CampbellReith
consulting engineers

St Pancras Commercial Centre, London NW1 0BY

Basement Impact Assessment Audit

For

London Borough of Camden

Project Number: 12727-79
Revision: D1

October 2019

Campbell Reith Hill LLP
15 Bermondsey Square
London
SE1 3UZ

T:+44 (0)20 7340 1700
F:+44 (0)20 7340 1777
E:london@campbellreith.com
W:www.campbellreith.com

Document History and Status

Revision	Date	Purpose/Status	File Ref	Author	Check	Review
D1	October 2019	Comment	GKemb12985-79-181019-St Pancras Commercial Centre-D1.doc	KB	GK	gk

Document Details

Last saved	18/10/2019 13:17
Path	GKemb12985-79-181019-St Pancras Commercial Centre-D1.doc
Author	G Kite, BSc MSc DIC FGS
Project Partner	E M Brown, BSc MSc CGeol FGS
Project Number	12727-79
Project Name	St Pancras Commercial Centre
Planning Reference	2019/4201/P

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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 St Pancras Commercial Centre, London NW1 0SE (planning reference 2019/4201/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. 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 Basement Impact Assessment (BIA) has been carried out by AKT II Consulting Structural and Civil Engineers. It should be demonstrated that the BIA authors hold appropriate qualifications in accordance with LBC guidance.

1.5. Screening and scoping assessments should be presented.

1.6. Site investigation data indicates the ground conditions to comprise areas of deep Made Ground over the London Clay formation. Interpretative geotechnical information should be provided including retaining wall parameters.

1.7. Numerous basement construction techniques and options are presented. It is likely that a piled retaining wall will be utilised to construct the basement. The depth and type of retaining wall and the proposed basement formation level should be confirmed.

1.8. A conceptual model in the context of the proposed basement and potential stability, hydrological and hydrogeological impacts should be confirmed based on the proposed methodology and formation levels.

1.9. A qualitative ground movement assessment (GMA) is presented. This should be confirmed once construction methodology and levels are confirmed, as 1.7, including an assessment of impacts to surrounding highways, underground infrastructure and buildings within the zone of influence, as applicable.

1.10. It is accepted that the development will not impact the wider hydrogeological environment.

1.11. There will be no change in impermeable site area due to the proposed development and no impact on the wider hydrological environment. It is proposed to adopt attenuation SUDS. A final drainage design should be agreed with LBC and Thames Water.

1.12. The site is at very low risk of surface water flooding. Standard flood risk mitigation measures should be adopted in the final design.

1.13. An outline construction programme has been provided.

1.14. Queries and requests for further information are discussed in Section 4 and summarised in Appendix 2. Until these are addressed, the BIA does not meet the criteria of CPG Basements.

2.0 INTRODUCTION

2.1. CampbellReith was instructed by London Borough of Camden (LBC) on 18 September 2019 to carry out a Category C Audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for St Pancras Commercial Centre, 63 Pratt Street, London NW1 0BY (Reference 2019/4201/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 Basements. March 2018.
- Camden Development Policy (DP) 27: Basements and Lightwells.
- Camden Development Policy (DP) 23: Water.
- Local Plan 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;

c) avoid cumulative impacts upon structural stability or the water environment in the local area, and;

d) 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 *"Demolition of existing buildings (Class B1c/B8); erection of 3x buildings ranging in height from 5 to 7 storeys above ground and a single basement level comprising a mixed use development of light industrial floorspace (Class B1c/B8), office floorspace (Class B1), 32x self-contained dwellings (Class C3), flexible retail floorspace (Class A1/A3); associated access and servicing, public realm, landscaping, vehicular and cycle parking, bin storage and other ancillary and associated works"*

2.6. CampbellReith accessed LBC's Planning Portal on 11 October 2019 and gained access to the following relevant documents for audit purposes:

- AKT II, Basement Impact Assessment Report, Revision B, 13 September 2019 (BIA)
- Soiltechnics, Ground Investigation Report, ref. STQ4646-G01 Revision 0, dated April 2019 and May 2019 (GIA)
- Planning Application Drawings consisting of

  Location Plan

  Existing Plans

  Proposed Plans
- Caruso St John, Design & Access Statement, Revision D, dated 7 August 2019
- Blackburn & Co, Construction Management Plan (Outline Construction Programme), dated August 2019
- AKT II, Flood Risk Assessment, dated August 2019
- Planning Comments and Responses

3.0 BASEMENT IMPACT ASSESSMENT AUDIT CHECK LIST

Item	Yes/No/NA	Comment
Are BIA Author(s) credentials satisfactory?	No	Credentials not provided in BIA
Is data required by Cl.233 of the GSD presented?	No	BIA Section 8.1.2 states "Initial models will be developed once the form, construction and ground conditions have been finalised post planning." Construction methodology, proposed levels to be confirmed.
Does the description of the proposed development include all aspects of temporary and permanent works which might impact upon geology, hydrogeology and hydrology?	No	Section 6 describes a generic bottom up construction sequence. Construction methodology, proposed levels to be confirmed.
Are suitable plan/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?	No	No specific screening section is provided.
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	No	No specific screening section is provided.
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	No	No specific screening section is provided.
Is a conceptual model presented?	No	Conceptual model in the context of the proposed basement and potential stability, hydrological and hydrogeological impacts to be confirmed based on methodology and formation levels.

Item	Yes/No/NA	Comment
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	No	Screening and Scoping not undertaken
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	No	Screening and Scoping not undertaken
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	No	Screening and Scoping not undertaken
Is factual ground investigation data provided?	Yes	
Is monitoring data presented?	Yes	
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?	No	Not presented.
Is a geotechnical interpretation presented?	Yes	Presented in the GIR
Does the geotechnical interpretation include information on retaining wall design?	No	Not presented in the GIR
Are reports on other investigations required by screening and scoping presented?	N/A	Screening and Scoping not undertaken
Are the base line conditions described, based on the GSD?	No	Construction methodology / conceptual model to be confirmed.
Do the base line conditions consider adjacent or nearby basements?	No	Nearby basements not identified.

Item	Yes/No/NA	Comment
Is an Impact Assessment provided?	Yes	Section 8 of BIA; however, to be confirmed based on Construction methodology / conceptual model.
Are estimates of ground movement and structural impact presented?	Yes	However, to be confirmed based on construction methodology / proposed levels.
Is the Impact Assessment appropriate to the matters identified by screen and scoping?	No	Screening and Scoping not undertaken; construction methodology / conceptual model to be confirmed.
Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme?	No	To be confirmed based on Construction methodology / conceptual model.
Has the need for monitoring during construction been considered?	Yes	General suggestions made in 8.2.2 of BIA
Have the residual (after mitigation) impacts been clearly identified?	No	To be confirmed based on Construction methodology / conceptual model.
Has the scheme demonstrated that the structural stability of the building and neighbouring properties and infrastructure will be maintained?	No	Infrastructure not considered despite a number of sensitive assets identified adjacent to the site (BIA chapters 3.4 & 3.5). The requirement for third party liaison, licensing and/or approval has been identified. GMA to be updated based on confirmed construction methodology / conceptual model.
Has the scheme avoided adversely affecting drainage and run-off or causing other damage to the water environment?	Yes	
Has the scheme avoided cumulative impacts upon structural stability or the water environment in the local area?	No	GMA to be updated based on confirmed construction methodology / conceptual model.
Does report state that damage to surrounding buildings will be no worse than Burland Category 1?	Yes	Section 8.2.3 determines negligible damage. However, GMA to be updated based on confirmed construction methodology / conceptual model.

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

4.0 DISCUSSION

4.1. The BIA has been carried out by AKT II Consulting Structural and Civil Engineers. It should be demonstrated that the BIA authors hold appropriate qualifications in accordance with LBC guidance for each section of the assessment: land stability, hydrogeology and hydrology.

4.2. The proposed development will comprise the demolition of the existing buildings and the construction of three buildings between 5- and 7-storeys high with a shared single-storey basement covering the entire footprint of the site. The maximum excavation depth for the basement is indicated in the BIA to be 5.10m below ground level (bgl), although the Soiltechnics report states a basement formation level of 4.00m bgl, and the drawings are not dimensioned. Depths of retaining walls and formation levels should be confirmed and presented consistently within all submission documents and assessments.

4.3. LBC guidance, provided within CPG Basements, indicates the requirements of a BIA. Screening and scoping form key parts of the BIA process and should be presented for review. Desk study information has been provided and should be referenced as evidence for the responses provided.

4.4. A Ground Investigation Report was produced in April or May 2019 and details the findings of ground investigations carried out in February 2019. Made Ground is identified to depths of between 5.10m and 5.80m bgl, below which lies the London Clay Formation extending to a depth of 41.00m bgl, below which lies the Thanet Formation. A perched water table was identified within the Made Ground at a depths between 4.13m and 5.28m bgl.

4.5. A concrete obstruction was encountered within the Made Ground and asbestos contamination was identified. The BIA indicates that the extent of contamination is to be further investigated in the following stages. The contaminated land assessment has not been considered within this audit.

4.6. Its noted that some interpretative geotechnical information is provided in the Soiltechnics report, including a shear strength design line and indicative bearing pile capacities. With reference to the GSD Appendix G3, retaining wall design parameters should also be provided i.e. as a basis for assessing embedment depths of retaining walls into the London Clay. Depending upon the methodology adopted for ground movement assessments (GMA), additional parameters may be required to be defined to form the basis of a ground model.

4.7. The BIA appears to have been compiled without referencing the Soiltechnics report and refers to ground investigation as ‘preliminary’. The Impact Assessment then states that “Site investigation has been completed and is being reviewed in order to establish the soil parameters necessary to complete a detailed assessment of the ground movements for

comparison against relevant acceptance criteria". The detailed assessment is not included in the BIA (see 4.11).

4.8. The BIA provides a general overview of basement construction options and numerous basement construction techniques and options are presented. The BIA states that "the solutions will be narrowed down as more detailed design is undertaken". It is likely that a piled retaining wall will be utilised to construct the basement and an outline, bottom up construction sequence is provided indicating a secant piled wall. The depth and type of retaining wall and the proposed basement formation level should be confirmed and, as 4.2, be consistently presented between documents and as the basis of assessment.

4.9. The BIA indicates a reinforced concrete raft foundation may be adopted for the basement foundation, whilst the Soiltechnics report discusses both piled foundations and the use of a raft. If a raft is adopted the founding stratum may be Made Ground or London Clay, based on the anticipated ground conditions. The Soiltechnics report indicates that the use of engineered fill may be required.

4.10. A conceptual model for the site showing the topography, proposed basement and retaining wall formation levels, geology, groundwater and adjacent structures should be provided, considering the proposed construction methodology, as a basis for the impact assessments. Its noted that the presence or absence of local basements has not been identified, which should be considered within impact assessments.

4.11. The GMA is not identified as being specific to any nominated construction technique. The assessment is qualitative and references Tables 6.1 and 6.3 of CIRIA C760 to define ground movement. The assessment does not attribute a Burland Category for ground movement but states *"if low support stiffness is being considered the movement to neighbours is minor although significant, for a high support stiffness the movement to neighbouring properties is negligible. Further ground movement assessments will be undertaken".*

4.12. The GMA should be confirmed once construction methodology and levels are confirmed, including an assessment of impacts to surrounding highways, underground infrastructure and buildings within the zone of influence, as applicable. The assessment should be reasonably conservative and, as 4.27 of CPG Basements, calculations to justify the assessments should be provided.

4.13. The BIA identifies a number of utilities and below ground assets that surround the site and identifies the need for third party approvals prior to commencing construction. It also identifies the need for liaison with the Highways Agency regarding the public highways surrounding the site. As 4.12, these potential impacts should be considered within the BIA, with final asset protection criteria agreed with asset owners.

4.14. It is accepted that the development will not impact the wider hydrogeological environment. The perched water within the Made Ground should be considered within the temporary works strategy, to ensure stability during construction.

4.15. There will be no change in impermeable site area due to the proposed development and no impact on the wider hydrological environment. It is proposed to adopt attenuation SUDS in accordance with best practice. A final drainage design should be agreed with LBC and Thames Water.

4.16. The site is at very low risk of surface water flooding. Standard flood risk mitigation measures should be adopted in the final design and are discussed within the BIA submissions.

4.17. An outline construction programme has been provided.

5.0 CONCLUSIONS

5.1. It should be demonstrated that the BIA authors hold appropriate qualifications in accordance with LBC guidance.

5.2. Screening and scoping assessments should be presented

5.3. The ground conditions comprise Made Ground over the London Clay formation. Interpretative geotechnical information should be provided including retaining wall parameters.

5.4. The construction methodology, depth and type of retaining wall and the proposed basement formation level should be confirmed, and used as the basis of a conceptual model in the context of potential stability, hydrological and hydrogeological impacts.

5.5. The ground movement assessment (GMA) should be confirmed once construction methodology and levels are confirmed, including an assessment of impacts to surrounding highways, underground infrastructure and buildings within the zone of influence, as applicable.

5.6. It is accepted that the development will not impact the wider hydrogeological environment.

5.7. There will be no impact on the wider hydrological environment. It is proposed to adopt attenuation SUDS. A final drainage design should be agreed with LBC and Thames Water.

5.8. The site is at very low risk of surface water flooding. Standard flood risk mitigation measures should be adopted in the final design.

5.9. Queries and requests for further information are summarised in Appendix 2. Until these are addressed, 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	Date closed out
1	BIA Format	It should be demonstrated that the BIA authors hold appropriate qualifications in accordance with LBC guidance.		
2	BIA Format	Screening and scoping assessments should be presented.		
3	BIA Format	The construction methodology, depth and type of retaining wall and the proposed basement formation level should be confirmed, and used as the basis of a conceptual model in the context of potential stability, hydrological and hydrogeological impacts.		
4	Land Stability	Interpretative geotechnical information should be provided including retaining wall parameters.		
5	Land Stability	The ground movement assessment (GMA) should be confirmed once construction methodology and levels are confirmed, including an assessment of impacts to surrounding highways, underground infrastructure and buildings within the zone of influence, as applicable.		

Appendix 3: Supplementary Supporting Documents

London

15 Bermondsey Square
London, SE1 3UN

T: +44 (0)20 7340 1700
E: london@campbellreith.com

Birmingham

Chantry House
High Street, Coleshill
Birmingham B46 3BP

T: +44 (0)1675 467 484
E: birmingham@campbellreith.com

Surrey

Raven House
29 Linkfield Lane, Redhill
Surrey RH1 1SS

T: +44 (0)1737 784 500
E: surrey@campbellreith.com

Manchester

No. 1 Marsden Street
Manchester
M2 1HW

T: +44 (0)161 819 3060
E: manchester@campbellreith.com

Bristol

Wessex House
Pixash Lane, Keynsham
Bristol BS31 1TP

T: +44 (0)117 916 1066
E: bristol@campbellreith.com