

51 – 52 Tottenham Court Road  
London W1T 2EH

Basement Impact Assessment  
Audit

For  
London Borough of Camden

Project Number: 12336-87  
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August 2016

Campbell Reith Hill LLP  
Friars Bridge Court  
41-45 Blackfriars Road  
London  
SE1 8NZ

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

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### Document Details

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Path	KZjw12336-87-190816-51-52 Tottenham Road-D1.doc
Author	K Zapaniotis, MEng CEng MICE
Project Partner	E M Brown, BSc MSc CGeol FGS
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## 1.0 NON-TECHNICAL SUMMARY

- 1.1. CampbellReith was instructed by London Borough of Camden, (LBC) to carry out an audit on the Basement Impact Assessment submitted as part of the Planning Submission documentation for 51 – 52 Tottenham Court Road, London W1T 2EH (planning reference 2016/2027/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 BIA has been carried out by firms of engineering consultants using individuals who possess the necessary and suitable qualifications.
- 1.5. The BIA has identified that the reinforced concrete basement slab is underlain by Made Ground to a depth of 3.60 metres below which lies Lynch Hill Gravel, approx. 1.70 metres thick, below which lies the London Clay Formation
- 1.6. It is likely that the ground water table will not be encountered during the basement excavation. Groundwater is anticipated at approximately 6.00mbgl; which is below the proposed excavation level of 3.50mbgl.
- 1.7. The proposed basement consists of a single storey construction. It is understood that the existing party/dividing wall between 51 and 52 Tottenham Court Road is to be removed to create open plan areas.
- 1.8. The Site Investigation (SI) suggests that the thickness of Made Ground beneath the site points towards the use of piled perimeter retaining walls. It indicates that the existing adjacent properties have small 2.40m deep basements; however it does not identify the extent of these on plan.
- 1.9. There is no structural proposal for the superstructure works that identifies the proposed internal supporting structure and works to the rear.
- 1.10. Further SI reports should be tailored to allow for consideration of any potential heave movements below the basement slab.

- 1.11. No ground movement analysis has been undertaken to report/assess on the potential damage to the adjoining properties. No proposed construction sequence with outline temporary works has been submitted.
- 1.12. It is recommended that further investigation of the neighbouring structures' foundations is carried out with trial pits along all property boundaries. Together with this, evidence that: a) this area is not at risk of unexploded ordnance from WWII, b) the site is not affected by the Lost Rivers of London and c) proposals will not affect London Underground assets (Goodge Street underground station box) should be provided.
- 1.13. It is to be established whether any gas or electrical services run under the site.
- 1.14. It is accepted that the development will not impact on the wider hydrogeology of the area and is not in an area subject to flooding.
- 1.15. Proposals for a movement monitoring strategy during excavation and construction have been provided.
- 1.16. It is accepted that the surrounding slopes to the development site are stable.
- 1.17. Queries and requests for further information are discussed in Section 4 and summarised in Appendix 2

## 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 for 51 – 52 Tottenham Court Road, London W1T 2EH (planning reference 2016/2027/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 (CPG) 4: Basements and Lightwells.
  - Camden Development Policy (DP) 27: Basements and Lightwells.
  - Camden Development Policy (DP) 23: Water
- 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; and,
  - c) avoid cumulative impacts upon structural stability or the water environment in the local area.

and evaluate the impacts of the proposed basement considering the issues of hydrology, hydrogeology and land stability via the process described by the GSD and to make recommendations for the detailed design.

- 2.5. LBC's Audit Instruction described the planning proposal as "Extension and refurbishment of 51 & 52 Tottenham Court Road to provide a mixed use retail, office and residential development. This includes the demolition and rebuilding of extensions to the rear of both buildings, and creation of one additional storey to both buildings".

Neither building is listed, although they are both designated as "positive contributors" to the Charlotte Street Conservation Area Appraisal and Management Plan (2008). The nearest listed building to the site is the Rising Sun Public House at 46 Tottenham Court Road.

2.6. CampbellReith accessed LBC's Planning Portal on 27.07.16 and gained access to the following relevant documents for audit purposes:

- LBC Application for Planning Permission dated 08/04/2016
- LBC Basement Impact Assessment Audit Instruction
- Basement Impact Assessment (BIA) report (Ellis and Moore Consulting Engineers Ltd, report ref: 15606 – c20160712bia, report issues 1 & 2, February and July 2016)
- Site Investigation (SI) report (Ground Engineering Ltd, report ref: C13604, January 2016)
- Construction Management Plan (M.E.F. Construction Services Ltd, report status: Initial Draft, January 2016)
- Construction Traffic Management and Access Plan (M.E.F. Construction Services Ltd, report status: Initial draft, January 2016)
- Environmental Impact Assessment and Control (M.E.F. Construction Services Ltd, rev: 00, January 2016)
- Planning statement for 51–52 Tottenham Court Road (Savills, April 2016)
- Planning Application Drawings consisting of
- Location Plan – (Squire & Partners drawing 13081-G100\_P\_00\_001, rev: -)

Existing Plans –

Basement (Squire & Partners drawing 13081-JA12\_P\_B1\_001, rev: -)

Ground floor (Squire & Partners drawing 13081-JA12\_P\_00\_001, rev: -)

1<sup>st</sup> floor (Squire & Partners drawing 13081-JA12\_P\_01\_001, rev: -)

2<sup>nd</sup> floor (Squire & Partners drawing 13081-JA12\_P\_02\_001, rev: -)

3<sup>rd</sup> floor (Squire & Partners drawing 13081-JA12\_P\_03\_001, rev: -)

Roof (Squire & Partners drawing 13081-JA12\_P\_RF\_001, rev: -)

Front Elevation (Squire & Partners drawing 13081-JA12\_E\_NE\_001, rev: -)

Rear Elevation (Squire & Partners drawing 13081-JA12\_E\_SW\_001, rev: -)

North West Elevation (Squire & Partners drawing 13081-JA12\_E\_NW\_001, rev: -)

South East Elevation (Squire & Partners drawing 13081-JA12\_E\_SE\_001, rev: -)

Section A-A (Squire & Partners drawing 13081-JA12\_S\_AA\_001, rev: -)

Demolition Plans –

Basement (Squire & Partners drawing 13081-C645\_P\_B1\_001, rev: -)

Ground floor (Squire & Partners drawing 13081-C645\_P\_00\_002, rev: -)

1<sup>st</sup> floor (Squire & Partners drawing 13081-C645\_P\_01\_002, rev: -)

2<sup>nd</sup> floor (Squire & Partners drawing 13081-C645\_P\_02\_002, rev: -)

3<sup>rd</sup> floor (Squire & Partners drawing 13081-C645\_P\_03\_002, rev: -)

Roof (Squire & Partners drawing 13081-C645\_P\_RF\_001, rev: -)

Front Elevation (Squire & Partners drawing 13081-C645\_E\_NE\_004, rev: -)

Rear Elevation (Squire & Partners drawing 13081-C645\_E\_SW\_002, rev: -)

North West Elevation (Squire & Partners drawing 13081-C645\_E\_NW\_002, rev: -)

South East Elevation (Squire & Partners drawing 13081-C645\_E\_SE\_002, rev: -)

#### Proposed Plans –

Basement (Squire & Partners drawing 13081-C645\_P\_B1\_001, rev: B)

Ground floor (Squire & Partners drawing 13081-C645\_P\_00\_001, rev: C)

1<sup>st</sup> floor (Squire & Partners drawing 13081-C645\_P\_01\_001, rev: D)

2<sup>nd</sup> floor (Squire & Partners drawing 13081-C645\_P\_02\_001, rev: D)

3<sup>rd</sup> floor (Squire & Partners drawing 13081-C645\_P\_03\_001, rev: D)

4<sup>th</sup> floor (Squire & Partners drawing 13081-C645\_P\_04\_001, rev: D)

Roof (Squire & Partners drawing 13081-C645\_P\_RF\_001, rev: B)

Front Elevation (Squire & Partners drawing 13081-C645\_E\_NE\_001, rev: D)

Rear Elevation (Squire & Partners drawing 13081-C645\_E\_SW\_001, rev: -)

North West Elevation (Squire & Partners drawing 13081-C645\_E\_NW\_001, rev: -)

South East Elevation (Squire & Partners drawing 13081-C645\_E\_SE\_001, rev: -)

Section AA (Squire & Partners drawing 13081-C645\_S\_AA\_001, rev: B)

#### Area and accommodation schedules –

Existing and proposed schedule of areas

Existing use mix drawing (Squire & Partners drawing 13081-F0\_P\_AL\_001, rev: B)

Proposed use mix drawing (Squire & Partners drawing 13081-F0\_P\_AL\_005, rev: C)



- Design and Access Statement (Squire & Partners Ltd, report status: Planning Issue, March 2016)
- Heritage Assessment (Peter Stewart Consultancy, April 2016)
- Environmental Noise Survey and Plant Noise Criteria (Applied Acoustic Design, report ref: 15204/001/twt, May 2016)
- Energy & Sustainability Statement (Mecserve Sustainability, report ref: C6092; report status: Final report for planning, November 2015)
- Air Quality Assessment for the proposed development at 51–52 Tottenham Court Road, London ( Aether Ltd, report ref: AQ\_assessment/2016/51\_Tottenham\_Court\_Rd; report status: Final, January 2016)
- Daylight and Sunlight Study (Right of Light Consulting, April 2016)
- Crossrail response to “2016/2027/P 51 Tottenham Court Road, London W1T 2EH” 18.05.16 email
- 02.06.16 planning Comment by Richenda Walford for BCAAC

### 3.0 BASEMENT IMPACT ASSESSMENT AUDIT CHECK LIST

Item	Yes/No/NA	Comment
Are BIA Author(s) credentials satisfactory?	Yes	We are satisfied that the authors of the BIA report possess the necessary and suitable qualifications.
Is data required by Cl.233 of the GSD presented?	No	-Proposed construction sequence, including all necessary method statements, should be in place prior to the commencement of structural works. No works to commence without detailed temporary works design, drawings and calculations in place. -Party wall agreements and awards outstanding.
Does the description of the proposed development include all aspects of temporary and permanent works which might impact upon geology, hydrogeology and hydrology?	No	It is recommended that evidence is provided to prove that the site will not be affected by the Lost Rivers of London.
Are suitable plan/maps included?	Yes	Refer to Ground Engineering Site Investigation Report.
Do the plans/maps show the whole of the relevant area of study and do they show it in sufficient detail?	Yes	Refer to Squire and Partners drawings and Design and Access Statement.
Land Stability Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	Refer to Ellis + Moore BIA report; section 2.0.
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	Refer to Ellis + Moore BIA report; section 2.0.
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	Refer to Ellis + Moore BIA report; section 2.0.
Is a conceptual model presented?	Yes	Refer to Ground Engineering Site Investigation Report.

Item	Yes/No/NA	Comment
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	Yes	Refer to Ellis + Moore BIA report; section 3.0.
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	Yes	Refer to Ellis + Moore BIA report; section 3.0. It is recommended that evidence is provided to prove that the site will not be affected by the Lost Rivers of London.
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	Yes	Refer to Ellis + Moore BIA report; section 3.0.
Is factual ground investigation data provided?	Yes	Refer to Ground Engineering Site Investigation Report.
Is monitoring data presented?	Yes	Refer to Ground Engineering Site Investigation Report.
Is the ground investigation informed by a desk study?	Yes	It is recommended that evidence showing that this area is not at risk of unexploded ordnance from WWII is provided.
Has a site walkover been undertaken?	No	Unclear.
Is the presence/absence of adjacent or nearby basements confirmed?	Yes	Refer to Ground Engineering Site Investigation Report and Ellis + Moore BIA report.
Is a geotechnical interpretation presented?	Yes	Refer to Ground Engineering Site Investigation Report.
Does the geotechnical interpretation include information on retaining wall design?	Yes	Refer to Ground Engineering Site Investigation Report.
Are reports on other investigations required by screening and scoping presented?	No	-CCTV survey -Ground Movement Assessment -UXO desk study with Risk Assessment -Desk top study and review of "The Lost Rivers of London".

Item	Yes/No/NA	Comment
Are the baseline conditions described, based on the GSD?	Yes	Refer to Ellis + Moore BIA report.
Do the base line conditions consider adjacent or nearby basements?	Yes	Refer to Ground Engineering Site Investigation Report.
Is an Impact Assessment provided?	No	To be provided.
Are estimates of ground movement and structural impact presented?	No	To be provided.
Is the Impact Assessment appropriate to the matters identified by screen and scoping?	Yes	
Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme?	No	Mitigation dependent upon GMA but not provided.
Has the need for monitoring during construction been considered?	Yes	Refer to Ellis + Moore BIA report.
Have the residual (after mitigation) impacts been clearly identified?	No	Indicative construction and temporary works sequence needs to be provided.
Has the scheme demonstrated that the structural stability of the building and neighbouring properties and infrastructure will be maintained?	No	Indicative construction and temporary works sequence needs to be provided. Ground Movement Assessment also needed.
Has the scheme avoided adversely affecting drainage and run-off or causing other damage to the water environment?	Yes	Refer to Ellis + Moore BIA report.
Has the scheme avoided cumulative impacts upon structural stability or the water environment in the local area?	No	Indicative construction and temporary works sequence needs to be provided.
Does report state that damage to surrounding buildings will be no worse than Burland Category 2?	No	

Item	Yes/No/NA	Comment
Are non-technical summaries provided?	Yes	Provided in Ellis + Moore BIA report. Refer to Summary, Comments and Conclusions sections in Ground Engineering Site Investigation Report.

## 4.0 DISCUSSION

- 4.1. The Basement Impact Assessment (BIA) has been carried out by Ellis + Moore consulting engineers. The individuals concerned in its production have suitable qualifications in accordance with the requirements of CPG4.
- 4.2. The SI report and geotechnical interpretation have similarly been carried out by a well-known firm of engineering consultants, Ground Engineering Ltd. The author and reviewer are both chartered geotechnical engineers; as required by CPG4.
- 4.3. The LBC Instruction to proceed with the audit identified that the basement proposal did not involve, or was not in close proximity to, a listed building.
- 4.4. The proposed basement consists of a single storey construction formed by lowering the existing basement at the front of the development site by approximately 1.10 metres and excavating the rear of portion of the site to the same level by approximately 3.50 metres. An existing party/dividing wall between 51-52 Tottenham Road will be demolished (and removed where necessary) to facilitate for new open plan areas. The building's existing footprint will be extended horizontally and to the rear; to provide new office and residential space.
- 4.5. The BIA has confirmed that the proposed basement will be underlain by Made Ground. A window sample borehole was carried out at the rear of the site and sampling and laboratory testing have been undertaken to confirm the geology and soil parameters required for the design of the new foundations. The borehole information confirmed the presence of Made Ground to 6.0m below ground level (bgl) and Lynch Hill Gravel strata between 6.00 and 7.70mbgl. Probing indicated stiff London Clay to 8.30 mbgl.
- 4.6. It is likely that the ground water table will not be encountered during the basement foundation excavation. Groundwater might be present at approximately 6.00mbgl; which is below the proposed excavation level of 3.50m. Whilst the proposed formation level is well above the recorded water level, the contractor will be expected to consider suitable mitigation measures should water be encountered during the excavation and general basement works.
- 4.7. The Site Investigation (SI) suggests that the thickness of Made Ground beneath the site points towards the use of piled perimeter retaining walls but identifies these as problematical due to the relatively small width of the site and the dense nature of the underlying gravel and London Clay strata. It indicates that the existing adjacent properties have small 2.40m deep basements; however it does identify the extent of these on plan.
- 4.8. No ground movement analysis has been undertaken to report/assess on the potential damage to the adjoining properties. It is recommended that an assessment of likely heave movements

and measures to overcome these movements should be also provided. An outline construction sequence and methodology, including temporary works proposals, is also required.

- 4.9. Further investigation of the neighbouring structures' foundations should be carried out with trial pits along all property boundaries. Together with this, evidence that: a) this site is not at risk from unexploded ordnance from WWII, b) the site is not affected by the Lost Rivers of London and c) proposals will not affect the London Underground assets (Goodge Street underground station box) should be provided.
- 4.10. There is no structural proposal for the superstructure works that identifies the proposed internal supporting structure and works for the rear. It is noted that sacrificial piles, which will not interfere with the existing party wall foundations of 51-52 Tottenham Road, might be required as a temporary stability measure.
- 4.11. Proposals were provided for a movement monitoring strategy during excavation and construction, which are acceptable.
- 4.12. It is understood that the below ground drainage design will be developed should planning consent be granted. As per Ellis + Moore BIA report, it is expected that the proposals will not increase the extent of the existing impermeable hard-standing; and on this basis, it is accepted that the total amount of water entering into the sewer system as a result of the development will not increase.
- 4.13. It is accepted that there are no slope stability concerns regarding the proposed development and it is not in an area prone to flooding.
- 4.14. It is accepted that the development will not impact on the wider hydrogeology of the area and is not in an area subject to flooding. Whilst the proposed formation level is well above the recorded water level, the contractor will be expected to consider suitable mitigation measures should water be encountered during the excavations and general basement works.

## 5.0 CONCLUSIONS

- 5.1. The BIA and SI have been carried out by well-known firms of engineering consultants using individuals who possess the necessary and suitable qualifications.
- 5.2. The SI has confirmed that the proposed single storey basement will be underlain by Made Ground and its foundations will be probably piled to the London Clay Formation below. The ground investigation report suggests a piled retaining wall system might be required to form the new basement.
- 5.3. It is unlikely that the ground water table will not be encountered during the basement foundation excavation. However, the contractor will be expected to consider suitable mitigation measures should this occur.
- 5.4. Existing adjacent properties have small 2.40m deep basements; however the extent of these (on plan) has not been identified. Further investigation of the foundations of the surrounding properties is also recommended. A ground movement assessment and a report of likely heave movements and measures to overcome these movements should be provided.
- 5.5. There is no structural proposal for the superstructure works that identifies the proposed internal supporting structure and works for the rear. It is noted that sacrificial piles, which will not interfere with the existing party wall foundations of 51-52 Tottenham Road, might be required as a temporary stability measure.
- 5.6. It is recommended that evidence showing that: a) this site is not a risk from unexploded ordnance from WWII, b) the site is not be affected by the Lost Rivers of London and c) proposals will not affect existing London Underground assets (Goodge Street underground station box) should be also submitted prior to the commencement of any site works.
- 5.7. Proposals were provided for a movement monitoring strategy during excavation and construction; which are acceptable.
- 5.8. It is accepted that the surrounding slopes to the development site are stable.
- 5.9. It is accepted that the development will not impact on the wider hydrogeology of the area and is not in an area subject to flooding.



## Appendix 1: Resident's Consultation Comments

None pertinent to BIA

## Appendix 2: Audit Query Tracker

Audit Query Tracker

Query No	Subject	Query	Status	Date closed out
1	Stability	No site specific ground movement analysis has been undertaken to report/assess on the potential damage to the adjoining properties.	Open	
2	Stability	Indicative construction and temporary works sequence and structural calculations to be provided.	Open	
3	Stability	Further investigation of neighbouring foundations.	Open	
4	Stability	Confirmation of impacts relating to UXO, lost rivers and nearby station.	Open	

## Appendix 3: Supplementary Supporting Documents

None

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## London

Friars Bridge Court  
41- 45 Blackfriars Road  
London, SE1 8NZ

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

## Birmingham

Chantry House  
High Street, Coleshill  
Birmingham B46 3BP

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

## Surrey

Raven House  
29 Linkfield Lane, Redhill  
Surrey RH1 1SS

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

## Manchester

No. 1 Marsden Street  
Manchester  
M2 1HW

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

## Bristol

Wessex House  
Pixash Lane, Keynsham  
Bristol BS31 1TP

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

## UAE

Office 705, Warsan Building  
Hessa Street (East)  
PO Box 28064, Dubai, UAE

T: +971 4 453 4735  
E: [uae@campbellreith.com](mailto:uae@campbellreith.com)

Campbell Reith Hill LLP. Registered in England & Wales. Limited Liability Partnership No OC300082  
A list of Members is available at our Registered Office at: Friars Bridge Court, 41- 45 Blackfriars Road, London SE1 8NZ  
VAT No 974 8892 43