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56 Platt's Lane, London NW3 7NT

Basement Impact Assessment Audit

For

London Borough of Camden

Project Number: 12985-64

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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 a revised Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 56 Platt's Lane, London NW3 7NT, Camden Reference 2019/4795/P. The basement is considered to fall within Category B as defined by the Terms of Reference.

1.2. The audit reviewed the 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 GEA with supporting documents prepared by SRB Structures and Water Environment Ltd (WEL). The authors' qualifications are in accordance with LBC requirements.

1.5. The site currently comprises a three-storey dwelling with a ground floor approximately 2.20m above street level. There is a change in elevation of more 7m between the rear and front gardens. The proposed development involves the construction of a single storey basement beneath the house at approximately 2.75m below the existing ground floor level.

1.6. The site is underlain by Made Ground, Bagshot Formation and Claygate Member. The groundwater table is below the proposed basement level but that seepages may be encountered during construction.

1.7. The previous BIA noted that the strength/density of the soils should be confirmed in advance of any works to ensure minimum design requirements are met at formation level. It should be confirmed whether this is still considered necessary, or justification for the adopted parameters provided.

1.8. GEA recommend further trial pits to investigate water ingress and excavation stability. The construction sequence should incorporate this investigation and mitigation to deal with either.

1.9. It is accepted that this feature does not impact the proposals and vice versa.

1.10. It is accepted that there are no adverse impacts to subterranean flows from the basement proposals.

1.11. A ground movement and building damage predicts negligible damage to affected properties. However, a number of queries are raised as described in Section 4.

1.12. It is accepted that there are no potential adverse impacts to or from flooding.

1.13. The structural engineering proposal is not consistent with the BIA and requires revision.

1.14. An outline construction programme has been provided.

1.15. The structural proposal contains an outline monitoring strategy. This can be developed at a later date as part of the party wall awards.

1.16. Discussion and requests for further information are presented in Section 4 and summarised in Appendix 2. Until the information requested is presented, it cannot be confirmed the BIA meets the criteria of CPG: Basements.

2.0 INTRODUCTION

2.1. CampbellReith was instructed by London Borough of Camden (LBC) on 2nd July 2019 to carry out a Category B Audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 56 Platt's Lane, London NW3 7NT, Camden Reference 2018/4795/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; 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: "*Creation of new basement storey to provide additional habitable accommodation, with new side lightwell plus associated windows and metal grille and with lowered front garden plus associated windows to front elevation*."

The planning portal also confirmed the site lies within the Redington Frognal Conservation Area. The site is not listed and neither are the adjacent buildings.

2.6. CampbellReith accessed LBC's Planning Portal on 12th July 2019 and gained access to the following relevant documents for audit purposes:

- Basement Impact Assessment dated April 2019 by SRB Structures including:
  - Existing and Proposed Plans, Elevations and Section drawings dated April 2017 by Studio 136 Architects and further drawings by Amirilan Design Ltd dated January 2019.
  - Geotechnical Ground Investigation (ref LS 3267) dated 26 February 2018 by Land Science.
  - Proposal for Basement Extension (including Structural Design) dated August 2018 by SR Brunswick.
  - Thames Water Asset Location Search dated 29 January 2019.
- Consultation responses.

2.7. The audit of the above documents identified several shortcomings in the information presented and concluded that the requirements of the CPG: Basements had not been met. LBC provided CampbellReith with a new BIA on 3 July 2020. CampbellReith accessed LBC's Planning Portal on 20 July 2020 and gained access to a structural engineer's statement and construction programme. The details of these documents are as follows:

- Site Investigation and Basement Impact Assessment Report, Issue No 1, by Geotechnical and Environmental Associates Ltd (GEA), reference J20031, dated June 2020.
- Proposal for basement extension by SRB Structures (undated), uploaded to website on 3 July 2020.
- 56 Platt's Lane Programme (undated) by Amirilan, uploaded to website 3 July 2020.

3.0 BASEMENT IMPACT ASSESSMENT AUDIT CHECK LIST

Item	Yes/No/NA	Comment
Are BIA Author(s) credentials satisfactory?	Yes	GEA and hydrological subconsultant have satisfactory qualifications.
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	SRB note retaining walls designed as cantilevers for worst case, but sections show them to typically be propped by ground floor slab.
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	Although site ground levels not confirmed
Land Stability Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	BIA report, Section 3.1.2. Distance to former tributary of River Brent contradicts that noted in Executive Summary, albeit it is noted the stream flows away from the site.
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	BIA report, Section 3.1.1. Distance to former tributary of River Brent contradicts that noted in Executive Summary, albeit it is noted the stream flows away from the site.
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	Presented in Appendix to BIA in Surface Water and Flooding Risk Assessment prepared by Water Environment Ltd.
Is a conceptual model presented?	Yes	

Item	Yes/No/NA	Comment
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	Yes	BIA report, Section 4.0.
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	Yes	BIA report, Section 4.0.
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	Yes	BIA report, Section 4.0.
Is factual ground investigation data provided?	Yes	GI undertaken for previous BIA is presented in GEA BIA with an additional groundwater monitoring visit.
Is monitoring data presented?	Yes	BIA report, Section 5.4.
Is the ground investigation informed by a desk study?	Yes	
Has a site walkover been undertaken?	Yes	
Is the presence/absence of adjacent or nearby basements confirmed?	Yes	BIA notes that 1 Telegraph Hill has a basement level similar to that proposed for No 56 Platt's Lane. It is assumed that no basement exists beneath No 54 Platt's Lane.
Is a geotechnical interpretation presented?	Yes	BIA report, Section 8.
Does the geotechnical interpretation include information on retaining wall design?	Yes	
Are reports on other investigations required by screening and scoping presented?	Yes	Ground movement/building damage and flood risk assessments provided.
Are baseline conditions described, based on the GSD?	Yes	

Item	Yes/No/NA	Comment
Do the base line conditions consider adjacent or nearby basements?	Yes	
Is an Impact Assessment provided?	Yes	
Are estimates of ground movement and structural impact presented?	Yes	However, queries are raised in Section 4 of this audit report.
Is the Impact Assessment appropriate to the matters identified by screening and scoping?	Yes	However, queries on ground movement assessment are raised in Section 4 of this audit report.
Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme?	Yes	- Further ground investigation to confirm stability and need for groundwater control during construction. - Propping of retaining walls at all times. - Monitoring during construction. - Careful control of workmanship to maintain stability.
Has the need for monitoring during construction been considered?	Yes	Outline scheme presented by SRB Structures.
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	However, queries on ground movement assessment are raised in Section 4 of this audit report.
Has the scheme avoided adversely affecting drainage and run-off or causing other damage to the water environment?	Yes	Hydrogeological assessment to be confirmed.
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 1?	Yes	However, queries on ground movement/damage impact assessment raised in Section 4 of audit report.

Item	Yes/No/NA	Comment
Are non-technical summaries provided?	Yes	

4.0 DISCUSSION

4.1. The BIA has been prepared by GEA with supporting documents prepared by SRB Structures and Water Environment Ltd (WEL). The authors' qualifications are in accordance with LBC requirements.

4.2. The site currently comprises a three-storey dwelling with a ground floor approximately 2.20m above street level. A small parking area exists at approximate street level at the front (west) and a terraced hillside garden is present to the rear (east). There is a change in elevation of more 7m between the rear and front gardens.

4.3. The proposed development involves the construction of a single storey basement beneath the existing footprint of the house with a small lightwell on the northern side and a small area of basement beneath the steps to the front door. The new basement will be founded at approximately 2.75m below the existing ground floor level (0.60m below the parking area and approximately 3.50m below the rear garden level).

4.4. The property is bounded by 54 Platt's Lane to the west and 1 Telegraph Hill to the east. The BIA notes that there is no evidence of a basement beneath 54 Platt's Lane but that 1 Telegraph Hill has a basement at a similar level to that proposed for 56 Platt's Lane.

4.5. A desk study has been undertaken. Information from the limited ground investigation undertaken for the previous BIA is presented with an additional groundwater monitoring visit undertaken by GEA. The BIA contains a ground model which describes Made Ground and Bagshot Formation to 1.00m below ground floor level and Claygate Member to 17.00m below. The BIA notes that the GI suggests the groundwater table is below the proposed basement level but that seepages may be encountered during construction. It recommends that the design of the basement assumes groundwater to be 1.00m below ground floor level. Parameters for the design of the basement retaining walls are presented.

4.6. The previous BIA noted that the dynamic probing results only indicate relative insitu strength/ density of the soils. Therefore the interpreted strength/density of the soils should be confirmed by the contractor in advance of any works to ensure minimum design requirements are met at formation level. It should be confirmed whether this is still considered necessary. If not, further justification for the adopted undrained shear strength profile is required to demonstrate it is reasonably cautious.

4.7. It was previously recommended that further monitoring should be undertaken to clarify the groundwater conditions and inform the temporary works strategy. A single further round of monitoring has been undertaken and indicates that the water table lies beneath the proposed basement formation level. GEA do, however, recommend further trial pits to confirm the potential

for water ingress into the underpin excavations and also, due to the recorded collapse of one of the previous exploratory holes, to confirm excavation stability. The construction sequence should include this further investigation and mitigation in the event that either of those phenomena are realised.

4.8. The screening and scoping exercise for land stability and groundwater flow has been completed by GEA and the conclusions are justified, although there is some contradiction of the distance of a tributary of the River Brent from the site. However, it is noted that the stream flows away from the site and it is accepted that this feature does not impact the proposals and vice versa.

4.9. It is accepted that there are no adverse impacts to subterranean flows from the basement proposals.

4.10. Potential stability impacts arising from the screening and scoping comprise the sloping site and the differential foundation depths that will result between Nos 54 and 56 Platt's Lane. The BIA concluded that, providing the construction work is carried out in accordance with best practice, the proposed structure should not have a significant impact on the overall stability of the slope.

4.11. A ground movement and building damage assessment is included in the BIA and has been carried out using the software programs PDisp and XDisp. XDisp is intended for use with embedded retaining walls but it is accepted that it can predict ground movements in line with those anticipated due to underpinning. The output from these programs has not been presented and should be provided. A review of the information presented raises the following queries:

- The shape of the excavation has been simplified. This is generally accepted except that the rear portion of basement does not appear to have been modelled.
- Further justification is required for the assumed stiffness of the Claygate Member (750 Cu) which does not appear to be a cautious estimate.
- It is stated (Section 10.1.2) that the heave movement predicted outside the basement will be an overestimate as "bored pile walls" act to restrict movement. The retaining walls are to be formed by underpinning and this is not accepted.
- It is further stated that the predicted movements are a worst case as they will be minimised due to the control of propping, however, it should be noted that a stiff propping system is assumed in the method used to predict movements.
- The movements predicted (maximum 3mm settlement and 6mm horizontal movement) are less than those commonly accepted as occurring due to underpinning and do not appear to take into account settlement occurring due to construction. The resultant category of damage (Burland Category 0) requires further justification.

4.12. The screening exercise for hydrology has been completed by WEL. It is noted that, although Platt's Lane has flooded in the past, the ground level at no 56 is 15m higher than the lowest point of the road. This combined with the sloping site indicates it is unlikely that No 56 has been affected by flooding. There are no records of sewer flooding and the site is not in a critical drainage area. The extent of impermeable surfacing is not increasing. It is accepted that there are no potential adverse impacts to or from flooding.

4.13. The structural engineering proposal provides a basic construction sequence for underpinning. It should be revised to include measures to deal with groundwater and potential excavation instability as described above. Structural calculations are presented for the basement retaining walls. There is a contradiction in the soil parameters used with the BIA recommending phi of 25^{o} and 27^{o}, the text of the structural proposal referring to phi of 24^{o} and the calculations adopting 40^{o}. The documents should be revised to be consistent and the calculations should be revised to reflect the geotechnical recommendations in the BIA. The calculations should also demonstrate that the net allowable bearing pressure is not exceeded.

4.14. An outline construction programme has been provided.

4.15. The structural proposal contains an outline monitoring strategy. This can be developed at a later date as part of the party wall awards.

5.0 CONCLUSIONS

5.1. The BIA has been prepared by GEA with supporting documents prepared by SRB Structures and Water Environment Ltd (WEL). The authors' qualifications are in accordance with LBC requirements.

5.2. The proposed development involves the construction of a single storey basement predominantly beneath the existing footprint of the house. The new basement will be formed using underpinning techniques.

5.3. The BIA notes that there is no evidence of a basement beneath 54 Platt's Lane but that 1 Telegraph Hill has a basement at a similar level to that proposed for 56 Platt's Lane.

5.4. The BIA describes Made Ground and Bagshot Formation to 1m below ground floor level and Claygate Member to 17m below. The groundwater table is reported to be below the proposed basement level but that seepages may be encountered during construction.

5.5. It should be confirmed whether further investigation is considered necessary to determine appropriate soil parameters; otherwise further justification for the adopted undrained shear strength profile is required.

5.6. It was previously recommended that further monitoring should be undertaken to clarify the groundwater conditions and inform the temporary works strategy. The construction sequence should be updated to include this further investigation and appropriate mitigation methods.

5.7. It is accepted that there are no adverse impacts to subterranean flows from the basement proposals.

5.8. Potential stability impacts comprise the sloping site and the differential foundation depths that will result between Nos 54 and 56 Platt's Lane. The BIA concluded that the proposed basement can be constructed without significant impact on the overall stability of the slope. A ground movement and building damage assessment predicts negligible damage to No 54 Platt's Lane. A number of queries have been raised as described in Section 4.

5.9. It is accepted that there are no potential adverse impacts to or from flooding.

5.10. The BIA and structural proposal should be consistent with respect to assumed soil properties. The structural calculations should reflect the recommendations in the BIA and demonstrate that the bearing pressure is not exceeded.

5.11. An outline construction programme has been provided.

5.12. The structural proposal contains an outline monitoring strategy. This can be developed at a later date as part of the party wall awards

5.13. Requests for further information are summarised in Appendix 2. Until the information requested is presented, the BIA does not meet the criteria of CPG: Basements.

Appendix 1: Residents' Consultation Comments

None

Appendix 2: Audit Query Tracker

Audit Query Tracker

Query No	Subject	Query	Status/Response	Date closed out
1	Land Stability	Justification to be provided for assumed soil strength and stiffness parameters.	Open	
2	Land Stability	Queries raised on ground movement and building damage assessment to be addressed (as Section 4).	Open	
3	Land Stability	Construction sequence to be revised to include further investigation and mitigation against groundwater and instability.	Open	
4	Land Stability	Structural calculations and basement proposal to be revised to be consistent, adopt recommended parameters and demonstrate bearing stratum is adequate.	Open	

Appendix 3: Supplementary Supporting Documents

None

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