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Jack Straw's Castle, North End Way, London NW3 7ES

Basement Impact Assessment Audit

For

London Borough of Camden

Project Number: 12466-78

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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 Jack Straw's Castle, North End Way, London NW3 7ES (planning reference 2017/2064/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 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. Subsequent to the issue of the initial audit, a number of documents were issued by Geotechnical & Environmental Associates Ltd and Richard Tant Associates dated between September and December 2017, in order to address the queries highlighted in the initial audit (dated July 2017).

1.4. CampbellReith reviewed the revised documents against an agreed audit check list.

1.5. The authors of the revised BIA submissions hold qualifications that are in accordance with LBC Guidance.

1.6. The proposed development comprises the construction of two three-storey dwellings with a single level basement to a depth of approximately 3.5m bgl. The proposed development is on the car park adjacent to the existing Jack Straw's Castle building (a three-storey to four-storey former Grade II Listed public house, which has been converted into a gymnasium and apartment building).

1.7. The BIA includes the majority of the information required from a desk study in line with LBC guidance. In the revised submissions, an outline construction programme and underground utilities information have now been provided.

1.8. A site investigation was undertaken by GEA in December 2016. The ground conditions comprise Made Ground over the Bagshot Formation.

1.9. Groundwater was not encountered during drilling nor during the single occasion that the standpipe was monitored, indicating any groundwater is >6m below ground level. The BIA recommends that groundwater monitoring should be continued to confirm groundwater conditions.

1.10. The BIA includes a geotechnical interpretation, including retaining wall design parameters.

1.11. The new basement is to comprise reinforced concrete retaining walls constructed in a hit and miss sequence. Mass concrete underpinning will be required below the adjacent foundation. An internal cavity drainage system will be employed. Outline temporary works are described in both the main BIA text and the Structural Methodology Report written by Richard Tant Associates. Retaining wall calculations have been provided.

1.12. Ground movement analysis (GMA) and building damage assessment calculations have been presented for review. The damage impact assessment indicates Category 0 damage (Negligible) to neighbours.

1.13. The BIA states that no structural monitoring will be required during the construction works. However, considering the immediately adjacent Grade II Listed structure, structural monitoring should be undertaken during the works to ensure damage to neighbours is maintained within the limits predicted. A monitoring strategy should be agreed under the Party Wall Award process and implemented.

1.14. There should be no impact to the wider hydrogeological environment.

1.15. It is accepted that the current site comprises hardstanding and therefore there will be no increase in the impermeable site area. An outline surface water drainage/SUDS strategy has been provided. As the soil types will support the effective use of infiltration devices, it is proposed that surface water from hardstanding areas and roofs will be drained using permeable paving.

1.16. The site is located within the Critical Drainage Area Group 3-010 but is not located within a Local Flood Risk Zone and is at very low risk of flooding.

1.17. Queries and matters requiring further information or clarification are summarised in Appendix 2. Considering the revised submissions, the BIA meets the criteria of CPG Basements.

2.0 INTRODUCTION

2.1. CampbellReith was instructed by London Borough of Camden (LBC) on 31 May 2017 to carry out a Category C Audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for Jack Straw's Castle, North End Way, London NW3 7ES, Camden Reference 2017/2064/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. Subsequent to the issue of the above initial audit, revised and updated BIA iterations were issued which required a revision to the initial CampbellReith audit to accommodate the clarifications incorporated within the revised BIA and associated documentation.

2.4. 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).

2.5. 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.

2.6. LBC's planning portal describes the proposal as: "*Erection of two x 4 bedroom 3 storey plus basement residential dwelling houses on rear part of carpark, including associated landscaping and cycle storage.*"

The planning portal also confirmed the site lies within Hampstead Conservation Area and adjoins the Grade II listed building of Jack Straw's Castle.

2.7. CampbellReith accessed LBC's Planning Portal on 5th June 2017 and gained access to the following relevant documents for audit purposes:

- Ground Investigation and Basement Impact Assessment (ref J16284) dated May 2017 by Geotechnical & Environmental Associates.
- Structural and Methodology Statement (ref RT/SMS/4423) by Richard Tant Associates dated March 2017.
- Design and Access statement by Quinlan & Francis Terry Architects LLP dated 21 March 2017.
- Planning and Heritage Statement of 1 to 2, The Terrace, Jack Straw's Castle by Montagu Evans dated April 2017.
- Proposed Application Drawings dated January 2017 by Quinlan Terry Architects.
- Hard and Soft Landscape proposals by enplane dated 12 April 2017.
- Tree Survey Report by RGS Arboricultural Consultants dated December 2016.
- Comments and objections to the proposed development from local residents.

2.8. The audit was subsequently updated based on a review of the following documents provided between September and December 2017, and discussion with the BIA authors in January and February 2018:

a) Basement Impact Assessment (BIA) Reports prepared by Geotechnical & Environmental Associates Ltd (ref J16284) dated September 2017 and December 2017.

b) Structural and Methodology Statement (ref RT/SMS/4423) by Richard Tant Associates dated September 2017.

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	Outline construction programme presented and Utility companies have provided correspondence regarding underground infrastructure.
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	
Land Stability Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	BIA Report, Section 3.1.2.
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	BIA Report, Section 3.1.1.
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	BIA Report, Section 3.1.3. The site is within the Golders Hill Chain catchment area.
Is a conceptual model presented?	Yes	Provided within revised BIA.

Item	Yes/No/NA	Comment
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	Yes	
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	Yes	
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	Yes	
Is factual ground investigation data provided?	Yes	BIA Report, Section 5.
Is monitoring data presented?	Yes	BIA Report, Section 6.
Is the ground investigation informed by a desk study?	Yes	BIA Report, Section 2.
Has a site walkover been undertaken?	Yes	
Is the presence/absence of adjacent or nearby basements confirmed?	Yes	BIA Report, Section 2.3.
Is a geotechnical interpretation presented?	Yes	BIA Report, Section 9.
Does the geotechnical interpretation include information on retaining wall design?	Yes	Geotechnical parameters for design presented. BIA Report, Section 9.1.2.
Are reports on other investigations required by screening and scoping presented?	Yes	Arboricultural Report and Outline surface water drainage/SUDS strategy.
Are baseline conditions described, based on the GSD?	Yes	
Do the base line conditions consider adjacent or nearby basements?	Yes	

Item	Yes/No/NA	Comment
Is an Impact Assessment provided?	Yes	BIA Report, Section 10.
Are estimates of ground movement and structural impact presented?	Yes	BIA Report, Section 10 and 11 and Structural Methodology report.
Is the Impact Assessment appropriate to the matters identified by screen and scoping?	Yes	However, drainage strategy is not referred to within the Impact Assessment.
Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme?	Yes	
Has the need for monitoring during construction been considered?	No	Structural monitoring should be implemented during the works.
Have the residual (after mitigation) impacts been clearly identified?	N/A	
Has the scheme demonstrated that the structural stability of the building and neighbouring properties and infrastructure will be maintained?	Yes	
Has the scheme avoided adversely affecting drainage and run-off or causing other damage to the water environment?	Yes	A drainage strategy has been provided.
Has the scheme avoided cumulative impacts upon structural stability or the water environment in the local area?	Yes	Structural monitoring should be implemented during the works.
Does report state that damage to surrounding buildings will be no worse than Burland Category 2?	Yes	Damage Impact limited to Category 0 (Negligible).
Are non-technical summaries provided?	Yes	BIA Report, Section 13.2.

4.0 DISCUSSION

4.1. The BIA has been prepared by Geotechnical & Environmental Associates (GEA) with a Structural Methodology Report produced by Richard Tant Associates. The revised BIA (dated September 2017) confirms that the authors of the BIA and various supporting documents are qualified in accordance with the requirements of CPG4.

4.2. The proposed development comprises the construction of two three-storey dwellings with a single level basement to a depth of approximately 3.5m bgl. The proposed development is on the car park adjacent to the existing Jack Straw's Castle building (a three-storey to four-storey former Grade II Listed public house, which has been converted into a gymnasium and apartment building).

4.3. The BIA includes the majority of the information required from a desk study in line with the GSD Appendix G1. A conceptual site model has been provided within the revised documents in addition to an outline construction programme. The revised BIA also includes correspondence with National Grid, UK Power Networks, Thames Water and London Underground Limited regarding underground infrastructure within the vicinity of the site.

4.4. A site investigation was undertaken by GEA in December 2016 comprising one 6.0m borehole and a single trial pit to 1.4m depth. A single groundwater monitoring standpipe was installed to 6.0m depth. The ground conditions comprise Made Ground over the Bagshot Formation.

4.5. Groundwater was not encountered during drilling nor during the single occasion that the standpipe was monitored (no date given of monitoring). The site investigation has indicated that groundwater is unlikely to be encountered within the basement excavation. The BIA recommends that groundwater monitoring should be continued to confirm groundwater conditions prior to construction.

4.6. The BIA presents a geotechnical interpretation, including retaining wall design parameters.

4.7. The new basement construction is to comprise reinforced concrete retaining walls constructed in a hit and miss sequence. Mass concrete underpinning will be required below the adjacent foundation. An internal cavity drainage system will be employed.

4.8. Outline temporary works are described in both the main BIA text and the Structural Methodology Report written by Richard Tant Associates. The temporary works propping and sequencing proposed is considered suitable to maintain stability during the works. Outline permanent structural calculations have been provided.

4.9. Revised ground movement analysis (GMA) and building damage assessment calculations have been presented for review. The damage impact assessment indicates Category 0 damage (Negligible) in regards to all the assessments undertaken. The assessments are considered to provide a reasonable estimate of the likely movements to be generated, considering the depth and scale of the proposed development, the proposed construction technique and temporary works, and the underlying ground conditions.

4.10. The previous Audit report requested that an outline methodology and guidance for monitoring structural movements is provided. The BIA states that as the predicted damage to neighbours is Category 0 (Negligible), monitoring is not required. However, considering the immediately adjacent Grade II Listed structure, structural monitoring should be undertaken during the works to ensure damage to neighbours is maintained within the limits predicted. A monitoring strategy should be agreed under the Party Wall Award process and implemented.

4.11. It is accepted that there should be no impact to the wider hydrogeological environment. However, the site is within the Golders Hill Catchment and Critical Drainage Area Group 3-010 but is not located within a Local Flood Risk Zone and is at very low risk of flooding. An outline surface water drainage/SUDS strategy has been provided. As the soil types will support the effective use of infiltration devices, it is proposed that surface water from hardstanding areas and roofs will be drained using permeable paving.

4.12. It is accepted that the current site comprises hardstanding and therefore there will be no increase in the impermeable site area.

4.13. Queries and matters requiring further information or clarification are summarised in Appendix 2.

5.0 CONCLUSIONS

5.1. The qualifications of the authors are in accordance with CPG4 guidelines.

5.2. The proposed development comprises the construction of two three-storey dwellings with a single level basement to a depth of approximately 3.5m bgl.

5.3. A site investigation has confirmed the underlying ground conditions to comprise Made Ground over the Bagshot Formation. Groundwater was not encountered during drilling or during the subsequent monitoring visit but further groundwater monitoring is recommended by the BIA prior to construction.

5.4. Outline temporary and permanent works are described and structural calculations have been provided.

5.5. The damage impact assessment indicates Category 0 damage (Negligible) in regards to all the assessments undertaken.

5.6. Considering the immediately adjacent Grade II Listed structure, structural monitoring should be undertaken during the works to ensure damage to neighbours is maintained within the limits predicted. A monitoring strategy should be agreed under the Party Wall Award process and implemented.

5.7. There should be no impact to the wider hydrogeological environment.

5.8. There should be no impact to the wider hydrological environment.

5.9. The site is located within the Critical Drainage Area Group 3-010 but is not located within a Local Flood Risk Zone and is at very low risk of flooding.

5.10. Queries and matters requiring further information or clarification are summarised in Appendix 2. Considering the revised submissions, and the recommendation to undertake structural monitoring during the works, the criteria of CPG Basements have been met.

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	Conceptual Site Model to be provided.	Closed – Conceptual Site Model provided (section 7.1 of revised BIA report).	November 2017
2	BIA	Outline construction programme.	Closed – Outline construction programme provided.	November 2017
	Desk Study	Underground utility infrastructure information should be provided.	Closed – the revised BIA includes correspondence with National Grid, UK Power Networks, Thames Water and London Underground Limited regarding underground infrastructure within the vicinity of the site.	November 2017
3	Groundwater	In accordance with the BIA's own recommendations, further groundwater monitoring should be undertaken.	Open – to be provided as 4.5	N/A – ongoing
4	Land Stability	GMA and damage impact assessment.	Closed – updated GMA provided	February 2018
5	Land Stability	Confirm depth of foundations with surrounding structures and impacts to retaining walls / highway.	Closed – provided within the structural methodology report.	December 2017
6	Land Stability	Monitoring structural movements during construction.	The BIA does not recommend monitoring. However, considering the sensitive neighbour, monitoring should be undertaken.	A monitoring strategy should be agreed under the Party Wall Award process and implemented.
7	Surface Water Flow and Hydrogeology	Outline drainage strategy to be provided to confirm assessments.	Closed – Outline surface water drainage/SUDS strategy provided.	November 2017

Appendix 3: Supplementary Supporting Documents

Basement Impact Assessment (BIA) Report prepared by Geotechnical & Environmental Associates Ltd (ref J16284) dated December 2017

Structural and Methodology Statement (ref RT/SMS/4423) by Richard Tant Associates dated September 2017

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