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Basement Impact Assessment Audit

126 St Pancras Way, London, NW1 9NB

For
London Borough of Camden

Project No.
14006-68

Date
July 2024

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CONTENTS

APPENDICES

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 126 St Pancras Way, London, NW1 9NB (planning reference 2024/1016/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 checklist.

1.4 The Basement Impact Assessment (BIA) has been carried out by Maund Geo-Consulting and the individuals concerned in its production have suitable qualifications.

1.5 A Construction Method Statement (CSM) is provided in Appendix B of the BIA report. The CSM has been produced by structural engineering consultancy Baker Chatterton.

1.6 126 St Pancras Way and the adjoining properties are Grade II listed.

1.7 The updated BIA report confirms that the base of the proposed basement ranges between 2.50m and 4.00m bgl and it will be formed using underpinning techniques.

1.8 A ground investigation was carried out at the neighbouring property (no. 124). The investigation findings suggest the site is underlain by a cover of Made Ground over 'Possible Head' deposits and London Clay. Perched groundwater is assumed to be present around 1.80m bgl.

1.9 The updated BIA includes consideration of the potential impacts to neighbouring properties from the removal of the trees in the rear garden.

1.10 It is accepted that the proposed development will not adversely affect the hydrology or hydrogeology of the local or wider environment.

1.11 The updated BIA report confirms the allowable bearing pressure exceeds the maximum anticipated loading.

1.12 The retaining wall calculations provided in Appendix D of the CSM have been re-issued at a higher resolution.

1.13 The Ground Movement Assessment/ Impact Assessment has been updated and confirms damage can be limited to Burland category 1 (very slight).

1.14 It can be confirmed that the updated BIA complies with the requirements of CPG: Basements.

2.0 INTRODUCTION

2.1 CampbellReith was instructed by London Borough of Camden (LBC) on 11th April 2024 to carry out a Category B audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 126 St Pancras Way, London, NW1 9NB (planning reference 2024/1016/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 (CPG): Basements. January 2021.
- 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;

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 "*demolition of rear garden shed; erection of lower ground floor rear extension and new basement rear extension, new windows to rear elevation; new Juliette balconies to front first floor windows and extension of front entrance steps.*"

2.6 The Audit Instruction confirmed 126 Pancras Way and the adjoining buildings are Grade II listed.

2.7 CampbellReith accessed LBC's Planning Portal on 23rd April 2024 and gained access to the following relevant documents for audit purposes:

- Design & Access Statement issued by Scenario Architecture in March 2024
- Arboricultural Report & Impact Assessment issued by Crown Tree Consultancy in March 2024, ref. 11569A
- Historic Building Report issued by Donald Insall Associates in February 2024.

- Site Location Plan issued by Scenario Architecture (not dated).
- Drawings showing the existing site issued by Scenario Architecture (not dated).
- Drawings showing the proposed development issued by Scenario Architecture (not dated).
- Drawings showing the proposed demolition issued by Scenario Architecture (not dated).

2.8 The following updated documents were provided on 5th July 2024:

- Basement Ipact Assessment issued by Maund Geo-Consulting in July 2024, ref. MGC-144-BIA-V1, rev. V3
  - Appendix B includes a Construction Method Statement issued by Baker Chatterton Structural Design in March 2024, ref. J460-RP-001, rev. 00.
  - Appendix G includes a Surface Water Report issued by Croft Structural + Civil in March 2024, ref. P:\2024\240219-126 St Pancras Way\2. Calcs\2.6.BIA & CMS\126 St Pancras Way - Surface Water Report

3.0 BASEMENT IMPACT ASSESSMENT AUDIT CHECK LIST

Item	Yes/No/NA	Comment
Are BIA Author(s) credentials satisfactory?	Yes	Section 2.4 of the BIA
Is data required by Cl.233 of the GSD presented?	Yes	Clarification has been provided within the updated BIA report.
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 plan/maps included?	Yes	Plans are referenced in the screening table.
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	Section 4.0 of the BIA.
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	Section 4.0 of the BIA.
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	Section 4.0 of the BIA and Appendix G of the BIA.
Is a conceptual model presented?	Yes	Section 5.0 of the BIA.
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	Yes	Potential impacts to the neighbouring properties from removal of trees have been included within the updated report.

Item	Yes/No/NA	Comment
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	NA	No items taken through to scoping.
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	NA	No items taken through to scoping.
Is factual ground investigation data provided?	Yes	Appendix C of the BIA
Is monitoring data presented?	Yes	Appendix C of the BIA
Is the ground investigation informed by a desk study?	Unknown	
Has a site walkover been undertaken?	Yes	Site visit record included in the Construction Method Statement
Is the presence/absence of adjacent or nearby basements confirmed?	Yes	
Is a geotechnical interpretation presented?	Yes	Section 7 of the BIA
Does the geotechnical interpretation include information on retaining wall design?	Yes	Table 7.4 of the BIA
Are reports on other investigations required by screening and scoping presented?	NA	
Are the baseline conditions described, based on the GSD?	Yes	
Do the baseline conditions consider adjacent or nearby basements?	Yes	
Is an Impact Assessment provided?	Yes	

Item	Yes/No/NA	Comment
Are estimates of ground movement and structural impact presented?	Yes	Clarifications of the allowable bearing pressures and damage category assessment are provided within the updated BIA report.
Is the Impact Assessment appropriate to the matters identified by screening and scoping?	Yes	The GMA has been updated and the methodology is accepted.
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?	Yes	Section 11 of the BIA.
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	
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?	Yes	
Does report state that damage to surrounding buildings will be no worse than Burland Category 1?	Yes	
Are non-technical summaries provided?	Yes	Section 1 of the BIA

4.0 DISCUSSION

4.1 The Basement Impact Assessment (BIA) has been carried out by Maund Geo-Consulting and the individuals concerned in its production have suitable qualifications.

4.2 A Construction Method Statement (CSM) is provided in Appendix B of the BIA report. The CSM has been produced by structural engineering consultancy Baker Chatterton.

4.3 The LBC Instruction to proceed with the audit identified that 126 St Pancras Way and the adjoining properties are Grade II listed although no reference of this is made within the BIA.

4.4 The proposed development includes extending the existing lower ground floor out to the rear of the property with a sunken patio and lightwell. A new basement beneath the rear extension, housing a gym and bathroom, is also proposed. The lower ground floor is currently some 1.60m below ground level (bgl). The updated BIA report confirms that the base of the proposed basement ranges between 2.50m and 4.00m bgl.

4.5 A ground investigation was carried out at the neighbouring property (no. 124) by CGL in October 2016. The details of the ground investigation are included in the BIA and have been used to build a ground model of the site. The investigation included 1 no. inspection pit and a single borehole to 8.65m below the rear garden level. The investigation findings suggest that the site is underlain by a cover of Made Ground approximately 1.00m thick over 'Possible Head' deposits of firm silty clays. Weathered London Clay was recorded from 2.10m bgl.

4.6 Groundwater was monitored on two occasions recording a minimum depth of 1.21m bgl. The groundwater encountered is considered to be perched as opposed to regional groundwater.

4.7 A schematic of the site's conceptual model is presented in Figure 5.1 of the BIA.

4.8 A summary of the geotechnical parameters is provided in Table 7.4 of the BIA.

4.9 Screening is included in section 4 of the BIA. The subterranean flow screening responses identify that the site is not directly underlain by an aquifer and not within 100m of any watercourses or spring lines. The screening states that the basement will not extend beneath the water table surface.

4.10 The land stability screening identifies that two trees will be felled as part of the proposed development and that the basement construction will significantly increase the differential depth of foundations relative to the neighbouring properties. The screening highlights that while the property is within 5m of St Pancras Way the proposed development is limited to the rear of the site and is therefore over 5m from the highway.

4.11 Screening responses for surface water and flooding identify that the site is in Flood Zone 1 and there will be no change in impermeable surfaces as the rear garden is currently paved. This is also stated within the Surface Water Report provided in Appendix G of the BIA.

4.12 The scoping confirms that no impacts to the hydrogeology or surface flow is anticipated as a result of the proposed basement development. It also states that the basement foundations will be below the influence of desiccation from the trees. The updated BIA report includes consideration of the impact of removing trees and confirms in an email (provided in Appendix 3) that the arboricultural consultancy (Crown Arboricultural Consultancy) believes the age and condition of the trees is such that their removal will not impact the neighbouring foundations.

4.13 The risk of impacts from heave due to stress relief within the London Clay and ground movements, causing damage to neighbouring properties, has been identified and a ground movement assessment is included to assess these potential impacts.

4.14 The CSM outlines that the construction of the new basement will require the existing perimeter walls and the rear wall of No. 124 to be underpinned and strengthened with a reinforced concrete retaining structure. The underpinning will be carried out using a hit and miss sequence with 1.00m wide sections. Drawings provided in the CSM include the construction sequence and temporary works of the basement.

4.15 The CSM indicates that the basement will be founded in the London Clay on a ground bearing slab and states an allowable bearing pressure of 90kPa has been assumed. The updated BIA report has confirmed an allowable bearing pressure of 200kPa at the base of the proposed underpins with a maximum anticipated loading of 135kPa.

4.16 The retaining wall calculations, provided in Appendix D of the CSM, have been re-issued at a higher resolution.

4.17 The Ground Movement Assessment (GMA) has been undertaken using commercial software OASYS PDisp and following the guidance provided in CIRIA C760. The GMA considers ground movements due to the excavation and loadings from the new structure. The BIA states that the foundations of the neighbouring properties at no. 124 and no. 128 have been assumed to be at 2.10m bgl with foundations at the rear of no. 126 assumed to be at 1.00m bgl. The updated BIA confirms that the foundation depths have been based on the findings of the ground investigation undertaken at no. 124 and the site inspection carried out by Baker Chatterton.

4.18 The GMA assessment has been updated to consider the maximum excavation depth of 4.00m bgl. In addition, the updated BIA confirms that the anticipated impact to 1A Reeds Place is negligible.

4.19 The damage category assessment carried out in Section 10 of the BIA has been updated to consider the movement of the installation of the underpins without the offset of heave from the rear extension. In addition, the vertical deflection estimation has been updated using a vertical line between the deflection curve and its chord. The damage category assessment confirms damage can be limited to Burland category 1 (very slight).

5.0 CONCLUSIONS

5.1 The Basement Impact Assessment (BIA) has been carried out by Maund Geo-Consulting and the individuals concerned in its production have suitable qualifications.

5.2 A Construction Method Statement (CSM) is provided in Appendix B of the BIA report. The CSM has been produced by structural engineering consultancy Baker Chatterton.

5.3 126 St Pancras Way and the adjoining properties are Grade II listed.

5.4 The proposed development includes extending the existing lower ground floor out to the rear to include a sunken patio and lightwell and the construction of a basement beneath the rear extension. The lower ground floor is currently some 1.60m below ground level (bgl). The updated BIA report confirms that the base of the proposed basement ranges between 2.50m and 4.00m bgl.

5.5 A ground investigation was carried out at the neighbouring property (no. 124). The investigation findings suggest that the site is underlain by a cover of Made Ground approximately 1.00m thick over 'Possible Head' deposits of firm silty clays. Weathered London Clay was recorded from 2.10m bgl.

5.6 Perched groundwater is assumed to be present from around 1.80m bgl.

5.7 The updated BIA includes consideration of potential impacts to neighbouring properties from the removal of the trees in the rear garden.

5.8 It is accepted that the proposed development will not adversely affect the hydrology or hydrogeology of the local or wider environment.

5.9 The updated BIA report confirms an allowable bearing pressure of 200kPa at the base of the proposed underpins with a maximum anticipated loading of 135kPa. The retaining wall calculations, provided in Appendix D of the CSM, have been re-issued at a higher resolution.

5.10 The Ground Movement Assessment/ Impact Assessment has been updated and predicts a maximum damage category of 1 (very slight).

5.11 It can be confirmed that the BIA complies with the requirements of CPG: Basements.

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Appendix 1

Consultation Responses

None

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Appendix 2

Audit Query Tracker

Audit Query Tracker

Query No	Subject	Query	Status	Date closed out
1	Construction	Confirm the maximum excavation depth of the proposed basement and, if required, review the assessments included within the BIA.	Closed – 4.4 & 4.19	28th May 2024
2	Land Stability	Consider the potential impacts to the neighbouring properties of felling the trees in the rear garden.	Closed – 4.12	5th July 2024
3	Land Stability	The wall loads stated in the BIA exceed the allowable bearing capacity referenced in the CSM. Clarification should be provided.	Closed – 4.15	28th May 2024
4	Land Stability	The retaining wall calculations provided in the Appendix D of the CSM are not legible. These should be reissued at a higher resolution to allow review.	Closed – 4.16	28th May 2024
5	Ground Movement Assessment/ Impact Assessment	It is recommended that the GMA is reviewed to ensure any typos are corrected. Confirmation of the potential impact to the neighbouring property at 1A Reed Place should be provided. A conservative assessment should be provided to consider the potential impact of undertaking the underpinning of the existing walls	Closed – 4.17 to 4.20	5th July 2024

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Appendix 3

Supplementary Supporting Documents

BIA query response
Response email date 4th July 2024

Reply to queries from Campbell Reith Basement Impact Assessment Audit (CR ref: 14006-68 May 2024)

Query Reference	Query	Response
4.4 & 4.14 (1)	The base of the proposed basement is indicated to reach a maximum of 3.50m bgl however, the demolition drawings provided suggest the full excavation depth is 4.00m bgl. Clarification of the maximum excavation depth is requested.	The proposed basement depth ranges from approx. 2.5m at the rear of the existing property to approx. 4m within the existing garden. An overall depth of 3.5m was taken for the ground movement modelling which is considered conservative. However, this has been revised to provide greater granularity of the analysis, although the change in ground movement is insignificant and slightly reduces the ground movement along the back of 124,-126 and 128 St Pancras Way, where the excavation is only 2.5m begl. Figures 2.2 and 8.1-8.7 and 10.1 to 10.6 have been amended to reflect this change as have PDisp reports of the analysis in Appendix F.
4.12 (2)	Consider the potential impacts to the neighbouring properties of felling the trees in the rear garden.	We have received a review of the impact of the tree removal from LBC senior planner, Brendan Versluys on 17/05/24. He has no concerns about the tree removal.
4.15 (3)	The wall loads stated in the BIA exceed the allowable bearing capacity referenced in the CSM. Clarification should be provided.	The proposed basement will entail the removal of soil to a depth of approximately 2.5m below the existing foundation (~ 4m bgl) to support the load of the existing wall. The soil strength design line in Figure 7.2 shows the soil strength increasing with depth (65 kPa @ 4.0m bgl). Therefore, the underpin is bearing on ground stiffer than the existing foundation. The load will be spread over the width of the underpin base of 1.0m instead of the exiting foundation width of approx. 440m wide. This gives a safe bearing capacity of ~ 200 kPa assuming a FoS of 3 using Terzaghi's conventional approach for bearing resistance for cohesive soils
4.16 (4)	The retaining wall calculations provided in the Appendix D of the CSM are not legible. These should be reissued at a higher resolution to allow review.	The calculation have been included at higher resolution

4.17 to 4.20 (5)	It is recommended that the GMA is reviewed to ensure any typos are corrected. Confirmation of the potential impact to the neighbouring property at 1A Reed Place should be provided. A conservative assessment should be provided to consider the potential impact of undertaking the underpinning of the existing walls	4.17- Typos have been corrected, with correct reference to Nos. 124, 126 and 128 St Pancras Way. Existing foundation depths based on inspections and existing information for No. 124. 128 is assumed to be comparable. The maximum depth of 4.0m has been modelled in the GMA but with greater granularity a depth of 2.5m has been included directly to the rear of No. 126. While this has resulted in very minor change to ground movement it is does not significantly alter the damage assessment. 4.18 amended as explained above. 4.19- The ground movement modelling has indicated the movements at the boundary with 1A Reed's Place are less than **0.5mm**. This is shown in the ground movement profiles in Figures 8.3, 8.4, 8.7 and 8.8 It is hard to quantify any significance of this ground movement, which is explained in the text. 4.20. The ground movement from short term relates to the area of excavation which excludes the back wall. The Δ/L has been amended to form a vertical line between the deflection curve and its cord.

From: [redacted]
Sent: 04 July 2024 10:00
To: [redacted]
Cc:
Subject: RE: 2024/1016/P and 2024/1163/L - 126 St Pancras Way

Good morning Liz,
We have now been advised by Crown Arboricultural Consultancy (who undertook the tree survey at 126 St Pancras Place) as follows:

"Where vegetation is removed from desiccated shrinkable soils, the soils will rehydrate and may swell. This can push buildings upwards.

For new buildings adjacent to old trees, the ground may have been desiccated before the house was built. In this scenario, vegetation removal may push the building up above its original level and cause damage. This is known as heave.

If a building is older than the vegetation to be removed, there is no risk of heave occurring.

Therefore, if no such subsidence has occurred, then the risk of damage as a result of ground recovery is effectively non-existent".

The extension to 1A Reeds Place was constructed in 2009. At this stage it is likely that the Cherry tree was either not present or a young sapling. Therefore, it is unlikely the removal of the tree will have any significant impact on 1A Reeds Place".

The other tree, a Bay Laurel, is located adjacent to the original property of 1A Reeds Place which was present since at least 1945 (Fig 3.1 of BIA). Furthermore, Crown have classified the trees as "unremarkable trees of low quality and merit. Individual specimens are not considered to be a material planning consideration".

Finally, I am reminded that the NHBC guidance, frequently quoted, is for the construction of new house foundations not existing ones.

If you could please indicate if you are happy in principle with our responses, so I can amend the BIA report accordingly, which I will do this week, before I go on leave for 3 weeks.
Kind regards

Julian Maund BSc PhD FGS CGeol MIMMM CEng
Registered Ground Engineering Adviser

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[redacted]

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