date	Issue raised	Response
Henderson	Redacted	22/01/19	Ground movements and structural stability	See Sections 4.13 – 4.14
Willmott	Redacted	24/01/19	Ground movements and structural stability	See Sections 4.13 – 4.14
Bradfield	Redacted	02/02/19	Ground movements and structural stability	See Sections 4.13 – 4.14
Farrow	54 Dartmouth Park Road	18/01/19	Ground movements and structural stability	See Sections 4.13 – 4.14
Trewartha	Redacted	28/01/19	Ground movements and structural stability	See Sections 4.13 – 4.14
Long	Redacted	28/01/19	Ground movements and structural stability	See Sections 4.13 – 4.14
Seymour	Redacted	28/01/19	Ground movements and structural stability	See Sections 4.13 – 4.14
Game/Jaspert	Redacted	28/01/19	Ground movements and structural stability	See Sections 4.13 – 4.14
French	Redacted	27/01/19	Ground movements and structural stability	See Sections 4.13 – 4.14
Barker	Redacted	27/01/19	Ground movements and structural stability	See Sections 4.13 – 4.14
Skinner	Redacted	27/01/19	Ground movements and structural stability	See Sections 4.13 – 4.14
Hermer	Redacted	26/01/19	Ground movements and structural stability	See Sections 4.13 – 4.14
Odgers	Redacted	27/01/19	Ground movements and structural stability	See Sections 4.13 – 4.14

Appendix 2: Audit Query Tracker

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Audit Query Tracker

Query No	Subject	Query	Status	Date closed out
1	BIA author's qualifications	It should be confirmed that the hydrology, hydrogeology and land stability assessments have been reviewed by individuals with the qualifications indicated CPG Basements.	Closed	20/03/2019
2	Working program	An outline construction programme should be presented in the BIA.	Closed	20/03/2019
3	BIA format	The BIA does not include a scoping section. The BIA should clearly identify the potential impacts for each of the matters of concern identified in the screening stage and indicate appropriate actions/mitigation measures. The scooping should be then reviewed by a person holding the required qualifications.	Closed	20/03/2019

Appendix 3: Supplementary Supporting Documents

None

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