CampbellReith
consulting engineers

10 Downside Crescent, London NW3 2AP

Basement Impact Assessment Audit

For

London Borough of Camden

Project Number: 12727-92

Revision: F1

December 2018

Campbell Reith Hill LLP
Friars Bridge Court
41-45 Blackfriars Road
London
SE1 8NZ

T:+44 (0)20 7340 1700
E:london@campbellreith.com
W:www.campbellreith.com

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Author	G Kite, BSc MSc DIC FGS
Project Partner	E M Brown, BSc MSc CGeol FGS
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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 2018/2615/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 BIA has been prepared by Geotechnical and Environmental Associates Ltd (GEA) with structural calculations and drawings by Rodrigues Associates. The qualifications of the authors are in accordance with LBC guidance.

1.5. The application property forms one half of a pair of three-storey properties located on the eastern side of Downside Crescent. The proposed basement will be 3.50m deep under the full footprint of the house and extend 5m into the rear garden. Two new lightwells will be created at the rear of the property.

1.6. The BIA includes the majority of the information required from a desk study in accordance with LBC guidance. In the revised submission, an outline construction programme has been presented.

1.7. The previous BIA references geotechnical interpretation that was inconsistent with the structural calculations presented. The geotechnical parameters and structural calculations have now been confirmed in the revised submissions.

1.8. The proposed basement will be founded in the London Clay Formation. Groundwater was not encountered during the investigation although subsequent monitoring recorded groundwater at approximately 2m below ground level. The basement will be formed by underpinning techniques beneath the current building footprint. Contingency measures to control groundwater and maintain stability have now been confirmed in the revised submissions.

1.9. In the revised submissions, construction methodology and temporary works information has been clarified, including the use of trench sheeting to support excavations outside of the current building footprint in the temporary case.

1.10. A revised Ground Movement Assessment (GMA) is presented, indicating impacts of Category 0 to 1 (Negligible to Very Slight) to neighbouring structures.

1.11. Although the site is within 5m of the highway and impact is accepted to be minimal. Protection of any utility assets within the highway should be agreed with asset owners, as applicable.

1.12. The site is understood to be 35m northeast of the Northern Line tunnels. The BIA states the site is outside the exclusion zone and will not impact TFL assets.

1.13. The structural calculations reference a Movement Monitoring Specification (Appendix B) that is provided for review in the revised submissions.

1.14. The BIA states the property is at low risk of surface water flooding.

1.15. The revised BIA indicates that off-site discharge flow rates will be attenuated to meet policy criteria. The final drainage scheme should be agreed with Thames Water and LBC.

1.16. Queries and requests for further information are discussed in Section 4 and summarised in Appendix 2. Considering the revised submissions, the BIA confirms that the basement proposals meet the criteria of CPG Basements.

2.0 INTRODUCTION

2.1. CampbellReith was instructed by London Borough of Camden (LBC) on 19th July 2018 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 2018/2615/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): Basements.
- Camden Development Policy (DP) 27: Basements and Lightwells.
- Camden Development Policy (DP) 23: Water.
- The 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; 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 planning portal describes the proposal as: *"subterranean excavation to create a new basement level, supplied by two enclosed lightwells located to the rear of the dwelling".* Also proposed is the erection of a single storey rear extension with a flat roof, removal of a rear

chimney breast and alterations to front driveway and increased height of an existing boundary wall to the front of the property.

The planning portal confirmed the site lies within the Parkhill and Upper Park Conservation Area but the site and neighbouring properties are not listed buildings.

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

- Basement Impact Assessment (ref J1719A) dated June 2018 by GEA.
- Structural Calculations and Structural Drawings (Job No. 1411 First Issue) dated 01.05 2018 by Rodrigues Associates.
- Existing and proposed elevations and plans dated April 2018 by Rodrigues Associates.
- Arboricultural Impact Assessment (ref 10 Downside Crescent) dated 27th July 2016 by Southern Ecological Solutions (SES).
- Design and Access Statement (May 2018) original by Bow Tie Construction and updated by XUL Architecture.

2.7. CampbellReith was provided with the following relevant documents for audit purposes in August and September 2018:

- Basement Impact Assessment (ref J1719A rev 3) dated 27 September 2018 by GEA.
- Structural Calculations and Structural Drawings (Job No. 1411 First Issue) including Appendix B dated 01.05 2018 by Rodrigues Associates.
- Outline Construction Programme.

2.8. CampbellReith was provided with the following relevant documents for audit purposes on 23 November 2018:

- Basement Impact Assessment (ref J1719A rev 4) dated 20 November 2018 by GEA.
- Structural Calculations and Structural Drawings (Job No. 1411 First Issue) including Appendix B dated 19 November 2018 by Rodrigues Associates.

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	Construction methodology revised in updated submission.
Does the description of the proposed development include all aspects of temporary and permanent works which might impact upon geology, hydrogeology and hydrology?	Yes	Construction methodology and contingency dewatering information revised in updated submission.
Are suitable plans/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	
Is a conceptual model presented?	Yes	Ground model updated in revised submissions

Item	Yes/No/NA	Comment
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	Yes	
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	Yes	Contingency dewatering information revised in updated submission.
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	Yes	Attenuated drainage proposed.
Is factual ground investigation data provided?	Yes	
Is monitoring data presented?	Yes	
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	The adjoining property 8 Downside Crescent has an existing single level basement assumed depth 2.2m.
Is a geotechnical interpretation presented?	Yes	Ground model and design parameters confirmed in revised submissions.
Does the geotechnical interpretation include information on retaining wall design?	Yes	
Are reports on other investigations required by screening and scoping presented?	Yes	Arboricultural Assessment.
Are baseline conditions described, based on the GSD?	Yes	

Item	Yes/No/NA	Comment
Do the base line conditions consider adjacent or nearby basements?	Yes	
Is an Impact Assessment provided?	Yes	
Are estimates of ground movement and structural impact presented?	Yes	Updated in revised submissions.
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	Updated in revised submissions.
Has the need for monitoring during construction been considered?	Yes	Appendix B Structural Report presented with details.
Have the residual (after mitigation) impacts been clearly identified?	Yes	Updated in revised submissions.
Has the scheme demonstrated that the structural stability of the building and neighbouring properties and infrastructure will be maintained?	Yes	Ground model, construction methodology, GMA updated in revised submissions.
Has the scheme avoided adversely affecting drainage and run-off or causing other damage to the water environment?	Yes	Drainage assessment provided.
Has the scheme avoided cumulative impacts upon structural stability or the water environment in the local area?	Yes	Ground model, construction methodology, GMA updated in revised submissions. Drainage assessment provided.
Does report state that damage to surrounding buildings will be no worse than Burland Category 1?	Yes	Ground model, construction methodology, GMA updated in revised submissions.
Are non-technical summaries provided?	Yes	

4.0 DISCUSSION

4.1. The BIA has been prepared by GEA with structural calculations and structural drawings by Rodrigues Associates. The qualifications of the authors are in accordance with LBC guidance.

4.2. As stated in the BIA presented by GEA, a BIA by others was previously submitted relating to the previous planning application for the property. The scheme has subsequently been revised but no further ground investigation has been undertaken.

4.3. The site comprises a three storey terraced residential building located on the eastern side of Downside Crescent which is understood to have been constructed between 1915 and 1934. The proposal is to excavate the existing cellar to 3.50m below ground level (bgl) / 61.90m AOD to create a single storey basement beneath the property. Two new lightwells will be created at the rear of the property in addition to an extension of the ground floor at the rear of the property. The proposed basement will extend around 5m beyond the rear principal elevation of the building.

4.4. The BIA includes the majority of the information required from a desk study in accordance with the GSD Appendix G1.

4.5. In the revised submission, an outline construction programme has been presented.

4.6. A site investigation was undertaken by SAS in March 2017 comprising one rotary percussive borehole (BH1) and one continuous flight auger borehole (BH2). No groundwater was encountered during the investigation. The ground conditions comprise Made Ground over Head Deposits which in turn overlie London Clay.

4.7. Groundwater was not encountered during drilling but was identified during subsequent monitoring. The BIA identifies that there is potential for perched groundwater within the Head Deposits to collect around the basement during construction and in the long term and therefore the basement should be fully waterproofed and designed to withstand hydrostatic pressures. Levels should be confirmed in advance of excavation to inform temporary works contingency planning and control of construction.

4.8. Considering the underlying unproductive strata, the proposed development will not impact the wider hydrogeological environment.

4.9. The previous BIA references a geotechnical interpretation that was inconsistent with the structural calculations presented. The geotechnical parameters and structural calculations have now been confirmed in the revised submissions. These are considered to be reasonably conservative for the purposes of assessment.

4.10. The basement will be founded in the London Clay Formation. The basement will be formed by underpinning techniques beneath the current building footprint. In the revised submissions, construction methodology and temporary works information has been clarified, including the use of trench sheeting to support excavations outside of the current building footprint in the temporary case. Sequencing and propping proposals are accepted.

4.11. Contingency measures to control groundwater and maintain stability have now been confirmed. It should be noted the development will need to obtain a Groundwater Risk Management Permit from Thames Water prior to any discharge to the public sewer / drainage network.

4.12. The BIA notes the potential for shrink / swell movements in shallow soils due to changes in soil moisture conditions due to nearby trees. No removal of trees during construction is proposed within the development's footprint and there are therefore no impacts to any surrounding shallow foundations. It is also noted that proposed foundation depths are beyond the likely zone of shrink / swell influence.

4.13. The BIA notes that 8 Downside Crescent has a rear extension basement which is assumed to be 2.2m below existing ground level. Shallow foundations have been assumed for the other surrounding structures.

4.14. A revised GMA is presented which has been undertaken using software programs PDisp and XDisp. The previous GMA was not accepted, with queries raised regarding construction methodology, settlement of foundations, the ground model and geotechnical parameters adopted, and the GMA methodology itself. The revised impact assessment indicates Category 0 to 1 (Negligible to Very Slight) to neighbouring structures and is accepted, having adequately addressed the previous queries.

4.15. The site is within 5m of the highway but it is accepted the impact from the proposed basement is concluded to be minimal. Protection of any utility assets within the highway should be agreed with asset owners, as applicable.

4.16. The site is understood to be approximately 35m northeast of the Northern Line underground tunnels. The BIA states the site is outside the exclusion zone and will not impact these assets.

4.17. The BIA recommends structural monitoring of the existing building on site and the neighbouring structures during the works, to ensure construction is controlled and to maintain impacts within predicted limits. The structural calculations reference a Movement Monitoring Specification (Appendix B) that are provided for review in the updated submissions. The proposed monitoring is accepted.

4.18. The site is not located within a Local Flood Risk Zone and is at very low risk of surface water flooding. Downside Crescent was not flooded during the 1975 and 2002 flood events.

4.19. The proposed development will increase the proportion of impermeable site area. The revised BIA indicates that off-site discharge flow rates will be attenuated to meet policy criteria. The final drainage scheme should be agreed with Thames Water and LBC.

4.20. A non-technical summary is presented with the BIA submission.

5.0 CONCLUSIONS

5.1. The qualifications of the authors are in accordance with LBC guidance.

5.2. The BIA includes the majority of the information required from a desk study in accordance with LBC guidance.

5.3. In the revised submission, an outline construction programme has been presented.

5.4. The underlying ground conditions comprise Made Ground over Head Deposits and London Clay. Groundwater is likely to be present within the Head Deposits. The proposed development will not impact the wider hydrogeological environment.

5.5. The previous BIA references geotechnical interpretation that was inconsistent with the structural calculations presented. The geotechnical parameters and structural calculations have now been confirmed in the revised submissions.

5.6. The basement will be formed by underpinning techniques beneath the current building footprint. Contingency measures to control groundwater and maintain stability have now been confirmed in the revised submissions.

5.7. In the revised submissions, construction methodology and temporary works information has been clarified.

5.8. A revised Ground Movement Assessment (GMA) is presented, indicating impacts of Category 0 to 1 (Negligible to Very Slight) to neighbouring structures.

5.9. It is accepted the impact from the proposed basement to the highway is minimal. Protection of any utility assets within the highway should be agreed with asset owners, as applicable

5.10. The structural calculations reference a Movement Monitoring Specification (Appendix B) that is provided for review in the revised submissions.

5.11. The site is at very low risk of surface water flooding.

5.12. The proposed scheme will increase the proportion of impermeable area. The revised BIA indicates that off-site discharge flow rates will be attenuated to meet policy criteria. The final drainage scheme should be agreed with Thames Water and LBC.

5.13. Queries and requests for further information are summarised in Appendix 2. Considering the revised submissions, the BIA confirms that the basement proposals meet the criteria of CPG Basements.

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	BIA	An outline construction programme should be provided.	Closed	October 2018
2	Hydrology	Increase in impermeable area to be confirmed and attenuation drainage assessment to be provided.	Closed	October 2018
3	Stability	Groundwater control strategy to maintain stability during underpinning to be confirmed.	Closed	December 2018
4	Stability	Construction methodology and temporary works for retaining walls outside of the existing building footprint to be provided.	Closed	December 2018
5	Stability	The geotechnical parameters and structural loads to be confirmed. Assessments to be updated as required.	Closed	December 2018
6	Stability	The current GMA has ignored new foundation loads. The loads and settlements should be considered in relation to the GMA and potential impacts to neighbours.	Closed	December 2018
7	Stability	The referenced Movement Monitoring Specification (Appendix B, Structural Calculations) should be provided for review.	Closed	August 2018

Appendix 3: Supplementary Supporting Documents

None

London

Friars Bridge Court
41- 45 Blackfriars Road
London, SE1 8NZ

T: +44 (0)20 7340 1700
E: london@campbellreith.com

Birmingham

Chantry House
High Street, Coleshill
Birmingham B46 3BP

T: +44 (0)1675 467 484
E: birmingham@campbellreith.com

Surrey

Raven House
29 Linkfield Lane, Redhill
Surrey RH1 1SS

T: +44 (0)1737 784 500
E: surrey@campbellreith.com

Manchester

No. 1 Marsden Street
Manchester
M2 1HW

T: +44 (0)161 819 3060
E: manchester@campbellreith.com

Bristol

Wessex House
Pixash Lane, Keynsham
Bristol BS31 1TP

T: +44 (0)117 916 1066
E: bristol@campbellreith.com

UAE

Office 705, Warsan Building
Hessa Street (East)
PO Box 28064, Dubai, UAE

T: +971 4 453 4735
E: uae@campbellreith.com