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Basement Impact Assessment Audit

100 Chalk Farm Road, London, NW1 8EH

For
London Borough of Camden

Project No.
14006-46

Date
March 2024

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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 100 Chalk Farm Road, London, NW1 8EH (planning reference 2024/0479/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 BIA has been carried out by engineering consultants Pell Frischmann; the individuals concerned in its production should demonstrate that they hold suitable qualifications in accordance with the CPG for Basements.

1.5 The proposed basement neighbours a Grade II listed building (the Roundhouse Theatre) and is within a Tier II archaeological priority area.

1.6 A preliminary ground investigation has been carried out however the investigation did not extend to the full depth of the proposed basement. Additional ground investigation has therefore been recommended within the BIA.

1.7 The site comprises a cover of Made Ground up to 4.50m thick over London Clay. Groundwater is estimated to be between 21.00m and 28.00m OD. The maximum excavation depth will be approximately 1.00m below this (c. 23.00m OD).

1.8 The BIA references a hydrogeological assessment, however, due to a typo in Section 5.1 it is not clear where this assessment is presented. Confirmation is requested.

1.9 A Flood Risk Assessment (FRA) carried out for the site concludes that it is at low risk of flooding from surface water. It is accepted that, with inclusion of the mitigation measures identified in the Sustainable Drainage Report, the proposed development will not adversely impact the hydrology of the area.

1.10 The proposed loads on the basement foundations and outline retaining wall calculations are requested to provide evidence that the proposed development is viable.

1.11 The proposed construction methodology should be reviewed to ensure it is presented consistent across the reports provided. The elevations within Table 2 of the BIA should also be reviewed and update where required. The proposed layout of the retaining wall along the southern boundary should be confirmed and presented consistently.

1.12 A Ground Movement Assessment (GMA) has been undertaken. The assessment should be revised in line with the confirmed construction method, length of the southern boundary and the comments in Section 4 of this audit.

1.13 Impact to Thames Water and London Underground assets have not been included within the GMA; these will be undertaken and reviewed by the relevant asset owners.

1.14 The GMA concludes a maximum damage of Burland Category 1 (Very Slight). This should be reviewed following the above comments being addressed.

1.15 A structural monitoring strategy to control impacts of the works to neighbouring structures has been proposed.

1.16 It cannot be confirmed that the BIA complies with the requirements of CPG: Basements until the queries raised in Section 4 and Appendix 2 are addressed.

2.0 INTRODUCTION

2.1 CampbellReith was instructed by London Borough of Camden (LBC) on Date to carry out a Category B audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation 100 Chalk Farm Road, London, NW1 8EH (planning reference 2024/0479/P). The basement is considered to fall within Category C as defined by the Terms of Reference.

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 existing buildings and redevelopment of the site to provide two new buildings of between 6-12 storeys: one containing affordable homes (Class C3) and one (with three cylindrical volumes) containing purpose-built student accommodation with associated amenity and ancillary space (Sui Generis), a ground floor commercial space (Class E) together with public realm, access, plant installation, and other associated works.*"

2.6 The Audit Instruction confirmed 10 Chalk Farm Road is neighbour to a Grade II listed building and Tier II archaeological priority area.

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

- Basement Impact Assessment Report (BIA) prepared by Pell Frischmann, ref. 106885-PF-ZZ-XX-RP-C-0005, rev. P02, issued January 2024.

- Land Contamination Desk Study prepared by Pell Frischmann, ref. 106885-PEF-XX-XX-RP-GG-600001, rev. P02, issued January 2024.
- Flood Risk Assessment Report (FRA) prepared by Pell Frischmann, ref. 106885-PEF-ZZ-XX-RP-YE-000010, rev. P03, issued February 2024.
- Sustainable Drainage Report (SDR) prepared by Pell Frischmann, ref. 106885-PEF-ZZ-XX-RP-CD-000001, rev. P03, issued February 2024.
- Construction Management Plan (CMP) prepared by Regal London, ref. 1130, rev. 2, issued February 2024.
- Design and Access Statement (DAS) prepared by DSDHA, issued February 2024.
- Heritage Engineering Report prepared by Pell Frischmann, ref. 106885-PF-ZZ-XX-RP-S-0006, rev. 3.0, issued February 2024.
- Structural Engineering Report (SER) prepared by Pell Frischmann, ref. 106885-PF-ZZ-XX-RP-S-0005, rev. 02, issued January 2024.
- Drawings prepared by DSDHA as outlined on the issue sheet ref. 100-100A Chalk Farm Road - Planning Issue Sheet.

3.0 BASEMENT IMPACT ASSESSMENT AUDIT CHECK LIST

Item	Yes/No/NA	Comment
Are BIA Author(s) credentials satisfactory?	No	Confirmation of the experience and qualifications of those who undertook the assessment is not provided.
Is data required by Cl.233 of the GSD presented?	No	See comments within Section 4.0.
Does the description of the proposed development include all aspects of temporary and permanent works which might impact upon geology, hydrogeology and hydrology?	Yes	However, some clarification of the construction methodology required as outlined in Section 4.0.
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?	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	The BIA recommends additional ground investigation to confirm the deeper ground conditions.
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	Yes	

Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	Yes	However, some clarification of the responses required as outlined in Section 4.0.
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	Yes	
Is factual ground investigation data provided?	Yes	Appendix B of the BIA
Is monitoring data presented?	Yes	The BIA recommends further, long-term groundwater monitoring be undertaken.
Is the ground investigation informed by a desk study?	Yes	
Has a site walkover been undertaken?	Yes	Section 2.1 of the BIA.
Is the presence/absence of adjacent or nearby basements confirmed?	Yes	
Is a geotechnical interpretation presented?	Yes	Section 7 of BIA. This should be updated once the additional ground investigation recommended by the BIA has been completed.
Does the geotechnical interpretation include information on retaining wall design?	Yes	Section 7 of BIA
Are reports on other investigations required by screening and scoping presented?	Yes	Additional assessment summarised in Section 6.2 of the BIA
Are the baseline conditions described, based on the GSD?	Yes	However, clarifications required as outlined in Section 4.0.
Do the base line conditions consider adjacent or nearby basements?	Yes	
Is an Impact Assessment provided?	Yes	

Are estimates of ground movement and structural impact presented?	Yes	However, clarifications required as outlined in Section 4.0.
Is the Impact Assessment appropriate to the matters identified by screening and scoping?	Yes	However, clarifications required as outlined in Section 4.0.
Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme?	No	Two different construction methods are presented, however only one of these is considered in the BIA.
Has the need for monitoring during construction been considered?	Yes	Section 7.4 of the BIA
Have the residual (after mitigation) impacts been clearly identified?	No	Further assessment is required as discussed in Section 4.0.
Has the scheme demonstrated that the structural stability of the building and neighbouring properties and infrastructure will be maintained?	Yes	However, clarifications required as outlined in Section 4.0.
Has the scheme avoided adversely affecting drainage and run-off or causing other damage to the water environment?	No	The hydrogeological assessment indicated in the BIA is requested.
Has the scheme avoided cumulative impacts upon structural stability or the water environment in the local area?	No	The Ground Movement Assessment (GMA) requires further consideration.
Does report state that damage to surrounding buildings will be no worse than Burland Category 1?	Yes	However this should be revisited as needed, following revision of the GMA.
Are non-technical summaries provided?	Yes	

4.0 DISCUSSION

4.1 The Basement Impact Assessment (BIA) has been carried out by engineering consultants Pell Frischmann (PF). The individuals concerned in its production have not provided sufficient evidence to show that they hold suitable qualifications and are suitably experienced to carry out the assessments in accordance with the requirements of CPG Basements.

4.2 The LBC Instruction to proceed with the audit identified that the proposed basement neighbours a Grade II listed building, the Roundhouse Theatre and is within a Tier II archaeological priority area. The BIA report also confirms other Grade II listed features adjacent to the site include a cattle trough and a drinking fountain. The site is within the Regents Canal Conservation Area.

4.3 The site currently houses two vacant office blocks and a two-storey carpark. The open ground surrounding the structures comprise hardstanding with a small area of overgrown vegetation just east of the carpark. The site slopes down towards the north, falling from 32.70m to 28.50m OD. The existing carpark opens to Chalk Farm Road on the north side of the site and is partially cut into the slope.

4.4 The re-development of the site involves the demolition of the existing buildings, replacing them with two new high-rise blocks to house student accommodation and a third block for affordable residential homes. The buildings are between 6- and 12-storeys high with a basement beneath part of the site. The proposed finish floor level of the basement is reported to be 24.18m OD, the maximum excavation depth will be approximately 1m below this (c. 23.00m OD).

4.5 A ground investigation has been carried out however it is highlighted in the BIA that the investigation did not extend to the full depth of the proposed basement. Additional ground investigation has therefore been recommended within the BIA, which will extend to at least 22.00m OD. It should be highlighted that, in accordance with EC7 guidance, ground investigation data should extend at least 5m below the base of the deepest proposed pile toe.

4.6 Geotechnical parameters are outlined in Table 5 (Section 7.1) of the BIA. These have been based on the ground investigation undertaken by IDOM (included in Appendix B) and deeper historical boreholes from a site 150m away, as summarised in Table 1 of the BIA.

4.7 The ground model provided in the BIA indicates that the site is underlain by a cover of Made Ground up to 4.50m thick over London Clay. Groundwater was not encountered during the ground investigation; however, historic boreholes suggest groundwater lies between 21.00m and 28.00m OD.

4.8 The hydrogeology screening recognises that the base of the proposed basement is anticipated to extend below the water table surface. This is brought through to scoping which confirms that additional groundwater monitoring, specifically across the winter months, of the site is recommended to confirm the presence/absence of perched groundwater.

4.9 A hydrogeological assessment considering the proposed basement and ground conditions, is referenced in the scoping however, due to a typo in Section 5.1 it is not clear where this assessment is presented. Confirmation is requested.

4.10 The hydrogeology screening highlights that the proposed development will lead to a decrease in hardstanding and that the site is situated over the London Clay Formation, which is classified as an unproductive aquifer. It is noted that the responses in the screening table regarding the surface water assessment slightly differ when discussing the change to hardstanding. Despite the discrepancy between the two responses, the issue has been considered further.

4.11 The screening table for the hydrology in Section 4.3 of the BIA highlights that the proposed development will alter the route of surface water and the profile of the surface water received by adjacent properties and downstream water courses. These items have not been taken through to scoping, however, details within the table include reference to the Sustainable Drainage Report (SDR) that has been undertaken. The SDR outlines that the surface water will be mitigated by a mixture of permeable paving, tree pits, rain gardens, blue and green roofs and attenuation tanks. It is assumed that proposals will be submitted for approval from the LLFA. It is noted that Thames Water will require additional documents to be submitted to secure their approval for the development.

4.12 A Flood Risk Assessment (FRA) carried out for the site concludes that it is at low risk of flooding from surface water. It is accepted that, with inclusion of the mitigation measures identified in the SDR, the proposed development will not adversely impact the hydrology of the area.

4.13 The land stability screening responses in Section 4.2 of the BIA suggest that the site does not include slopes greater than 7 degrees. This contradicts the statement made in point 2 of Section 2.2 of the BIA, which states that slope angles between 7 and 10 degrees exist locally within the site. It is noted that section 4.4.2 confirms that the slope will be removed as part of the construction of the affordable housing block and will be replaced with a retaining wall.

4.14 Possible felling of trees and the impact of shrink-swell subsidence have been taken through to scoping. The BIA includes consideration of the high plasticity London Clay soils, stating that the foundation depths will be designed to accommodate seasonal variation in moisture content and the effects of vegetation.

4.15 The Thames Lee Tunnel passes beneath the southeastern edge of site. The BIA confirms that the proposed basement footprint has been designed to ensure it does not encroach into the tunnel protection zone.

4.16 The site is in proximity to a highway (Chalk Farm Road) and National Rail railway lines. The railway runs along the site's southern boundary and an existing survey of the site suggests that a retaining wall is situated just southeast of site however, no record of the wall has been located to date. A new retaining wall is proposed in this area to a height of 9m and will be within 5m of the railway. In addition, the proposed basement significantly increases the differential depth of foundations relative to neighbouring properties including a Grade II listed building.

4.17 The scoping identifies that the proposed works have potential to impact the land stability of the surrounding area thus a ground movement assessment has been undertaken.

4.18 Within the screening tables it is identified that the highway and pedestrian way are within 5m of the proposed basement; whilst these assets are not mentioned within the scoping section they have been included in subsequent impact assessments.

4.19 The basement will be formed by bottom-up construction with temporary props installed to provide a high wall stiffness. The basement walls shall be formed as contiguous pile walls with grouting, the piles installed to depths of 21.38m and 17.98m OD. A schematic of the proposed construction sequence is included in 1.6.3 of the BIA and highlights the following sequence:

1. Install the perimeter contiguous pile walls to 21.38m OD along the southern edge of site.
2. Install the perimeter contiguous pile wall along the northern edge to 17.98m OD.
3. Excavate to 24.48m OD to form a level platform across the site and install perimeter contiguous pile walls along the eastern and western sides.
4. Install the foundation piles from the new platform level across the proposed building footprint.
5. Excavate to 28.00m OD and install temporary propping at 4m intervals across the basement.
6. Excavate to the base of the basement (23.38m OD) and install pile caps.
7. Install the basement slab with finished floor level (FFL) at 24.18m OD and supporting columns.
8. Install ground floor slab with FFL at 28.48m OD and remove temporary propping.
9. Construct main building above.

4.20 The Structural Engineering Report (SER) in Appendix D of the BIA states that the walls of the basement will be built as "open excavation" with necessary temporary supports. This contradicts the construction sequence detailed in the BIA and drawing reference 106885-PEL-XX-098-SK-C-000002, presented in Appendix C of the BIA, which provides further information relating to the contiguous pile wall. The SER and BIA should provide a consistent construction methodology and subsequent impact assessments should be updated accordingly.

4.21 The elevation given in step 3 of the proposed sequence above does not appear to be correct and should be reviewed.

4.22 Query 9 of the initial review (included in Appendix 3) requested details of the proposed structural methodology, embedment depth, excavation depth, temporary works, construction sequence and outline structural calculations. While the BIA has been updated to include further details of the proposed sequence, the BIA and the SER do not provide any outline structural calculations. The proposed loads on the basement foundations and outline retaining wall calculations should be included to provide evidence that the proposed development is viable.

4.23 Drawings 106885-PEF-ZZ-ZZ-SK-S-000801, 106885-PEF-ZZ-ZZ-SK-S-000802 and 356_P20.129 show the contiguous pile retaining wall along the southern boundary extending beyond the basement area and terminating at different distances from the Roundhouse Theatre. The layout of the contiguous pile wall should be presented consistently throughout the BIA and SER and the impact of the pile installation in proximity to the Roundhouse should be included in subsequent impact assessments.

4.24 A Ground Movement Assessment (GMA) has been carried out as part of the BIA. The GMA assumes the basement will be constructed using a contiguous pile wall for all basement walls. This should be confirmed as per 4.22 above.

4.25 Figure 6 in the BIA and drawing ref. 106885-PEL-XX-098-SK-C-000001 in Appendix C of the BIA show the basement in relation to neighbouring structures, with the zones of influence for pile installation and basement excavation. The BIA states these have been derived based on the basement excavation depth, with reference to CIRIA C760. It should be noted that CIRIA C760 gives the zone of influence for pile installation as a function of pile length, not basement excavation depth.

4.26 The zones of influence shown in Figure 6 of the BIA should be checked to ensure that the distances to negligible impact for the pile wall installation considers the full length of the embedded wall. As referenced in 4.24, the southern pile wall extends further towards the Roundhouse Theatre than currently shown in Figure 6. The impacts from the installation of these piles should also be considered in the GMA.

4.27 Table 7 of the BIA indicates that the Cattle Trough is outside the zone of influence however, this contradicts Figure 6 of the BIA and should be reviewed.

4.28 Impact to Thames Water and London Underground assets have not been included within the GMA as these are subject to separate detailed assessments. It is assumed that these will be carried out and reviewed by the relevant asset owners.

4.29 Table 4 of the BIA summarises the anticipated ground movements impacting non-building structures. Minimal impact to Chalk Farm Road, just north of site, is concluded with movements less than 10mm predicted. Horizontal movements up to 21mm and vertical movements of 12mm have been calculated for the Network Rail tracks south of site. These should be updated following the recommended revisions to the GMA as described above.

4.30 The assessment concludes a maximum damage of Burland Category 1 (Very Slight) to the Juniper Crescent Houses to the south of site and Category 0 (Negligible) to the Roundhouse Theatre west of site. These should be reviewed once the above comments have been addressed.

4.31 Section 1.7 of the BIA comments that a structural monitoring strategy to control impacts of the works to neighbouring structures will comprise vibration monitoring and displacement monitoring. It proposes that baseline readings be undertaken for at least two weeks before the commencement of the foundation and basement works and be monitored in real time during the substructure construction. The BIA recommends monitoring also be continued for the duration of the superstructure construction and for a period after completion of the works.

5.0 CONCLUSIONS

5.1 The BIA has been carried out by engineering consultants Pell Frischmann; the individuals concerned in its production do not demonstrate that they hold suitable qualifications in accordance with the CPG Basements.

5.2 The proposed basement neighbours a Grade II listed building (the Roundhouse Theatre) and is within a Tier II archaeological priority area.

5.3 The re-development of the site involves the demolition of the existing buildings, replacing them with two new high-rise blocks to house student accommodation and a third block for affordable residential homes. The buildings are between 6- and 12- storeys high with a basement beneath part of the site. The proposed finish floor level of the basement is reported to be 24.18m OD, the maximum excavation depth will be approximately 1m below this (c. 23.00m OD).

5.4 A preliminary ground investigation has been carried out however the investigation did not extend to the full depth of the proposed basement. Additional ground investigation has therefore been recommended within the BIA.

5.5 Geotechnical parameters provided have been based on the preliminary ground investigation undertaken and deeper historical boreholes.

5.6 The site comprises a cover of Made Ground up to 4.50m thick over London Clay. Groundwater is estimated to be between 21.00m and 28.00m OD.

5.7 The BIA references a hydrogeological assessment, however it is not clear where this assessment is presented. Confirmation is requested.

5.8 A Flood Risk Assessment (FRA) carried out for the site concludes that it is at low risk of flooding from surface water.

5.9 It is accepted that, with inclusion of the mitigation measures identified in the Sustainable Drainage Report, the proposed development will not adversely impact the hydrology of the area.

5.10 The scoping identifies that the proposed works have potential to impact the land stability of the surrounding area thus a ground movement assessment has been undertaken.

5.11 The construction method presented in the BIA differs from that provided in the Structural Engineering Report (SER). This should be confirmed and presented consistently in all assessments.

5.12 The proposed layout of the retaining wall along the southern boundary should be presented consistently throughout the BIA and SER reports and the impact of the piling at proximity to the Roundhouse should be included in subsequent impact assessments.

5.13 The proposed loads on the basement foundations and outline retaining wall calculations should be included to provide evidence that the proposed development is viable.

5.14 A Ground Movements Assessment (GMA) has been undertaken and assumes the basement will be constructed using a contiguous pile wall for all basement walls. The zones of influence or neighbouring structures should be revisited in consideration of the full length of the piles in accordance with CIRIA C760.

5.15 The GMA concludes a maximum damage of Burland Category 1 (Very Slight) to the Juniper Crescent Houses to the south of site and a Category 0 (Negligible) to the Roundhouse Theatre west of site. These should be reviewed once the above comments have been addressed.

5.16 A structural monitoring strategy to control impacts of the works to neighbouring structures has been proposed.

5.17 Impact to Thames Water and London Underground assets have not been included within the GMA; it is assumed that these will be carried out and reviewed by the relevant asset owners.

5.18 It cannot be confirmed that the BIA complies with the requirements of CPG: Basements until the queries raised in Section 4 and Appendix 2 are addressed.

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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	Qualifications	Provide evidence to show the authors hold suitable qualifications and are suitably experienced to carry out the assessments in accordance with the CPG requirements.	Open – See 4.1	
2	Hydrogeology	The hydrogeological assessment referenced in Section 5.1 of the BIA should be provided.	Open – See 4.9	
3	Construction sequence	The proposed construction sequence should be confirmed and presented consistently in all documents. Elevations within Table 2 of the BIA should be reviewed and update where required.	Open – See 4.20 Open – See 4.21	
4	Land Stability	The proposed loads of the basement foundations and outline retaining wall calculations are requested.	Open – See 4.22	
5	Proposed Layout	Confirm the proposed location of the southern retaining wall and ensure it is presented consistently throughout the submission.	Open – See 4.23	
6	Ground Movement Assessment	The Ground Movement Assessment should be revised following the comments outlined within Section 4.0.	Open – see paragraphs 4.23 to 4.28.	
Note Only	Ground Investigation and groundwater monitoring	The BIA recommends additional ground investigation is undertaken to confirm the assumed ground conditions.	NA	

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Appendix 3

Supplementary Supporting Documents

Pre-Application Basement Impact Assessment Audit

Pre-Application Basement Impact Assessment Audit
100 Chalk Farm Road, London NW1 8EH

CampbellReith
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Planning Reference: 2022/4141/PRE
Date: 17 January 2024

Query No.	Subject	Query
1	Qualifications	In accordance with CPG Basements, a Hydrogeologist with the 'CGeol' (Chartered Geoloist) qualification from the Geological Society of London and a Fellow of the Geological Society of London is required for the subterranean (groundwater) flow assessment.
2	Drawing references	Drawing references in the BIA are missing and should be updated.
3	Appendices	A number of the referenced Appendix documents are missing and should be provided.
4	Existing Drawings	BIA advises a 2.8m deep retaining wall is present to the southeast of site. This, alongside the neighbouring structures should be shown on existing and proposed drawings with a scale, showing the distances from the existing development.
5	Proposed construction drawings	Neighbouring structures, including the described existing retaining wall should be shown alongside the proposed development. Evidence for the levels of the existing basements and ground levels for the neighbouring structures should be provided.
6	Proposed construction drawings	The BIA advises a secant piled retaining wall is to be adopted. Drawings should show the construction detail of this, specifying the embedment depth and temporary and permanent propping arrangements, shown alongside the neighbouring structures.
7	Topographic survey	A topographic survey is indicated to have been undertaken and should be provided to confirm the nature of any slopes on and surrounding the site.
8	Construction Method	Section 1.62 and 1.63 of the BIA describes both a top down and bottom up construction. This should be clarified and an appropriately detailed outline construction method statement provided, including temporary and permanent propping arrangements.
9	Construction Method Statement	This is missing and should be provided. It should detail the proposed structural methodology, embedment depth, excavation depth, temporary works, construction sequence and provide outline structural calculations. Any party wall matters, water control, waterproofing strategy should also be detailed here.
10	Ground Investigation	The Ground Investigation (GI) completed comprises 5 window sample holes to 5.00m depth. Elevations are not provided on the logs. The BIA states the deepest SI exploratory hole was completed to 24.89m OD and terminated 1m higher than the proposed FFL of the basement at 23.88m OD. Looking at the sections proposed ground level FFL varies from 32.818m to 28.180m OD. Section 6.1 of the BIA recommends an additional GI to at least 22m OD. Any ground investigation should fully investigate the ground affected by the proposed basement construction as well as the ground impacted by the basement installation and excavation. The proposed embedment depth of the secant piled retaining wall is not clear and should be clarified.

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Planning Reference: 2022/4141/PRE
Date: 17 January 2024

Query No.	Subject	Query
11	Ground Investigation	Section 7.1 of the BIA. Justification to support the geotechnical design parameters used for ground below the maximum depth of the ground investigation should be provided.
12	Ground Movement Assessment	Section 7.3 of the BIA identifies the zone of influence for ground movements due to the proposed development as 3x the basement excavation depth. Table 6.1 of CIRIA C760 summarises the distance behind the wall affected by ground movements due to bored pile wall installation in stiff clay, which for a bored secant pile is defined as 1.5x wall depth for both horizontal and vertical movements. Table 6.3 of CIRIA C760 summarises the distance behind the wall affected by ground surface movements due to excavation in front of a bored pile wholly embedded in competent ground (Stiff clays) as 4x basement excavation depth for horizontal movements and 3.5x excavation depth for vertical movements. Additional information is requested to show how the maximum horizontal and vertical movements were derived. If the assessment has been undertaken in accordance with CIRIA C760, additional clarification is requested relating to how the zone of influence of 3x wall depth was derived and why it has been used in place of the zones of influence given in C760.
13	Ground Movement Assessment	Section 7.3, Table 8 of the BIA. Clarification regarding how the neighbouring structure foundation elevations were determined should be provided, to demonstrate a suitably conservative assessment has been undertaken.
15	Ground Movement Assessment	Commentary on the impact to the identified highway within 5m of the site is requested.
16	Building Damage Assessment	Section 7.3 Table 8 of the BIA provides a Burland Damage Category but it is not clear how the results of the ground movement assessment have been used to calculate the damage category.

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