

**61 Netherall Gardens,
London, NW3 5RE**

**Basement Impact Assessment
Audit**

For
London Borough of Camden

Project Number: 12727-24
Revision: D1

January 2018

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

T: +44 (0)20 7340 1700
F: +44 (0)20 7340 1777
E: london@campbellreith.com
W: www.campbellreith.com

Document History and Status

Revision	Date	Purpose/Status	File Ref	Author	Check	Review
D1	Draft	Comment	FDfd-12727-24-040118- 61 Netherall Gardens D1.doc	F Drammeh	R Morley	R Morley

This document has been prepared in accordance with the scope of Campbell Reith Hill LLP's (CampbellReith) appointment with its client and is subject to the terms of the appointment. It is addressed to and for the sole use and reliance of CampbellReith's client. CampbellReith accepts no liability for any use of this document other than by its client and only for the purposes, stated in the document, for which it was prepared and provided. No person other than the client may copy (in whole or in part) use or rely on the contents of this document, without the prior written permission of Campbell Reith Hill LLP. Any advice, opinions, or recommendations within this document should be read and relied upon only in the context of the document as a whole. The contents of this document are not to be construed as providing legal, business or tax advice or opinion.

© Campbell Reith Hill LLP 2015

Document Details

Last saved	15/01/2018 17:32
Path	FDfd-12727-24-040118- 61 Netherall Gardens D1.doc
Author	F Drammeh, MEng (Hons)
Project Partner	E M Brown, BSc MSc CGeol FGS
Project Number	12727-24
Project Name	61 Netherall Gardens
Planning Reference	2017/5627/P

Contents

1.0 Non-technical summary 1

2.0 Introduction 3

3.0 Basement Impact Assessment Audit Check List..... 5

4.0 Discussion 9

5.0 Conclusions 13

Appendix

- Appendix 1: Residents’ Consultation Comments
- Appendix 2: Audit Query Tracker
- Appendix 3: Supplementary Supporting Documents

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 61 Netherall Gardens, NW3 5RE (planning reference 2017/5627/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 qualifications of the BIA authors should be demonstrated to be in accordance with LBC guidance for all assessments.
- 1.5. It would be beneficial if the BIA is updated to reference and provide a summary of the findings of the other assessments undertaken with the reports made consistent with each other.
- 1.6. The BIA makes reference to the 2015 Camden Local Plan. The 2017 Camden Local Plan together with the other current guidance documents should also be referenced.
- 1.7. The BIA was not undertaken strictly in accordance with the guidance documents. It is recommended future revisions are presented to include information in Section 4 of this audit.
- 1.8. The descriptions of the proposed basement are subjective and it is recommended compass directions are used for clarity.
- 1.9. The construction methodology should be clarified. An indicative structural methodology and sequence with temporary propping should be provided. Outline retaining wall calculations should be presented.
- 1.10. Evidence of consultation with adjacent asset owners should be provided. A utilities search should be undertaken. Impacts to assets / utilities should be assessed and sufficient protection of the assets allowed for, as agreed with each asset owner.
- 1.11. The retaining wall parameters provided should be based on the site specific information and sufficient for design.

- 1.12. A ground movement and damage assessment should be undertaken for the subject site and neighbouring properties. This should consider the various construction methods and should be consistent with the structural methodology and sequence.
- 1.13. A preliminary structural monitoring strategy, with suggested trigger levels and contingency measures based on the ground movement assessment should be presented.
- 1.14. An indicative works programme is requested. A detailed programme may be provided by the appointed Contractor at a later date.
- 1.15. It is accepted that there are no slope stability concerns regarding the proposed development and it is not in an area prone to flooding.
- 1.16. Queries and requests for information are summarised in Appendix 2. Until the additional information and further assessments requested are presented, the BIA does not meet the requirements of CPG4.

2.0 INTRODUCTION

- 2.1. CampbellReith was instructed by London Borough of Camden (LBC) on 7 December 2017 to carry out a Category B Audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 61 Netherall Gardens, NW3 5RE (Camden planning reference 2017/5627/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.
 - Local Plan 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 *"Conversion of 3 x 3 bed flats into 4 x 2 beds & 1 x 1 bed flats. Erection of a single storey side and rear extension at ground level. Extensions at basement level, including front and rear lightwells. Erection of a roof extension. Demolish two storey building and erection of 2 x 3 bedroom, four storey dwellings including a new basement floor."*

- 2.6. The Audit Instruction confirmed 61 Netherall Gardens is not listed, nor is it a neighbour to listed buildings.
- 2.7. CampbellReith accessed LBC's Planning Portal on 2 January 2018 and gained access to the following relevant documents for audit purposes:
- BIA Impact Screening Assessment Stages 1 and 2, CTP Consulting Engineers, dated 28 September 2017.
 - Basement Impact Screening Assessment (included as an appendix to the CTP document), Geo-Environmental Engineer, dated 27 September 2017.
 - Planning, Heritage, Design and Access Statement , AR Architecture Ltd & Planning Sense Ltd, dated 22 September 2017.
 - Trees and Construction (arboricultural assessment) report, Indigo Surveys Ltd, dated October 2017.
 - Screening Assessment maps with site location, undated.
 - AR Architecture planning application drawings, dated 28 September 2017 comprising:
 - Existing plans (A-1 100 100-S2-R1, A-1 100 101-S2-R1 and A-1 200 100-S2-R1)
 - Existing sections (A-1 200 300-S2-R1 and A-1 200 301-S2-R1)
 - Existing elevations (A-1 210 200-S2-R1, A-1 210 201-S2-R1 and A-1 210 202-S2-R1)
 - Demolition plans (A-3 090 100-S2-R1)
 - Demolition sections (A-3 090 300-S2-R1 and A-3 090 301-S2-R1)
 - Demolition elevations (A-3 090 200-S2-R1, A-3 090 201-S2-R1 and A-3 090 202-S2-R1)
 - Proposed plans (A-3 100 101-S2-R1 and A-3 200 100-S2-R1)
 - Proposed elevations (A-3 210 200-S2-R1, A-3 210 201-S2-R1 and A-3 210 202-S2-R1)
 - Proposed sections (A-3 210 300-S2-R1, A-3 210 301-S2-R1, A-3 210 302-S2-R1 and A-3 210 303-S2-R1)
 - 5 No relevant consultation responses.
- 2.1. The ground investigation report was received via a file sharing link from the Planning Officer on 7 December 2017.

3.0 BASEMENT IMPACT ASSESSMENT AUDIT CHECK LIST

Item	Yes/No/NA	Comment
Are BIA Author(s) credentials satisfactory?	No	See Audit paragraph 4.1.
Is data required by Cl.233 of the GSD presented?	No	BIA is incomplete, proposal not sufficiently detailed and works programme not included (see Audit paragraphs 4.2, 4.4, 4.7, 4.9 and 4.13).
Does the description of the proposed development include all aspects of temporary and permanent works which might impact upon geology, hydrogeology and hydrology?	No	As above.
Are suitable plan/maps included?	Yes	Maps with site location indicated included with BIA supporting documents.
Do the plans/maps show the whole of the relevant area of study and do they show it in sufficient detail?	Yes	As above.
Land Stability Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	No	Relevant maps with the site location indicated have been provided separately, however, no reference is made to these in the screening and justification is not provided for all the 'No' answers (see Audit paragraph 4.10). Inconsistent with Arboricultural report (see Audit paragraph 4.12).
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	No	As above. Site specific GI not referenced (see Audit paragraph 4.2).
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	No	As above. It is stated in the screening and scoping report that this element was provided for guidance only and should be confirmed by a suitably qualified engineer (see Audit paragraphs 4.1 and 4.14).
Is a conceptual model presented	Yes	Summary of the ground conditions encountered and groundwater level provided in Section 4 of the ground investigation (GI) report.

Item	Yes/No/NA	Comment
		This is however not referenced in the BIA.
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	No	Provided however incorrect response to Q6 of the screening therefore not all potential issues identified/considered (see Audit paragraph 4.12).
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	No	Provided and consistent with the scoping however no reference to the site specific investigation (see Audit paragraph 4.2).
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	No	Confirmation is required on whether the conclusions have been confirmed by a suitably qualified individual. Issues identified not sufficiently addressed (see Audit paragraph 4.1 and 4.14).
Is factual ground investigation data provided?	Yes	Provided as a separate report but not referenced in the BIA (see Audit paragraph 4.2).
Is monitoring data presented?	Yes	Section 4.3 of the GI report.
Is the ground investigation informed by a desk study?	Yes	Section 2 of the GI report.
Has a site walkover been undertaken?	Yes	Section 1.4 of the BIA.
Is the presence/absence of adjacent or nearby basements confirmed?	No	Section 3 of the screening and scoping states no obvious signs of basements were observed. This is contradictory to the Planning Statement and Street View (see Audit paragraph 4.2 and 4.13).
Is a geotechnical interpretation presented?	Yes	Provided but incomplete (see Audit paragraph 4.18).
Does the geotechnical interpretation include information on retaining wall design?	No	Incomplete and not based on site specific investigation (see Audit paragraph 4.18).
Are reports on other investigations required by screening and scoping presented?	N/A	Need for further investigations not identified. GI and arboricultural reports separately provided however not referred to in the BIA and some aspects are inconsistent. Other assessments required but not

Item	Yes/No/NA	Comment
		undertaken/provided (see Audit paragraph 4.2, 4.9, 4.12, 4.20 and 4.20).
Are the baseline conditions described, based on the GSD?	No	Incomplete. Presence of neighbouring basements not confirmed and existing surface water drainage path not confirmed (see Audit paragraph 4.13 and 4.14) and no mention of a utilities search (Audit paragraph 4.22).
Do the base line conditions consider adjacent or nearby basements?	No	As above.
Is an Impact Assessment provided?	No	Provided but incomplete and not in accordance with guidance documents (see Audit paragraph 4.2 and 4.11).
Are estimates of ground movement and structural impact presented?	No	Not provided (see Audit paragraph 4.19 and 4.20).
Is the Impact Assessment appropriate to the matters identified by screening and scoping?	No	As above. Incomplete (see Audit paragraphs 4.2 and 4.11).
Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme?	No	BIA incomplete. Not all potential issues have been identified (see Audit paragraphs 4.11, 4.19 and 4.20).
Has the need for monitoring during construction been considered?	No	Not considered (see Audit paragraph 4.23).
Have the residual (after mitigation) impacts been clearly identified?	N/A	Mitigation not considered or provided.
Has the scheme demonstrated that the structural stability of the building and neighbouring properties and infrastructure will be maintained?	No	Assessment not undertaken (see Audit paragraphs 4.20).
Has the scheme avoided adversely affecting drainage and run-off or causing other damage to the water environment?	No	Not sufficiently assessed and no surface water management/drainage strategy (see Audit paragraphs 4.14).

Item	Yes/No/NA	Comment
Has the scheme avoided cumulative impacts upon structural stability or the water environment in the local area?	No	As above.
Does report state that damage to surrounding buildings will be no worse than Burland Category 1?	No	Damage assessment not undertaken (see Audit paragraph 4.20).
Are non-technical summaries provided?	No	Summary provided for the screening however the BIA is disjointed (see Audit paragraph 4.2 and 4.4).

4.0 DISCUSSION

- 4.1. The BIA comprises a screening and scoping assessment undertaken by Geo-Environmental Services Ltd with the preceding summary by CTP Consulting Engineers. The reviewer of the screening assessment holds a CGeol qualification. It is stated in the screening assessment that the surface flow and flooding element was provided for guidance only and should be confirmed by a suitably qualified Engineer. CPG4 requires the involvement of a hydrologist or a Civil Engineer specialising in flood risk with a C.WEM or CEng MICE qualification respectively in the surface flow and flooding assessment and a Chartered Engineer together with a CGeol for the land stability assessment. Whilst the author and reviewer (name redacted) of the CTP summary document hold CEng MICE and CEng IStructE qualifications respectively, evidence is required of their involvement in the assessment.
- 4.2. A ground investigation report is provided separately and it appears this was undertaken after the screening assessment. The findings of this report are not referenced in the BIA. An arboricultural report is also separately provided. A number of discrepancies which are discussed below are noted between the BIA, this document and the planning statement. Where a number of supporting documents are provided, it is beneficial to make reference to these in the BIA and provide a summary of the findings/conclusions of the other documents. The reports submitted in support of the BIA should be consistent with each other in terms of the baseline conditions, proposed development and assessment of impacts.
- 4.3. Paragraph 2.11 of the CTP report makes reference to the 2015 Camden Local Plan. Together with the other current guidance documents, the 2017 Camden Local Plan should also be referenced.
- 4.4. Non-technical summaries at each stage of the assessments should be provided, as required by the LBC guidance documents (see Section 6.118 of the Camden 2017 Local Plan).
- 4.5. The site comprises a three storey semi-detached building over a part basement '*towards the left hand flank of the building*'. This is considered subjective and compass directions should be used where possible for clarity. The planning statement indicates the building comprises three separate self-contained dwellings. The property is not listed but it is within the Fitzjohn's and Netherall Conservation Area.
- 4.6. Although it is not explicitly stated in the BIA, the planning application drawings indicate partial demolition of the existing building and a lateral extension at ground level. The existing basement is to be deepened by c.0.85m (2.48 to 3.30m bgl) and extended to cover the area beneath the entire footprint of the building.

- 4.7. Paragraphs 2.18 and 2.19 of the CTP report states the basement is to be formed by underpinning the party wall and existing '*flank wall*'. A contiguous bored pile wall is indicated for '*rear and left hand side*'. As noted above, these descriptions are subjective. Open cut excavations are indicated for the front lightwells.
- 4.8. Section 5 of the Geo-Environmental ground investigation report states that the new basement areas are to be formed by a secant or contiguous piled wall. As stated above, this is inconsistent with the BIA and given the form of construction has an effect on the magnitude of the ground movements generated, clarification is requested.
- 4.9. An indicative structural methodology and sequence with temporary propping (if required) indicated should be provided to demonstrate structural stability. Sketches are useful to illustrate this. Outline retaining wall calculations should be presented.
- 4.10. Although the relevant figures/maps from the Arup GSD and other guidance documents are provided with the site location indicated, these are not referenced in the screening assessment to support the statements made. Additionally, justification is not given for some of the 'No' responses. Nevertheless, the responses are considered to be largely valid.
- 4.11. An impact assessment is provided within the Geo-Environmental screening report, however, this was not undertaken in accordance with the Arup GSD, does not consider all the potential impacts as described below and is based on the desk study rather than the site specific ground investigation.
- 4.12. A 'No' response is given to Question 6 of the land stability screening assessment which relates to whether or not the trees are to be felled as part of the proposed development or if works are proposed within any tree protection zones. This is contradictory to the arboricultural assessment which indicates a number of trees to be removed in the front garden and '*side extension*' area to facilitate construction as well as protective measures for trees in the rear of the property where the proposed development coincides with the root protection area.
- 4.13. Section 3 of the Geo-environmental Ltd screening and scoping report states no obvious signs of neighbouring basements were observed. It further states that the Arup GSD maps indicate planning permission has been granted for basements in Netherall Gardens although the specific properties are not confirmed. It is however stated on the Planning Statement that No 59, one of the neighbouring properties comprises a basement. This is also evident from street views of publically available maps.
- 4.14. It is stated on the surface water and flooding assessment that there will be an increase in the hardstanding area as part of the proposed development which will result in an increase in the volume of surface water run-off. Section 5 (Impact Assessment) of the report states '*it would*

be practical for the site drainage to be connected to the existing mains sewers...the limited extension of the impermeable area and additional runoff it would create is unlikely to stress the existing drainage to the point of failure'. Paragraph 2.16 of the CTP summary states a foul sewer is present in Netherall Gardens but no public storm sewer. It further states it is assumed the existing storm water is dealt with via site soakage. This is considered to be inadequate. A surface water management strategy identifying the existing drainage arrangement together with specific proposals for the additional volumes (some form of attenuation) is required. This should be undertaken by an individual with the relevant qualifications as outlined in CPG4.

- 4.15. As stated above, a site specific ground investigation informed by a desk study has been undertaken. The investigation comprised a single cable percussive borehole and four hand dug pits to investigate the existing foundations. This is not referenced in the BIA screening which refers to ground and groundwater conditions from nearby historic boreholes.
- 4.16. Section 4 of the ground investigation report indicates Made Ground to 0.60m underlain by the Claygate Member to c.10.50m over the London Clay which was proven to 12m bgl. A single monitoring visit indicates a groundwater depth of c.4.85m bgl.
- 4.17. TP01, TP02 and TP04 were undertaken to expose the foundations to No 61 with TP03 undertaken against the party wall with No 63 to the east. The sketches indicate the party wall foundation to be c.1m deep extending 0.25m outwards and constructed on the Claygate Member.
- 4.18. Although some interpretation is included in the ground investigation report, the retaining wall parameters provided are considered to be incomplete as stiffness values (Young's Modulus) for the relevant strata are not included. Additionally, these should be based on the site specific investigation rather than generic values from a guidance document as indicated.
- 4.19. It is stated in Section 2.6 of the CTP BIA summary that the neighbouring properties (59 ½ and 59) are located at a considerable distance (>10m away) and therefore out of the zone of influence of the proposed basement. Street view indicates a driveway to the west which provides access to No. 59 ½ separates No. 59 and the subject site No. 61. Observations indicate the width of the driveway is less than 4m, therefore based on guidance by CIRIA C760 and the proposed basement depth, this property is within the zone of influence together with No 63 (not mentioned in the BIA) which shares a party wall with No 61 to the east.
- 4.20. A ground movement and a result damage assessment for the neighbouring properties has not been undertaken. This is required to demonstrate structural stability will be maintained and to ensure damage will be limited to within acceptable limits. The assessment should include all the proposed construction methods and be consistent with the indicative structural methodology

and sequence. The assessment should include the retained sections of the existing building due to the separate self-contained dwellings noted above.

- 4.21. Section 2.8 of the CTP report states that a Network Rail Tunnel runs along the length of Netherall Garden to the south of the building. It is further stated enquiries have been made with Network Rail. Although construction in the vicinity of these assets are subject to separate approvals, information on these and evidence of approval of the assessments from the relevant authorities should be provided to ensure that any requirements not already addressed will be included as part of a planning condition.
- 4.22. There is no mention of a utility search in the BIA or desk study included as part of the ground investigation report and it is assumed this has not been undertaken. A utilities search should be undertaken at this stage to enable an assessment of potential impacts of the proposed construction on these assets to be undertaken. Appropriate protection and mitigation of damage to each asset should be agreed with each asset owner.
- 4.23. A structural monitoring strategy has not been considered or included. This should be proposed to ensure that movements and damage impacts remain within the agreed limits. The trigger values should be based on the results of the ground movement assessment.
- 4.24. The BIA has shown that although the development is close to a tributary of the 'lost' River Westbourne and Tyburn, it will not impact on the wider hydrogeology of the area, any other watercourses, springs or the Hampstead Heath Pond chain catchment area.
- 4.25. An indicative works programme as required by cl. 233 of the Arup GSD is not included.
- 4.26. It is accepted that there are no slope stability concerns regarding the proposed development and it is not in an area prone to flooding.

5.0 CONCLUSIONS

- 5.1. The qualifications of the BIA authors should be demonstrated to be in accordance with LBC guidance for all assessments.
- 5.2. It would be beneficial if the BIA is updated to reference and provide a summary of the findings of the other assessments undertaken with the reports made consistent with each other.
- 5.3. The BIA makes reference to the 2015 Camden Local Plan. The 2017 Camden Local Plan together with the other current guidance documents should also be referenced.
- 5.4. The BIA was not undertaken strictly in accordance with the guidance documents. Non-technical summaries and impact assessments which adequately address all the issues identified in the screening and scoping is requested.
- 5.5. The baseline conditions (presence or absence of neighbouring basements and depths where present, existing drainage etc) should be confirmed.
- 5.6. The descriptions of the proposed basement are subjective and it is recommended compass directions are used for clarity.
- 5.7. The construction methodology for the bored piled wall should be clarified. An indicative structural methodology and sequence with temporary propping should be provided. Outline retaining wall design/calculations should be presented.
- 5.8. Evidence of consultation with adjacent asset owners should be provided. A utilities search should be undertaken. Impacts to assets / utilities should be assessed and sufficient protection of the assets allowed for, as agreed with each asset owner.
- 5.9. The retaining wall parameters provided should be based on the site specific information and sufficient for design.
- 5.10. A ground movement and damage assessment should be undertaken for the subject site and neighbouring properties. This should consider the various construction methods and should be consistent with the structural methodology and sequence.
- 5.11. A preliminary structural monitoring strategy should be presented, including trigger levels based on the ground movement assessment and contingency measures, to ensure construction is controlled and impacts are limited to within the predicted limits.
- 5.12. An indicative works programme is requested. A detailed programme may be provided by the appointed Contractor at a later date.

61 Netherall Gardens, NW3 5RE
BIA – Audit

- 5.13. It is accepted that there are no slope stability concerns regarding the proposed development and it is not in an area prone to flooding.
- 5.14. Queries and requests for information are summarised in Appendix 2. Until the additional information and further assessments requested are presented, the BIA does not meet the requirements of CPG4.

Appendix 1: Residents' Consultation Comments

Residents' Consultation Comments

Surname	Address	Date	Issue raised	Response
Jalving	63 Netherall Gardens	21/22 December 2017	Consideration not given to sloping areas. Evidence of a spring in the rear gardens Request for varying foundation levels to be taken into account	Maps provided do not indicate slope stability issues. Change in levels noted however slope less than 7°. No such features identified in the BIA. See Audit paragraph 4.14 and 4.15
Levin, Catherine	63B Netherall Gardens	20 December 2017	Inconsistencies between the BIA and Planning Statement Insufficient information to demonstrate structural stability Request for a full BIA to be provided	See Audit paragraph 4.2. See Audit paragraphs 4.9 and 4.20. See Audit paragraphs 4.2 and 4.11.
Levin, Robert	63B Netherall Gardens	20 December 2017	Concerns about impact to neighbouring properties	See Audit paragraphs 4.9 and 4.20
Grose	63A Netherall Gardens	20 December 2017	Insufficient information to demonstrate structural stability	See Audit paragraphs 4.9 and 4.20.
Stevens	20 Netherall Gardens	21 December 2017	Incomplete BIA	See Audit paragraphs 4.2 and 4.11.

Appendix 2: Audit Query Tracker

Audit Query Tracker

Query No	Subject	Query	Status	Date closed out
1	BIA format	Author qualifications.	Open – Evidence of the input of individuals with qualifications in accordance with CPG4 requirements requested (see Audit paragraph 4.1)	
2	BIA format	BIA not undertaken in accordance with Arup GSD and CPG4 requirements.	Open – to be resubmitted with information included as outlined on Audit paragraphs 4.2, 4.4, 4.11, 4.13 and 4.22.	
3	BIA format	Works programme not included	Open – outline duration to be provided with detailed programme submitted at a later date by appointed Contractor.	
4	BIA format	Inconsistencies between BIA, arboricultural assessment and ground investigation report	Open – to be updated as per Section 4.	
5	BIA format/Stability	Retaining wall design parameters	Open – to be provided as per Audit paragraph 4.18.	
6	Hydrology	Drainage strategy not provided	Open – to be provided as per Audit paragraph 4.14.	
7	Stability	Proposal not sufficiently detailed. No outline retaining wall calculations, construction methodology, construction sequence sketches or temporary works proposal.	Open – information to be provided as per Section 4.9.	
8	Stability	Ground movement assessment (GMA) not undertaken.	Open – to be provided as per Audit paragraph 4.20.	
9	Stability	Movement monitoring proposal not provided.	Open – Outline proposal with trigger levels based on GMA to be provided.	

*Please provide complete and clear responses to the above queries. Where the BIA and other documents are updated/revised, please include a covering email or letter to indicate the amended sections.

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

Campbell Reith Hill LLP. Registered in England & Wales. Limited Liability Partnership No OC300082
A list of Members is available at our Registered Office at: Friars Bridge Court, 41- 45 Blackfriars Road, London SE1 8NZ
VAT No 974 8892 43