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128-130 Grafton Road, London NW5 4BA

Basement Impact Assessment Audit

For

London Borough of Camden

Project Number: 12985-65

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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 128-130 Grafton Road, London NW5 4BA (planning reference 2018/3059/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 (BIA) for potential impact on land stability and local ground and surface water conditions arising from basement development in accordance with LBC's policies and technical procedures.

1.3. CampbellReith was able to access LBC's Planning Portal and gain access to the latest revision of submitted documentation and reviewed it against an agreed audit check list.

1.4. The BIA has been prepared by a number of engineering consultants. The qualifications of the authors of the reports are in accordance with CPG guidelines.

1.5. There is not a single BIA report and as such statements within the four documents repeat some aspects of the requirements, ignore other aspects, and fail to reference each other consistently.

1.6. The proposed development involves the demolition of the existing structure and the construction of a five-storey residential building with a basement and roof terrace.

1.7. The BIA includes the majority of the information required from a desk study in line with LBC guidance although utility companies should be consulted with regards to underground infrastructure.

1.8. A site investigation indicates Made Ground over Head Deposits over London Clay. No groundwater was encountered. Groundwater monitoring is recommended in the BIA to inform the temporary works strategy.

1.9. The London Clay is designated as unproductive strata. It is accepted there will be no impact to the wider hydrogeological environment.

1.10. Outline temporary works information is included in the Structural Engineers Construction Method Report. The construction methodology should be reviewed and amended to ensure it is consistent in all documents.

1.11. A Ground Movement Assessment is presented which considers the movements for the adjoining properties. The damage impact assessment indicates Category 2 damage (Slight) will be sustained by 126 and 132 Grafton Road. The GMA should demonstrate that damage to

neighbouring properties will not exceed Category 1 and should assess all structures within the zone of influence as well as adjacent highways and surrounding utilities.

1.12. An outline methodology and guidance for monitoring structural movements during construction is provided within the Structural Engineers Construction Method Report. This should be reviewed once the GMA has been finalised.

1.13. Grafton Road is not located within a Local Flood Risk Zone and the site is at 'low' risk of flooding from surface water run-off. The BIA recommends standard flood risk mitigation measures.

1.14. The proposed scheme will not increase the proportion of impermeable area at the site. It is accepted there will be no impact to wider hydrological environment.

1.15. Queries and matters requiring further information or clarification are discussed in Section 4 and summarised in Appendix 2. Until the clarifications requested are presented, the BIA does not meet the requirements of CPG: Basements.

2.0 INTRODUCTION

2.1. CampbellReith was instructed by London Borough of Camden (LBC) on 15th July 2019 to carry out a Category B Audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 128-130 Grafton Road, London NW5 4BA, Camden Reference 2018/3059/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. March 2018.
- 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: *"Demolition of existing two-storey industrial building (Class B8) and erection of a 5-storey plus basement, mixed use development comprising office space (Class B1) at basement level and 8 x 2-bed and 1 x 3-bed flats (Class C3) at upper floor levels."*

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

2.6. CampbellReith accessed LBC's Planning Portal on 24th July 2019 and gained access to the following relevant documents for audit purposes:

- Existing and proposed elevations and plans dated July 2017 and June 2018 by ETA Bridging Ltd.
- Phase 1 Desk Study: Preliminary Risk Assessment (ref 40213-2) dated September 2017 by Ground and Project Consultants Ltd.
- Factual Ground Investigation Report (ref GWPR2985/GIR/April 2019) dated April 2019 by Ground and Water Limited.
- Design and Access Statement dated June 2018 by ETA Bridging Ltd.
- Basement Impact Assessment: Land Stability Assessment Report (ref 40213-3) dated July 2019 by Ground and Project Consultants Ltd.
- Basement Impact Assessment: Groundwater (ref 30206R2D1) dated April 2019 by H Fraser Consulting Ltd.
- Basement Impact Assessment: Surface Water dated September 2017 by Kaya Consulting Ltd.
- Flood Risk Assessment (ref HYD401_GRAFTON.ROAD_FRA) dated April 2019 by Betts Hydro Consulting Engineers.
- Structural Engineers Construction Method Report (ref NP061974) dated June 2019 by NP Essex Construction Consultancy.

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?	No	Outline construction programme required.
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	Existing and proposed elevations and plans.
Land Stability Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	BIA: Land Stability Assessment, Section 4.
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	BIA: Groundwater Assessment, Section 3.
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	BIA: Surface Water Assessment, pages 1 and 2.
Is a conceptual model presented?	Yes	Within text of BIA: Land Stability Assessment (Section 7) and BIA: Groundwater Assessment (Section 6.1).

Item	Yes/No/NA	Comment
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	Yes	BIA: Land Stability Report Assessment, Section 5.
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	N/A	No groundwater encountered during site investigation and no further groundwater monitoring undertaken. London Clay is designated unproductive strata.
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	N/A	There is no change in the permeable / impermeable site ratio.
Is factual ground investigation data provided?	Yes	Factual Ground Investigation Report by Ground and Water Limited.
Is monitoring data presented?	No	Factual Ground Investigation Report, Section 4.1. Section 7.13. No groundwater encountered during site investigation and no further groundwater monitoring undertaken.
Is the ground investigation informed by a desk study?	Yes	A brief desk study is included within the Factual Ground Investigation Report. A full desk study is provided within the Phase 1 Preliminary Risk Assessment and within the BIA Assessments for Land Stability and Groundwater.
Has a site walkover been undertaken?	Yes	
Is the presence/absence of adjacent or nearby basements confirmed?	Yes	BIA: Land Stability Assessment, Section 8 states that 'It is understood that the adjoining properties do not have basements'.
Is a geotechnical interpretation presented?	Yes	BIA: Land Stability Assessment
Does the geotechnical interpretation include information on retaining wall design?	Yes	BIA: Land Stability Assessment

Item	Yes/No/NA	Comment
Are reports on other investigations required by screening and scoping presented?	Yes	A Preliminary Ground Movement Assessment Report (Section 8.v of BIA: Land Stability Assessment) and Flood Risk Assessment.
Are baseline conditions described, based on the GSD?	Yes	
Do the baseline conditions consider adjacent or nearby basements?	Yes	The adjoining properties are reported not to have basements.
Is an Impact Assessment provided?	Yes	BIA: Land Stability Assessment, Section 8 and BIA: Groundwater Assessment, Section 6.
Are estimates of ground movement and structural impact presented?	Yes	A Preliminary Ground Movement Assessment has been provided within the BIA: Land Stability Assessment which considers 126 and 132 Grafton Road and 10 Sprint Place.
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?	No	A temporary works sequence indicating underpinning and propping is presented. However, Category 2 damage is predicted.
Has the need for monitoring during construction been considered?	Yes	Structural Engineers Construction Method Statement, Section 5.3.
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	However, Category 2 damage indicated.
Has the scheme avoided adversely affecting drainage and run-off or causing other damage to the water environment?	Yes	The development will not increase the impermeable area.

Item	Yes/No/NA	Comment
Has the scheme avoided cumulative impacts upon structural stability or the water environment in the local area?	No	GMA concludes that maximum damage to neighbouring properties will be a Category 2 (Slight).
Does report state that damage to surrounding buildings will be no worse than Burland Category 1?	No	BIA: Land Stability Assessment report, Section 8.v. Damage Impact estimated to be Category 2 (Slight).
Are non-technical summaries provided?	No	

4.0 DISCUSSION

4.1. The BIA has been prepared by a number of sources: Ground and Project Consultants Ltd, H Fraser Consulting Ltd and Kaya Consulting Ltd. Supporting structural information is provided by NP Essex Construction Consultancy. The qualifications of the authors of the reports are in accordance with CPG guidelines.

4.2. There is not a single BIA report and as such statements within the four documents repeat some aspects of the requirements, ignore other aspects, and fail to reference each other consistently. In addition, some of the assessments reference the superseded CPG4 guidance. The current CPG: Basements should be referenced in any revised submissions.

4.3. The existing structure is a single storey terraced industrial building/warehouse comprising a ground floor and a mezzanine floor, forecourt area and off-street parking and is currently occupied by E & D Scaffolding Co Ltd. The ground cover at the front of the property comprises hardstanding. The property adjoins a large residential scheme on its eastern side (no. 126) with a single storey industrial building "Spring Lighting" on its western side (no. 132-134). The proposal is to construct a five-storey residential building with a basement and roof terrace. The basement will be approximately 3.00m deep. Sunken terraces are proposed at basement level, at the front and the rear. These will be paved.

4.4. The BIA includes the majority of the information required from a desk study in line with LBC guidance although utility companies have not been consulted with regards to underground infrastructure.

4.5. There is a culvert running approximately 185m northeast of the site which is believed to be associated with a tributary of the lost river Fleet.

4.6. A site investigation was undertaken by Ground and Water Ltd in February 2019 comprising two trial pits to depths of between 1.00 and 1.15m bgl and two windowless sampler boreholes to depths of between 6.45 and 7.10m bgl. The ground conditions comprise Made Ground (to a maximum depth of 1.80m) over Head Deposits (in one borehole to depth of 2.00m) over London Clay. No groundwater was encountered during the investigation and no further monitoring of the groundwater levels has been undertaken on site. The BIA recommends that groundwater monitoring is undertaken to aid in temporary works planning and ensure stability is maintained (i.e. during underpinning works).

4.7. The BIA prepared by H Fraser Consulting Ltd (Hydrogeology assessment) identifies the potential for perched groundwater to be present within the Made Ground below the site or for groundwater to be present in ‘sand partings or other discontinuities within the London Clay’. The potential for groundwater ingress to the basement excavation (particularly during times of heavy rainfall) is

also identified and therefore sump pumps may be required. The BIA notes that the basement should be waterproofed in accordance with BS 8102:2009.

4.8. The London Clay is designated as unproductive strata. It is accepted there will be no impact to the wider hydrogeological environment.

4.9. The basement will be single storey and will be formed by secant piles walls to the rear, front and part of the side elevations. The basement walls adjoining properties No. 126, 132 & 134 Grafton Road will be formed by underpinning the existing party/boundary walls. The land stability assessment refers to the sheet piling although this is not covered in the Construction Method Statement. The documents should be revised to be consistent. A reinforced concrete liner wall is proposed in the permanent case. Temporary propping will be utilised during construction.

4.10. Geotechnical design parameters are provided in the Land Stability BIA, which also indicates that secant piles will approximately 18m in length. Although the site investigation undertaken to date is sufficient for this impact assessment, it is likely additional site investigation is required to finalise the pile design.

4.11. The GMA considers the movements for the adjoining properties at 126 and 132 Grafton Road and 10 Spring Place. 10 Spring Place comprises two long buildings, one tall and one low, which have been assessed separately. The damage impact assessment indicates Category 2 damage (Slight) will be sustained by 126 and 132 Grafton Road. In line with current policies, applicants must demonstrate that damage to neighbouring properties resulting from the basement scheme will be no worse than Category 1 (Very Slight). Therefore, the proposed scheme has not been demonstrated to be compliant with policy. The GMA should be reviewed and, if possible, mitigation provided, sufficient to demonstrate that a maximum of Category 1 damage can feasibly be achieved.

4.12. The GMA should also identify a zone of influence for the proposed works and assess all structures within the zone, including highways and surrounding utilities.

4.13. An outline methodology and guidance for monitoring structural movements during construction are provided within the Structural Engineers Construction Method Statement (Section 5.3). The BIA recommends that, prior to works commencing, a condition survey should be undertaken on all adjacent neighbouring walls and property facades. It additionally recommends trigger values and contingency actions are set for use during monitoring as the construction progresses. This should be reviewed once the GMA has been finalised.

4.14. Grafton Road is within a Critical Drainage Area (Group 3-003), although this was not identified within the BIA screening or scoping process nor within the Flood Risk Assessment. The site is not located within a Local Flood Risk Zone. The site is at 'low' risk of flooding from surface water

run-off. Grafton Road did not flood in 1975 or 2002. Standard flood risk mitigation measures are recommended in the FRA including finished ground floor levels should be raised above the external levels, and low-height walls at ground floor level.

4.15. The proposed scheme will not increase the proportion of impermeable area at the site. An outline attenuated drainage strategy is provided. The final design should be agreed with LBC and Thames Water. It is accepted there will be no impact to the wider hydrological environment.

5.0 CONCLUSIONS

5.1. The qualifications of the authors are in accordance with CPG guidelines.

5.2. Any revised BIA should reference current LBC guidance: COG: Basements and the Local Plan (Policy A5 Basements).

5.3. The BIA includes the majority of the information required from a desk study. Utilities information should be provided.

5.4. The ground conditions comprise Made Ground over Head Deposits and London Clay. The London Clay is designated as unproductive strata. There will be no impact to the wider hydrogeological environment.

5.5. The BIA recommends that groundwater monitoring should be undertaken to inform the temporary works strategy. Additional site investigation may be needed to finalise the proposed pile design.

5.6. The basement is variously described as being formed by a combination of secant piling, sheet piling, and underpinning, propped in the temporary and permanent case. The methodology should be consistent across all documents and reflected in the GMA.

5.7. The GMA indicates Category 2 damage (Slight) to 126 and 132 Grafton Road. It must be demonstrated that the basement scheme will cause no more than Category 1 (Very Slight) damage. The GMA should identify the zone of influence and assess all structures within the zone and consider the adjacent highways and surrounding utilities.

5.8. An outline strategy for monitoring structural movements is presented. This should be reviewed once the GMA has been finalised.

5.9. The site is at low risk of flooding from surface water run-off. Standard flood risk mitigation measures are recommended in the BIA.

5.10. The proposed scheme will not increase the proportion of impermeable area. It is accepted there will be no impact to the wider hydrological environment.

5.11. Queries and matters requiring further information or clarification are summarised in Appendix 2. Until the clarifications requested are presented, the BIA does not meet the requirements of CPG: Basements.

Appendix 1: Residents' Consultation Comments

None

Appendix 2: Audit Query Tracker

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Audit Query Tracker

Query No	Subject	Query	Status/Response	Date closed out
1	BIA	Revisions to the BIA should reference current LBC policies (CPG: Basements and Policy A5 Basements).	Open	
2	BIA	Utilities information should be presented (and considered within revised GMA).	Open	
3	Land Stability	Construction methodology to be consistent across all documents.	Open	
4	Land Stability	The GMA and construction methodology / design should be reviewed. A maximum of Category 1 damage is acceptable. The monitoring strategy should be reviewed once the scheme / GMA are finalised.	Open	
5	Land Stability	GMA to include assessment of highway and infrastructure assets, as applicable.	Open	

Appendix 3: Supplementary Supporting Documents

None

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