

**Basement Impact
Assessment Audit**

Gloucester Lodge, 12 & 13
Gloucester Gate Mews,
London NW1 4AD

For
London Borough of Camden

Project No.
14006-26

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CONTENTS

1.0	NON-TECHNICAL SUMMARY	4
2.0	INTRODUCTION.....	5
3.0	BASEMENT IMPACT ASSESSMENT AUDIT CHECK LIST	7
4.0	DISCUSSION	11
5.0	CONCLUSIONS.....	14

APPENDICES

Appendix 1: Consultation Responses	16
Appendix 2: Audit Query Tracker.....	17
Appendix 3: Supplementary Supporting Documents.....	19

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 (BIA) submitted as part of the Planning Submission documentation for Gloucester Lodge, 12 Gloucester Gate and 12 & 13 Gloucester Gate Mews, London NW1 4HG (planning reference 2023/2155/P). The basement is considered to fall within Category C 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. CampbellReith previously audited a basement scheme at the same site. The stairwell area has been widened to accommodate a lift in the most recent scheme.
- 1.4 The BIA has been prepared by individuals who possess suitable qualifications.
- 1.5 The BIA confirms that the proposed basement will be founded within the London Clay Formation. Further ground investigation and ground water monitoring is recommended in the BIA, in the Mews and garden areas, in order to confirm the ground conditions.
- 1.6 No underground assets have been identified within the zone of influence.
- 1.7 The site is located within a Critical Drainage Area. Heritage restrictions imposed on the site preventing SUDS to be incorporated at the front of the property, however, measures will be incorporated to provide betterment to the drainage in the courtyard area. It is accepted that the development will not impact the hydrology of the area.
- 1.8 It is accepted that the surrounding slopes to the development site are stable.
- 1.9 It is accepted that the development will not impact on the wider hydrogeology of the area.
- 1.10 The BIA and Structural report discuss two alternative basement construction proposals, underpinning and piled perimeter retaining walls, both with suitable temporary propping arrangements. Confirmation of the distribution of the two proposed construction methodologies is requested.
- 1.11 The Ground Movement Assessment (GMA) was undertaken to support the 2016 application and requires revision to reflect the latest basement proposal geometry and the different construction techniques to be used.
- 1.12 The damage category assessment should be updated based on the revised GMA.
- 1.13 It cannot be confirmed that the BIA complies with the requirements of CPG: Basements until the queries raised in Section 4 and Appendix 2 are addressed.

2.0 INTRODUCTION

2.1 CampbellReith was instructed by London Borough of Camden (LBC) on 12th July 2023 to carry out a Category C audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for Gloucester Lodge, 12 Gloucester Gate and 12 & 13 Gloucester Gate Mews, London NW1 4HG (planning reference 2023/2155/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

- Camden Local Plan 2017 - Policy A5 Basements.
- Camden Planning Guidance (CPG): Basements. January 2021.
- Guidance for Subterranean Development (GSD). Issue 01. November 2010. Ove Arup & Partners.

2.4 The site is not within a neighbourhood planning area.

2.5 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.

2.6 LBC's planning portal describe the planning proposals as follows:

- "External alterations including installation of lift from basement to first floor, creation of lightwell and installation of associated balustrades, change to material of mews courtyard elevation from painted brick to fair-faced brick, increase in height of garage doors on retained elevation of 12 Gloucester Gate Mews, reinstatement of existing door into Mews from courtyard and reinstatement of pedestrian gate on front boundary and associated works."

- 2.7 The Audit Instruction confirmed the development at Gloucester Lodge involves, and is a neighbour to, listed buildings.
- 2.8 CampbellReith accessed LBC's Planning Portal on 16th August 2023 and gained access to the following relevant documents for audit purposes:
- Gloucester Lodge. Basement Impact Assessment (BIA) Screening and Scoping by Techniker. Ref 15060/01/05. Rev 05. Dated 07 July 2017.
 - Basement Impact Assessment Addendum 10 by Techniker. Ref 2104287/10/001. Rev 03. Dated 23rd May 2023.
 - Basement Impact Assessment Addendum 02 by Techniker. Ref TK15060-BIA addendum_02. Dated 4th October 2016.
 - Basement Impact Assessment Addendum 03 by Techniker. Ref TK15060-BIA addendum_03. Dated 13th October 2016.
 - Gloucester Lodge Internal Alterations – Design & Access Statement by Make Architects. Rev 00. Dated 25th May 2023. This includes proposed drawings and sections.
 - Structural Report for Interior Alterations, Basement Addition and Renewal of Mews House by Techniker. Ref 2104287/R4/001. Rev 02. Dated 17th May 2023.
- 2.9 The audit identified that the BIA on the planning website was not complete (Appendices H, I and J missing). These missing appendices were provided to CampbellReith by Camden Council on the 15th September 2023.

3.0 BASEMENT IMPACT ASSESSMENT AUDIT CHECK LIST

Item	Yes/No/NA	Comment
Are BIA Author(s) credentials satisfactory?	Yes	Signatures final section in BIA addendum 2
Is data required by Cl.233 of the GSD presented?	Yes	
Does the description of the proposed development include all aspects of temporary and permanent works which might impact upon geology, hydrogeology and hydrology?	Yes	
Are suitable plan/maps included?	Yes	BIA addendum 10 appendices
Do the plans/maps show the whole of the relevant area of study and do they show it in sufficient detail?	Yes	
Land Stability Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	BIA section 4
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	As above
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	As above
Is a conceptual model presented?	Yes	Appendix D of BIA
Land Stability Scoping Provided?	Yes	BIA section 5

Item	Yes/No/NA	Comment
Is scoping consistent with screening outcome?		
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	Yes	As above
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	Yes	As above
Is factual ground investigation data provided?	Yes	BIA addendum 3, appendix 1
Is monitoring data presented?	Yes	Additional site investigation is required
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	
Is a geotechnical interpretation presented?	Yes	BIA addendum 2, section 3
Does the geotechnical interpretation include information on retaining wall design?	Yes	As above
Are reports on other investigations required by screening and scoping presented?	Yes	Drainage proposals should be updated to consider the new proposed basement layout.
Are the 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	BIA addendum 2, appendix 4
Are estimates of ground movement and structural impact presented?	Yes	However, the Ground Movement Assessment should be updated to reflect the proposed scheme and construction methodology.
Is the Impact Assessment appropriate to the matters identified by screening and scoping?	Yes	
Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme?	Yes	
Has the need for monitoring during construction been considered?	Yes	
Have the residual (after mitigation) impacts been clearly identified?	Yes	
Has the scheme demonstrated that the structural stability of the building and neighbouring properties and infrastructure will be maintained?	No	GMA requires revision
Has the scheme avoided adversely affecting drainage and run-off or causing other damage to the water environment?	Yes	BIA addendum 2, section 6. Drainage proposals require updating to reflect the new proposed basement layout.
Has the scheme avoided cumulative impacts upon structural stability or the water environment in the local area?	No	

Item	Yes/No/NA	Comment
Does report state that damage to surrounding buildings will be no worse than Burland Category 1?	Yes	However this requires updating to reflect the revised GMA.
Are non-technical summaries provided?	Yes	

4.0 DISCUSSION

- 4.1 A previously audited Basement Impact Assessment (BIA) Audit for the Gloucester Lodge basement scheme in 2016, part of planning application ref: 2015/4549/P, was approved by CampbellReith. Since the approval of the BIA in 2016, pro forma guidance has been updated to the most recent Camden Planning Guidance CPG: Basements document, issued in 2021.
- 4.2 The proposals have the same general layout as the previously audited scheme. The basement has been widened where it extends under Gloucester Lodge, to accommodate a small lift, which is extended downwards from ground floor level.
- 4.3 The Basement Impact Assessment (BIA) has been carried out by engineering consultants Techniker Ltd and the individuals concerned in its production have suitable qualifications.
- 4.4 The Design & Access Statement indicates the subject site at Gloucester Lodge is a Grade I statutorily listed building located within the Regent's Park Conservation Area, London Borough of Camden.
- 4.5 The proposals comprise the excavation of a single large basement beneath part of the main house, garden and Nos 12 and 13 Gloucester Gate Mews linking the main house to Mews house. The basement will have a single storey approximately 5m deep.
- 4.6 The Structural Stability Report (Appendix J of BIA) and the Structural Report outline the basement construction options. It is intended to form the basement beneath the main house using two levels of conventional underpinning techniques. The mews buildings are to be demolished and, prior to the new building being constructed, the basement around the garden will be formed using contiguous bored piling or silent sheet metal piling. The Basement Plan drawing in the Structural Report appears to also show underpinning where the basement extends below the mews buildings. Confirmation of the construction techniques to be used is requested.
- 4.7 A desk top study and site-specific intrusive ground investigation were undertaken in 2016 and are presented in BIA Addendum 03. The ground conditions encountered agree with those anticipated. BH1 presents Made Ground to 1.00m bgl, over the London Clay Formation which extends to the maximum depth of investigation, 15.45m bgl (-5.45m OD). Groundwater was not encountered during the ground investigation. Subsequent monitoring records present standing water level in the well at 14.5m bgl (-4.50m AOD). This is interpreted as groundwater seepage.
- 4.8 The foundation exposure trial pits undertaken indicate the main house and mews foundations are conventional spread footings at shallow depths. These footings comprise sandstone block and brick and are founded within the London Clay Formation.
- 4.9 The geotechnical parameters to be adopted in design, including retaining wall design have been presented and are generally accepted.

- 4.10 The BIA confirms that the site lies directly on a designated non-aquifer, the London Clay Formation and states groundwater flooding risk is negligible. In the absence of significant volumes of groundwater, it is accepted that there is very low risk of groundwater flooding at the site or impact to the wider hydrogeological environment. The BIA Addendum 10 states this should be confirmed by additional groundwater monitoring included in further site-specific ground investigation.
- 4.11 The BIA confirms searches for underground transport infrastructure and utility assets have been undertaken, and that there are no underground assets within the proposed development's zone of influence.
- 4.12 The London Borough of Camden Strategic Flood Risk Assessment Figure 6 indicates the site is situated within a Critical Drainage Area (CDA), Group3_003.
- 4.13 The site is within an area at very low risk of surface water flooding. The Environment Agency flood risk map indicates the site is within Flood zone 1 an area with low probability of flooding, although a localised area of low / medium surface water flood risk is present immediately adjacent to the development site at the Outer Circle and Gloucester Gate Mews. The site itself is not shown to be at risk.
- 4.14 The neighbouring property (14 & 15 Gloucester Gate Mews) reports historical basement flooding. The BIA submissions do not identify the potential causes of flooding to the adjacent property. However, the submissions confirm that the proposed development will be constructed to Grade 3 BS8102 waterproofing standard, with raised thresholds, perimeter drainage and sealed service penetrations. Assuming the works are undertaken in accordance with best practice then the risk of the proposed development being affected by surface water flooding is considered to be low.
- 4.15 The BIA submission confirms that the impermeable area of the site will slightly decrease due to the proposed development's basement roof slab being covered by 1.0m of topsoil, within the courtyard. The BIA indicates that peak run-off flows will be discharged to combined sewers, and discharge flow will remain at or slightly below existing levels, thereby avoiding any cumulative effects. The drainage layout presented in Appendix D of the BIA still shows the old configuration of the basement and should be updated to show how the proposed attenuation and drainage will be accommodated in the new layout.
- 4.16 Whilst it is not considered likely that surface water drainage from the site is directly attributing to any historical flooding encountered at the adjacent property, the incorporation of 1.0m thickness of topsoil above the basement roof slab and replacement of existing drainage with new during the redevelopment should provide betterment to the existing situation.
- 4.17 Land stability screening and scoping conclude there are no slope stability concerns at the site or adjacent plots.

- 4.18 BIA Addendum 03 includes the results of a ground investigation undertaken at the property in August 2016. Foundation inspection excavations undertaken identify the London Clay as the bearing formation for the proposed foundations, beneath shallow Made Ground. An allowable bearing capacity presented of 110kN/m² at 4.0m bgl has been derived from BH1, which was undertaken at the front of the property, and is accepted. The revised BIA submissions confirm that additional ground investigation and in-situ testing will be taken at the rear of the property to confirm geotechnical parameters prior to construction.
- 4.19 The BIA states there is no history of shrink-swell subsidence in the local area or evidence of such effects at the site. Laboratory testing indicates the London Clay is of High volume change potential. The proposed development includes selected tree felling. The BIA Addendum 03 states the volume change must be taken into account during the design process, specifically in the courtyard area due to the influence of trees.
- 4.20 The majority of the new basement walls beneath the main house will be formed by two levels of conventional underpinning techniques. The sections of basement beneath the mews building and garden areas will be formed using contiguous bored piling or silent sheet metal piling. The Structural Report also shows underpinning where the basement extends below the mews buildings. Clarification of the distribution of proposed construction techniques across the site is required.
- 4.21 The Structural Report outlines the construction sequencing and confirms the requirement for temporary and permanent propping and close monitoring of works during construction.
- 4.22 A Ground Movement Assessment (GMA) using a finite element model is present in Appendix I of the BIA addendum 10. The GMA assesses that ground movements will be minimal and that damage impact in accordance with the Burland Scale will be Category 1 (Very Slight). However, the GMA was undertaken in 2016 and the previous basement proposals have since been modified due to inclusion of a lift. The GMA should be updated to consider the latest basement proposal geometry, the two proposed lifts of underpinning and the use of bored piles as a construction technique to form some parts of the basement.
- 4.23 Temporary propping and an outline monitoring proposal, are presented in the BIA.
- 4.24 It is accepted that there are no potential impacts in relation to slope stability.

5.0 CONCLUSIONS

- 5.1 The Basement Impact Assessment (BIA) has been carried out by engineering consultants Techniker Ltd and the individuals concerned in its production have suitable qualifications.
- 5.2 This application includes similar basement works, previously approved BIA and Addendum Report as the audit undertaken by CampbellReith in 2016 (planning reference 2016/4549/P). Scheme modifications include widening the stairwell area to accommodate a lift.
- 5.3 The BIA and Design & Access Statement confirm the subject site is a Grade I statutorily listed building located within the Regent's Park Conservation Area.
- 5.4 The BIA has confirmed the proposed basement will be founded within the London Clay Formation encountered near surface. The bearing capacity of the London Clay is considered acceptable at foundation level for outline assessment purposes.
- 5.5 Additional site investigation to confirm geotechnical parameters should be undertaken prior to construction, specifically in the Mews and garden areas. Limited groundwater monitoring has been presented. The BIA confirms that long-term monitoring will be provided, together with further intrusive investigation.
- 5.6 The site is within an area at very low risk of surface water flooding. It is accepted that there is very low risk of groundwater flooding at the site or impact to the wider hydrogeological environment.
- 5.7 The site is located within a Critical Drainage Area. Heritage restrictions imposed on the site preventing SUDS to be incorporated at the front of the property.
- 5.8 The neighbouring property reports historical basement flooding. The BIA submissions do not identify the potential causes of flooding to the adjacent property. It is not considered likely that surface water drainage from the site is directly attributing to any historical flooding encountered at the adjacent property. Incorporation of 1.0m of topsoil above the proposed basement roof slab and replacement of existing drainage with new during the redevelopment should provide betterment to the existing situation.
- 5.9 It is accepted that the development will not impact on the wider hydrogeology of the area and is not in an area subject to flooding.
- 5.10 Searches for underground transport infrastructure and utility assets have been undertaken for the BIA, and that there are no underground assets within the proposed development's zone of influence.
- 5.11 The structural report outlines two basement construction proposals, underpinning and piled perimeter retaining walls both with suitable temporary propping arrangements. There is inconsistency between the BIA and structural report construction methodology. Confirmation of the distribution of the proposed construction techniques to be used is requested.
- 5.12 The Ground Movement Assessment (GMA) undertaken in 2016 requires revision. The GMA should consider the latest basement proposal geometry, the two proposed lifts of underpinning and the use of bored piles as a construction technique to form some parts of the basement.

- 5.13 The damage category assessment should be updated based on the revised GMA.
- 5.14 It cannot be confirmed that the BIA complies with the requirements of CPG: Basements until the queries raised in Section 4 and Appendix 2 are addressed.

Appendix 1

Consultation Responses

None

Basement Impact Assessment Audit
Gloucester Lodge, 12 & 13 Gloucester Gate Mews,
London NW1 4AD

CampbellReith
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Appendix 2

Audit Query Tracker

Audit Query Tracker

Query No	Subject	Query	Status	Date closed out
1	Hydrology	The drainage layout should be updated to show the new basement layout.	Open – See 4.15	
2	Land Stability	Clarification of the distribution of proposed construction techniques across the site is required.	Open – See 4.20	
3	Land Stability	The GMA should be updated to consider the latest basement proposal geometry, the two proposed lifts of underpinning and the use of bored piles as a construction technique to form some parts of the basement.	Open – See 4.22	
4	BIA	BIA Addendum 10 recommends further site investigation and monitoring	Note	

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Appendix 3

Supplementary Supporting Documents

None

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