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10 Downside Crescent, London, NW3 2AP

Basement Impact Assessment Audit

For

London Borough of Camden

Project Number: 12466-21

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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 10 Downside Crescent, London NW3 2AP (planning reference 2016/4413/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 proposed development involves the erection of a single storey rear extension, the removal of the rear chimney breast and the excavation of a single storey basement.

1.5. The BIA has been prepared by Bow Tie Construction with supporting documents prepared by Rodrigues Associates. The author's qualifications have not been proven and are therefore not in accordance with CPG4 guidelines.

1.6. Information within the BIA is broadly in line with the aspects recommended of a desk study within the GSD Appendix G1. Utility companies have not been approached with regards to underground infrastructure. The Northern Line (London Underground) is 60m southwest of the site and a Thameslink tunnel is 100m north of the site.

1.7. The BIA states that the site lies directly on a designated non-aquifer, the London Clay and it is accepted that there is a very low risk of groundwater flooding at the site or impact to the wider hydrogeological environment.

1.8. It is accepted that the site is at low risk of surface water flooding. However, assessment in the change to impermeable site area should be made and outline drainage plans should be provided demonstrating that discharge flows have been attenuated, in line with LBC's and Thames Water's criteria.

1.9. No site investigation or interpretative geotechnical information is provided and the potential for perched water above the London Clay has not been investigated. A site investigation along with groundwater monitoring should be undertaken in accordance with the GSD Appendix G2 and data should be presented in an interpretative report in accordance with the GSD Appendix G3.

1.10. Reference is made to a single storey basement at the adjacent property but no ground movement analysis has been presented for review and therefore there is no information on the indicative zone of influence and the presence or absence of other nearby basements, underground structures or listed buildings. A ground movement assessment should be provided which should address both the effects of the excavation and the construction methodology and assess the impact on all of the structures within the zone of influence. It should also provide an outline methodology and guidance for monitoring ground / structural movements during construction.

1.11. More information is required on the proposed control of construction, including control of perched water and structural monitoring, including an outline construction management plan in line with CPG4 and an underpinning / retaining wall bay layout.

1.12. Assessments should be reviewed once the additional information required has been presented, and the impact assessment and mitigation proposals updated, as required.

1.13. Queries and matters requiring further information or clarification are discussed in Section 4 and summarised in Appendix 2. Until the additional information requested has been provided it is not possible to assess whether the requirements of CPG4 have been met.

2.0 INTRODUCTION

2.1. CampbellReith was instructed by London Borough of Camden (LBC) on 19 October 2016 to carry out a Category B Audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 10 Downside Crescent, London NW3 2AP, Camden Reference 2016/4413/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; 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: "Erection of a single storey rear extension and removal of rear chimney breast; excavation of single storey basement; and alterations to front driveway and boundary walls."

The Audit Instruction also confirmed the proposal did not involve a listed building nor was it a neighbour of a listed building.

2.6. CampbellReith accessed LBC's Planning Portal on 5 November 2016 and gained access to the following relevant documents for audit purposes:

- Basement Impact Assessment (ref 129 BIA) dated 9 August 2016 by Bow Tie Construction.
- Site Location Plan dated July 2016 by Prewett Bizley Architects.
- Existing Plans and Elevations and Proposed Plans and Elevations dated June 2016 by Bow Tie Construction.
- Neighbour foundations (8 Downside Crescent) dated June 2016 by Bow Tie Construction.
- Structural Calculations Report (ref 1411) dated October 2016 by Rodrigues Associates.
- Design and access statement dated July 2016 by Bow Tie Construction.
- An Arboricultural Impact Assessment and Tree Protection Plan dated 27th July 2016 by Southern Ecological Solutions Ltd.
- Comments and objections to the proposed development from local residents.

3.0 BASEMENT IMPACT ASSESSMENT AUDIT CHECK LIST

Item	Yes/No/NA	Comment
Are BIA Author(s) credentials satisfactory?	No	The author's qualifications have not been proven and are therefore not in accordance with CPG4 guidelines for all sections.
Is data required by Cl.233 of the GSD presented?	No	Information within the BIA is broadly in line with the information required of a desk study in line with the GSD Appendix G1. Utility companies have not been approached with regards to underground infrastructure. The Northern Line (London Underground) is 60m southwest of the site and a Thameslink tunnel is 100m north of the site.
Does the description of the proposed development include all aspects of temporary and permanent works which might impact upon geology, hydrogeology and hydrology?	No	The BIA is based on assumptions. Outline designs, movement and damage assessments, etc, required.
Are suitable plans/maps included?	Yes	BIA Appendix A.
Do the plans/maps show the whole of the relevant area of study and do they show it in sufficient detail?	Yes	BIA Appendix A.
Land Stability Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	Historical maps and Slope Angle Map consulted and the site walkover has indicated that the site is not on ground with a significant slope / worked ground.
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	The potential for perched water to be present above the London Clay formation level has been identified.
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	Appropriate mapping referenced but screening has not identified Downside Crescent having a low risk of surface water flooding. The site itself is indicated as very low risk.

Item	Yes/No/NA	Comment
Is a conceptual model presented?	No	
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	No	The screening identified that the basement foundations will be in London Clay and deeper than the neighbouring property foundation depths. The report states that both these factors are common challenges which can be met with adequately considered structural design but further assessment required to demonstrate this.
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	No	The BIA states that perched water may be present above the London Clay – discussion required to mitigate construction impacts. The Screening process makes assumptions about the drainage design and discharge flow (Q4 and Q5) which require further assessment.
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	No	There is a change in permeable / impermeable site ratio. Attenuation drainage references need further detailing to assess.
Is factual ground investigation data provided?	No	Within the Land Stability Screening of the BIA (page 5), a reference to Appendix B is made relating to borehole data collected at 23 Downside Crescent. This Appendix has not been made available. Site specific data should be provided.
Is monitoring data presented?	No	
Is the ground investigation informed by a desk study?	N/A	
Has a site walkover been undertaken?	Yes	
Is the presence/absence of adjacent or nearby basements confirmed?	Yes	A single level basement is present in the adjacent property at 8 Downside Crescent. The BIA states that the depth of this adjacent basement has been assessed via an internal inspection.
Is a geotechnical interpretation presented?	No	No site investigation provided or geotechnical data presented.

Item	Yes/No/NA	Comment
Does the geotechnical interpretation include information on retaining wall design?	Yes	Structural Calculations Report details retaining wall design in section 5.
Are reports on other investigations required by screening and scoping presented?	No	No site investigation provided.
Are baseline conditions described, based on the GSD?	No	No site investigation provided.
Do the base line conditions consider adjacent or nearby basements?	Yes	The Neighbours Foundations plan states that the depth of the adjacent basement has been assessed via an internal inspection.
Is an Impact Assessment provided?	No	
Are estimates of ground movement and structural impact presented?	No	
Is the Impact Assessment appropriate to the matters identified by screen and scoping?	No	No impact assessment submitted.
Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme?	No	A temporary works sequence indicating propping is presented, although without movement / damage assessments no conclusion can be reached as to adequacy. Groundwater and drainage have not been addressed.
Has the need for monitoring during construction been considered?	No	More information is required on the proposed construction including a construction management plan in line with CPG4.
Have the residual (after mitigation) impacts been clearly identified?	No	More information is required on the proposed construction including a construction management plan in line with CPG4.
Has the scheme demonstrated that the structural stability of the building and neighbouring properties and infrastructure will be maintained?	No	Assumptions made in the Structural Calculations Report. Site investigation, ground movement assessment, damage impact assessments required.

Item	Yes/No/NA	Comment
Has the scheme avoided adversely affecting drainage and run-off or causing other damage to the water environment?	No	Not proven. It is stated that the 'additional flow from the extension roof will be attenuated. The front driveway will be recovered (sic) with a permeable material'. No proposed drainage plans have been provided.
Has the scheme avoided cumulative impacts upon structural stability or the water environment in the local area?	No	Further consideration of site conditions required. A ground movement assessment is required which should assess the impact on all of the structures within the zone of influence.
Does report state that damage to surrounding buildings will be no worse than Burland Category 2?	No	No ground movement assessment provided.
Are non-technical summaries provided?	No	However, the BIA is written so as to be understandable.

4.0 DISCUSSION

4.1. The BIA has been prepared by Bow Tie Construction with supporting documents prepared by Rodrigues Associates. The author's qualifications have not been proven and are therefore not in accordance with CPG4 guidelines.

4.2. There is no development description within the BIA although the Structural Calculations Report and Architects drawings indicate that a rear extension and basement will be constructed in the rear garden.

4.3. The BIA includes the majority of the information required from a desk study in line with the GSD Appendix G1. However, Utility companies have not been approached with regards to underground infrastructure. The Northern Line (London Underground) is 60m southwest of the site and a Thameslink tunnel is 100m north of the site.

4.4. The site lies directly on a designated non-aquifer, the London Clay and it is accepted that there is a very low risk of groundwater flooding at the site or impact to the wider hydrogeological environment. The proposed basement excavation may encounter perched water above the London Clay Formation. No groundwater monitoring has been undertaken and therefore the level should be confirmed in advance of excavation to inform temporary works contingency planning and control of construction.

4.5. No site investigation has been undertaken on site although a reference is made to borehole data collected at 23 Downside Crescent, but this has not been provided for review. Given the distance (60m north of the proposed development) from the site and the planned development, this data is not considered sufficient to confirm ground and groundwater conditions. A site investigation should be undertaken broadly in accordance with the GSD Appendix G2. The data should be presented in an interpretative report in accordance with GSD Appendix G3, including a conceptual site model.

4.6. It is accepted that the site is at low to very low risk of surface water flooding but assumptions have been made about the drainage design, including the attenuation of discharge flow. The development results in an increase in impermeable site area. Outline drainage plans should be provided, including attenuation proposals, with sufficient assessment to demonstrate discharge flows will be in accordance with LBC's and Thames Water's requirements.

4.7. Reference is made to a single storey basement at the adjacent property. No ground movement analysis (GMA) has been presented for review and therefore there is no information on the indicative zone of influence of the development. The presence or absence of other nearby basements, underground structures or listed buildings within that zone should be confirmed. A GMA should therefore be provided which should address both the excavation and construction

methodology effects and assess the damage impact on all of the structures within the zone of influence (including the applicant's property and neighbouring properties within the zone with shallow foundations). In line with CPG4, where Category 1 or a higher damage category is identified in a ground movement assessment, the BIA should provide mitigation measures to address ground movement. It should also provide an outline methodology and guidance for monitoring ground / structural movements during construction.

4.8. Permanent retaining walls designs have been provided, along with outline temporary works sequencing based on underpinning. Stiff propping is proposed throughout the construction sequence and outline prop sizing has been calculated. The potential for perched water above the London Clay requires further discussion, both in terms of permanent waterproofing grade and outline proposals and in the temporary case, for control of construction. The permanent retaining wall takes a conservative approach and assumes full hydrostatic pressure to be accounted for in the final design. More information is required on the proposed construction including an outline construction management plan in line with CPG4 and a drawing showing the underpinning / retaining wall bay layout.

4.9. Non-technical summaries should be provided within any revisions to the BIA submitted.

4.10. Queries and matters requiring further information or clarification are summarised in Appendix 2.

5.0 CONCLUSIONS

5.1. The qualifications of the authors have not been stated and therefore these need to be confirmed to ascertain that they meet the LBC requirements.

5.2. The Structural Calculations Report and Architects drawings indicate that a rear extension and basement will be constructed in the rear garden.

5.3. Information within the BIA is broadly in line with aspects recommended in the GSD Appendix G1. The presence of any underground utility infrastructure, listed buildings and neighbouring foundation depths / basements to be provided.

5.4. No site investigation or interpretative geotechnical information is provided and the potential for perched water above the London Clay has not been investigated. A site investigation along with groundwater level monitoring should be undertaken in accordance with GSD Appendix G2 and then data should be presented in an interpretative report in accordance with GSD Appendix G3.

5.5. It is accepted that there is a very low risk of groundwater flooding at the site or impact to the wider hydrogeological environment.

5.6. It is accepted that the site is at low risk of surface water flooding but no drainage / attenuation plans have been provided in order to assess hydrological impacts.

5.7. The BIA does not include a Ground Movement Assessment and therefore no conclusions can be made regarding land or structural stability issues relating to the proposed development. A GMA should therefore be provided along with an outline methodology and guidance for monitoring ground / structural movements during construction.

5.8. More information is required on the proposed control of construction, including control of perched water and structural monitoring, including an outline construction management plan in line with CPG4 and an underpinning / retaining wall bay layout.

5.9. Queries and matters requiring further information or clarification are discussed in Section 4 and summarised in Appendix 2. Until the additional information requested has been provided it is not possible to assess whether the requirements of CPG4 have been met.

Appendix 1: Residents' Consultation Comments

Residents' Consultation Comments

Surname	Address	Date	Issue raised	Response
Holdsworth	8 Downside Crescent (assumed based on information provided in BIA Audit Instruction)	30th September 2016	'We have reviewed the plans and are supportive of the proposed works as they are largely in line with what we ourselves built in 2011, including a basement'.	N/A

Appendix 2: Audit Query Tracker

Audit Query Tracker

Query No	Subject	Query	Status/Response	Date closed out
1	Author's qualifications	Evidence of author's qualifications to be provided in accordance with CPG4.	Open – to be provided	
2	Site investigation	No site investigation or interpretative geotechnical. No groundwater monitoring.	Open – to be provided in line with GSD G2 / G3	
3	Stability	Temporary works / construction management.	Open – planning for groundwater, control of construction, monitoring of structures, management plan in line with CPG4 to be provided.	
4	Surface Water Flow	Change in permeable site area noted, along with reference to attenuation SUDS.	An outline drainage plan should be provided.	
5	Stability	Ground Movement Assessment and Damage Assessment	A ground movement assessment should be provided which should address both the excavation and construction methodology effects. It should also identify a zone of influence and assess all structures within the zone.	
6	BIA Format	Impact Assessment	Impact assessment should be presented for issues carried through scoping.	
7	BIA Format	Impact Mitigation Measures	In response to GMA / damage assessment and BIA, best practise / requirements to mitigate impacts should be provided.	
8	Desk Study	Underground infrastructure	Underground utility infrastructure information should be provided.	
9	Stability	Construction Methodology	A description of construction methodology should be provided, together with a basement layout showing underpinning / retaining wall bay sequence.	

Appendix 3: Supplementary Supporting Documents

None

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