

**10A Elsworthy Road,
London NW3 3DJ**

**Basement Impact Assessment
Audit**

For
London Borough of Camden

Project Number: 12727-68

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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 10A Elsworthy Road, London NW3 3DJ (planning reference 2018/0423/P). The basement is considered to fall within Category B as defined by the Terms of Reference.
- 1.2. The Audit reviewed the Basement Impact Assessment for potential impact on land stability and local ground and surface water conditions arising from basement development in accordance with LBC's policies and technical procedures.
- 1.3. CampbellReith was able to access LBC's Planning Portal and gain access to the latest revision of submitted documentation and reviewed it against an agreed audit check list.
- 1.4. The BIA has been prepared by LBH Wembley Engineering with a Structural Planning Report and Calculations produced by Entuitive. The qualifications of the authors are in accordance with LBC guidance.
- 1.5. The proposed site comprises a three-storey terraced residential building located on the northern side of Elsworthy Road. The proposed basement will extend the full width of the site and beyond the footprint of the building above into the rear garden. Approximately 1.5m of excavation will take place below the existing cellar floor to create a floor to ceiling height of 3.0m. A new lightwell will be created at the front of the property.
- 1.6. The BIA includes the majority of the information required from a desk study in accordance with LBC guidance.
- 1.7. A site investigation was undertaken by LBH Wembley Engineering in August 2017. The ground conditions comprise Made Ground over London Clay. Groundwater was not encountered during the investigation.
- 1.8. The BIA presents a geotechnical interpretation, including retaining wall design parameters.
- 1.9. The formation level of the new basement slab will be founded in the London Clay formation. The basement will be formed by underpinning techniques. Outline temporary works and permanent structural calculations have been presented. An outline construction programme is provided.
- 1.10. The BIA notes that at the depth of the proposed foundations, and the foundations of the neighbouring structures, there should be no impact from shrink swell movements.

- 1.11. A Ground Movement Assessment (GMA) is presented. The damage impact assessment indicates Category 1 damage (Very Slight) for 12 Elsworthy Road and Category 0 damage (Negligible) for 8 Elsworthy Road. Ground movements will not impact the highway.
- 1.12. An outline methodology and guidance for monitoring structural movements during construction is provided which includes proposed trigger values and contingency actions.
- 1.13. The crown of a Network Rail tunnel (Primrose Hill fast line rail route) is understood to be approximately 8m below the rear garden level which is approximately 10m in diameter running in a northeast to southwest direction. Consultations have been undertaken with Network Rail and agreement has been reached that the proposed basement extension will cause negligible ground movement to the crown of the tunnel.
- 1.14. Elsworthy Road is within a Critical Drainage Area (Group 3-005) but is at very low risk of surface water flooding.
- 1.15. The proposed scheme will increase the proportion of impermeable area. It is understood that a SUDS assessment will be undertaken to attenuate off-site discharge flows in accordance with the guidance. The final drainage scheme should be agreed with Thames Water and LBC.
- 1.16. The BIA meets the criteria of CPG Basements.

2.0 INTRODUCTION

2.1. CampbellReith was instructed by London Borough of Camden (LBC) on 28 March 2018 to carry out a Category B Audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 10A Elsworthy Road, London NW3 3DJ, Camden Reference 2018/0423/P.

2.2. The Audit was carried out in accordance with the Terms of Reference set by LBC. It reviewed the Basement Impact Assessment for potential impact on land stability and local ground and surface water conditions arising from basement development.

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

- Guidance for Subterranean Development (GSD). Issue 01. November 2010. Ove Arup & Partners.
- Camden Planning Guidance (CPG): Basements.
- Camden Development Policy (DP) 27: Basements and Lightwells.
- Camden Development Policy (DP) 23: Water.
- The 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; and,
- 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: "*Erection of single storey ground floor rear and side extensions; Extension to existing garden outbuilding; Excavation of a basement extension*".

The planning portal also confirmed the site lies within the Elsworthy Conservation Area but the site or neighbouring properties are not listed buildings.

2.6. CampbellReith accessed LBC's Planning Portal in April 2018 and gained access to the following relevant documents for audit purposes:

- Basement Impact Assessment (ref LBH4482 Ver 2.0) dated September 2017 by LBH Wembley Engineering.
- Structural Planning Report and Calculations (ref 4512, Rev. 01) dated October 2017 by Entuitive.
- Existing and proposed elevations and plans dated June 2017 by Zac Monro Architects.
- Document Review Notice by Network Rail dated October 2017.
- Arboricultural Implications Assessment (ref J53.97) dated November 2017 by Broad Oak Tree Consultants Ltd.
- Design and Access Statement by Zac Monro Architects.
- Planning and Heritage Statement (ref 16340/JG/CJ) dated October 2017 by Firstplan.

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 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	BIA Report, Section 4.1.3. The site is directly underlain by London Clay. Three trees will be removed as part of the development. A Network Rail tunnel (Primrose Hill fast line rail route) is located approximately 8m below the rear garden which is approximately 10m in diameter running in a northeast to southwest direction.
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	BIA Report, Section 4.1.1.
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	BIA Report, Section 4.1.2. Elsworthy Road is within a Critical Drainage Area (Group 3-005), although this was not identified within the screening process. Increase in impermeable site area noted.
Is a conceptual model presented?	Yes	Within BIA text.

Item	Yes/No/NA	Comment
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	Yes	BIA Report, Section 4.2.3.
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	Yes	BIA Report, Section 4.2.1.
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	Yes	BIA Report, Section 4.2.2. Final drainage design to be approved by LBC / TW.
Is factual ground investigation data provided?	Yes	BIA Report, Section 5.
Is monitoring data presented?	No	No groundwater was encountered during the site investigation. Impermeable LC underlying.
Is the ground investigation informed by a desk study?	Yes	BIA Report, Section 3.
Has a site walkover been undertaken?	Yes	Site investigation.
Is the presence/absence of adjacent or nearby basements confirmed?	Yes	BIA Report, Section 2.4 and 4.1.3. The adjoining property at 12 Elsworthy Road has an existing cellar extending to around 1.5m depth (it is understood that a planning application has been approved at number 12 for a similar basement excavation to the one proposed on the subject site). Number 8 Elsworthy Road has a basement beneath the house footprint extending to 3.2m depth.
Is a geotechnical interpretation presented?	Yes	BIA Report, Section 6.
Does the geotechnical interpretation include information on retaining wall design?	Yes	BIA Report, Section 6.5.1 and Structural Planning Report and Calculations by Entuitive.

Item	Yes/No/NA	Comment
Are reports on other investigations required by screening and scoping presented?	Yes	Arboricultural Assessment.
Are baseline conditions described, based on the GSD?	Yes	
Do the base line conditions consider adjacent or nearby basements?	Yes	For the purposes of structural calculations it has been assumed that by the time the works at 10A are undertaken that the planned and approved basement works at number 12 will have been completed. However, GMA conservatively considers the case if number 12 basement not complete.
Is an Impact Assessment provided?	Yes	BIA Report, Section 7.
Are estimates of ground movement and structural impact presented?	Yes	Ground movement assessment provided in BIA report, Section 7.4.
Is the Impact Assessment appropriate to the matters identified by screen 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	BIA Report, Sections 8 and 9.
Have the residual (after mitigation) impacts been clearly identified?	Yes	Long term heave and basement waterproofing discussed.
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	Final drainage design to be approved by LBC / TW.

Item	Yes/No/NA	Comment
Has the scheme avoided cumulative impacts upon structural stability or the water environment in the local area?	Yes	
Does report state that damage to surrounding buildings will be no worse than Burland Category 2?	Yes	
Are non-technical summaries provided?	No	However, the BIA Chapter 7 is generally written so as to be understandable by non-technical readers.

4.0 DISCUSSION

- 4.1. The BIA has been prepared by LBH Wembley Engineering with a Structural Planning Report produced by Entuitive. The qualifications of the authors of the reports prepared by LBH Wembley Engineering and Entuitive are in accordance with CPG4 guidelines.
- 4.2. The proposed site comprises a three storey terraced residential building located on the northern side of Elsworth Road which is understood to have been constructed in the 1880s. The proposal is to excavate the existing cellar by 1.5m to create a single storey basement beneath the entire property. A new lightwell will be created at the front of the property in addition to a small extension of the ground floor at the rear of the property and a single storey extension to the southwest corner of the garage at the rear of the garden.
- 4.3. The BIA includes the majority of the information required from a desk study in line with the GSD Appendix G1.
- 4.4. A site investigation was undertaken by LBH Wembley Engineering in August 2017 comprising two 7.45m boreholes and 8 trial pits. No groundwater was encountered during the investigation. The ground conditions comprise Made Ground over London Clay.
- 4.5. Groundwater was not encountered during drilling but the BIA identifies that there is potential for water to collect around the basement in the long term and therefore the basement should be fully waterproofed and designed to withstand hydrostatic pressures.
- 4.6. Considering the underlying unproductive strata, the proposed development will not impact the wider hydrogeological environment.
- 4.7. The BIA presents geotechnical interpretation, including retaining wall design parameters.
- 4.8. The formation level of the new basement slab will be founded in the London Clay formation. The basement will be formed by underpinning techniques. Where existing retaining walls to neighbouring basements exist, appropriate structural connections to the new basement slab will be made. Outline temporary works and permanent structural calculations have been presented. An outline construction programme is provided.
- 4.9. The BIA notes potential for shrink / swell movements in shallow soils due to changes in soil moisture conditions, both due to nearby trees and removal of trees during construction within the proposed development's footprint. The BIA notes that at the depth of the proposed foundations, and the foundations of the neighbouring structures, there should be no impact from shrink swell movements.

- 4.10. 8 Elsworthy Road has a basement, constructed recently to a similar formation depth to that proposed. The new basement foundations will not undermine those to number 8. 12 Elsworthy Road has planning permission for a basement to a similar depth to that proposed. The structural design assumes this will be complete before the works to 10 Elsworthy Road commences. However, the GMA considers both scenarios (basement to 12 built / not built), which is appropriately conservative.
- 4.11. A Ground Movement Assessment (GMA) is presented. The damage impact assessment indicates Category 1 damage (Very Slight) for 12 Elsworthy Road and Category 0 damage (Negligible) for 8 Elsworthy Road. Ground movements will not impact the highway.
- 4.12. It is reported that significant damage occurred to the party wall, rear garden wall and flank wall of number 10 during the construction of the basement at number 8 and therefore there is heightened sensitivity to the proposed basement excavation. An outline methodology and guidance for monitoring structural movements during construction is provided which includes proposed trigger values and contingency actions. These are considered appropriate to limit damage to within a maximum of Category 1 (Very Slight).
- 4.13. A Network Rail tunnel (Primrose Hill fast line rail route) is located below the rear garden which is approximately 10m in diameter running in a northeast to southwest direction. The crown of the tunnel is understood to be approximately 8m below the rear garden level with a 5m horizontal exclusion zone from the edge of the tunnel. The proposed basement may extend slightly within the normal tunnel exclusion zone and the extension to the garage at the rear of the garden will be over the footprint of the tunnel. Consultations have been undertaken with Network Rail regarding the proposed works and agreement has been reached that the proposed basement extension will only cause negligible ground movement to the crown of the Network Rail Tunnel (Network Rail Document Review Notice provided which has a category of 1 (Accepted)).
- 4.14. Elsworthy Road is within a Critical Drainage Area (Group 3-005), although this was not identified within the BIA screening or scoping process. The site is not located within a Local Flood Risk Zone and is at very low risk of surface water flooding. Elsworthy Road did not flood in 1975 or 2002.
- 4.15. The proposed scheme will increase the proportion of impermeable area. It is understood that a SUDS assessment will be undertaken to attenuate off-site discharge flows in accordance with the guidance. The final drainage scheme should be agreed with Thames Water and LBC. The proposed development will not impact the wider hydrological environment.
- 4.16. Although generally understandable to a non-technical reader, non-technical summaries should be presented with any future BIA submissions.

5.0 CONCLUSIONS

- 5.1. The qualifications of the authors are in accordance with CPG4 guidelines.
- 5.2. The proposal is to excavate the existing cellar by 1.5m to create a single storey basement beneath the entire property, plus a new lightwell.
- 5.3. A site investigation has confirmed the underlying ground conditions to comprise Made Ground over London Clay. Groundwater was not encountered. The proposed development will not impact the wider hydrogeological environment.
- 5.4. The BIA presents a geotechnical interpretation, including retaining wall design parameters.
- 5.5. Outline temporary works and permanent structural calculations have been presented. An outline construction programme is provided.
- 5.6. A Ground Movement Assessment (GMA) is presented. The damage impact assessment indicates Category 1 damage (Very Slight) for 12 Elsworthy Road and Category 0 damage (Negligible) for 8 Elsworthy Road. Ground movements will not impact the highway.
- 5.7. Consultations have been undertaken with Network Rail and agreement has been reached that the proposed basement extension will cause negligible ground movement to the crown of the nearby Network Rail tunnel.
- 5.8. An outline methodology and guidance for monitoring structural movements during construction is provided which includes proposed trigger values and contingency actions.
- 5.9. Elsworthy Road is within a Critical Drainage Area (Group 3-005) but is at very low risk of surface water flooding.
- 5.10. The proposed scheme will increase the proportion of impermeable area. It is understood that a SUDS assessment will be undertaken to attenuate off-site discharge flows in accordance with the guidance. The final drainage scheme should be agreed with Thames Water and LBC. There will be no impact to the wider hydrological environment.
- 5.11. The BIA meets the criteria of CPG Basements.

Appendix 1: Residents' Consultation Comments

None

Appendix 2: Audit Query Tracker

None

Appendix 3: Supplementary Supporting Documents

None

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