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London
NW3 5PT

Basement Impact Assessment
Audit

For

London Borough of Camden

Project Number: 13398-90
Revision: D1

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Appendix

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 12 Eldon Grove, NW3 5PT (planning reference 2021/0143/P). The basement is considered to fall within Category C 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 qualifications of the individuals involved in the BIA are in accordance with LBC guidance.

1.5. The proposed works comprise the demolition of the single storey garage and the construction of a single storey basement beneath its footprint. A new three-storey building (13 Eldon Grove) with a single level basement is also proposed.

1.6. Screening and scoping assessments are presented, supported by desk study information. Outline permanent and temporary structural works proposals are presented.

1.7. A site walkover has been undertaken. Site investigation data is provided. The basements will bear into the Claygate Member.

1.8. The site is at very low risk from flooding from rivers, seas and reservoirs, from groundwater, and from surface water.

1.9. The site is not within a critical drainage area. The BIA confirms that impermeable areas of the site will increase as a result of the proposed development but attenuation SUDS will be adopted. It is noted that the final drainage scheme will require approval by the local flood authority and Thames Water.

1.10. As the excavation and underpinning will be undertaken into the Claygate Member, which may have localised saturated granular layers, the BIA recommends dewatering is undertaken. The BIA should assess potential impacts to the stability of adjacent structures due to dewatering.

1.11. A Ground Movement Assessment (GMA) has been undertaken. The GMA should be reviewed with further assessment presented, as detailed in Section 4.

1.12. The BIA indicates that the impact to the underlying Network Rail tunnel will be negligible.

Appropriate asset protection criteria should be agreed with the asset owner.

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 Camden Planning Guidance: Basements.

2.0 INTRODUCTION

2.1. CampbellReith was instructed by London Borough of Camden (LBC) on 17 March 2021 to carry out a Category C Audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 12 Eldon Grove, London NW3 5PT, Camden Reference 2021/0143/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:

- Camden Local Plan 2017 - Policy A5 Basements.
- Camden Planning Guidance: Basements. March 2018.
- Guidance for Subterranean Development (GSD). Issue 01. November 2010. Ove Arup & Partners.

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 "*Erection of new dwelling with basement level East of No.12 following demolition of garage with associated landscaping and installation of front bin and bike stores. To No.12: Excavation of basement level and front lightwell; erection of rear single storey extension at ground floor and side/rear extension at first floor with associated balcony; erection of roof extension, rear dormer and installation of side rooflight; fenestration alterations at first floor including replacement of 2x rear windows and insertion of 2x side windows and alterations to West side fenestration; front/rear landscaping alterations and installation of front cycle and bin stores*."

2.6. The Audit Instruction confirmed applicant's property and neighbouring properties are not listed.

2.7. CampbellReith accessed LBC's Planning Portal on 31st March 2021 and gained access to the

following relevant documents for audit purposes:

- Basement Impact Assessment (ref.:9001-BIA-001), dated December 2020, by Byrne Looby, with support from Paddock Geo Engineering (Appendix B of the BIA, ref.:P18-180bia);
- Basement Construction Method Statement (ref.: 5492/13/RJ/PG LR1), dated December 2020 by Arcelle Consulting;
- Sustainable Urban Drainage Report (ref.: 9001-SUDS-001), dated January 2021 by Byrne Looby;
- Arboricultural Impact Assessment (ref.: 20201127), dated December 2020, by TreTec.
- Planning Application Drawings consisting of Location Plan, Existing and Proposed Plans, Existing and Proposed Sections dated January 2021 by KSR Architects LLP.

3.0 BASEMENT IMPACT ASSESSMENT AUDIT CHECK LIST

Item	Yes/No/NA	Comment
Are BIA Author(s) credentials satisfactory?	Yes	Section 2 of the BIA.
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	The assessment is supported by suitable drawings of existing and proposed development and by suitable references to describe the environmental setting.
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 of the BIA.
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	Section 4 of the BIA.
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	Section 4 of the BIA.
Is a conceptual model presented?	Yes	Section 6 of the BIA.

Item	Yes/No/NA	Comment
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	Appendix A of the BIA.
Is monitoring data presented?	Yes	Section 6.3 of the BIA.
Is the ground investigation informed by a desk study?	Yes	Appendix A of the BIA
Has a site walkover been undertaken?	Yes	
Is the presence/absence of adjacent or nearby basements confirmed?	No	This should be confirmed in the BIA.
Is a geotechnical interpretation presented?	Yes	Paddock Geo Engineering report.
Does the geotechnical interpretation include information on retaining wall design?	Yes	Paddock Geo Engineering report.
Are reports on other investigations required by screening and scoping presented?	Yes	Tree Survey and Arboricultural Method Statement.
Are the baseline conditions described, based on the GSD?	Yes	
Do the base line conditions consider adjacent or nearby basements?	No	Presence/absence of adjacent or nearby basements should be confirmed in the BIA.

Item	Yes/No/NA	Comment
Is an Impact Assessment provided?	Yes	Section 8 of the BIA.
Are estimates of ground movement and structural impact presented?	Yes	Section 7.3 of the BIA and the Paddock Geo Engineering report.
Is the Impact Assessment appropriate to the matters identified by screening and scoping?	No	Clarification on the GMA should be presented as detailed in Section 4. Impact of dewatering should be assessed.
Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme?	Yes	However, they may need to be updated after the impact assessment is revised.
Has the need for monitoring during construction been considered?	Yes	Section 7.4 of the BIA.
Have the residual (after mitigation) impacts been clearly identified?	Yes	The BIA concludes that residual impacts will be negligible. However, this will need to be confirmed after the impact assessment is completed.
Has the scheme demonstrated that the structural stability of the building and neighbouring properties and infrastructure will be maintained?	No	However, clarification on the GMA should be presented. Impact of dewatering should be assessed.
Has the scheme avoided adversely affecting drainage and run-off or causing other damage to the water environment?	Yes	It is noted that the final drainage design will be subject to approval by Thames Water.
Has the scheme avoided cumulative impacts upon structural stability or the water environment in the local area?	Yes	As above.
Does report state that damage to surrounding buildings will be no worse than Burland Category 1?	Yes	However, clarification of the GMA should be presented. Impact of dewatering should be assessed.
Are non-technical summaries provided?	Yes	Section 1 of the BIA.

4.0 DISCUSSION

4.1. The BIA is authored by Byrne Looby, with support from Paddock Geo Engineering. The qualifications of the authors are in line with those required by LBC guidance.

4.2. The site is currently occupied by a two storey detached residential property of conventional masonry construction with a detached single storey garage. Mature and semi-mature trees are present to the south western and north-eastern extremities of the site. A Network Rail Tunnel runs under the application site c. 25m below ground level (bgl).

4.3. The proposed works comprise the demolition of the single storey garage and the internal structure and part of the rear façade of the existing building, and the construction of a single storey basement beneath its footprint. A new three-storey building (13 Eldon Grove) with a single level basement is also proposed. The proposed finished basement floor level will be 2.27m bgl and 4.15m bgl for No. 12 and No. 13 Eldon Grove respectively.

4.4. The LBC Instruction to proceed with the audit confirmed that both the applicant's property and neighbouring properties are not listed. The BIA does not present information on neighbouring basements/ foundations.

4.5. Screening and scoping assessments are presented and informed by desktop study information. Most of the relevant figures / maps from the Arup GSD and other guidance documents are referenced within the BIA to support responses to the screening questions.

4.6. A site investigation was undertaken in August 2019 to inform the basement design. A total of two window sampler boreholes and five foundation inspection pits were completed. A GPR survey was also undertaken to investigate the potential presence of a railway shaft. The ground investigation encountered Made Ground to a maximum depth of 1.40m bgl. Deposits of the Claygate Member were encountered below the Made Ground to a depth of 6.00m bgl where the boreholes terminated. The foundation inspection pits revealed the existing building's foundations to be typically formed of corbelled brick on mass concrete at a depth of c. 1.30m bgl. The GPR survey and further investigation undertaken discounted the presence of any railway shaft on site.

4.7. Groundwater was not struck during drilling; however, it was monitored between 2.29m and 5.30m bgl during subsequent monitoring visits. Some of the monitored groundwater levels are above the proposed formation level. The BIA states that groundwater control measures will be required and that localised dewatering may be required to deal with groundwater ingress into the excavation. It is accepted that the proposed development will cause negligible impact to the wider hydrogeological environment. However, as 4.10, further assessment of the proposed dewatering should be presented.

4.8. The site is at very low risk from flooding from rivers, seas and reservoirs, from groundwater, and from surface water. The site is not within a Critical Drainage Area. The BIA confirms that impermeable areas of the site will increase as a result of the proposed development. Attenuation SUDS in accordance with best practice is to be implemented to ensure that off-site discharge flows do not impact the wider hydrological environment. It is noted that the final drainage scheme will require approval by the local flood authority and the owner of the public sewer system present in the area (Thames Water).

4.9. An outline construction sequence and outline structural calculations are presented in the BIA. It is proposed to construct the new basements using traditional reinforced concrete underpinning following a typical 'hit and miss' sequence. The sequence confirms that temporary propping is proposed in the short term and that the new retaining walls will not be cantilevered at any stage.

4.10. Geotechnical parameters to inform settlement, retaining wall calculations and foundation design have been presented in the BIA. As the excavation and underpinning will be undertaken into the Claygate Member, which may have localised saturated granular layers, the BIA recommends dewatering is undertaken. The BIA should assess potential impacts to the stability of adjacent structures due to dewatering.

4.11. A Ground Movement Assessment (GMA) has been undertaken to demonstrate that ground movements and consequential damage to neighbouring properties will be within LBC's policy requirements. The GMA presents an estimation of the heave occurring due to the basement excavation and estimated category of damage to neighbouring buildings. The GMA is stated to follow the CIRIA C580 methodology for calculating movements generated by embedded retaining walls, and the full assessment should be provided for review including any amendments or assumptions made for movements generated by underpinning. Any potential cumulative impact of constructing two neighbouring basements should also be assessed in the GMA. Its noted that CIRIA C580 has been superseded by C760, which should be referenced if that is the methodology to be adopted.

4.12. It is understood that a ground movements analysis has been undertaken for the Network Rail tunnel running below the site at c. 25m bgl. The BIA indicates that the impact of the basements' construction at the depth of the asset exclusion zone are negligible. The validation of this analysis is outside the scope of this audit. Appropriate asset protection criteria should be agreed with the asset owner.

4.13. A specification for building movement monitoring is presented in Appendix F of the BIA. This includes proposed locations of survey targets, frequency of readings and suggested trigger levels. A detailed monitoring regime will be implemented following the specification throughout construction of the basement, in accordance with current guidance.

4.14. A Tree Survey and Arboricultural Method Statement has been presented to support the BIA. The report confirms that there is no tree within the gardens of the site which represent a planning constraint and, as such, no trees are proposed to be removed.

5.0 CONCLUSIONS

5.1. The qualifications of the individuals involved in the BIA are in accordance with LBC guidance.

5.2. Screening and scoping assessments are presented, supported by desk study information.

5.3. A site walkover has been undertaken. Site investigation data is provided. The basements will bear into the Claygate Member.

5.4. The site is at very low risk from flooding from rivers, seas and reservoirs, from groundwater, and from surface water.

5.5. The site is not within a critical drainage area. The BIA confirms that attenuation SUDS will be adopted. The final drainage scheme will require approval by the local flood authority and Thames Water.

5.6. Interpretative geotechnical assessment is presented.

5.7. Outline permanent and temporary structural works proposals and construction methodology are presented. The impacts of the recommended dewatering should be assessed.

5.8. A Ground Movement Assessment (GMA) has been undertaken. Further assessment should be presented as detailed in Section 4.

5.9. The BIA indicates that the impact to the underlying Network Rail tunnel will be negligible. Appropriate asset protection criteria should be agreed with the asset owner.

5.10. Queries and requests for information are summarised in Appendix 2. Until the clarifications requested are presented, the BIA does not meet the requirements of Camden Planning Guidance: Basements.

Appendix 1: Residents' Consultation Comments

Residents' Consultation Comments

Surname	Address	Date	Issue raised	Response
Hampstead Neighbourhood Forum	-	25/03/2021	Basement vicinity and cumulative impact	See Section 4.11 of this audit

Appendix 2: Audit Query Tracker

Audit Query Tracker

Query No	Subject	Query	Status	Date closed out
1	Land stability	As the excavation and underpinning will be undertaken into the Claygate Member, which may have localised saturated granular layers, the BIA recommends dewatering is undertaken. The BIA should assess potential impacts to the stability of adjacent structures due to dewatering.	Open – See 4.10	
2	Land stability	The GMA should be reviewed and presented in accordance with the comments in Section 4.	Open – See 4.11.	
3	Land Stability	The BIA indicates that the impact to the underlying Network Rail tunnel will be negligible. Appropriate asset protection criteria should be agreed with the asset owner.	Note Only	N/A

Appendix 3: Supplementary Supporting Documents

None

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