

45 Lancaster Grove, London
NW3 4BH

Basement Impact Assessment
Audit

For
London Borough of Camden

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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 retrospectively as part of the Planning Submission documentation for 45A Lancaster Grove, London, NW3 4HB (planning reference 2015/2534/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 Planning and Party Wall Specialists Ltd. The individuals concerned in the production of the documents have generally suitable qualifications. Geo-Environmental Services Limited was instructed by Planning and Party Wall Specialists Ltd to undertake a retrospective ground investigation to confirm the conclusions made in a hydrogeological report by the GCG. The report is appended to the BIA.
- 1.5. The redevelopment consists of a new basement and ground level space to replace an existing ground level extension at the rear of a 3 storey detached house. The BIA confirms that the proposed basement is founded within London clay. Made Ground was found to a maximum depth to 1.2m bgl.
- 1.6. No construction sequence drawings, plans or calculations have been provided. Whilst it is noted that no concerns have been raised with respect to building damage it is not possible to comment on long term stability without this information. It is accepted that there are no impacts on surrounding slopes.
- 1.7. It is believed that a 'lost river' may cross the site and concerns have been raised with respect to groundwater flows. The ground investigation has confirm the assumptions made by the GCG that any flows are likely to be limited and will predominantly occur in the made ground rather than the low permeability London Clay. The GCG note that the original foundations and basement will have caused an obstruction to any groundwater flows and conclude that the new basement is unlikely to have a significant impact. This is accepted, however, it is recommended that the depth and bearing stratum of the original foundations are confirmed.
- 1.8. The enlarged basement has resulted in an increase in the impermeable area at the site which can increase surface water run off. The GCG's conclusions are based on this being adequately management and their report proposes various mitigation measures. It should be confirmed whether or not these have been adopted.

- 1.9. Lancaster Grove was flooded in 1975 and 2002. It is reported that the EA was contacted in regard to this. Their response should be provided. Architectural measures were recommended to avoid the basement being flooded. It should be confirmed whether or not these were incorporated into the design.
- 1.10. Queries and requests for clarification are discussed in Section 4 and summarised in Appendix 2.

2.0 INTRODUCTION

2.1. CampbellReith was instructed by London Borough of Camden (LBC) on 12th May 2016 to carry out a Category B Audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for retrospective planning permission for 45 Lancaster Grove, London NW3 4HB, planning reference 2015/2534/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) 4: Basements and Lightwells.
- Camden Development Policy (DP) 27: Basements and Lightwells.
- Camden Development Policy (DP) 23: Water.

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 Audit Instruction described the planning proposal as *"the extension of an existing basement together with additional ground floor accommodation within the rear garden of the house."*

2.6. CampbellReith accessed LBC's Planning Portal on 24th May 2016 and gained access to the following relevant documents for audit purposes:

- Design and Access Statement
- 3D Views of proposed extension
- Existing Drawings (Prior to works)
- Proposed drawings
- Ground Investigation Report
- Planning comments and responses

3.0 BASEMENT IMPACT ASSESSMENT AUDIT CHECK LIST

Item	Yes/No/NA	Comment
Are BIA Author(s) credentials satisfactory?	Yes	See Front sheet with author and reviewers with qualifications listed.
Is data required by Cl.233 of the GSD presented?	No	Physical form of the development is missing, a work programme for construction, operation and commissioning phases, construction methods and information about mitigation measures is not available to see.
Does the description of the proposed development include all aspects of temporary and permanent works which might impact upon geology, hydrogeology and hydrology?	No	
Are suitable plan/maps included	Yes	Location map only and plans show site and original/extended ground floor and basement.
Do the plans/maps show the whole of the relevant area of study and do they show it in sufficient detail?	No	Location map and plans of garden area showing outline basement not to sufficient detail. Extracts from Camden GHHS, EA and Strategic Flood Risk Assessment identifying site location could be provided.
Land Stability Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	No	See BIA Section 3.1.2. No maps provided from Arup GSD and no consideration of foundations to neighbouring properties.
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	See BIA Section 3.1.3. Suitable screening has been provided with justification for no answers where appropriate. However, no maps are provided.
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	No	See BIA Section 2.3. and 3.1.3. No maps are provided from the SFRA. Response to question 4 confuses groundwater and surface water flows.

Item	Yes/No/NA	Comment
Is a conceptual model presented?	Yes	For Ground conditions refer to the Ground investigation report.
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	Yes	See BIA Section 4.1.
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	No	See BIA Section 5.0 and Appendix D. Scoping does not consider possible former stream on western boundary although subsequent investigation reports no evidence for it.
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	Yes	See BIA Section 4.1 and Appendix D.
Is factual ground investigation data provided?	Yes	Refer to Ground Investigation report with an original desk based hydrogeological report appended.
Is monitoring data presented?	Yes	See BIA Section 2.2.
Is the ground investigation informed by a desk study?	Yes	See BIA Section 2.0.
Has a site walkover been undertaken?	Yes	Nothing is noted in the BIA for this, however photos have been taken from the ground investigation site visit and appended into the BIA.
Is the presence/absence of adjacent or nearby basements confirmed?	No	
Is a geotechnical interpretation presented?	Yes	Some basic soil parameters presented in BIA Section 7.0.
Does the geotechnical interpretation include information on retaining wall design?	Yes	Limited information provided in BIA Section 7.
Are reports on other investigations required by screening and scoping presented?	N/A	

Item	Yes/No/NA	Comment
Are the baseline conditions described, based on the GSD?	No	
Do the base line conditions consider adjacent or nearby basements?	No	
Is an Impact Assessment provided?	Yes	
Are estimates of ground movement and structural impact presented?	No	
Is the Impact Assessment appropriate to the matters identified by screen and scoping?	No	
Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme?	No	See BIA Section 8.0, mitigation is considered. Mitigation proposals are mentioned but it is not known which, if any, have been adopted.
Has the need for monitoring during construction been considered?	No	Retrospective application.
Have the residual (after mitigation) impacts been clearly identified?	No	
Has the scheme demonstrated that the structural stability of the building and neighbouring properties and infrastructure will be maintained?	No	See BIA Section 8.0.
Has the scheme avoided adversely affecting drainage and run-off or causing other damage to the water environment?	No	See BIA Section 8.0.
Has the scheme avoided cumulative impacts upon structural stability or the water environment in the local area?	No	Not proven.
Does report state that damage to surrounding buildings will be no worse than Burland Category 2?	No	Retrospective application.

Item	Yes/No/NA	Comment
Are non-technical summaries provided?	Yes	Summaries are presented at the end of the screening, scoping and assessment stages of the BIA (Sections 3, 4 and 5).

4.0 DISCUSSION

- 4.1. The retrospective BIA has been prepared by Planning and Party Wall Specialists Ltd. The individuals concerned in the production of the documents have generally suitable qualifications. Geo-Environmental Services Limited was instructed by Planning and Party Wall Specialists Ltd to undertake a ground investigation; the report is appended to the BIA, together with a hydrogeological assessment prepared by the Geotechnical Consulting Group in 2012 for the original basement application. No structural information has been presented, thus is not possible to comment on the qualifications of the designer.
- 4.2. The redevelopment site comprises a detached three storey house. It originally had a small ground level extension at the rear. Drawings show the replacement of the extension with a new single level structure with a single level basement under the front part of the rear garden. No structural information is provided although the BIA states "It is anticipated that the basement will be encased by a contiguous concrete piled wall prior to the basement excavation taking place".
- 4.3. It would be beneficial if the requirements of CPG4 were followed accurately by the inclusion of map extracts from the Arup GSD, the Environment Agency and the LBC Flood Risk Management Strategy identifying the site location on each map. These extracts would help to support statements made in the BIA screening process.
- 4.4. Geo-Environmental Services was instructed by Planning and Party Wall Specialists to undertake a retrospective intrusive ground investigation in order to confirm the information presented in the Hydrogeological Review, carried out by the GCG in March 2012. The investigation comprised the drilling of two 5m deep window sampling boreholes and the report notes the proposed basement will be constructed approximately 3m below the level of the house which will be into London clay. Groundwater was not measured within the window sampling up to a depth of 5m below GL. The investigation concludes that 'the anticipated ground conditions of a thin capping of made ground overlying the London Clay' are present. 'Groundwater was not encountered during the fieldworks'....'Based on the results of the investigation Geo-Environmental concurs with the interpretations made by the Geotechnical Consulting Group, in particular that the new basement construction is highly unlikely to cause adverse changes to the local hydrogeology'.
- 4.5. The BIA has identified that there is an increase in impermeable area across the ground surface. It states that the surface flow regime will be unchanged as the London Clay is generally impermeable and it is considered that the change in the site cover will not effect the existing drainage on site. However, there appears to be confusion with respect to surface water and groundwater. The BIA states that this could result in a strain on the existing drainage network. Various mitigation measures were suggested by the GCG such a survey of existing drains, the

construction of land drains and the consideration of options for SUDs. It is not known whether any of these have been adopted.

- 4.6. According to the Camden Flood Map, shown in Figure 8 and Camden Strategy Risk Assessment present in the Guidance Notes for Camden New Basement Development and Extensions to Existing Basement Accommodation, Lancaster Grove was affected by flooding in 1975 and in 2002. On this basis Lancaster Grove has been identified as a “primary” location for risk of flood from surface water. It is reported that the Environment Agency was approached to confirm that there is no risk of flooding for the site from sources other than surface water. It is not known whether they have responded. The GCG recommended architectural measures were implemented to avoid the basement being flooded. It is not known whether these were incorporated into the design.
- 4.7. It is recorded that a ‘lost stream’ runs across the site, possibly along the western boundary. It has been reported that ‘it is likely to be currently culverted or filled in, and that it is likely to be a preferential route for groundwater in the area of the site, which would be expected to flow towards it’. That suggests a westerly or south westerly flow direction. It also noted that ‘some minor horizontal flow could be expected within the London Clay due to its siltier and sandier nature in this area’. The GCG noted that the existing house is likely to be founded on London Clay and, together with the existing basement, probably already obstructs, to some extent, any potential water running across the site. Whilst the GCG considers that the proposed extension and the new basement could create an additional barrier to the potential groundwater flow, it was anticipated that the effect would be limited as the water flow across the site was not expected to be significant. This has been confirmed by the investigation and monitoring which show that any perched water that might exist in the made ground is impersistent. No discussion has been provided with respect to the depth and founding stratum for the original foundations.
- 4.8. It is accepted that there are no slope stability concerns regarding the basement development.
- 4.9. The screening process did not acknowledge the increase in differential depth between No 45 Lancaster Grove and its neighbouring properties. No assessment of vertical and horizontal ground movements has been produced and no indication of potential damage to adjoining properties can be reviewed. No methods of construction, drawings or calculations have been presented.
- 4.10. It is noted that no reports have been made of damage to neighbouring properties and Geo-Environmental Services state “Observations (albeit not detailed) made of the walls of the adjacent buildings indicated that the basement construction has not caused any significant adverse movements of party wall foundations”. However, it is not possible to comment on long term stability without any structural information.

- 4.10. As noted above the BIA has confirmed that the geology at the site comprises made ground over London Clay. The London Clay was shown to comprise clay with occasional pockets of fine sand. This confirms its low permeability and that any groundwater flows through it would be minor and localised. No groundwater was encountered during the investigation or a subsequent monitoring visit, confirming that any perched water is impersistent. No evidence of a former stream was noted, including in an exploratory hole on the western site boundary. The GCG note that the original foundations and small basement will already have created a barrier to shallow groundwater flows. The GCG's conclusion that the basement is not expected to cause adverse changes to the local hydrogeology provided that adequate drainage measures are adopted to deal with surface water is accepted, however, further confidence could be given to this conclusion by identifying the depth and bearing stratum of the original foundations.
- 4.11. The GCG's conclusions with respect to groundwater were dependent on the measures adopted to deal with greater surface water flows resulting from the increase in impermeable area. No information has been provided to describe the measures implemented and the cumulative impact on the water environment cannot therefore be determined. Furthermore no information has been provided with respect to measures to avoid the basement itself becoming flooded.

5.0 CONCLUSIONS

- 5.1. The retrospective BIA has been carried out by Planning and Party Wall Specialists Ltd and the individuals concerned in its production are broadly in accordance with the requirements of CPG4. A ground investigation was carried out by the GCG in 2012 for the original basement application.
- 5.2. The BIA has confirmed that the proposed basement is founded within London Clay.
- 5.3. No construction sequence drawings, plans or calculations have been provided. Whilst it is noted that no concerns have been raised with respect to building damage it is not possible to comment on long term stability without this information. It is accepted that there are no impacts on surrounding slopes.
- 5.4. It is believed that a 'lost river' may cross the site and concerns have been raised with respect to groundwater flows. The ground investigation has confirm the assumptions made by the GCG that any flows are likely to be limited and will predominantly occur in the made ground rather than the low permeability London Clay. The GCG note that the original foundations and basement will have caused an obstruction to any groundwater flows and conclude that the new basement is unlikely to have a significant impact. This is accepted, however, it is recommended that the depth and bearing stratum of the original foundations are confirmed.
- 5.5. The enlarged basement has resulted in an increase in the impermeable area at the site which can increase surface water run off. The GCG's conclusions are based on this being adequately management and their report proposes various mitigation measures. It should be confirmed whether or not these have been adopted.
- 5.6. Lancaster Grove was flooded in 1975 and 2002. It is reported that the EA was contacted in regard to this. Their response should be provided. Architectural measures were recommended to avoid the basement being flooded. It should be confirmed whether or not these were incorporated into the design.

Appendix 1: Residents' Consultation Comments

Residents' Consultation Comments

Surname	Address	Date	Issue raised	Response
Tankel	43a Lancaster Grove	-	<ul style="list-style-type: none"> • Insufficient ground investigation • Flood Risk Assessment does not consider 'lost river' • Planning inspectorate concluded that it had not been shown the scheme would not adversely affect the underground drainage or structural stability of adjacent buildings 	Refer to audit paragraphs 4.5 to 4.12
Bryant	12 Lancaster Drive	29.06.15	Writes in support of Tankel	Refer to audit paragraphs 4.5 to 4.12
Self	37 Lancaster Grove	29.06.15	Writes in support of Tankel	Refer to audit paragraphs 4.5 to 4.12
Robbie	43 Lancaster Grove	29.06.15	Writes in support of Tankel	Refer to audit paragraphs 4.5 to 4.12
Gluckman	12 Lancaster Drive	29.06.15	Writes in support of Tankel	Refer to audit paragraphs 4.5 to 4.12

Appendix 2: Audit Query Tracker

Audit Query Tracker

Query No	Subject	Query	Status	Date closed out
1	Hydrogeology	Confirmation required of mitigation measures incorporated.	Open	
2	Hydrogeology	Depth and bearing stratum of original foundation to be confirmed.	Open	
3	Surface Water	Confirmation required of mitigation measures incorporated.	Open	
4	Surface Water	Response to enquiry to EA to be provided.	Open	
5	Stability	Construction drawings, plans and calculations to be provided to demonstrate long term structural stability. Qualification and experience of designer to be confirmed.	Open	

Appendix 3: Supplementary Supporting Documents

None

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