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18 - 22 Hand Court, London WC1V 6JF

Basement Impact Assessment Audit

For

London Borough of Camden

Project Number: 12985-26

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1.0 NON-TECHNICAL SUMMARY

1.1. CampbellReith was instructed by London Borough of Camden (LBC) on 12 November 2018 to carry out an Audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 19-22 Hand Court, London WC1V 6JF, Camden Reference 2018/4924/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 Heyne Tillett Steel and RSK Environment Ltd. The qualifications of the authors of the reports prepared by RSK Environment Ltd are in accordance with LBC guidance.

1.5. The site comprises a two-storey office building above a single level basement (the current basement is understood to cover 50% of the current site) within the High Holborn Estate. The proposal is to demolish the existing structure and construct a new five storey building with a basement across the entire footprint of the existing buildings on site.

1.6. The BIA includes the majority of the information required from a desk study in accordance with LBC guidance.

1.7. A site investigation has been undertaken and the ground conditions comprise Made Ground underlain by Lynch Hill Gravel and London Clay.

1.8. Groundwater was monitored and found to be present within the Lynch Hill Gravel below the level of the proposed basement. The proposed development will not impact the wider hydrogeological environment.

1.9. The basement will be formed by underpinning techniques. Geotechnical design parameters, outline temporary works and permanent structural information has been presented. Structural drawings indicate that contractor designed sheet piled walls may be required locally, in the temporary case.

1.10. Neighbouring properties are identified as having basements. No cumulative impacts are predicted.

1.11. A Ground Movement Assessment (GMA) is presented. The GMA considers movements from demolition, construction of the underpinned retaining walls, excavation of the basement and settlement of foundations. The impact assessment indicates a maximum of Category 1 damage (Very Slight) for neighbouring structures.

1.12. The GMA is noted not to have considered movements resulting from sheet piling, nor to have assessed every building within the zone of influence of the works. It also has not considered potential impacts to identified Thames Water assets. A Basement Construction Plan (BCP) should be submitted in advance of the works confirming a final design and construction methodology, with impacts confirmed to all neighbouring structures within the zone of influence. Consultation with Thames Water should be undertaken and an asset protection agreement entered into, as applicable.

1.13. The LUL Central Line runs beneath High Holborn to the south of the site. Consultations with LUL have indicated that LUL have no objection in principle to the proposed works and that no further assessment of LUL assets is required.

1.14. A Flood Risk Assessment is presented which concludes the development is at low risk of flooding from all sources.

1.15. The proposed scheme will not increase the proportion of impermeable area. Use of storm water attenuation is proposed. The proposed development will not impact the wider hydrological environment. The final drainage scheme should be agreed with Thames Water and LBC.

1.16. Discussion and requests for further information are presented in Section 4 and summarised in Appendix 2. On the basis that the final scheme will be confirmed within a BCP, the BIA meets the criteria of CPG Basements.

2.0 INTRODUCTION

2.1. CampbellReith was instructed by London Borough of Camden (LBC) on 5 November 2018 to carry out a Category B Audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 18-22 Hand Court, London WC1V 6JF, Camden Reference 2018/4924/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.
- 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 18 - 21 Hand Court and the erection of a new building comprising, basement, ground plus 4 upper storeys of office (Class B1) and retail (Class A1/A3) uses; the refurbishment and change of use of basement and ground floor level at 22 - 23 Hand Court from office (Class B1) to retail (Class A1/A3); and associated works".*

The planning portal also confirmed the site lies within the Bloomsbury Conservation Area. The site is not listed but the site adjacent to the north is an early 18th Century Georgian terrace which is Grade II Listed.

2.6. CampbellReith accessed LBC's Planning Portal in December 2018 and gained access to the following relevant documents for audit purposes:

- Basement Impact Assessment (ref 1508, Rev A) dated 26 September 2018 by Heyne Tillett Steel including:
    - Basement Impact Assessment (ref 371547-03(02) dated 11 July 2018 by RSK Environment Ltd.
    - Site Investigation (ref 371547-01(00) dated 13 July 2017 by RSK Environment Ltd.
- Existing, Proposed and Demolition drawings dated September 2018 by Buckley Gray Yeoman.
- Drainage Strategy Report (ref 1508, Rev A) dated 2 July 2018 by Heyne Tillett Steel.
- Design & Access Statement dated 26 September 2018 by Buckley Gray Yeoman.
- Consultation Responses.

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?	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	Contractor designed local sheet piling to be addressed in BCP.
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	
Land Stability Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	
Is a conceptual model presented?	Yes	Described within: the SI Report and BIA; temporary works drawings.

Item	Yes/No/NA	Comment
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	Yes	RSK Environment Ltd BIA Report, Section 5.3.1.
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	Yes	RSK Environment Ltd BIA Report, Section 5.1.1.
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	Yes	RSK Environment Ltd BIA Report, Section 5.2.
Is factual ground investigation data provided?	Yes	RSK Environment Ltd BIA Report, Section 6 and Appendix C of the RSK report.
Is monitoring data presented?	Yes	RSK Environment Ltd Site Investigation Report (July 2017), Section 5.15, Tables 12 and 13.
Is the ground investigation informed by a desk study?	Yes	RSK Environment Ltd Site Investigation Report, Sections 2 and 3.
Has a site walkover been undertaken?	Yes	
Is the presence/absence of adjacent or nearby basements confirmed?	Yes	It is understood that 23 Hand Court to the north, High Holborn House to the east and 57 High Holborn to the south all have existing single storey basement levels (Section 2.1 of RSK BIA Report). To the west of the site is Mid City Place which is a 7-storey building over a single storey basement (Section 2.1 of the Heyne Tillett Steel BIA Report).
Is a geotechnical interpretation presented?	Yes	RSK Site Investigation Report, Section 8 and RSK BIA Report, Section 7.
Does the geotechnical interpretation include information on retaining wall design?	Yes	Section 8.4 of the RSK Site Investigation Report and referenced in Section 7 of the RSK BIA Report.

Item	Yes/No/NA	Comment
Are reports on other investigations required by screening and scoping presented?	Yes	Drainage Strategy Report by Heyne Tillett Steel and a Sitecheck Flood Report by Landmark Information Group have been provided.
Are baseline conditions described, based on the GSD?	Yes	
Do the base line conditions consider adjacent or nearby basements?	Yes	
Is an Impact Assessment provided?	Yes	RSK BIA Report, Section 7.
Are estimates of ground movement and structural impact presented?	Yes	RSK BIA Report, Section 7. Noted that impacts to utilities and any impact from local sheet piling to be addressed in a BCP.
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?	Yes	Temporary works strategy.
Has the need for monitoring during construction been considered?	Yes	The RSK BIA (Section 8.3.1).
Have the residual (after mitigation) impacts been clearly identified?	Yes	To be further clarified through a BCP.
Has the scheme demonstrated that the structural stability of the building and neighbouring properties and infrastructure will be maintained?	Yes	The assessment is considered to be reasonably conservative and consider adjacent structures. The BCP should address all structures / utilities within the zone of influence, and local sheet piling, if required.
Has the scheme avoided adversely affecting drainage and run-off or causing other damage to the water environment?	Yes	The proposed drainage design (Appendix F of the Drainage Strategy Report) will require approval from LBC and Thames Water.

Item	Yes/No/NA	Comment
Has the scheme avoided cumulative impacts upon structural stability or the water environment in the local area?	Yes	Subject to final scheme being considered within BCP. BCP should address all structures / utilities within the zone of influence, and local sheet piling, if required.
Does report state that damage to surrounding buildings will be no worse than Burland Category 1?	Yes	A maximum Damage Impact of Category 1 (Very Slight).
Are non-technical summaries provided?	Yes	RSK BIA

4.0 DISCUSSION

4.1. The BIA has been prepared by Heyne Tillett Steel and RSK Environment Ltd. The qualifications of the authors of the reports prepared by RSK Environment Ltd are in accordance with LBC Guidance. The qualifications of the authors of the Heyne Tillett Steel Report are not stated.

4.2. The site currently comprises a two-storey office building above a single level basement (the current basement is understood to cover 50% of the current site in the southwest area) which is located within the High Holborn Estate to the north of High Holborn. The site is within the Bloomsbury Conservation area and the site adjacent to the north of the site is an early 18th Century Georgian terrace which is Grade II Listed.

4.3. The proposed redevelopment will involve the demolition of the existing structure on site and the construction of a new five storey reinforced concrete framed structure with a basement across the entire footprint of the existing buildings on site. The proposed basement is supported by a reinforced concrete raft foundation which will be founded at +19.97m AOD. The site is constrained on three sides by adjacent buildings, and on the fourth side by Hand Court (highway).

4.4. A site investigation was undertaken by RSK Environment Ltd in April and May 2017 comprising: two cable-percussion boreholes drilled to depths of between 8.50m and 30.00m below ground level (bgl); one drive-in sampler borehole to a depth of 4.00m bgl; and four hand dug foundation inspection pits to a maximum depth of 2.80m bgl. The investigation identified varying thicknesses of Made Ground underlain by Lynch Hill Gravel overlying the London Clay Formation. Groundwater was monitored on three occasions between May and July 2017 which indicated that water is present at the site within the Lynch Hill Gravel Member at depths ranging from 2.79 to 3.34m bgl (between 17.86 and 18.55mAOD).

4.5. The proposed development is envisaged to comprise a reduction in site levels to some 19.97mAOD (base of raft), locally deepened at the edges to a maximum of 18.69mAOD to match adjacent building footings. The BIA therefore considers that it is unlikely that dewatering will be required but does recommend ongoing monitoring of the groundwater levels on site to establish the full range of conditions and any trends in groundwater levels.

4.6. The BIA identifies the need for basement liner walls and cavity drainage for long term water proofing.

4.7. It is accepted the proposed development will not impact the wider hydrogeological environment.

4.8. The site investigation and BIA have been informed by a desk study broadly in accordance with the GSD Appendix G1. Interpretative geotechnical information broadly in accordance with the GSD Appendix G3 is presented.

4.9. The basement will be formed by underpinning techniques. An outline temporary works strategy and sequence is presented plus permanent structural information. Structural drawings indicate that contractor designed sheet piled walls may be required locally, in the temporary case, and this will need to be confirmed within a Basement Construction Plan (BCP).

4.10. An outline construction programme has been provided. A detailed programme should be presented within the BCP.

4.11. It is understood that 23 Hand Court to the north, High Holborn House to the east and 57 High Holborn to the south all have existing single storey basement levels. To the west of the site is Mid City Place which is a 7-storey building over a single storey basement.

4.12. A Ground Movement Assessment (GMA) is presented that considers the movements relating to demolition, construction of the underpinned retaining walls, excavation of the basement and settlement of foundations. Impacts are assessed for Mid City Place (beyond the western site boundary) and High Holborn House (adjacent to the east of the site). The impact assessment indicates a maximum of Category 1 damage (Very Slight).

4.13. No assessment has been provided for the adjoining properties at 45-48 Sandland and 24-25 Hand Court (adjacent to the north of the site) nor 55-57 High Holborn (adjacent to the south of the site). The BCP should confirm the final design and construction methodology, with impacts confirmed to all neighbouring structures within the zone of influence. Consultation with Thames Water should be undertaken and an asset protection agreement entered into, as applicable (note also Appendix 1 and the consultation response from Thames Water).

4.14. The BIA indicates that structural monitoring will be required during the works, to ensure the construction is well controlled. A strategy and methodology for monitoring structural movements during construction, including trigger values and contingency actions, should be provided within the BCP.

4.15. The LUL Central Line runs beneath High Holborn to the south of the site. A letter dated 20th April 2017 from LUL has been provided for review which states that LUL have no objection in principle to the proposed works and that no further consultation is required.

4.16. Hand Court is within a Critical Drainage Area (Group 3-003). This was identified in the accompanying Drainage Strategy Report although not commented upon within the BIA screening or scoping process. The site is not located within a Local Flood Risk Zone although part of the site is identified as having a low risk of flooding from surface water. Hand Court did not flood in either 1975 or 2002.

4.17. The Drainage Strategy Report concludes the development is at low risk of flooding from all sources. A consultation response from Thames Water indicates that there have been no incidents

of flooding at the site as a result of surcharging public sewers. Thames Water do make recommendations on standard flood risk mitigation measures, which should be adopted in the final design.

4.18. The development will not increase the area of hardstanding across the site as the site is currently 100% impermeable. The Drainage Strategy Report produced by Heyne Tillett Steel outlines the surface water disposal options and concludes that storm water attenuation will be implemented. The proposed drainage design should be agreed with LBC and Thames Water. The proposed development will not impact the wider hydrological environment.

5.0 CONCLUSIONS

5.1. The qualifications of the authors of the BIA report are in accordance with LBC guidance.

5.2. The proposed redevelopment will involve the demolition of the existing structure on site and the construction of a new five storey building with a basement across the entire footprint of the site.

5.3. A site investigation indicates ground conditions to comprise Made Ground underlain by Lynch Hill Gravel and the London Clay Formation.

5.4. Geotechnical design parameters, outline temporary works and permanent structural information has been presented.

5.5. The basement will be formed by underpinning techniques. Structural drawings indicate that contractor designed sheet piled walls may be required locally, in the temporary case.

5.6. The proposed development will not impact the wider hydrogeological environment.

5.7. An outline construction programme has been provided.

5.8. A GMA is presented that indicates a maximum of Category 1 damage (Very Slight) for neighbouring structures.

5.9. A BCP should be submitted in advance of the works confirming a final design and construction methodology, with impacts confirmed to all neighbouring structures within the zone of influence

5.10. Asset protection requirements must be agreed with Thames Water, as applicable (noting also consultation response in Appendix 1).

5.11. The proposed development will not impact the wider hydrological environment. The final drainage scheme should be agreed with Thames Water and LBC.

5.12. On the basis that the final scheme will be confirmed within a BCP, the BIA meets the criteria of CPG Basements.

Appendix 1: Residents' Consultation Comments

Residents' Consultation Comments

Surname		Address	Date	Issue raised	Response
		Thames Water	18th October 2018	The proposed development is located within 15m of a strategic sewer. Thames Water request that the following condition be added to any planning permission: No piling shall take place until a piling method statement (detailing the depth and type of piling to be undertaken and the methodology by which such piling will be carried out, including measures to prevent and minimise the potential for damage to subsurface sewerage infrastructure, and the programme for the works) has been submitted to and approved in writing by the local planning authority in consultation with Thames Water. Thames Water requests that the Applicant should incorporate within their proposal, protection to the property by installing a positive pumped device (or equivalent reflecting technological advances) to avoid the risk of backflow at a later date, on the assumption that the sewerage network may surcharge to ground level during storm conditions. Fitting only a non-return valve could result in flooding to the property should there be prolonged surcharge in the public sewer. If as part of the basement development there is a proposal to discharge ground water to the public network, this would require a Groundwater Risk Management Permit from Thames Water. Any discharge made without a permit is deemed illegal and may result in prosecution under the provisions of the Water Industry Act 1991. With regard to surface water drainage, Thames Water would advise that if the developer follows the sequential approach to the disposal of surface water we would have no objection. Where the developer proposes to discharge to a public sewer, prior approval from Thames Water Developer Services will be required.	Section 4; impacts to be considered within BCP and asset protection agreement to be entered into, as applicable.

Appendix 2: Audit Query Tracker

Audit Query Tracker

Query No	Subject	Query	Status/Response	Date closed out
1	Stability	Stability impacts to be confirmed to all neighbouring structures within the zone of influence within an updated GMA based on the final scheme / construction methodology, including sheet piling if applicable.	To be presented within BCP.	N/A
2	Stability	Consultation with Thames Water should be undertaken and an asset protection agreement entered into, as applicable.	To be presented within BCP.	N/A

Appendix 3: Supplementary Supporting Documents

None

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