

**139 Cranley Gardens,
London, N10 3AG**

Basic Impact Assessment Audit

For
London Borough of Haringey

Project No.
13979-03

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Campbell Reith Hill LLP
15 Bermondsey Square
London
SE1 3UN

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

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Author	N Simonini, BSc MSc 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 Haringey, (LBH) to carry out an audit on the Basement Impact Assessment submitted as part of the Planning Submission documentation for 139 Cranley Gardens, London N10 3AG (planning reference HGY/2023/0850).
- 1.2 The Audit reviewed the Basement Impact Assessment (BIA) for potential impact on land stability and local ground and surface water conditions arising from basement development in accordance with LBH's policies and technical procedures.
- 1.3 CampbellReith was able to access LBH'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 proposal includes the construction of a basement to a depth of c. 6.90m below ground level below part of the footprint of the house and the rear garden.
- 1.5 Screening and scoping assessments are presented, supported by desk study information.
- 1.6 The qualifications of the individuals involved in the production of the hydrogeology impact assessment are not in accordance with LBH guidance. Non-technical summaries are not presented in the BIA and are required.
- 1.7 Clarification on whether a site walkover was undertaken to inform the BIA is required.
- 1.8 Further site investigation information and additional evidence are required to confirm the impact to/from a culverted brook and the wider hydrogeological environment.
- 1.9 Clarification on the hydrology assessment is required regarding proposed surface water discharge rates, provision of permeable areas above the basement and decrease in surface water flooding. Evidence of liaison with the public sewer owner is required.
- 1.10 The proposed geotechnical parameters for detailed design of the basement require further clarification as detailed in Section 4.
- 1.11 The Ground Movement Assessment should be reviewed, and further information provided as described in Section 4. The trigger levels proposed in the outline monitoring strategy may also require revision.
- 1.12 Any impact on underground assets within the zone of influence of the basement is outside the scope of this report.
- 1.13 Queries and requests for information are summarised in Appendix 2. Until the clarifications requested are presented, the BIA does not meet the requirements of LBH guidance on basements.

2.0 INTRODUCTION

2.1 CampbellReith was instructed by London Borough of Haringey (LBH) on 2nd of November 2023 to carry out an audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 139 Cranley Gardens, London N10 3AG, planning reference HGY/2023/0850.

2.2 The audit reviewed the BIA for potential impact on land stability and local ground and surface water conditions arising from basement development. An audit of land quality/contamination issues has not been undertaken and is outside the scope of this report.

2.3 A BIA is required for all planning applications with basements in Haringey in general accordance with policies and technical procedures contained within:

- Development Management DPD. July 2017.
- Draft Basement Development Guidance Note. June 2012.
- Haringey Council Strategic Flood Risk Assessment.

2.4 The BIA should demonstrate that the scheme:

- a) maintains the structural stability of neighbouring properties;
- b) does not adversely affect drainage and run-off or cause other damage to the water environment;
- c) does not have a cumulative impact upon structural stability or the water environment in the local area.

2.5 and evaluate the impacts of the proposed basement considering the issues of hydrology, hydrogeology and land stability and to make recommendations for the detailed design.

2.6 Although the site lies within the London Borough of Haringey, it was agreed that the audit of the screening, scoping and impact assessment would follow the procedure presented in the London Borough of Camden (LBC) Planning Guidance: Basements as it is widely known and is considered to provide a robust approach to the issues of concern.

2.7 The site is within the Highgate Neighbourhood Area.

2.8 LBH's Audit Instruction described the planning proposal as "Basement Extension to existing semi-detached property, to implement a new gym, swimming pool, sauna room, plant room and bathroom".

2.9 CampbellReith accessed LBH's Planning Portal on 7th of November 2023 and gained access to the following relevant documents for audit purposes:

- Basement Impact Assessment Report by Symmetrys Ltd, ref.: 21066-SYM-XX-XX-RP-S-0001-Rev E, dated August 2023. Including structural drawings in Appendix A.
- Geotechnical Ground Investigation Report by SAS Ltd, ref.: SAS 21/33613 Rev 0, dated May 2021.

- Ground Movement Assessment by GEA Ltd, ref.: J23175 Rev 1, dated August 2023.
- Flood Risk Assessment & SuDS Report by Symmetris Ltd, ref.: 21066-SYM-XX-XX-RP-C-0001-Rev A, dated May 2023.
- Existing and Proposed Architectural Drawings by Crawford Partnership, dated 24th March 2023:
 - Site and Location Plan
 - Proposed Ground Floor Plan
 - Proposed Mezzanine and Basement Plan
 - Proposed Sections
- Consultation responses. Of note, Independent Review of Basement Impact Assessment by LBHGEO – ref.: LBH4692, ver. 2.2, dated September 2023; Objection Letter from SM Planning, dated May 2023 and Objection Letter from Jason Small, Principal Engineer – Flood & Water Management.

3.0 BASEMENT IMPACT ASSESSMENT AUDIT CHECK LIST

Item	Yes/No/NA	Comment
Are BIA Author(s) credentials satisfactory?	No	The BIA should be reviewed by individuals holding the relevant qualifications as per Haringey Draft Basement Development Note.
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	However further clarification is required on the construction sequence and on potential impact on culverted stream.
Are suitable plans/maps included?	Yes	All maps to support screening are included in the BIA.
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	Section 4.2 of the BIA.
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	Section 4.1 of the BIA.
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	Section 4.3 of the BIA.

Item	Yes/No/NA	Comment
Is a conceptual model presented?	Yes	Section 4 of the Ground Investigation Report.
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	Yes	Section 5 of the BIA.
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	Yes	Section 5 of the BIA.
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	Yes	Section 5 of the BIA.
Is factual ground investigation data provided?	Yes	See Ground Investigation Report.
Is monitoring data presented?	Yes	Monitoring has been carried out on a single occasion to date.
Is the ground investigation informed by a desk study?	Yes	Section 3 of the BIA.
Has a site walkover been undertaken?	Unknown	
Is the presence/absence of adjacent or nearby basements confirmed?	No	However, the BIA assumes the absence of any neighbouring basements.
Is a geotechnical interpretation presented?	Yes	Section 7 of the Ground Investigation Report. However clarification on the bearing capacity is required.
Does the geotechnical interpretation include information on retaining wall design?	Yes	Section 7 of the Ground Investigation Report.
Are reports on other investigations required by screening and scoping presented?	No	

Item	Yes/No/NA	Comment
Are the baseline conditions described, based on the GSD?	Yes	
Do the baseline conditions consider adjacent or nearby basements?	No	However, the BIA assumes the absence of any neighbouring basements.
Is an Impact Assessment provided?	Yes	Section 7, 8, 9, and 10 of the BIA.
Are estimates of ground movement and structural impact presented?	Yes	See GEA GMA.
Is the Impact Assessment appropriate to the matters identified by screening and scoping?	Yes	However, land stability, hydrology and hydrogeological assessments require further consideration.
Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme?	Yes	However, further mitigation measures and/or revision of the presented mitigation measures may be required.
Has the need for monitoring during construction been considered?	Yes	Section 11 of the BIA. Revision of the trigger values may be required after GMA review.
Have the residual (after mitigation) impacts been clearly identified?	No	Residual impact are considered negligible. However impact assessment requires review.
Has the scheme demonstrated that the structural stability of the building and neighbouring properties and infrastructure will be maintained?	No	GMA presented; clarifications requested.
Has the scheme avoided adversely affecting drainage and run-off or causing other damage to the water environment?	No	Clarification on the FRA required.

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?	Yes	However, clarifications on the GMA requested.
Are non-technical summaries provided	No	

4.0 DISCUSSION

- 4.1 The BIA has been carried out by Symmetris supported by GEA. The individuals involved do not hold the qualifications required by LBH policy for the hydrogeology assessment. Clarification is required. Non-technical summaries are not presented in the BIA and are required. Clarification on whether a site walkover was undertaken is also required.
- 4.2 The site is a residential property consisting of a 3-storey semi-detached house including a driveway at the front and a rear garden, which includes a paved patio, a single storey outbuilding, a garden and an astro-turf pitch. The main house does not have any basement or partial basement at present, however it is understood the outbuilding has a single storey basement. The property is attached to No. 137 Cranley Gardens to the west, while No. 141 Cranley Gardens is present to the east. It is unknown whether neighbouring properties have basements, however the BIA assumes no neighbouring basements are present. This is considered conservative in relation to the land stability assessment and, considering the anticipated groundwater flow and location of the proposed basement, neutral in relation to the hydrogeology assessment.
- 4.3 The proposals include the construction of a double storey basement to host a new swimming pool and including a mezzanine level where a gym is proposed. The basement will extend to a maximum depth of c. 6.90m bgl. The basement will be located underneath a small portion of the southern end of the existing building and mainly underneath the rear garden and outbuilding. The basement is to be constructed following a 'hit and miss' sequence of retaining wall construction and multistage underpinning. It is understood the existing outbuilding will be demolished except for the boundary wall which is going to be underpinned.
- 4.4 Screening and scoping assessments are presented and informed by desk study information. Most relevant figures/maps and other guidance documents are referenced within the BIA to support responses to screening questions. However, the assessment should be reviewed by qualified professionals as per LBH guidance.
- 4.5 A site-specific ground investigation was undertaken in April 2021. The exploratory hole location plan presented in the ground investigation report indicates a cable percussive borehole and 4 trial pits were undertaken. However logs for the trial pits have not presented and are required.
- 4.6 The ground investigation encountered a limited thickness of Made Ground (to 0.60m bgl) over the London Clay Formation (to 12.00m bgl). Groundwater was not encountered during drilling. Although not shown on the borehole log, it is understood a standpipe was installed to a depth of 5.00m bgl and groundwater was monitored at 0.85m bgl as part of a single monitoring visit undertaken two weeks after completion of the borehole. Noting that there was only one monitoring visit which was undertaken more than two and a half years ago, it is not considered that the baseline has been established sufficiently to permit the assessment of impacts to/from hydrogeology or to inform the detailed design (including temporary works).

- 4.7 The BIA acknowledges the presence of a culverted brook (Moselle Brook) in the vicinity of the site. Further confirmation of ground and groundwater conditions, for example from the trial pits, should be presented and sufficient evidence to confirm the presence/absence of any soft and water bearing deposits associated with the culverted brook and to confirm impacts on the wider hydrogeological environment.
- 4.8 The BIA states that the site is at medium risk from surface water flooding and within a critical drainage area. A FRA and SuDS Report has been prepared and indicates that the impermeable areas are not going to increase. However, clarification is required with respect to the provision of permeable areas over the basement. The report states that the inclusion of attenuation will reduce the impact of flooding to 'low'. As the surface water flooding appears to be generated from offsite flow routes heading down the Cranley Gardens road and through the site towards the Cricket Ground to the south, the risk to the property is from external runoff generated from beyond the site boundary and it is unlikely to be reduced through the proposed development or the proposed onsite drainage system. As such clarification on this is also required.
- 4.9 As indicated within the objection letter from Jason Small, there is a discrepancy between proposed discharge rates presented in Figure 33 and paragraph 10.81 and clarification is required. In addition, clarification whether consultation with the statutory sewer system owner has been undertaken is required. It is noted final drainage design and strategy will require approval by the lead local flood authority.
- 4.10 Structural drawings for the proposed basement are presented with construction sequences for the underpinning and the construction of tension piles. These indicate transitional underpinning from ground level to proposed mezzanine level will be undertaken below the party wall to No. 137 to limit differential settlement. The typical sequence presented in the BIA indicates underpinning will be undertaken in two lifts. Structural drawings indicates that the proposed retaining walls will not be cantilevered at any time due to the inclusion of multi-level temporary props, shuttering and vertical struts and that a detailed temporary works design will be agreed with the appointed contractor at a later stage.
- 4.11 Structural engineering calculations for the substructure are presented. Different sections of the proposed retaining walls are analysed with retained heights varying from 4.20 to 5.90m reflecting the structural proposal. It is noted this is a preliminary design sufficient to allow impact assessment. The structural information concludes that underpinning is a suitable retaining option for the proposed development, however, it assumes the underpins will be formed entirely in the London Clay and, as described above, this requires to be confirmed.
- 4.12 The geotechnical parameters used for the Ground Movement Assessment (GMA) and the retaining wall calculations are presented in the GMA and the site investigation report. The site investigation report recommends a friction angle of 23° for the retained soil and an allowable bearing pressure of 250kPa at basement formation level. Although the calculated bearing pressure is typically below that value, a realistic and conservative value for the allowable bearing capacity should be presented.

- 4.13 A GMA has been presented to demonstrate damage to neighbouring buildings will be limited to Category 1 of the Burland Scale. The sensitive structures relevant to this assessment are Nos. 137 and 141 Cranley Gardens and the footpath and carriageway of Cranley Gardens. As indicated in the CCTV survey presented in the FRA and as raised in LHBGEO's report, a combined drain is present at the proposed development location which affects the feasibility of the proposals. Any impact on this and any other underground asset that may be present within the zone of influence of the basement is outside the scope of this report.
- 4.14 Commercial software XDisp was used and ground displacement curves presented in CIRIA C760 associated with construction and excavation were adopted in the analysis. Whilst the CIRIA approach is intended for embedded retaining walls, it is accepted that in certain situations the predicted ground movements can be within the range typically anticipated for underpinning techniques carried out with good control of workmanship. However, the GMA should be reviewed according to the comments below and updated as necessary.
- There is a discrepancy in the GMA construction sequence which indicates the proposed RC floor slab to be cast at the highest level first and subsequently notes it will be constructed at the end of the sequence. This should be clarified.
 - The GMA states that at least 5mm of ground movements should be considered in both the vertical and horizontal direction for each lift of underpinning. As two lifts are proposed total movements at the wall are expected to be 10mm in both the vertical and horizontal direction. However, the GMA indicates 3 to 8mm and 2 to 9mm in the vertical and horizontal direction respectively. This should be clarified.
 - On the basis of industry experience, the quoted movement of 5mm per lift is the minimum typically experienced with good control of workmanship. Other factors such as load induced settlement and the feasibility of excavating to 6.90m in two lifts of underpinning should be further considered.
 - The GMA should include an impact assessment of the transitional underpinning proposed below the party wall to No. 137 Cranley Gardens.
 - Clarification on whether ground movements occurring due to the underpinning of the existing outbuilding have been considered in the analysis is required.

- 4.15 The results of the Building Impact Assessment currently indicate damage to neighbouring structures will not exceed Burland Category 1 (Very Slight); however, the GMA requires further consideration as per the items discussed above.
- 4.16 The BIA indicates that a monitoring strategy will be developed at a later stage and will be subject to discussions and agreements with the owners of the adjacent properties and structures as part of the Party Wall Agreement. Trigger levels are presented in the outline strategy and they may require update after the review of the GMA.
- 4.17 Technical reports submitted as part of the public consultation raise matters that are relevant to the BIA as discussed below:

LBHGeo

- Trial pits from the site investigation or any additional site investigation have not been presented - see audit 4.5;
- Clarification on the baseline of groundwater conditions required - see audit 4.6.;
- SAS report does not provide any basement impact assessment or basement construction advice, geotechnical parameters and structural design - the impact assessment has been undertaken by Symmetrys with contribution from GEA on land stability, however clarification on the qualifications of the BIA in relation to the hydrogeology assessment is required, see audit 4.1;
- The structural information presented at this stage has been evaluated to be suitable for the planning requirements although queries on geotechnical parameters have been raised - see audit 4.12.
- Additional groundwater monitoring is recommended in the SAS report but not considered in the BIA - see audit 4.6.
- Discrepancy in suggested sequence of works – the discrepancy relevant to this audit is that described in audit 4.14 and clarification on this is required. Additional queries on the GMA have been raised, see audit 4.14.
- The development is contributing to increased run-off and hardstanding areas are increasing – clarification on the provision of permeable areas over the basement and on proposed run-off rates is required, see audit 4.8. and 4.9.
- A shared public combined drain is present at the location of the proposed development – clarification on whether consultation with the asset owner is ongoing is required, see audit 4.13.

SM Planning objection letter

- The BIA refers to the basement as single storey – it is agreed that 'single storey' may be misleading, however the BIA has correctly taken into consideration the proposed basement depth.

Jason Small objection letter

- Clarification on the discrepancy between proposed discharge rates in the FRA is required. In addition, clarification whether consultation with the statutory sewer system owner has been undertaken is required.

4.18 All the others matters/comments raised in the technical reports are considered to have been addressed in the submitted information or outside the scope of this report.

5.0 CONCLUSIONS

- 5.1 Screening and scoping assessments are presented, supported by desk study information. However, the qualifications of the individuals involved in the production of the hydrogeology impact assessment are not in accordance with LBH guidance. Clarification on whether a site walkover was undertaken is required. Non-technical summaries to be included in the BIA.
- 5.2 The proposal includes the construction of a basement to a maximum depth of c. 6.90m bgl below part of the footprint of the house and the rear garden.
- 5.3 The site investigation information presented is insufficient for the BIA. Additional evidence is required to confirm the presence/absence of soft and water bearing deposits associated with a culverted brook, to confirm hydrogeology baseline and assess the impact on the wider hydrogeological environment.
- 5.4 Clarification is required with respect to the provision of permeable areas over the basement, the decrease in surface water flooding and the proposed discharge rates. Evidence that liaison with the public sewer owner is ongoing is required.
- 5.5 Structural calculations and drawings are presented to demonstrate the feasibility of the scheme. There is a discrepancy in the construction sequence which should be clarified.
- 5.6 The proposed allowable bearing capacity value used in the retaining wall calculations require further clarification as detailed in Section 4.
- 5.7 The Ground Movement Assessment (GMA) should be revised, and further information provided as described in Section 4. Trigger levels presented in the outline monitoring strategy may also require revision.
- 5.8 Any impact to/from the combined sewer that crosses the site and any other underground asset that may be present within the zone of influence of the basement is outside the scope of this report.
- 5.9 Queries and requests for information are summarised in Appendix 2. Until the clarifications requested are presented, the BIA does not meet the requirements of Haringey Council Planning Guidance.

Appendix 1

Residents' Consultation Comment

Residents Consultation Comments

Surname	Company/Address	Date	Issue raised	Response
Susan Secher	-	07/06/23	Structural stability	See 4.13 to 4.15.
Janie	-		Flooding	See 4.8.
CREOS	-	06/06/23		
Yorke-Starkey	-	05/06/23		
Law	-	02/06/23		
La Vespa	-	01/06/23		
Van Basteen and Puzey	-	01/06/23		
Connor	-	31/05/23		
Barter	-	30/05/23		
Brock	-	30/05/23		
Evans	-	27/05/23		
Davies	-	22/05/23		
Rendle	-	22/05/23		
Rodger	-	22/05/23		

Appendix 2

Audit Query Tracker

Audit Query Tracker

Query No	Subject	Query	Status	Date closed out
1	BIA format	The hydrogeology impact assessment should be prepared and/or reviewed by qualified professionals as per LBH guidance.	Open – See 4.1.	
2	BIA format	Non-technical summary to be included in the BIA.	Open – See 4.1.	
3	BIA format	Clarification on whether a site walkover was undertaken is required.	Open – See 4.1	
4	BIA format	Trial pit records to be submitted. Alternatively additional justification will be required to confirm the presence/absence of any soft and water bearing deposits associated with a culverted brook.	Open – See 4.6.	
5	Hydrogeology	Baseline for groundwater regime not established. Additional evidence required.	Open – See 4.6.	
6	Hydrogeology	Impact assessment on the wider hydrogeological environment to be reviewed following confirmation of absence of soft/water bearing deposits associated with culverted brook.	Open – See 4.7.	
7	Hydrology	Clarification is required with respect to the provision of permeable areas over the basement and on the proposed decrease in the surface water flooding risk.	Open – See 4.8.	
8	Hydrology	Clarification on proposed discharge rates and on whether liaison with the public sewer owner is ongoing is required.	Open – See 4.9.	
9	Land Stability	Clarification regarding the allowable bearing capacity value used in the retaining walls calculation is required.	Open – See 4.11.	
10	Land Stability	The Ground Movement Assessment is to be reviewed and, where necessary, updated following the comments provided in Section 4.	Open – See 4.13.	
11	Land Stability	Trigger levels presented in the outline monitoring strategy may require amendments following GMA revision.	Open – See 4.15.	
12	Third Party Consultation	Impact on any underground asset running across or nearby the proposed basement is outside the scope of this report. Early liaison with the assets owners is encouraged to agree methods of assessment.	Note Only – See 4.12.	
13	Hydrology	Final drainage design and strategy will require approval by the lead local flood authority.	Note only – See 4.9.	



CampbellReith
consulting engineers

Appendix 3

Supplementary Supporting Documents

None

London

15 Bermondsey Square
London
SE1 3UN

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

Bristol

Unit 5.03,
HERE,
470 Bath Road,
Bristol BS4 3AP

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

Manchester

No. 1 Marsden Street
Manchester
M2 1HW

T: +44 (0)161 819 3060
E: manchester@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: 15 Bermondsey Square, London, SE1 3UN
VAT No 974 8892 43