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2 Chalcot Square
London NW6 3AJ

Basement Impact Assessment Audit

For

London Borough of Camden

Project Number: 12066-10

July 2015

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Appendices

1.0 NON-TECHNICAL SUMMARY

1.1. The BIA and EMS have been carried out by individuals who possess suitable qualifications.

1.2. The BIA has confirmed that the proposed basement will be located within the London Clay and that the surrounding slopes are stable.

1.3. It has been identified that any groundwater control during construction will be carried out by sump pumping with suitable controls over the removal of fine soils.

1.4. It is accepted that groundwater will not be affected by the excavation and variations to the groundwater regime are unlikely to occur.

1.5. The proposed basement will be excavated and constructed utilising established techniques.

1.6. A Ground Movement Analysis indicates that Burland Damage Category of 1- “very slight” may occur but it is suggested that this assessment is revisited during the Party Wall process, when fuller and better particulars of the existing vaults to adjacent properties are known.

1.7. Monitoring procedures are proposed during excavation and construction which are acceptable.

1.8. Whilst the development is at negligible risk of surface water flooding generally, the BIA identifies that the front vaults have a high risk of flooding from a rainfall event and proposes construction provisions to overcome the potential problem.

1.9. The BIA has identified mitigation measures to minimise any effect on adjacent properties by the basement development.

1.10. The BIA has identified the need for a Utilities Infrastructure search and an Arboricultural Survey, with which we concur.

2.0 INTRODUCTION

2.1. CampbellReith was instructed by London Borough of Camden (LBC) on 30 April 2015 to carry out a Category B Audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for Chalcot Square, Camden Reference 2015/0914/P and 2015/1261/L.

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; and,

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 the "*Extension to the lower ground floor underneath the front garden, installation of new railings at ground floor level and windows.*"

The Audit Instruction also confirmed that no. 2 Chalcot Square is Grade II listed and forms part of a terrace of listed buildings with nos. 1 and 3 Chalcot Square on either side.

2.6. CampbellReith accessed LBC's Planning Portal on 24 June 2015 and gained access to the following relevant documents for audit purposes:

- Design Access and Heritage Statement
- Geo-Environmental Interpretative Report
- Basement Impact Assessment Engineering Method Statement (EMS)
- CS01 FG Existing & Proposed Lower Ground
- CS02 FG Existing & Proposed Section CC
- CS03 FG Existing & Proposed Sections
- CS05 FG Existing & Proposed Section BB
- Location Plan
- Block Plan

2.7. Following an initial inspection of the Engineering Method Statement, CampbellReith contacted its author, Green Structural Engineering, to discuss the lack of a document they had referred to, namely a Basement Impact Assessment Report by Chelmer Consultancy Services, which was not included within documentation on the Planning Portal.

2.8. CampbellReith was issued with the Chelmer Basement Impact Assessment (BIA) on 25 June by email.

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?	Yes	BIA and EMS.
Does the description of the proposed development include all aspects of temporary and permanent works which might impact upon geology, hydrogeology and hydrology?	Yes	BIA Section 2 to 6.
Are suitable plan/maps included?	Yes	BIA and supplementary drawings.
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	BIA Section 7.3.
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	BIA Section 7.2.
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	BIA Section 7.4.
Is a conceptual model presented?	Yes	BIA Section 10.1.
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	Yes	BIA Section 8.3.

Item	Yes/No/NA	Comment
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	NA	
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	Yes	BIA Section 8.3.
Is factual ground investigation data provided?	Yes	Geo-Environmental Interpretive Report.
Is monitoring data presented?	Yes	BIA Section 10.7.
Is the ground investigation informed by a desk study?	Yes	BIA Section 1.3.
Has a site walkover been undertaken?	Yes	BIA Section 1.3.
Is the presence/absence of adjacent or nearby basements confirmed?	Yes	
Is a geotechnical interpretation presented?	Yes	BIA Section 9.0.
Does the geotechnical interpretation include information on retaining wall design?	Yes	Reinforced concrete retaining wall to front wall.
Are reports on other investigations required by screening and scoping presented?	Yes	Although Arboricultural and Utility services should be researched.
Are 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	BIA Section 10.0.
Are estimates of ground movement and structural impact presented?	Yes	BIA Section 10.5.

Item	Yes/No/NA	Comment
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?	Yes	BIA Section 10.9.
Has the need for monitoring during construction been considered?	Yes	BIA Section 10.7.
Have the residual (after mitigation) impacts been clearly identified?	Yes	BIA Section 10.9.
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 2?	Yes	Estimated to be Burland Category 1.
Are non-technical summaries provided?	Yes	BIA Sections 7.5, 8.4, 9.13 and 11.0.

4.0 DISCUSSION

4.1. The BIA has been carried out by a Chartered Geologist and a Chartered Civil Engineer acting for Chelmer Consultancy Services. Both authors have suitable qualifications.

4.2. The EMS has been carried out by Green Structural Engineering and their report has been reviewed by a Chartered Structural Engineer with suitable qualifications.

4.3. The BIA has identified that the proposed basement is expected to be founded within the London Clay and is unlikely to be detrimental to any groundwater flow.

4.4. It is accepted that groundwater control is likely to require sump pumping during construction works and it is noted that the potential for fine soils to be removed with the groundwater has been identified.

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

4.6. The EMS has indicated that conventional underpinning techniques will be adopted to construct the basement and these proposals are acceptable.

4.7. A Ground Movement Analysis has been undertaken using established software which shows that potential horizontal and vertical movements may result in a Burland Damage Category of 1- *"very slight"*. However, the BIA acknowledges that no details are known of the adjoining vaults to nos. 1 and 3 Chalcot Square. It is suggested that this Ground Movement Analysis is revisited during the Party Wall negotiation process, once better and more accurate details of the adjacent properties are established.

4.8. Monitoring procedures of surrounding walls during excavation and construction are identified within the BIA which are acceptable.

4.9. The BIA has identified that Chalcot Square lies within the Environment Agency's Flood Zone 1 with negligible risk of fluvial flooding. It has also shown that Environmental Agency modelling appears to show a *"Very Low"* risk of surface water flooding generally although with a *"High"* risk of pluvial flooding to the front vaults. Provisions to overcome the potential basement flooding from such an event have been identified.

4.10. The BIA proposes four mitigation measures to minimise any effect on the basement development and its adjacent properties and these should be included within final construction details.

4.11. The BIA identifies, within 10.1.3 and 10.1.4, the potential presence of a below ground tunnel and recommends that a general utilities infrastructure search should be undertaken, with which we concur.

4.12. The BIA also identifies, in 10.4.13, the need for an arboricultural survey to determine the extent of the root protection area required for a Plane tree on the adjacent public footway, with which we concur.

5.0 CONCLUSIONS

5.1. The BIA and EMS have been carried out by individuals who possess suitable qualifications.

5.2. The BIA has confirmed that the proposed basement will be located within the London Clay and that the surrounding slopes are stable.

5.3. It has been identified that any groundwater control during construction will be controllable by sump pumping with suitable controls over the removal of fine soils.

5.4. It is accepted that groundwater will not be affected by the excavation and variations to the groundwater regime are unlikely to occur.

5.5. The proposed basement will be excavated and constructed utilising established techniques.

5.6. A Ground Movement Analysis indicates that Burland Damage Category of 1- “very slight” may occur but it is suggested that this assessment is revisited during the Party Wall process, when fuller and better particulars of the existing vaults to adjacent properties are known.

5.7. Monitoring procedures are proposed during excavation and construction which are acceptable.

5.8. Whilst the development is at negligible risk of surface water flooding generally, the BIA identifies that the front vaults have a high risk of flooding from a rainfall event and proposes construction provisions to overcome the potential problem.

5.9. The BIA has identified mitigation measures to minimise any effect on adjacent properties by the basement development.

5.10. The BIA has identified the need for a Utilities Infrastructure search and an Arboricultural Survey, with which we concur.

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	Utilities Infrastructure	Additional research should be provided.		N/A
2	Arboricultural Report	Report not provided.		N/A
3	Ground Movement Analysis	Revisit during Party Wall Process		N/A

Appendix 3: Supplementary Supporting Documents

None

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