

29A Gondar Gardens,
London NW6 1EP

Basement Impact Assessment
Audit

For
London Borough of Camden

Project Number: 13693-14

Revision: F1

March 2022

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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 29A Gondar Gardens, London NW6 1EP (planning reference 2020/5976/P). The basement is considered to fall within Category B as defined by the Terms of Reference.
- 1.2. The Audit reviewed the documents provided 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 a number of sources: Maund Geo-Consulting Ltd, Croft Structural Engineers. In the revised submissions, the Star Design Solutions' documents have been omitted.
- 1.5. The authors' qualifications have been demonstrated to be in accordance with CPG Basements.
- 1.6. The site currently comprises a three-storey mid-terraced residential property with a lower ground floor occupying part of the building footprint. The proposed development comprises the development of a full basement with a lightwell at the front of the property. The basement will be excavated to approximately 3.00m below ground level (bgl).
- 1.7. The BIA includes the majority of the information required from a desk study in line with LBC guidance. In the revised submissions, utilities information within the zone of influence of the works is presented.
- 1.8. A site investigation has been undertaken. The ground conditions comprise Made Ground overlying the London Clay Formation.
- 1.9. Groundwater was not encountered during drilling nor during the subsequent monitoring visits.
- 1.10. Interpretative geotechnical parameters are provided and have been adopted consistently in the updated structural information and calculations provided.
- 1.11. Outline permanent and temporary works information is provided. The retaining walls will be constructed utilising underpinning techniques and cantilever in the permanent case.
- 1.12. A Ground Movement Assessment (GMA) has been undertaken. The GMA indicates that structural damage to the adjacent buildings and overlying properties within 29 Gondar Gardens will not exceed Burland Category 1 (Very Slight) as required by CPG Basements.

- 1.13. Outline methodologies and guidance for monitoring structural movements during construction have been provided within the Croft documents, which have been updated to be consistent with the predictions of the GMA.
- 1.14. Gondar Gardens is not within a Critical Drainage Area nor within a Local Flood Risk Zone. The site is at very low risk of flooding from rivers and sea, surface water flooding and reservoir flooding. Gondar Gardens did not flood in either 1975 or 2002.
- 1.15. The proposed basement development will not result in any change to the impermeable site area. Drainage proposals should be agreed with LBC and Thames Water.
- 1.16. Queries and matters requiring further information or clarification are discussed in Section 4 and summarised in Appendix 2. Considering the revised submissions, the BIA meets the requirements of CPG Basements.

2.0 INTRODUCTION

- 2.1. CampbellReith was instructed by London Borough of Camden (LBC) on 23rd August 2021 to carry out a Category B Audit on the documents submitted as part of the Planning Submission documentation for 29A Gondar Gardens, London NW6 1EP, Camden Reference 2020/5976/P.
- 2.2. The Audit was carried out in accordance with the Terms of Reference set by LBC. It reviewed the documents provided 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. January 2021.
- Camden 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;
- 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: *"Extension of existing basement and new front and central lightwells"*.

The planning portal also confirmed the site does not lie within a Conservation Area and neither the subject site nor the neighbouring properties are listed.

- 2.6. CampbellReith accessed LBC's Planning Portal on 8th September 2021 at which time the BIA documents were not available for review. The Planning Portal was accessed again on 7th October 2021 and the following relevant documents were available to review for audit purposes:

- Basement Impact Assessment (ref 210518) dated 28 July 2021 by Croft Structural Engineers.
- Geotechnical Factual Report (ref MGC-FR-21-20-V1) dated 7 July 2021 by Maund Geo-Consulting.

- Geotechnical Interpretative Report and Ground Movement Assessment (ref MGC-GMA-21-20-V1) dated 28 July 2021 by Maund Geo-Consulting.
- Engineer's Report and Suggested Construction Method Statement by Star Design Solutions Ltd (unknown date and report reference).
- Existing plan and section (ref ST_DEC20_29GON_001) dated December 2020 by Simply Loft.
- Proposed plans, sections, neighbour section and elevation drawings (ref ST_DEC20_29GON_006 and 008 and 009) dated December 2020 by Simply Extend and Simply Loft.
- Engineering drawings including beam to beam connections and profiles of proposed foundations (ref ST_DEC20_29GON_005) dated December 2020 by Simply Extend.
- Flood Risk Assessment dated December 2020 by Star Design Solutions Ltd.
- Comments and objections to the proposed development from Gondar and Agamemnon Residents' Association. The objection was regarding bin storage and levels of light and is therefore not discussed further within this report.

2.7. CampbellReith received additional documents for audit purposes between November 2021 and March 2022:

- Basement Impact Assessment (ref 210518) dated 10 November 2021 by Croft Structural Engineers.
- Basement Impact Assessment (ref 210518) dated 12 January 2022 by Croft Structural Engineers.
- Geotechnical Interpretative Report and Ground Movement Assessment (ref MGC-GMA-21-20-V1) dated 28 July 2021 by Maund Geo-Consulting.
- Proposed plans, sections, neighbour section and elevation drawings (ref ST_DEC20_29GON_006 and 008 and 009) dated December 2020 by Simply Extend and Simply Loft.
- Engineering drawings (ref ST_FEB22_29GON_005) dated February 2022 by Simply Extend.
- Email correspondence with Applicant's Engineers (extracts presented in Appendix 3).

3.0 BASEMENT IMPACT ASSESSMENT AUDIT CHECK LIST

Item	Yes/No/NA	Comment
Are BIA Author(s) credentials satisfactory?	Yes	Updated
Is data required by Cl.233 of the GSD presented?	Yes	Updated
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 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	Updated
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	Section 7.2 of Land Stability and Hydrogeology BIA by Maund Geo-Consulting.
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	Section 4.3 of Surface Water BIA by Croft Structural Engineers.
Is a conceptual model presented?	Yes	Section 8 of the Land Stability and Hydrogeology BIA by Maund Geo-Consulting.

Item	Yes/No/NA	Comment
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	Yes	Updated.
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	N/A	Section 8 of Land Stability and Hydrogeology BIA by Maund Geo-Consulting. No issues identified during screening process.
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	N/A	Section 5 of Surface Water BIA by Croft Structural Engineers. No issues identified during screening process.
Is factual ground investigation data provided?	Yes	Geotechnical Factual Report (ref MGC-FR-21-20-V1) dated 7 July 2021 by Maund Geo-Consulting.
Is monitoring data presented?	Yes	Section 5 of Geotechnical Factual Report. Groundwater monitoring undertaken on 25th June and 7th July 2021 further to site investigation on 16th June 2021.
Is the ground investigation informed by a desk study?	Yes	Section 3 of Croft Structural Engineers BIA.
Has a site walkover been undertaken?	Yes	16 th June 2021.
Is the presence/absence of adjacent or nearby basements confirmed?	No	Assumptions made regarding the depth of adjacent basements: depth of 27 Gondar Gardens assumed to be the same as the proposed basement of 29 Gondar Gardens. It is understood that 31 Gondar Gardens has cellars occupying part of the property.
Is a geotechnical interpretation presented?	Yes	Sections 5 and 6 of Land Stability and Hydrogeology BIA (Geotechnical Interpretative Report and Ground Movement Assessment) by Maund Geo-Consulting. Parameters not adopted consistently across the BIA documents submitted.

Item	Yes/No/NA	Comment
Does the geotechnical interpretation include information on retaining wall design?	Yes	Updated
Are reports on other investigations required by screening and scoping presented?	Yes	A Flood Risk Assessment and Ground Movement Assessment are provided.
Are baseline conditions described, based on the GSD?	Yes	
Do the baseline conditions consider adjacent or nearby basements?	Yes	Assumptions made on adjacent basement depths.
Is an Impact Assessment provided?	Yes	Section 9 of Land Stability and Hydrogeology BIA (Geotechnical Interpretative Report and Ground Movement Assessment) by Maund Geo-Consulting and Section 7 of the Croft Structural Engineers BIA.
Are estimates of ground movement and structural impact presented?	Yes	Land Stability and Hydrogeology BIA (Geotechnical Interpretative Report and Ground Movement Assessment) by Maund Geo-Consulting. Queries raised in Section 4.
Is the Impact Assessment appropriate to the matters identified by screen and scoping?	Yes	Updated
Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme?	Yes	Mitigation measures outlined in Section 9 of Maund Geo-Consulting BIA and Section 7 of the Croft Structural Engineers BIA.
Has the need for monitoring during construction been considered?	Yes	Section 6.7.4 of Croft Structural Engineers BIA, Section 12 of Land Stability and Hydrogeology BIA (Geotechnical Interpretative Report and Ground Movement Assessment) by Maund Geo-Consulting.
Have the residual (after mitigation) impacts been clearly identified?	Yes	Updated

Item	Yes/No/NA	Comment
Has the scheme demonstrated that the structural stability of the building and neighbouring properties and infrastructure will be maintained?	Yes	Structural calculations and ground movement assessment provided.
Has the scheme avoided adversely affecting drainage and run-off or causing other damage to the water environment?	Yes	Final proposed drainage design will require approval from LBC and Thames Water.
Has the scheme avoided cumulative impacts upon structural stability or the water environment in the local area?	Yes	Updated
Does report state that damage to surrounding buildings will be no worse than Burland Category 1?	Yes	Section 11 of Maund Geo-Consulting BIA.
Are non-technical summaries provided?	Yes	

4.0 DISCUSSION

- 4.1. The BIA has been prepared by a number of sources: Maund Geo-Consulting Ltd and Croft Structural Engineers. The previous Star Design Solutions' submissions have been omitted from the updated submissions.
- 4.2. It has been demonstrated that the authors' qualifications meet the requirements of CPG Basements.
- 4.3. Both the BIA for Land Stability and Groundwater and the BIA for Surface Water refer to CPG Basements dated March 2018. It should be noted that this has now been superseded by CPG Basements dated January 2021 and reference to it should be made in all future revisions.
- 4.4. The site currently comprises a three-storey mid-terraced residential property with a lower ground floor occupying part of the building footprint. The current lower ground floor depth is c. 1.79m bgl. The proposed development comprises deepening and extending the existing basement below the entire footprint of the house with a lightwell at the front of the property. The basement will be excavated to a maximum depth of approximately 3.00m below ground level (bgl). The applicant's property is part of a terrace and both the neighbours No. 27 and No.29 are understood to have lower ground floors.
- 4.5. The BIA includes the majority of the information required from a desk study in line with the GSD Appendix G1. The updated submissions include utilities information within the zone of influence of the proposed development.
- 4.6. Screening assessments are presented which are generally considered to be correct.
- 4.7. In the Croft BIA (Section 3.2.2) calculations are presented for root protection areas to minimise the impacts to nearby trees. The updated submissions indicate that the tree is 7.00m from the building and the proposed foundations are outside of the root protection area.
- 4.8. A site investigation was undertaken on 16 June 2021 by PM Sampling Ltd on behalf of Maund Geo-Consulting Ltd comprising one window sampler borehole to 8.45m bgl, one inspection pit to 1.20m bgl and two foundation pits. The ground conditions comprise Made Ground (from ground level to 1.00m bgl) overlying the London Clay Formation (to the full depth of the borehole).
- 4.9. Groundwater was not encountered during drilling nor during the subsequent monitoring visits (standpipe installed to 4.50m bgl) on 25 June and 7 July 2021. Mitigation measures have been outlined in the Maund Geo-Consulting BIA (Section 9.2.3). Mitigation measures include temporary management of groundwater during construction, if required, by traditional pumping.

- 4.10. Interpretative geotechnical information is presented in the Maund Geo-Consulting reports, broadly in accordance with the GSD Appendix G3. The updated Croft BIA adopts these geotechnical parameters.
- 4.11. Outline permanent and temporary works information is provided. The retaining walls will be constructed utilising typical underpinning techniques and cantilever in the permanent case. A system of propping to support the soil behind the excavation is proposed during construction. Foundation loads are to be carried by the thickened toes of the stem bases whilst the basement slab will be suspended.
- 4.12. A Ground Movement Assessment (GMA) has been undertaken. The GMA indicates that structural damage to the adjacent buildings and the overlying properties at 29 Gondar Gardens will not exceed Burland Category 1 (Very Slight) as required by CPG Basements. Whilst the methodology of the GMA has been queried, it is accepted that the range of movements predicted are within the range anticipated for the proposed construction technique, considering the structural proposals and the underlying ground conditions.
- 4.13. Outline methodologies and guidance for monitoring structural movements during construction have been provided.
- 4.14. Gondar Gardens is not within a Critical Drainage Area nor within a Local Flood Risk Zone. The FRA prepared by Star Design Solutions has identified that the site is at very low risk of flooding from rivers and sea, surface water flooding and reservoir flooding. Gondar Gardens did not flood in either 1975 or 2002. Flood mitigation measures are outlined in Section 5 of the FRA and Section 7.4.1 of the Croft Structural Engineers BIA including a tanking system for the basement walls and floor and a pumping mechanism within the proposed basement. It is recommended that standard flood mitigation measures should be incorporated into the design of the basement.
- 4.15. The proposed basement development will not result in any change to the impermeable site area. Drainage proposals should be agreed with LBC and Thames Water.
- 4.16. Queries and matters requiring further information or clarification are summarised in Appendix 2.

5.0 CONCLUSIONS

- 5.1. The authors' qualifications meet the requirements of CPG Basements.
- 5.2. Utilities records within the zone of influence of the works have been presented.
- 5.3. The ground conditions comprise Made Ground overlying the London Clay Formation.
- 5.4. Groundwater was not encountered during the site investigation nor during the subsequent monitoring visits.
- 5.5. Interpretative geotechnical parameters are provided and have been adopted consistently in the updated submissions.
- 5.6. A Ground Movement Assessment (GMA) has been undertaken and damage to neighbouring properties should be maintained within LBC policy limits.
- 5.7. Outline methodologies and guidance for monitoring structural movements are presented.
- 5.8. Gondar Gardens is not within a Critical Drainage Area nor within a Local Flood Risk Zone.
- 5.9. The proposed basement development will not result in any change to the impermeable site area. Drainage proposals should be agreed with LBC and Thames Water.
- 5.10. The revised submissions confirm there will be no impacts in relation to trees / root protection areas.
- 5.11. The BIA meets the requirements of CPG Basements.

Appendix 1: Residents' Consultation Comments

None

Appendix 2: Audit Query Tracker

Audit Query Tracker

Query No	Subject	Query	Status/Response	Date closed out
1	BIA Format	The information / proposals within the submitted documents should consistently presented.	Closed	March 2022
2	Land Stability	The author is required to be CEng MICE	Closed	March 2022
3	BIA Format	Desk Study information should Thames Water utility records, noting proximity to nearby reservoir.	Closed	March 2022
4	Land Stability	The impacts to trees should be reviewed and clarified, particularly in respect to how any impact to trees may further impact land stability or surrounding structures.	Closed	March 2022
5	Land Stability	Geotechnical parameters should be consistently adopted.	Closed	March 2022
6	Land Stability	GMA to be reviewed.	Closed	March 2022
7	Land Stability	Monitoring proposals to be reviewed.	Closed	March 2022

Appendix 3: Supplementary Supporting Documents

Email Extracts

From: Sergios Sergiou <sergios@studio136.co.uk>
Sent: 12 January 2022 10:33
To: Adam Greenhalgh <Adam.Greenhalgh@camden.gov.uk>; Admin <admin@studio136.co.uk>
Subject: RE: 13693-14: 29A GondarGardens BIA Audit <2020/5976/P>

Dear Adam

Following your email below please find attached the revised BIA.
It includes the answers to:

- Q4 - section 3.2.2 (the tree was 7m away from the basement instead of 4m. Measurements were taken during my site visit. The tree won't be impacted).
- Q7 - section 6.7.4 (monitoring trigger values altered as requested).

Please can you forward this to Campbell Reith at your earliest convenience

Kind Regards

Sergios Sergiou BA(hons)dip arch RIBA
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From: GrahamKite@campbellreith.com <GrahamKite@campbellreith.com>
Sent: 17 December 2021 17:38
To: Adam Greenhalgh <Adam.Greenhalgh@camden.gov.uk>
Cc: camdenaudit@campbellreith.com
Subject: 13693-14: 29A GondarGardens BIA Audit <2020/5976/P>

[EXTERNAL EMAIL] Beware – This email originated outside Camden Council and may be malicious. Please take extra care with any links, attachments, requests to take action or for you to verify your password etc. Please note there have been reports of emails purporting to be about Covid 19 being used as cover for scams so extra vigilance is required.
Hi Adam

Apologies for the delay in responding. The updated submission and previous responses received by email (copied below for reference) have been reviewed, and whilst they close out a number of the issues there are 2no still remaining (items Q4 and Q7, below). With reference to Appendix 2 of the audit report, these queries are:

Q4) This refers to paragraph 3.2.2 in the Croft BIA and paragraph 4.7 our audit report and is in regard to proximity of trees and their Root Protection Area (RPA). The calculation for the RPA stated in the BIA is: the RPA has a radius that is 12 x the stem diameter. Since the tree diameter is 400mm, the radius of the RPA is 4.8m. The trees is stated to be 4m from the basement construction. The query is therefore, will the tree be impacted and if so, will this impact upon neighbouring foundations? (ie we require a response that clearly states: if tree roots are to be removed / impacted, will this result in any potential swelling of soils beneath the neighbouring properties? This can be demonstrated using the NHBC 4.2 methodology if required)

Q6) We requested the GMA to be reviewed in accordance with our comments in section 4.12 of the audit report. The response from the authors (below in red, item 5) states that they believe the analysis to be suitably conservative, and therefore have not revised it. Whilst we shall comment further on this in the final audit report (in summary we do not entirely agree with the methodology adopted or the comments below) we will accept that the magnitude of movements predicted is broadly in the range anticipated for a basement proposal of similar scale and depth constructed within the same ground conditions. Therefore no further response is required in regard to the GMA.

Q7) We requested the Monitoring trigger values to be reviewed in accordance with our comments in section 4.13 of the audit report. The response from the authors (below in red, item 6) states that the appropriate trigger values have been adopted. However, since the GMA predicts a maximum 5mm of horizontal / 8mm of vertical movement will occur at the retaining walls (which will be the Party Walls to the adjacent properties, and properties above), the current red trigger values of 8mm horizontal / 10mm vertical are not considered appropriately conservative to demonstrate that impacts to the neighbouring properties will be within the predicted maximum allowable damage category (Category 1). Therefore the trigger values should be revised, with red trigger values at or lower than the maximum predicted value.

I hope the above is clear.

1. The Land Stability assessment is required to be authored by a chartered engineer CEng MICE, which is not currently the case. The Croft BIA (section 2.1) indicates that a CEng MICE has reviewed the Surface Water Flow (hydrology) assessment but specifically has not reviewed the Land Stability assessment.

The land stability has been reviewed by Croft who has added a CEng MICE as part of the BIA package. Please note that Julian Maund is a Chartered Engineer and Registered Ground Engineering Adviser in the Register of Ground Engineering Professionals validated by the ICE.

2. The Star Design Services Construction Method Statement provides contrary information to the Croft and Maund Geo-Consulting BIAs, notably in regard to: geotechnical parameters and monitoring trigger values. The submitted documents should be reviewed / corrected to provide consistent information.

Please disregard the Star Design Services CMS this is superseded by the Croft and MGC reports

3. The Croft BIA adopts different geotechnical parameters within the text and retaining wall calculations to those presented in the Maund Geo-Consulting geotechnical assessment, which requires review and clarification.

The parameters adopted by Croft will be amended to agree with Maund Geoconsulting

4. The Croft BIA notes that utility information has been obtained to check for underground infrastructure except for Thames Water records. Noting the close proximity of the reservoir on Gondar Gardens, the TW records should be obtained and if infrastructure is present within the zone of influence, potential impacts should be assessed.

Thames Water records have been obtained, and added to the BIA by Croft.

5. The Croft BIA indicates that the retaining walls will be cantilevered in the permanent case. The Maund Geo-Consulting ground movement assessment has made an allowance of 5mm vertical and

horizontal movements due to basement construction, plus allowance for heave and settlement due to unloading / loading. The allowance of 5mm horizontal movement for a cantilever wall should be further justified, noting that estimates of movement for a 'low stiffness' embedded wall would be in excess of this, and the BIA is expected to present a reasonably conservative assessment.. Noted that the walls are not embedded.

We have allowed a 5mm movement for horizontal movement for the underpin. As there is no specific guidance for ground movements relating to underpins, as C760 is based on embedded walls, we had previously agreed with Campbell Reith recommendation to allow for a nominal 5mm movement for an almost identical scheme (15 Lyncroft Gardens NW6 1LB) July 2020.

The ground conditions as determined by the ground investigation at 29 Gondar Gardens indicated the London Clay to firm to stiff. It is considered appropriate to relate this to stiff clay, not soft to firm clay (as indicated in C760 as the 'not stiff option') which may be more appropriate to organic or normally consolidated alluvial clays, rather than over consolidated London Clay. As the characteristic values of geotechnical parameters used in the analysis are cautious estimates it is considered, when the modest depth of the underpins are considered, that overall this is a suitably conservative analysis.

6. The Croft BIA indicates monitoring trigger values that are currently in excess of the movements predicted at the Party Wall by the Maund Geo-Consulting ground movement assessment. These values also differ from the Star Design Services trigger values. Once the movement assessment has been reviewed (as 5), appropriate trigger values should be adopted.

It is considered that the appropriate trigger value have been adopted.

Regards

Graham Kite

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