### CampbellReith consulting engineers

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### **Basement Impact** Assessment Audit

13 Belsize Crescent, London, NW3 5QU

> For London Borough of Camden

> > Project No. 14006-13

Date November 2023

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#### 1.0 NON-TECHNICAL SUMMARY

- 1.1.1 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 13 Belsize Crescent, London, NW3 5QU (planning reference 2023/0692/P). The basement is considered to fall within Category B as defined by the Terms of Reference.
- 1.1.2 The Audit reviewed the Basement Impact Assessment for potential impact on land stability and local ground and surface water conditions arising from the basement development in accordance with LBC's policies and technical procedures.
- 1.1.3 CampbellReith was able to access LBC's Planning Portal and gain access to the latest revision of submitted documentation and reviewed them against an agreed audit check list.
- **1.1.4** The BIA has been carried out by a well-known firm using individuals who possess suitable qualifications to undertake the assessments in accordance with the CPG requirements.
- 1.1.5 The proposed works include the complete refurbishment of a five-story property with the construction of a new basement below the lower ground floor. At the front of the property the new basement will extend below the lightwell and vault and, to the rear, extend below the back garden. The basement will include a pool which will be formed at a reduced level to the rest of the basement.
- 1.1.6 The basement is to be formed by means of underpinning the existing foundations within the London Clay Formation to 6.2m below the current ground level.
- **1.1.7** The screening has been updated and the responses include sufficient justification. In addition, where required, the items have been brought through to scoping.
- 1.1.8 The construction methodology includes five main phases including: 1.) installing CFA piles to resist uplift pressures, 2.) excavating the underpins in 1m wide bays using a hit and miss method, 3.) installing reinforcement cages and casting the underpins, 4.) excavating the basement and installing temporary props at set increments 5.) casting the reinforced concrete floor slabs for the basement and the lower ground floor.
- 1.1.9 A Ground Movement Assessment (GMA) has been undertaken using PDisp and XDisp software. The input and output data from the software has been provided for review. The methodology and assumptions made are considered sufficiently conservative for the proposed development.
- 1.1.10 The results of the GMA have been used in a damage assessment for neighbouring structures and the road. The results indicate a maximum damage category of Burland Category 1 (Very Slight).
- **1.1.11** Considering the additional information presented, it can be confirmed that the BIA meets the requirements of Camden Planning Guidance: Basements.



#### 2.0 INTRODUCTION

- 2.1.1 CampbellReith was instructed by London Borough of Camden (LBC) on 13/06/2023 to carry out a Category B audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 13 Belsize Crescent, London, NW3 5QU and Planning Reference No. 2023/0692/P.
- 2.1.2 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 the basement development.
- 2.1.3 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.
- 2.1.4 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.

- 2.1.5 LBC's Audit Instruction described the planning proposal as "*Basement excavation, installation* of external platform lift, reconfiguration of external staircase, reinstatement of stair balustrade and front boundary treatment to match original, replacement windows, installation of bi folding doors, hard and soft landscaping and associated works."
- 2.1.6 The Audit Instruction confirmed 13 Belsize Crescent is not involved, or was a neighbour to, listed buildings.
- 2.1.7 CampbellReith accessed LBC's Planning Portal on 5<sup>th</sup> July 2023 and gained access to the following relevant documents for audit purposes:
  - Phase I Desk Study by A2 Site Investigation issued in March 2023, ref. 24022-A2SI-XX-XX-RP-Y-0001-01, rev. 01.
  - Factual Report by A2 Site Investigation issued in March 2023, ref. 24022-A2SI-XX-XX-RP-X-0001-02, rev 02.



- Interpretative report by A2 Site Investigation issued in March 2023, ref. 24022-A2SI-XX-XX-RP-Y-0003-00, rev. 00.
- Design & Access Statement by Undercover Architecture Ltd issued 16<sup>th</sup> February 2023.
- Arboricultural Survey by Arbtech issued 30<sup>th</sup> March 2023, ref 13 Belsize Crescent Arbtech TSR 02.
- Photograph Survey by Undercover issued in 2023.
- Drawings and sections by Undercover as follows:
  - Site Location Plan issued 23/08/22, ref. GA 100, rev. A
  - Lower Ground Floor Garden Plan issued 11/08/22, ref. GA 100, rev. A
  - Lower Ground Floor Plan issued 11/08/23, ref. GA 101, rev. A
  - Upper Ground Floor Plan issued 14/02/23, ref. GA 102, rev. A
  - First Floor Plan issued 14/02/23, ref. GA 103, rev. A
  - Second Floor Plan issued 14/02/23, ref. GA 104, rev. A
  - Third Floor Plan issued 14/02/23, ref. GA 105, rev. A
  - Roof Plan issued 14/02/23, GA 106, rev. A
  - Existing Rear Elevation issued 31/01/23, ref. GA 107, rev. C
  - Existing Front Elevation issued 31/02/23, ref. GA 108, rev. C
  - Existing Section A issued 31/01/23, ref GA 200, rev. A
  - Existing Section B issued 31/01/23, ref. GA201, rev. A
  - Proposed Lover Ground Floor Garden Plan issued 16/02/23, ref. GA 307, rev. A
  - Proposed Basement Floor Plan, issued 16/02/23, ref. GA 314, rev. A
- Planning consultation responses
- 2.2 Updated reports were made available to CampbellReith following initial comments, these reports include:
  - Basement Impact Assessment by A2 Site Investigation issued in November 2023, ref. 24022-A2SI-XX-XX-RP-Y-0005-04.
  - Structural Engineer's Report issued by Baker Chatterton Structural Design on September 2023, ref. J225-S-RP-001.
  - Ground Damage Ground Movement Assessment issued by A2 in November 2023, ref. 24022-A2SI-XX-XX-RP-Y-0004-04.
  - Flood Risk Assessment issued by Studio AF Engineering on 5<sup>th</sup> August 2023, ref. 1004-C-RP-001, rev. 02.



#### 3.0 BASEMENT IMPACT ASSESSMENT AUDIT CHECK LIST

Item	Yes/No/NA	Comment
Are BIA Author(s) credentials satisfactory?	Yes	
Is data required by Cl.233 of the GSD presented?	Yes	
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	
Do the plans/maps show the whole of the relevant area of study and do they show it in sufficient detail?	Yes	
Land Stability Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	
Is a conceptual model presented?	Yes	Section 3 of GMA (Appendix C of the BIA)
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	Yes	



Item	Yes/No/NA	Comment
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	Yes	
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	Yes	
Is factual ground investigation data provided?	Yes	
Is monitoring data presented?	Yes	
Is the ground investigation informed by a desk study?	Yes	Desktop Study included in Appendix A of BIA.
Has a site walkover been undertaken?	Yes	Section 2.2 of the Desktop Study.
Is the presence/absence of adjacent or nearby basements confirmed?	Yes	The neighbouring properties have been assumed to be founded at ground level.
Is a geotechnical interpretation presented?	Yes	Provided under a separate cover (ref: 24022-A2SI-XX-XX-RP-Y-0003-00).
Does the geotechnical interpretation include information on retaining wall design?	Yes	
Are reports on other investigations required by screening and scoping presented?	Yes	
Are the baseline conditions described, based on the GSD?	Yes	
Do the base line conditions consider adjacent or nearby basements?	Yes	
Is an Impact Assessment provided?	Yes	Section 4 of the GMA (Appendix C of the BIA).
Are estimates of ground movement and structural impact presented?	Yes	



Item	Yes/No/NA	Comment
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?	Yes	
Has the scheme avoided adversely affecting drainage and run- off or causing other damage to the water environment?	Yes	
Has the scheme avoided cumulative impacts upon structural stability or the water environment in the local area?	Yes	
Does the report state that damage to surrounding buildings will be no worse than Burland Category 1?	Yes	
Are non-technical summaries provided?	Yes	



#### 4.0 **DISCUSSION**

- 4.1.1 The Basement Impact Assessment (BIA) has been carried out by engineering consultants A2 Limited and the individuals concerned in its production have suitable qualifications.
- 4.1.2 The Structural Engineer's Report (SER) has been prepared by the engineering consultants, Baker Chatterton Structural Design.
- 4.1.3 The LBC Instruction to proceed with the audit identified that the basement proposal did not involve, nor was a neighbour to, any listed buildings. The Design & Access Statement (DAS) identified that site is located within the Belsize Conservation Area.
- 4.1.4 The proposed work includes a complete refurbishment of a five-story property at 13 Belsize Crescent and the construction of a new basement level below the existing lower ground floor. The SER states that at the front of the property the new basement will extend below the lightwell and vault and, at the rear, extends beneath the back garden. The basement will include a pool which will be formed at a reduced level to the rest of the basement.
- 4.1.5 The BIA indicates the ground floor slab will be replaced and underpinned up to 6.2m below current ground level. A drawing included within the SER appendices (reference J225-BC-SK-2200) provides the approximate extent of the excavation area showing the stepped profile of the basement.
- 4.1.6 A desktop study is provided in Appendix A of the BIA. A ground investigation has also been carried out at the site and is reported within a factual report issued under a separate cover. The ground investigation identified that the site comprises a cover of Made Ground to a maximum depth of 1.4m bgl over firm clay with occasional pockets of silt of the London Clay Formation. The deep cable percussive borehole recorded water seepage at 17.90m bgl.
- 4.1.7 Three monitoring wells were installed to a maximum depth of 1.00m bgl with response zones within the Made Ground. No groundwater was recorded during the monitoring visits.
- 4.1.8 The Interpretive Report prepared by A2SI (ref: 24022-A2SI-XX-XX-RP-Y-0003-00) provides the geotechnical parameters and an indicative safe bearing pressure of 250kPa at basement depth.
- 4.1.9 A Flood Risk Assessment has been carried out by Studio AF Engineering and confirmed that the development site is at low risk from all sources of flooding. A brief outline of the proposed drainage is included in the SER.
- 4.1.10 The BIA report identifies the site is situated on a gentle slope, with a gradient less than 4 degrees, within a wider hillside setting.
- 4.1.11 The subterranean flow and surface flow screening responses have been updated to recognise that the basement extends beyond the footprint of the existing structure and hardstanding. A 1m thick layer of granular material will be placed over this area to mitigate surface water impacts.



- 4.1.12 The land stability screening identifies that the shallowest stratum is London Clay and the proposed basement is adjacent to neighbouring structures and a public highway. The BIA report has been updated to bring these items through to scoping.
- 4.1.13 The report has also been updated to acknowledge the responses from local residents, provided on the planning portal, that discuss issues with seasonal shrink-swell subsidence along the street.
- 4.1.14 The construction sequence included within the SER includes 5 primary phases for the basement construction:
  - 1. Installation of CFA pile foundations from the lower ground floor to help resist uplift pressures.
  - 2. Excavation and underpinning of the existing masonry foundations. The existing masonry foundations will be underpinned with a new retaining wall formed of reinforced concrete. The underpinning will be carried out in a 'hit and miss' method with bays no wider than 1m. The excavation required for the underpinning will be shored using sheathing board and acrow props.
  - 3. Casting the underpins. The reinforcement for the underpins will be installed with projecting bars into the soil to later tie into the wall and basement slab.
  - 4. Basement excavation. The excavation of the basement will include installation of temporary propping to the perimeter retaining walls at various increments during the excavation process.
  - 5. Casting the basement and lower ground floor slabs. The basement slab will be formed in reinforced concrete and span between the mass concrete strip footings around the perimeter and through the centre of the basement. The slab will be treated as suspended with heave board placed beneath. The basement slab will be 'cranked' to allow formation of the sunken pool area beneath the rear garden.
- 4.1.15 The underpinning sequence is shown on drawing J225-BC-SK-3080 rev P4 in Appendix A of the SER. The drawing has been updated to show 1m wide underpinning will be carried out to construct the wall extending beneath the rear garden.
- 4.1.16 The works also include the lightwell being extended up to the property's boundary line, adjacent to the public highway. A new retaining wall adjacent to the highway is proposed and will be constructed following the main basement construction works. Trench sheeting with temporary props will be installed along the boundary line with excavation and retaining wall construction being carried out in 1m wide sections.
- 4.1.17 New below ground drainage will be installed below the proposed basement slab and pumped up to the lower ground floor where it will flow under gravity into the existing Thames Water outfall. SuDs, such as permeable paving, will be used to aid surface water attenuation and preventing any increase in surface water discharge off-site.
- 4.1.18 The Ground Movement Assessment (GMA) is included in Appendix C of the BIA report. Oasys PDisp software has been used to evaluate the magnitude of heave caused from the partial



demolition of the existing structure and excavation of the basement assessed in the short-term conditions. The GMA has been updated to assume two unloading pressures from excavation, 98.6kN/m<sup>2</sup> beneath the property footprint and 127.3kN/m<sup>2</sup> beneath the rear garden. An unloading pressure of 15kN/m<sup>2</sup> has been estimated for the partial demolition of the existing building.

- 4.1.19 Oasys XDisp software has been used to evaluate the ground movements associated with short-term movement due to the underpinning along with short-term and long-term movement due to underpinning and building loading. The GMA states that the loading has been modelled by using idealised pressure patches. The width of the underpins vary between 1m and 1.5m to prevent the loading from exceeding the bearing pressure of 200kN/m<sup>2</sup>. The point loads have not been included however, the loading regime includes the full self-weight of the 7m deep underpins. This method is accepted as being reasonably conservative.
- 4.1.20 Sensitive structures evaluated include the walls of No. 11 and No. 15 Belsize Crescent. It has conservatively been assumed these structures do not have basements and are founded at ground level. The movements along the highway, of 8mm vertically and 7mm horizontally, have been estimated from the contour outputs of the GMA.
- 4.1.21 Ground displacement curves presented in CIRIA C760 and CIRIA C580 were used within the XDisp analysis. The GMA reports vertical movements of between 7mm to 17mm and horizontal movements of up to 10mm. These predicted movements are considered to be appropriately conservative for the proposed development.
- 4.1.22 The full input and output tables for the PDisp and XDisp models have been provided for review.
- 4.1.23 The results of the GMA were used to estimate that the maximum damage category is Category 1 (Very Slight) on the Burland scale.
- 4.1.24 The BIA recommends that the predicted ground movement should be checked by monitoring of the adjacent properties. No precise monitoring strategy was included within the BIA or SER.



#### 5.0 CONCLUSIONS

- 5.1.1 The BIA has been carried out by a well-known firm using individuals who possess suitable qualifications to undertake the assessments in accordance with the CPG requirements.
- 5.1.2 The proposed works include the complete refurbishment of a five-story property with the construction of a new basement below the lower ground floor. At the front of the property the new basement will extend below the lightwell and vault, and, at the rear, extend beneath the back garden. The basement will include a pool which will be formed at a reduced level to the rest of the basement.
- 5.1.3 The basement is to be formed by means of underpinning the existing foundations within the London Clay Formation to 6.2m below the current ground level.
- 5.1.4 The screening has been updated and the responses include sufficient justification. In addition, where required, the items have been brought through to scoping.
- 5.1.5 The construction methodology includes five main phases including: 1.) installing CFA piles to resist uplift pressures, 2.) excavating the underpins in 1m wide bays using a hit and miss method, 3.) installing reinforcement cages and casting the underpins, 4.) excavating the basement and installing temporary props at set increments 5.) casting the reinforced concrete floor slabs for the basement and the lower ground floor.
- 5.1.6 The methodology has been updated to clarify that the walls along the area of basement situated beneath the back garden will also be constructed by underpinning 1m sections in a hit and miss sequence.
- 5.1.7 Interpretive geotechnical parameters and an indicative safe bearing pressure (of 250kPa) are provided.
- 5.1.8 The proposed development includes extending the front lightwell up to the property's boundary line adjacent to the public highway. This new retaining wall will be constructed using trench sheeting with temporary props to allow excavation and retaining wall construction in 1m wide sections.
- 5.1.9 A Ground Movement Assessment (GMA) has been undertaken using PDisp and XDisp software. The input and output data from the software has been provided for review. The methodology and assumptions made are considered sufficiently conservative for the proposed development.
- 5.1.10 The results of the GMA have been used in a damage assessment for neighbouring structures and the road. The results indicate a maximum damage category of Burland Category 1 (Very Slight).
- 5.1.10 Considering the additional information presented, it can be confirmed that the BIA meets the requirements of Camden Planning Guidance: Basements.



Appendix 1 Consultation Responses



#### Residents' Consultation Comments

Surname	Address	Date	Issue raised	Response
Taheri	Belsize Crescent	31/05/23	Increased area of hardstanding resulting from the construction of the basement beneath the rear garden. Impact to the subterranean flow. Damage to party walls due to vibrations caused by the excavation.	Considered within the scoping section of the BIA. The proposed basement is within the London Clay which is considered to be an unproductive stratum. The BIA states appropriate ground movement monitoring should be implemented during construction.
Legg	Not provided	07/06/23	Increased area of hardstanding resulting from the construction of the basement beneath the rear garden. Potential subsidence risk to the surrounding properties.	Considered within the scoping section of the BIA. A Ground Movement Assessment and a Flood Risk Assessment have been carried out.
Wright	Not provided	09/06/23	Risk of ground movement associated with the steep terrain. Increased risk of flooding.	The BIA report indicates the site is situated within an area with a gradient no greater than 4 degrees. A Flood Risk Assessment has been carried out and concludes that the development site is at low risk from all sources of flooding.
Peiron	Not provided	14/06/2023	The site is on sloped ground. Houses impacted by seasonal shrink-swell subsidence. Risk of flooding.	The BIA report indicates the site is situated within an area with a gradient no greater than 4 degrees. Considered within the scoping section of the BIA. Low risk of flooding indicated by the Flood Risk Assessment.



Address	Date	Issue raised	Response
Not provided	13/06/2023	Site situated on steep slope.	The BIA report indicates the site is situated within an area with a gradient no greater than 4 degrees.
Not provided	21/06/2023	Site situated on steep slope.	The BIA report indicates the site is situated within an area with a gradient no greater than 4 degrees.
		Risk of ground movement.	A Ground Movement Assessment has been carried out.
		Risk of flooding created by the basement.	Low risk of flooding indicated by the Flood Risk Assessment.
Not provided	17/06/2023	Potential for foundation failure and stability concerns.	A Structural Engineer's Report has been provided with a proposed construction phase plan (including an outline of temporary support).
Not provided	1706/2023	Stability issues due to sloped ground.	The BIA report indicates the site is situated within an area with a gradient no greater than 4 degrees.
Not provided	17/06/2023	Risk of flooding created by the basement.	Low risk of flooding is indicated by the Flood Risk Assessment.
		Impacts to neighbouring structures.	A Ground Movement Assessment has been carried out.
Not provided	19/06/2023	The site is situated on the side of a hill.	The BIA report indicates the site is situated within an area with a gradient no greater than 4 degrees.
20 Belsize Crescent	Not provided	Risk of damage to neighbouring properties from vibrations during works and construction of new foundations.	A Ground Movement Assessment has been carried out and monitoring is to be carried out with suitable trigger values derived from the results.
Not provided	25/06/2023	Cracking on neighbouring properties. Ground movements caused by the basement (and subsequent use as swimming pool) will negatively impact neighbouring properties.	The has been included within the BIA screening and scoping assessment. A Ground Movement Assessment has been carried out.
	Address Not provided Not provided Not provided Not provided Not provided Not provided Z0 Belsize Crescent Not provided	AddressDateNot provided13/06/2023Not provided21/06/2023Not provided17/06/2023Not provided17/06/2023Not provided17/06/2023Not provided17/06/2023Not provided19/06/2023Not provided19/06/2023Not provided19/06/2023Not provided19/06/2023Not provided19/06/2023	AddressDateIssue raisedNot provided13/06/2023Site situated on steep slope.Not provided21/06/2023Site situated on steep slope.Not provided21/06/2023Site situated on steep slope.Risk of ground movement.Risk of flooding created by the basement.Not provided17/06/2023Potential for foundation failure and stability concerns.Not provided1706/2023Stability issues due to sloped ground.Not provided17/06/2023Risk of flooding created by the basement.Not provided17/06/2023The site is situated on the side of a hill.20 Belsize CrescentNot providedRisk of damage to neighbouring properties from vibrations during works and construction of new foundations.Not provided25/06/2023Cracking on neighbouring properties.Not provided25/06/2023Cracking on neighbouring properties.



Surname	Address	Date	Issue raised	Response
			Flooding occurring within the surrounding area.	Low risk of flooding is indicated by the Flood Risk Assessment.
Choi	18 Belsize Crescent	25/06/2023	Houses impacted by seasonal shrink-swell subsidence.	The has been included within the BIA screening and scoping assessment.
			The basement excavation will undermine neighbouring properties.	The has been included within the BIA screening and scoping assessment.
Saul	Not provided	25/06/2023	Movement caused by the basement excavation may cause damage to the neighbouring properties.	A Ground Movement Assessment has been carried out to assess predicted damage to neighbouring properties.
Krause	Not provided	23/06/2023	Movement caused by the basement excavation may cause damage to the neighbouring properties.	A Ground Movement Assessment has been carried out to assess predicted damage to neighbouring properties.
			The proposed basement may create flooding/ drainage issues.	Low risk of flooding is indicated by the Flood Risk Assessment and a brief outline of the proposed drainage is included in the SER.
Farrand	Not provided	08/08/2023	Concerns of the brick strength within the existing structure.	Outside the scope of this audit.
			Presence of rising damp along a party wall.	therefore the ingress of water during construction is accepted to be minimal.
			Inconsistencies in reference to increase of hardstanding as part of the proposed works.	The BIA has been updated to consider the extension beneath the rear garden
			Consideration of climate change to foundations within London Clay.	Outside the scope of this audit.



Appendix 2 Audit Query Tracker



#### Audit Query Tracker

No.	Subject	Query	Status	Date closed out
1	Groundwater flow and flood risk	Demonstrate that the authors for the subterranean flow assessment and flood risk assessment hold suitable qualifications in accordance with CPG Basements.	Closed	04/10/2023
2	Land stability	Clarify the foundation depth(s) of the proposed basement and ensure reference to the foundation depth(s) are consistent across all reports.		14/08/2023
3	Groundwater flow and hydrology	Update screening responses to acknowledge that the proposed basement extends beyond the existing property footprint. If required, take through to scoping.	Closed	14/08/2023
4	Land stability	Bring Q5, regarding London Clay being the shallowest strata, through to scoping.	Closed	14/08/2023
5	Land stability	Review the response of Q12 regarding the site's distance from the highway and, if required, bring through to scoping.	Closed	14/08/2023
6	Land stability	Review response to Q7, considering the comments provided by local residents referencing issues with shrink swell subsidence in neighbouring properties.	Closed	14/08/2023
7	Hydrology	Consideration of the impact that increased sewer discharge will have on the surrounding area and proposed mitigation measures is required.	Closed	14/08/2023
8	Construction Methodology	Provide details of the proposed construction sequence for the area of basement beneath the rear garden.	Closed	04/10/2023
9	Construction Methodology	Provide clarification of the underpinning sections shown to be greater than 1m wide on the structural drawing J225-BC-SK-3080.	Closed	14/08/2023
10	Ground Movement Assessment	Include the highway as sensitive structure within the GMA or provide justification for it not being considered.	Closed	04/10/2023



No.	Subject	Query	Status	Date closed out
11	Ground Movement Assessment	Provide clarification on how the GMA has assessed the proposed retaining wall adjacent to the highway.	Closed	04/10/2023
12	Ground Movement Assessment	Carry out sensitivity checks using suitably conservative curves for the underpinning.	Closed	04/10/2023
13	Ground Movement Assessment	Provide the full input and output tables of the PDisp and XDisp models for review.	Closed	04/08/2023



# Appendix 3

### Supplementary Supporting Documents

None

Appendix

### London

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