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1 & 2 Falkland Mews, London, NW5 2PP

Basement Impact Assessment Audit

For

London Borough of Camden

Project Number: 12985-15
Revision: D1

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Contents

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 1&2 Falkland Mews, NW5 2PP (Camden planning reference 2016/6906/P). The basement is considered to fall within Category B as defined by the Terms of Reference.

1.2. The Audit reviewed the Basement Impact Assessment for potential impact on land stability and local ground and surface water conditions arising from basement development in accordance with LBC's policies and technical procedures.

1.3. CampbellReith was able to access LBC's Planning Portal and gain access to the latest revision of submitted documentation and reviewed it against an agreed audit check list.

1.4. The qualifications of the individuals involved meet the LBC guidance requirements.

1.5. The BIA makes reference to CPG4 and CIRIA C580 which are no longer current. The current documents should be referenced.

1.6. The proposals involved excavating single storey basements by underpinning the foundations to the full footprint of the properties. Clarification is requested on the excavation depths.

1.7. Groundwater was recorded within the basement depth during the investigations and subsequent monitoring and dewatering measures are proposed during construction.

1.8. The BIA confirms that neighbouring properties do not have basements.

1.9. Clarification is requested on the soil parameters recommended for foundation design.

1.10. A Ground Movement Assessment (GMA) has been undertaken. The GMA indicated the potential damage to neighbouring properties as no higher than Category 1 (Very Slight), however there are queries on this.

1.11. An outline structural monitoring strategy has been provided, however, this may require updating following reassessment of the GMA.

1.12. It is stated that there will be no change in the hardstanding area. The flood risk assessment indicates the site to be at a very low risk of flooding.

1.13. It is accepted that there are no slope stability concerns regarding the proposed development and there will be no impacts to the wider hydrological environment.

1.14. An outline construction programme has been provided. A detailed programme should be provided by the appointed contractor at a later date.

1.15. Queries and requests for information are summarised in Appendix 2. Until the additional information and further assessments required are presented, the BIA does not meet the requirements of Camden Planning Guidance: Basements.

2.0 INTRODUCTION

2.1. CampbellReith was instructed by London Borough of Camden (LBC) on 01 October 2018 to carry out a Category B Audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 1 & 2 Falkland Mews, NW5 2PP.

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 *"Excavation of basement floor beneath both properties with lightwell to the front."*

2.6. The Audit Instruction also confirmed that 1 & 2 Falkland Mews, does not involve, or neighbour, listed buildings.

2.7. CampbellReith accessed LBC's Planning Portal on 05 October 2018 and gained access to the following relevant documents for audit purposes:

- Basement Impact Assessment (BIA) by Ashton Bennett dated May 2018 included appendices A-F.
- Flood Risk Assessment (FRA) including appendices A&B by UK Flood Risk Consultants dated 29 March 2018.
- Planning drawings including plans, elevations and section by Bashkal & Associates

  Existing drawings dated November 2016

  Proposed drawings dated May 2018
- Site Location Plan
- Planning Comments and Response from Thames Water and London Underground

3.0 BASEMENT IMPACT ASSESSMENT AUDIT CHECK LIST

Item	Yes/No/NA	Comment
Are BIA Author(s) credentials satisfactory?	Yes	
Is data required by Cl.233 of the GSD presented?	Yes	
Does the description of the proposed development include all aspects of temporary and permanent works which might impact upon geology, hydrogeology and hydrology?	No	There are queries on the proposal (see Audit paragraph 4.5).
Are suitable plan/maps included?	Yes	Some of the relevant maps with site location indicated provided.
Do the plans/maps show the whole of the relevant area of study and do they show it in sufficient detail?	No	Location plan provided unclear and proximity of neighbouring properties not clearly identified (See Audit paragraph 4.8).
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	
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	Yes	

Item	Yes/No/NA	Comment
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	
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?	Yes	BIA confirms neighbouring properties do not have basements.
Is a geotechnical interpretation presented?	Yes	There are queries on this however (see Audit Section 4.0)
Does the geotechnical interpretation include information on retaining wall design?	Yes	Information on foundation design provided, however, there are queries on this (see Audit Section 4.0)
Are reports on other investigations required by screening and scoping presented?	Yes	Flood Risk Assessment has been provided
Are the baseline conditions described, based on the GSD?	Yes	
Do the base line conditions consider adjacent or nearby basements?	Yes	
Is an Impact Assessment provided?	Yes	Provided but not undertaken in accordance with Camden Planning Guidance and cumulative impact of the two excavations not undertaken.

Item	Yes/No/NA	Comment
Are estimates of ground movement and structural impact presented?	Yes	Provided but there are queries on this.
Is the Impact Assessment appropriate to the matters identified by screening and scoping?	No	As above.
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	Outline scheme presented however this may require updating following reassessment of the GMA.
Have the residual (after mitigation) impacts been clearly identified?	N/A	None identified.
Has the scheme demonstrated that the structural stability of the building and neighbouring properties and infrastructure will be maintained?	No	There are queries on the ground movement assessment (see Audit paragraph 4.9).
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	Structural stability not demonstrated.
Does report state that damage to surrounding buildings will be no worse than Burland Category 1?	Yes	Maximum Category 1 damage predicted, however, there are queries on this.
Are non-technical summaries provided?	Yes	

4.0 DISCUSSION

4.1. The Basement Impact Assessment (BIA) has been carried out by Ashton Bennett Engineering Geologists and Environmental Scientists, with the Structural Method Statement, Construction Programme and Monitoring Plan carried out by Croft Structural Engineers. The Flood Risk Assessment has been carried out by UK Flood Risk Consultants. The qualifications of the authors of the BIA and the associated reports are in compliance with the requirements of CPG Basements.

4.2. The BIA included screening, scoping, site investigation and impact assessment stages as defined and required in the LBC Planning Guidance document 'CPG Basements (2018)'. However the Croft BIA makes reference to 'CPG 4' which is now superseded by 'CPG Basements (2018)'. CIRIA C580 is also referenced in relation to the ground movement assessment. This document is superseded by CIRIA C760.

4.3. The application proposes to construct basements with new lightwells below the existing buildings 1 & 2 Falkland Mews. The existing buildings are of traditional masonry and timber construction. This building is divided into two semi-detached properties, each with two storeys above ground. The application proposed to construct a basement to both properties, 1 & 2 Falkland Mews. The property is location off Falkland Road and is surrounded by the rear gardens to the buildings that front on to Fortress Road and Fortress Grove.

4.4. The BIA Audit Instruction confirmed that the site is not situated within a Conservation Area. The site is not a listed building and there are no listed buildings neighbouring the site.

4.5. The proposed works include excavation of new single storey basements beneath the full footprint of the existing properties and constructing new lightwells to the front. The depth of the proposed basements are unclear. Croft's report indicates approximately 3.0m below existing ground floor level, however, 2.30m is stated in the ground movement assessment for '*No. 5*' whilst 2.50m is indicated in Section 1 of the BIA. It is proposed to construct the basements by forming reinforced concrete underpins in a hit and miss sequence beneath the existing properties. A new retaining wall is proposed to be constructed to form the new lightwell structure. The basement retaining walls and slab are to be ground bearing. Indicative calculations for the retaining wall have been provided. The retaining walls are designed as cantilevers in the permanent condition.

4.6. A limited site investigation has been undertaken, which included two window sample holes in the rear garden and one foundation inspection pit to investigate the foundations of the existing building. The window sample holes, encountered Made Ground to a maximum depth of 1.55m bgl underlain by London Clay, designated unproductive strata. The base of the Made Ground was not identified in the foundation inspection pits which only extended to 0.60m bgl. Groundwater was not encounter during site works, however groundwater was recorded at

0.79m bgl and 1.78m bgl during monitoring. The BIA recommends that further readings are taken prior to construction and recommends that the contractor make allowance for temporary dewatering of any perched water encountered. It is accepted that impacts to the wider hydrogeological environment are likely to be minimal.

4.7. The BIA indicates the existing footings as shallow concrete strip footings bearing on the Made Ground. The trial pit identifies a 'Large Concrete Mass' 150mm bgl and 170mm from the face of the property. Further investigation should be carried prior to commencing construction to identify the purpose of this concrete mass and the impact on the proposed scheme.

4.8. Drawings (site location plan etc) provided do not clearly indicate the neighbouring properties or proximity to the subject sites. This should be clarified to allow assessment of impacts of the properties within the zone of influence to the undertaken and any Party Walls identified. The BIA by Croft makes reference to a Party Wall Award. This should be clarified.

4.9. The geotechnical assessment includes interpreted geotechnical parameters for the design of the retaining wall, foundations and basement slab. The parameters recommended for foundation design are unclear and not considered to be suitable. Clarification is requested.

4.10. The BIA notes the high to very high volume change potential of the London Clay. The report recommends that compressible material is laid beneath the basement slab to mitigate against clay heave.

4.11. A Ground Movement Assessment (GMA) and resulting damage assessment for neighbouring properties has been undertaken. It is stated that CIRIA C580 was used to estimate horizontal and vertical movements due to excavation works and underpinning. As stated above, this document is no longer current. A hand calculation is presented and although is not indicated which curves have been used, based on the calculations, this appears to be 'installation of planar diaphragm wall in stiff clay' to model the underpinning. The current CIRIA guidance is intended for embedded retaining walls, but it is accepted that this may provide a basis for which to undertake an assessment of an underpinned construction, provided ground movements are within the range typically anticipated for underpinning techniques carried out with good control of workmanship.

4.12. The GMA indicated the potential damage to 'Falkland Mews' as no higher than Category 1 (Very Slight) on the Burland Scale. The assessment is however unclear and confusing. The exact property this assessment is based on is unclear. A 2.30m excavation has been indicated for '*No 5'* with the depth of the walls indicated to be 2.60m. It is not clear which property this relates to as the subject sites are Nos 1 and 2 Falkland Mews. The assessment does not appear to include the effects of the excavation and underpinning of both properties. Based on the site plan presented as Figure 7 in Croft's report, a number of properties are within the theoretical zone of influence of the excavations and should be included in the assessment.

4.13. Heave/settlement due to excavation and construction in the short and long term do not appear to have been assessed. Cumulative impacts of the two excavations on the neighbouring properties do not appear to have been undertaken.

4.14. Proposals are provided for a structural movement monitoring strategy during excavation and construction with trigger values are presented. This may require updating following reassessment of the GMA.

4.15. The BIA notes that the site lies in a 'Critical Drainage Area, 3-003' but not in a Local Flood Risk Zone. It is noted that the basement is situated within Flood Zone 1 (negligible risk of flooding). The Flood Risk Assessment (FRA) report indicates the site to be at a very low risk of flooding.

4.16. An outline construction programme has been provided in accordance with the GSD paragraph 233. A detailed programme is to be provided by the appointed contactor at a later date.

4.17. Consultation has taken place with LUL and it is accepted that the proposals do not impact London Underground Infrastructure.

4.18. Consultation with Thames Water has confirmed that public sewers may cross through or run close to this development. A full survey to identify buried services should be carried prior to commencing works. The BIA notes mitigation measures such as providing non return valves to the drainage system and sealing all service entries, this is in line with the recommendations made by Thames Water.

4.19. It is accepted that the increase to the hardstanding is negligible. It is accepted that there are no slope stability concerns or wider hydrogeological impacts regarding the proposed development and the site is not in an area prone to flooding.

5.0 CONCLUSIONS

5.1. The qualification of the individuals involved meet the LBC guidance requirements.

5.2. The BIA makes reference to CPG4 and CIRIA C580 which are no longer current. The current documents should be referenced.

5.3. The proposed developments consists of a new single storey basement beneath the full footprint of the existing properties. It is proposed to excavate the basement using underpinning techniques. Clarification is requested on the excavation and underpinning depths.

5.4. Outline retaining wall calculations demonstrating structural stability have been provided.

5.5. A limited ground investigation which included window sample holes and foundation trial pits was undertaken. Groundwater was not recorded during initial investigation works. Subsequent groundwater monitoring recorded the groundwater level at 0.79m bgl. Further monitoring and dewatering methods during construction are proposed.

5.6. Clarification is requested on the recommendations given for foundation design as discussed in Section 4.

5.7. It is noted that there will not be an increase to the hardstanding area. It is accepted that there will be no impacts to the wider hydrogeological environment.

5.8. The BIA notes the high to very high volume change potential of the London Clay. The BIA recommends that compressible material is laid beneath the basement slab to mitigate against clay heave.

5.9. There are queries on the ground movement assessment and it is requested that this is reassessed as discussed in Section 4. The damage assessment should include all the neighbouring properties within the zone of influence of the basements. The cumulative impacts of the two proposals should also be assessed.

5.10. Proposals are provided for a structural movement monitoring strategy during excavation and construction, including trigger values. This may require updating following reassessment of the GMA.

5.11. It is accepted that the risk of flooding is negligible.

5.12. An outline construction programme has been provided. A detailed programme should be provided by the appointed contractor at a later date.

5.13. It is accepted that the increase to the hardstanding is negligible. It is accepted that there are no slope stability concerns and wider hydrogeological impacts regarding the proposed development and it is not in an area prone to flooding.

5.14. Queries and requests for further information are summarised in Appendix 2. Until the additional information is provided, the BIA does not meet the criteria of CPG Basements.

Appendix 1: Residents' Consultation Comments

Residents' Consultation Comments - None

Surname	Address	Date	Issue raised	Response

Appendix 2: Audit Query Tracker

Audit Query Tracker*

Query No	Subject	Query	Status	Date closed out
1	BIA format	Superseded planning guidance and technical documents referenced.	Open – see Audit paragraphs 4.2 and 5.2.	
2	BIA	Clarification on proximity of neighbouring structures	Open – to be provided.	
3	BIA format/ stability	Contradictory and confusing recommendations on foundation design.	Open - clarification requested (see Audit paragraphs 4.9 and 5.6).	
4	Stability	Contradictory information on the depth of excavation/underpinning.	Open – clarification requested. Depth to be indicated for both properties (see Audit paragraphs 4.5 and 5.3).	
5	Stability	Ground movement assessment confusing and unclear. Assessment not undertaken for all potentially affected properties and cumulative impacts of the two excavations not assessed.	Open – to be reassessed as discussed on Section 4.	
6	Stability	Movement monitoring	Open – see Audit paragraphs 4.14 and 5.10	

*Please provide complete and clear responses to the above queries which are discussed in detail in Section 4. Where any of the documents are updated, please indicate the updated sections in a covering email/letter.

Appendix 3: Supplementary Supporting Documents

None

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