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10 Downside Crescent, London, NW3 2AP

Basement Impact Assessment Audit

For

London Borough of Camden

Project Number: 12466-21

Revision: F1

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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 original BIA was prepared by Bow Tie Construction with supporting documents prepared by Rodrigues Associates. In the revised submissions, assessments by ESI Limited, Site Analytical Services Limited (SAS) and Geotechnical and Environmental (GEA) Limited are also presented. The author's qualifications are in accordance with LBC guidance.

1.6. Information within the BIA is broadly in line with the aspects recommended of a desk study within LBC guidance. The revised submissions include a search to identify any nearby sensitive utilities and underground structures.

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. In the revised submission, an attenuation SUDS scheme is proposed which will reduce off-site discharge flow rates, benefitting the wider hydrological environment.

1.9. No site investigation or interpretative geotechnical information was originally presented. In the revised submissions, sufficient factual and interpretative geotechnical information is provided.

1.10. The original BIA did not include sufficient assessment of ground movements and potential impacts to neighbouring structures. The revised submissions include a ground movement and damage impact assessment that confirms damage to neighbouring structures to be Category 0 (Negligible). A structural monitoring scheme is recommended to ensure construction is

appropriately controlled to maintain damage to within the limits predicted, which should be secured by a Condition of Planning.

1.11. The revised submissions include sufficient permanent and temporary works information, including sequencing and propping arrangements, and outline structural calculations, to demonstrate stability.

1.12. There are no impacts related to slope stability.

1.13. Queries and matters requiring further information or clarification are discussed in Section 4 and summarised in Appendix 2. Considering the revised submissions, 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 obtained 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.

2.7. CampbellReith accessed LBC's Planning Portal in May and August 2017 and obtained the following relevant documents for audit purposes, provided in response to the original Audit Report and queries raised during the Audit process:

- Basement Impact Assessment (ref 17/26538-2) dated April 2017 by Site Analystical Services Ltd.
- Construction Method Statement by Bow Toe Construction.
- Basement Impact Assessment (ref 65914R1, Final) dated May 2017 by ESI Limited and re-issued and superseded in August 2017 (ref 65914R1 Rev 1, Final).
- Update Drainage Drawings dated 25 May 2017 and re-issued and superseded in August 2017.
- Report on a Phase 1 Risk Assessment (ref 17/26538) by Site Analytical Services Ltd.
- Supplementary Basement Impact Assessment Report (ref J7190, Issue 1, Final) dated 5 August 2017.
- Structural Calculations and Cover Letter dated 7 July 2017 by Rodrigues Associates.
- Email from Asif Noor to LBC dated 10 August 2017 in answer to CampbellReith Queries.

3.0 BASEMENT IMPACT ASSESSMENT AUDIT CHECK LIST

Item	Yes/No/NA	Comment
Are BIA Author(s) credentials satisfactory?	Yes	Provided in updated submissions.
Is data required by Cl.233 of the GSD presented?	Yes	Provided in updated submissions.
Does the description of the proposed development include all aspects of temporary and permanent works which might impact upon geology, hydrogeology and hydrology?	Yes	Provided in updated submissions.
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.
Is a conceptual model presented?	Yes	Provided in updated submissions – sufficient description for assessment.

Item	Yes/No/NA	Comment
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	Yes	Provided in updated submissions.
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	Yes	Provided in updated submissions.
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	Yes	Provided in updated submissions.
Is factual ground investigation data provided?	Yes	Provided in updated submissions.
Is monitoring data presented?	Yes	Provided in updated submissions.
Is the ground investigation informed by a desk study?	Yes	Provided in updated submissions.
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?	Yes	Provided in updated submissions.
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?	Yes	Provided in updated submissions.
Are baseline conditions described, based on the GSD?	Yes	Provided in updated submissions.

Item	Yes/No/NA	Comment
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?	Yes	Provided in updated submissions.
Are estimates of ground movement and structural impact presented?	Yes	Provided in updated submissions.
Is the Impact Assessment appropriate to the matters identified by screen and scoping?	Yes	Provided in updated submissions.
Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme?	Yes	Provided in updated submissions.
Has the need for monitoring during construction been considered?	Yes	Provided in updated submissions.
Have the residual (after mitigation) impacts been clearly identified?	Yes	Provided in updated submissions.
Has the scheme demonstrated that the structural stability of the building and neighbouring properties and infrastructure will be maintained?	Yes	Provided in updated submissions.
Has the scheme avoided adversely affecting drainage and run-off or causing other damage to the water environment?	Yes	Provided in updated submissions.
Has the scheme avoided cumulative impacts upon structural stability or the water environment in the local area?	Yes	Provided in updated submissions.
Does report state that damage to surrounding buildings will be no worse than Burland Category 2?	Yes	Provided in updated submissions. Structural monitoring to ensure damage impacts are maintained within predicted limites should be secured by a Condition of Planning.

Item	Yes/No/NA	Comment
Are non-technical summaries provided?	Yes	Provided in updated submissions.

4.0 DISCUSSION

4.1. The original BIA was prepared by Bow Tie Construction with supporting documents prepared by Rodrigues Associates. In the revised submissions, assessments by ESI Limited, Site Analytical Services Limited (SAS) and Geotechnical and Environmental (GEA) Limited are also presented. The author's qualifications are in accordance with CPG4.

4.2. 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.

4.3. The BIA includes the majority of the information required from a desk study in line with the GSD Appendix G1. The revised submissions include a search to identify any nearby sensitive utilities and underground structures. The Northern Line (London Underground) is southwest of the site (>20m) 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. In the revised submissions groundwater monitoring has been undertaken and further monitoring will be undertaken in advance of construction, to inform temporary works contingency planning and control of construction. Any perched groundwater encountered is likely to be limited in volume and controlled by sump pumping, which should be undertaken in such a manner as to ensure no loss of fine grained soils from the surrounding ground.

4.5. No site investigation or interpretative geotechnical information was originally presented. In the revised submissions, sufficient factual and interpretative geotechnical information is provided, in accordance with the GSD Appendix G2 and Appendix G3, to demonstrate suitable founding conditions and the basis of structural stability.

4.6. It is accepted that the site is at low to very low risk of surface water flooding. In the revised submission, an attenuation SUDS scheme is proposed which will reduce off-site discharge flow rates, benefitting the wider hydrological environment. An assessment is presented which accounts for the increase in impermeable site area and calculates run-off rates in accordance with the relevant guidance, including an allowance for climate change. A 5,000 litre attenuation tank will be installed within the rear garden with hydrobrake, limiting off-site discharge flow rates to a maximum of 1.1 litres per second.

4.7. Reference is made to a single storey basement at the adjacent property. The original BIA did not include sufficient assessment of ground movements and potential impacts to neighbouring structures. The revised submissions include a ground movement and damage impact

assessment that confirms damage to neighbouring structures to be Category 0 (Negligible). It also identifies potential damage to the subject site of Category 2, but notes that sufficient mitigation in the form of underpinning and transitional underpinning will be utilised to limit damage. The assessments predict ground movements, including the effects of heave, in line with expectations for a development of the proposed scale and depth, and are accepted.

4.8. A structural monitoring scheme is recommended in the GMA to ensure construction is appropriately controlled to maintain damage to within the limits predicted, which should be secured by a Condition of Planning and implemented on site. The trigger values should be calculated with reference to the GMA and in agreement with Party Wall Surveyors.

4.9. 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 permanent retaining wall takes a conservative approach and assumes full hydrostatic pressure to be accounted for in the final design. The revised submissions provide additional temporary works information, confirming outline sequencing and propping arrangements.

4.10. There are no impacts relating to slope stability.

4.11. Non-technical summaries are provided in the revised submission.

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

5.0 CONCLUSIONS

5.1. In the revised submissions, the author's qualifications are in accordance with LBC guidance.

5.2. The Structural Calculations Report and Architect's drawings indicate that an extension and basement will be constructed in the rear garden, confirmed in the revised BIA submissions.

5.3. The revised submissions have generally provided the additional information requested to evidence assessments.

5.4. No site investigation or interpretative geotechnical information was originally presented. In the revised submissions, sufficient factual and interpretative geotechnical information is provided.

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. In the revised submission, an attenuation SUDS scheme is proposed which will reduce off-site discharge flow rates, benefitting the wider hydrological environment.

5.7. The original BIA did not include sufficient assessment of ground movements and potential impacts to neighbouring structures. The revised submissions include a ground movement and damage impact assessment that confirms damage to neighbouring structures to be Category 0 (negligible).

5.8. A structural monitoring scheme is recommended to ensure construction is appropriately controlled to maintain damage to within the limits predicted, which should be secured by a Condition of Planning.

5.9. The revised submissions include sufficient permanent and temporary works information to demonstrate stability will be maintained if properly executed.

5.10. There are no impacts related to slope stability.

5.11. Queries and matters requiring further information or clarification summarised in Appendix 2. Considering the revised submissions, 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.	Closed	August 2017
2	Site investigation	No site investigation or interpretative geotechnical. No groundwater monitoring.	Closed	August 2017
3	Stability	Temporary works / construction management.	Closed	August 2017
4	Surface Water Flow	Change in permeable site area noted, along with reference to attenuation SUDS.	Closed	August 2017
5	Stability	Ground Movement Assessment and Damage Assessment	Closed Note: a structural monitoring strategy should be implemented to maintain damage impacts within predicted limits to neighbouring structures, to be secured by a Condition of Planning.	August 2017
6	BIA Format	Impact Assessment	Closed	August 2017
7	BIA Format	Impact Mitigation Measures	Closed	August 2017
8	Desk Study	Underground infrastructure	Closed	August 2017
9	Stability	Construction Methodology	Closed	June 2017

Appendix 3: Supplementary Supporting Documents

Basement Impact Assessment (ref 17/26538-2) dated April 2017 by Site Analystical Services Ltd

Construction Method Statement by Bow Toe Construction

Basement Impact Assessment by ESI Limited, August 2017 (ref 65914R1 Rev 1, Final)

Update Drainage Drawings dated August 2017

Report on a Phase 1 Risk Assessment (ref 17/26538) by Site Analytical Services Ltd (and Appendices)

Supplementary Basement Impact Assessment Report (ref J7190, Issue 1, Final) dated 5 August 2017

Structural Calculations and Cover Letter dated 7 July 2017 by Rodrigues Associates

Email from Asif Noor to LBC dated 10 August 2017

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