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32 Percy Street
London, W1T 2DE

Basement Impact Assessment Audit

For

London Borough of Camden

Project Number: 12336-14
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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 32 Percy Street, London, W1T 2DE (planning reference 2015/6537/P). On the basis of the BIA screening, the basement was considered to fall within Category A as defined by the Terms of Reference, however, a review of the proposals identified potential impacts on surrounding structures, which are listed, and infrastructure.

1.2. The basement is considered to fall within Category B as defined by the Terms of Reference.

1.3. 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.

1.4. 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.

1.5. The qualifications of the author(s) of the BIA should be confirmed to ensure they comply with the requirements of CPG4.

1.6. Clarification as detailed in Section 4 is requested on the proposals which include underpinning as these are unclear.

1.7. No information is presented with respect to foundation depths and the presence or absence of surrounding basements to allow the impacts to surrounding foundations/properties to be confirmed.

1.8. It is accepted that there are no other potential significant impacts.

1.9. It is recommended that the BIA is resubmitted with the proposals clearly detailed in the method statement and a scoping exercise is carried out for the potential impacts identified by reference to the screening questions. This will inform the need for further assessment.

1.10. A works programme has not been provided and this is requested.

1.11. Queries and matters requiring further information or clarification are summarised in Appendix 2 and discussed in Section 4.

2.0 INTRODUCTION

2.1. CampbellReith was instructed by London Borough of Camden (LBC) to carry out a Category A Audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 32 Percy Street, London, W1T 2DE, (Camden Planning reference 2015/6537/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; 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 Audit Instruction described the planning proposal as *"Erection of 2 storey rear extension with copper roof and rooflights (including basement excavation) following demolition of existing extension, replacement front windows at 2nd floor level, lowering shopfront sill, replacement rear windows, alteration to rear dormer, insertion of rooflight, 4 condensers at roof level and 1 condenser to front vault, all to existing offices (Class B1)".*

2.6. No 32 Percy is part of a Grade II listed terrace (Nos 32-37) with No 31 indicated to make a positive contribution.

2.7. CampbellReith accessed LBC's Planning Portal on 23 March 2016 and gained access to the following relevant documents for audit purposes:

- Basement Impact Assessment (BIA) Screening: Equicom Structural Design (ESD) Limited, September 2015 which includes as Appendix A, a ground investigation report Jomas Associates Limited, dated November 2015.
- Description of existing structure and method statement for carrying out internal alterations and extensions (Structural Stability report): Equicom Structural Design (ESD) Limited, August 2015
- Design and Access Statement: Garnett+Partners LLP, dated November 2015
- Planning Application Drawings consisting of:

  Location Plan

  Existing Plan with demolitions

  Proposed Plans

  Existing elevations with demolitions

  Proposed elevations

3.0 BASEMENT IMPACT ASSESSMENT AUDIT CHECK LIST

Item	Yes/No/NA	Comment
Are BIA Author(s) credentials satisfactory?	No	Not provided (see Audit paragraph 4.1).
Is data required by Cl.233 of the GSD presented?	No	Proposal is unclear and contradictory in various documents and drawings (see Audit paragraphs 4.9 to 4.12) and works programme not included.
Does the description of the proposed development include all aspects of temporary and permanent works which might impact upon geology, hydrogeology and hydrology?	No	Description not sufficiently detailed (see Audit paragraphs 4.9 to 4.12).
Are suitable plan/maps included?	No	Scheme drawings provided but inadequate. No extracts from CPG4 source documents provided. Plans for the proposed underpinning sequence not provided (see Audit paragraphs 4.2 and 4.15).
Do the plans/maps show the whole of the relevant area of study and do they show it in sufficient detail?	No	Scheme drawings not sufficiently detailed as required by Cl. 233 of the Arup GSD and contradict description in text.
Land Stability Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	No	Relevant Arup GSD maps not referenced or provided. A 'No' response is given to Q13 which relates significant increase in differential depth of the basement and neighbouring foundations however this was not established (see Audit paragraph 4.4).
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	No	Relevant Arup GSD maps not referenced or provided.
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	No	Relevant Arup GSD maps not referenced or provided.

Item	Yes/No/NA	Comment
Is a conceptual model presented?	Yes	Ground Investigation Report (GIR) Section 4.
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	No	Not undertaken, however, there is one issue from the screening which should have been taken forward to scoping (see Audit paragraph 4.4).
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	Yes	BIA Stage 2.
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	No	No issues identified from screening.
Is factual ground investigation data provided?	Yes	Jomas Associates Limited GIR.
Is monitoring data presented?	Yes	Jomas Associates Limited GIR.
Is the ground investigation informed by a desk study?	No	Does not appear to be and Section 1 of the GIR states a deskstudy was not required (see Audit paragraph 4.5).
Has a site walkover been undertaken?	Yes	As part of the ground investigation.
Is the presence/absence of adjacent or nearby basements confirmed?	No	States in Stage 2 of the BIA that site investigations/enquiries to establish this will be undertaken but this does not appear to have been done (see Audit paragraph 4.11).
Is a geotechnical interpretation presented?	Yes	Some geotechnical recommendations are presented in Section 9 of the GIR but this is considered inadequate.
Does the geotechnical interpretation include information on retaining wall design?	No	

Item	Yes/No/NA	Comment
Are reports on other investigations required by screening and scoping presented?	Yes	GIR.
Are baseline conditions described, based on the GSD?	No	See Audit paragraphs 4.9 to 4.11.
Do the base line conditions consider adjacent or nearby basements?	No	States in BIA that it is unlikely the adjoining properties on Percy Street and Windmill Street have substructures deeper than the proposed basement however this was not considered any further (see Audit paragraph 4.4).
Is an Impact Assessment provided?	No	No issues identified beyond screening and scoping.
Are estimates of ground movement and structural impact presented?	No	See Audit paragraph 4.15.
Is the Impact Assessment appropriate to the matters identified by screen and scoping?	N/A	No issues identified beyond screening and scoping.
Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme?	No	Some mitigation provided, however, as all the potential impacts of the proposed basement have not been considered this is considered inadequate (see Audit paragraph 4.15).
Has the need for monitoring during construction been considered?	No	Not considered.
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	Not demonstrated (see Audit paragraph 4.15).
Has the scheme avoided adversely affecting drainage and run-off or causing other damage to the water environment?	Yes	

Item	Yes/No/NA	Comment
Has the scheme avoided cumulative impacts upon structural stability or the water environment in the local area?	No	See Audit paragraph 4.15.
Does report state that damage to surrounding buildings will be no worse than Burland Category 2?	No	
Are non-technical summaries provided?	No	

4.0 DISCUSSION

4.1. The Basement Impact Assessment (BIA) was undertaken by Equicom Structural Design (ESD) Limited. The author and reviewer's qualifications are not provided and these are requested.

4.2. 32 Percy Street is part of a Grade II listed terrace (Nos 32 -37) located within the Charlotte Street Conservation Area. The property comprises 5 storeys which includes a sub-basement which comprises brick vaults and occupies the full width of the property. A single storey rear extension is separated from the main building by a narrow glazed roofed light well and this also comprises a sub-basement.

4.3. Although it is evident that a thorough screening process has been largely undertaken, it would be beneficial if the requirements of CPG4 were followed accurately by the inclusion of map extracts from the Arup GSD, 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. It is noted on Stage 2 of the BIA that '*from an initial search of the existing planning information, it is not expected that the existing adjoining properties in Percy Street and Windmill Street will have substructures deeper than proposed for No 32 Percy Street*' and that it is proposed to carry out onsite investigations/enquiries to ascertain the presence and nature of any substructures at Nos 311 and 33 Percy Street and Nos 7,8 and 9 Windmill Street prior to the development of any structural design. It appears that these have not been undertaken and the 'No' response given for Q13 of the land stability screening is therefore incorrect. The response to this question should be 'unknown' with maximum differential depth assumed until information on the neighbouring property foundations is forthcoming.

4.5. Whilst the desk study information required by the Arup GSD has been presented it is in a fragmented format and it is not clear it has been considered in the assessment. A 'preliminary geological desk study' is included as Appendix A of the ESD and a development history is given in the design and access statement. A sufficient desk study consolidating all the available historic, geological, hydrology and hydrogeological information in a single document will facilitate the impact assessment.

4.6. It is stated in the structural stability report that '*on visual inspection no cracking of a structural nature or any serious deflections or displacements were observed and it is considered that the property is in a sound and stable structural condition*'. It is however stated in Section 4.1 of the design and access statement that the existing buildings at 32 Percy Street are '*in a poor state of repair having suffered from issues with maintenance and ad-hoc developments under previous owners'.* Clarification is requested.

4.7. The ground investigation encountered Made Ground to 4.20m bgl over soft clay to 6.25m bgl and it is recommended in the GIR that deep trench filled foundations founded on the gravels at c.6.25m bgl (3.10m below basement level) may be suitable. Groundwater was monitored at c.7m bgl and Section 9.7 of the GIR states that this is below the proposed basement level. It however identifies that seasonal fluctuations are possible and that the existing basement may have ground water ingress measures incorporated.

4.8. It is accepted that there are no slope stability or hydrogeology concerns regarding the proposed development and the site is not in an area prone to flooding.

4.9. It is stated in ESD Description of Existing Structure and Method Statement report that the front vault floors are to be lowered, however, there is no indication by how much. It is further stated the existing rear extension will be demolished together with the brick vaults beneath and reconstructed to include a new basement over the full width and extending to the existing boundary wall. Section 2.3 of the GIR states '*the proposed development is to comprise a lateral extension of the existing basement*'. Drawing No (PL)800 indicates the depth of the existing basement is to be increased to maximise headroom as well as a lateral extension. Clarification is requested.

4.10. It is stated in the ESD Description of Existing Structure and Method Statement report that the external walls of the existing extension appear to form party walls with the neighbours on the western side (33 Percy Street) and northern end (7/8 Windmill Street) and that these will need to be retained. It is further stated that '*the flank wall of the existing extension on its eastern side is placed either on the boundary between the properties or straddles it forming a party fence wall with the neighbour on that side' (*31 Percy Street). This wall is to be retained and incorporated into the new construction with its load carrying capacity assessed as part of the structural design. It is proposed the wall is to be laterally stabilised by scaffold flying shores installed sequentially as sections of the existing roof are dismantled. An indicative structural design and temporary works proposal have not been provided and this is requested.

4.11. It is proposed to construct the new basement partially in open cut in the existing vaulted area with top-down method to be used in the area to be excavated in the rear of the property. It is stated that the walls on all sides of the excavation will be underpinned to a depth below the new basement floor although the ESD report does not give indicate what this the depth is. It is stated on Section 9.3.3 of the GIR that the type and depth of the existing foundations have not been determined as part of the ground investigation recommends that these are investigated. Given that underpinning is proposed, the type and depth of the existing building and party wall foundations should have been determined as part of the investigation and not left for a later date. It is noted that it states in the method statement recommended the inclusion of trial pits as part of the ground investigation and it is unclear why these were not undertaken.

4.12. The method statement includes a preliminary geological desk study which gives a sequence of strata encountered in historic boreholes and this indicates gravels from c.1.80m bgl overlain by Made Ground. The scoping in the BIA references these historic boreholes and the whilst a depth is not indicated it states that '*it is estimated that underpinning of the party walls of the neighbouring rear extensions will need to extend to a similar depth below ground to form the new basement*'. Whilst it is appreciated that the method statement may have been written prior to the ground investigation being undertaken, it is confusing to reference the ground conditions from the historic boreholes rather than the sequence and depths from the site specific investigation. The sketches of the proposed underpinning included in the method statement indicate mass concrete underpinning directly beneath the new basement slab. Given that the site specific investigation recorded incompetent strata at shallow depth, clarification is requested as the sketches do not reflect what is being proposed.

4.13. Mass concrete underpinning is proposed and there are no details of underpinning width, depth or sequence. A mass concrete underpinning solution would have to rely on the pre compression imposed by the structure above to prevent tension forming in the concrete, and therefore from cracking of the concrete and movements occurring. Further details are requested of the proposed underpinning and confirmation that mass concrete underpinning is a suitable solution especially for the boundary wall to the east due to the absence of a large vertical load.

4.14. It is stated in the method statement that '*in due course the finalised and working drawings together with those of the temporary supports will be the subject of party wall awards and submitted to the Local Authority for Building Regulations approval'* . Whilst it is accepted the final designs may be developed at a later date, indicative design proposals together with temporary supports are required as part of this application to demonstrate that the stability of the neighbouring properties will be maintained.

4.15. There is no evidence presented with respect to the depths of the foundations to 32 Percy Street or the neighbouring properties to allow the differential depth, and any potential impact such as ground movements and building damage, to be determined. This issue should be taken forward to scoping/assessment. It is also requested that the proposal is clearly detailed in the method statement with the proposed depth of underpinning, sequence etc as outlined above included.

4.16. It is accepted that the screening is correct in all other aspects.

4.17. Without further information on proposals and the potential impacts referred to above, it is not possible to confirm whether or not mitigation measures are required. Mitigation might comprise dewatering, monitoring during construction and condition surveys. It is recommended that the scoping exercise is completed and the BIA re-submitted with any assessment of impacts and mitigation as necessary.

4.18. It is noted that a works programme has not been submitted as required by Cl.233 of the GSD.

5.0 CONCLUSIONS

5.1. The qualifications of the author(s) of the BIA should be confirmed to ensure they comply with the requirements of CPG4.

5.2. Clarification as detailed in Section 4 is requested on the proposals which include underpinning as these are unclear.

5.3. No information is presented with respect to foundation depths and the presence or absence of surrounding basements to allow the impacts to surrounding foundations/properties to be confirmed.

5.4. It is accepted that there are no other potential significant impacts.

5.5. It is recommended that the BIA is resubmitted with the proposals clearly detailed in the method statement and a scoping exercise is carried out for the potential impacts identified by reference to the screening questions. This will inform the need for further assessment.

5.6. A works programme has not been provided and this is requested.

Appendix 1: Residents' Consultation Comments

None

Appendix 2: Audit Query Tracker

Audit Query Tracker

Query No	Subject	Query	Status	Date closed out
1	BIA format	Author(s) qualifications not provided	Open – to be provided	
2	BIA format	Arup GSD maps to justify screening responses, drawings with sufficient detail and underpinning sequence not provided	Open – to be provided	
3	BIA format	Proposal unclear and confusing (see Audit paragraphs 4.9 to 4.12)	Open – to be provided	
4	BIA format	Works programme not included	Open – to be provided	
5	Stability	No temporary works proposal, construction sequence or detail to confirm stability of the existing structure and neighbouring properties will be maintained	Open – to be provided	
6	Stability	Confirmation that the proposed construction method is appropriate	Open – to be provided	

Appendix 3: Supplementary Supporting Documents

None

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