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Basement Impact Assessment Audit

28 Parliament Hill, London NW3 2TN

For
London Borough of Camden

Project No.
14291-11

Date
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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 28 Parliament Hill, London NW3 2TN (planning reference 2025/0524/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 authors' qualifications do not comply with CPG Basements.

1.5 It is proposed to construct a swimming pool at lower ground floor level. The maximum excavation depth is given as 2.35m. The basement retaining walls are to be formed using underpinning techniques. However, contradictory information is presented with respect to the extent of underpinning and it should be confirmed whether underpins will be formed in one or two stages.

1.6 It is accepted that the surrounding slopes to the development site are stable.

1.7 It is accepted the development will not impact the hydrogeology and hydrology of the wider area.

1.8 The allowable bearing pressures should correspond with the values specified by the geotechnical ground investigation report and should be used consistently in all calculations.

1.9 A Ground Movement Assessment (GMA) has been carried out but requires revision to consider the initial stages of construction. Contradictions exist between the structural loads used in the modelling and those provided in the construction information.

1.10 The BIA states that damage to neighbouring properties will not exceed Burland Category 1 (very slight), however justification to support this conclusion should be provided.

1.11 As described in Section 5, it cannot be confirmed that the BIA complies with the requirements of CPG: Basements and the Principles for Audit set out in the Basement Impact Assessment (BIA) Audit Service Terms of Reference & Audit Process. Queries and comments on the BIA are described in Section 4 and Appendix 2.

2.0 INTRODUCTION

2.1 CampbellReith was instructed by London Borough of Camden (LBC) in March 2025 to carry out a Category B audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 28 Parliament Hill, London NW3 2TN and Planning Reference 2025/0524/P. Separate applications for this scheme were withdrawn in August 2024 (2024/0452/P) and in February 2025 (2024/4314/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.
- Hampstead Neighbourhood Plan

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 "*Variation of Condition 2 (approved drawings) of permission 2023/0396/P granted on 30/08/23 for 'Amalgamation of two flats into one single family dwelling. Mansard roof extension with dormer windows, new part two storey rear extension and ground floor roof terrace with rear spiral stair. Alteration to rear elevation windows, new, entrance steps to front of property side access gate and new side access steps', namely to allow the formation of a swimming pool on the lower ground floor.*"

2.6 The Audit Instruction confirmed 28 Parliament Hill neither involved, nor was a neighbour to listed buildings.

2.7 CampbellReith accessed LBC's Planning Portal on 6th February 2025 and gained access to the following relevant documents for audit purposes:

- Basement Impact Assessment and Engineering Method Statement by Green Structural Engineers (GSE), ref. 20230153, rev. 4, dated 19th December 2024.
- Design & Access Statement by Neale & Norden Consultants, Letter format, dated 05 February 2024.
- Pool Technical Appraisal Notes on Original Underpinning 1997, Ref. 2024/4313P Rev.-, dated November 2024.
- Geotechnical Ground Investigation and Ground Movements Report by AVZ GeoEng Ltd, ref. 2166-23, Rev B, dated 20th September 2024.
- Consultation responses.

3.0 BASEMENT IMPACT ASSESSMENT AUDIT CHECK LIST

Item	Yes/No/NA	Comment
Are BIA Author(s) credentials satisfactory?	No	Evidence of engineering geology expertise is not provided.
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	Contradictory information on the extent of underpinning.
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	BIA Appendix B – desktop study.
Land Stability Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	No	BIA section 7. Screening does not acknowledge increase in differential depth of foundations to no. 30.
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	BIA section 8.
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	No	BIA section 6. Screening does not identify the 2002 flooding of Parliament Hill.
Is a conceptual model presented?	Yes	AVZ GeoEng Ltd report section 6.
Land Stability Scoping Provided? Is scoping consistent with screening outcome?	No	However, the BIA refers to the AVZ GeoEng Ltd report to address potential stability impacts identified in screening.

Item	Yes/No/NA	Comment
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	NA	No hydrogeology impacts identified.
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	Yes	
Is factual ground investigation data provided?	Yes	AVZ GeoEng Ltd report Appendices A & B.
Is monitoring data presented?	No	
Is the ground investigation informed by a desk study?	Yes	AVZ GeoEng Ltd section 2.
Has a site walkover been undertaken?	Yes	
Is the presence/absence of adjacent or nearby basements confirmed?	Yes	BIA section 10.
Is a geotechnical interpretation presented?	Yes	AVZ GeoEng Ltd section 6.
Does the geotechnical interpretation include information on retaining wall design?	Yes	BIA section 10.
Are reports on other investigations required by screening and scoping presented?	Yes	
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	BIA sections 13-18.

Item	Yes/No/NA	Comment
Are estimates of ground movement and structural impact presented?	Yes	AVZ GeoEng Ltd section 9.
Is the Impact Assessment appropriate to the matters identified by screening and scoping?	Yes	
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	AVZ GeoEng Ltd section 9.12.
Have the residual (after mitigation) impacts been clearly identified?	No	
Has the scheme demonstrated that the structural stability of the building and neighbouring properties and infrastructure will be maintained?	No	Ground bearing capacity of 285kPa should be confirmed.
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	
Does report state that damage to surrounding buildings will be no worse than Burland Category 1?	Yes	However, justification to support the damage category is requested.
Are non-technical summaries provided?	Yes	BIA executive summary.

4.0 DISCUSSION

4.1 The Basement Impact Assessment (BIA) has been carried out by engineering consultants Green Structural Engineering Ltd (GSE). The authors' qualifications do not comply with the requirements of CPG Basements. A Ground Movement Assessment has been undertaken by AVZ GeoEng Ltd (AVZ) with input by an individual holding a CEng (MICE) qualification.

4.2 The LBC Instruction to proceed with the audit identified that 28 Parliament Hill is in the Hampstead Conservation Area. It is not a listed building and is not a neighbour to listed buildings.

4.3 The Design Access Statement describes 28 Parliament Hill as a semi-detached Victorian 3-storey red brick house with an existing lower ground floor.

4.4 The proposed basement comprises the construction of a new swimming pool at lower ground floor level, within a rear extension to the lower ground floor, which has been approved under a different planning application (2023/0396/P granted in August 2023). This application is for a swimming pool, which is to have a maximum excavation depth of 2.35m below the lower ground floor level (BIA, Appendix C).

4.5 The BIA includes a Screening assessment that follows the flowchart questions provided in CPG Basements. The BIA states Slope Stability Scoping requirements are included within the AVZ report dated September 2024, including a Ground Movement Assessment (GMA). Part of the AVZ GMA was uploaded on the Camden Planning Portal for the 2025/0524/P application, whilst the full AVZ document was uploaded 2024 applications.

4.6 The BIA has been informed by a desk study and a site-specific borehole undertaken within the rear garden. The ground conditions encountered on-site comprise Made Ground to 0.50m below ground level (bgl) overlying the London Clay Formation to the maximum depth of investigation (10m bgl).

4.7 Groundwater was not encountered during the investigation. A standpipe was installed within the single borehole in the rear garden. Groundwater monitoring has not been undertaken.

4.8 The groundwater screening exercise did not identify any potential impacts to subterranean flows.

4.9 The BIA includes a review of the Camden Flood Risk Management Strategy and shows the site is not located in a Local Flood Risk Zone or Critical Drainage area.

4.10 The surface water aspects of the BIA indicate the site is not in the Hampstead Heath Surface Water Catchments and Drainage area (Figure 14 Arup) and it is at low risk of low risk of river and sea flooding, as well as surface water flooding. However, the BIA does not record that Parliament Hill flooded in 2002 and there was an EA groundwater flood incident upslope of site (Figure 4e). The BIA identifies internal flood risk due to backing up of the existing drainage system and recommends non-return valve installation as mitigation.

4.11 It is accepted that the amount of hardstanding will not change as a result of this basement application and there are no significant impacts to surface water and flooding.

4.12 Laboratory testing undertaken with the ground investigation indicates the London Clay Formation soils are of high-volume change potential. The AVZ report states foundations should be designed to cater for the high-volume change potential soils. No trees are to be removed as part of the development.

4.13 BIA Section 10 states that lower ground floors similar to the existing one at No.28 Parliament Hill are present at neighbouring properties. No basements are present at neighbouring properties.

4.14 The BIA states the property is located on a sloped site, but the planned activities are confined to a level portion of the property. It is accepted that the basement will not impact the slope stability of the area.

4.15 Section 4 of the BIA states the property was underpinned to 3m bgl in 1997. This has been confirmed by site investigation and the provision of underpin construction drawing extracts.

4.16 Section 10 of the GSE report outlines the structural design proposals involving the formation of reinforced concrete walls to form the swimming pool and piles to support the slab where the pool extends beyond the footprint of the original house at the rear. Contradictory information is provided as to the extent of underpinning and imposed loads.

4.17 Temporary propping will be used to maintain stability during construction. The BIA outlines the construction sequence in 15-stages, including the temporary works propping arrangements. Construction will be undertaken in a 'hit and miss' sequence. The BIA provides a series of drawings to illustrate the structural scheme and temporary works in Appendices C and E respectively.

4.18 The Structural Design Package provided in Appendix D of the GSE presents calculations for the party wall which show bearing pressures to be restricted to the safe bearing pressures advised by AVZ. However, calculations for retaining wall RW1 (LC1)-Perm and RW1 (LC2)-Perm calculations indicate a bearing pressure of 285kPa. This exceeds the bearing pressure recommended by AVZ and justification is requested.

4.19 A Ground Movement Assessment (GMA) has been undertaken by AVZ that incudes predicted ground movement for short-term conditions (underpin construction) and long-term conditions (completed development). Predictions of vertical movement were carried out using PDisp software. The loads modelled in PDisp do not capture the initial stage of construction and do not correspond with the loads presented in the structural design package (BIA appendix D).

4.20 Section 9.9 of the GMA states lateral ground movement can be limited to less than 5mm with temporary propping and control of good workmanship. Clarification of the number of underpin stages is required to confirm whether this is a reasonably conservative assumption.

4.21 Section 9.11 of the GMA discusses the impact of the ground movements induced by the basement development and states that the impacts to neighbouring structures are expected to be within Damage Category 1 (Very Slight). Justification to support the conclusion of the damage assessment should be provided such as strain estimations for the affected walls to inform damage category.

4.22 The ground movement report states conditions surveys and movement monitoring of the adjacent properties need to be undertaken although the precise monitoring strategy would be subject to agreements with the neighbouring property owners.

5.0 CONCLUSIONS

5.1 The BIA has been carried out by Green Structural Engineering Ltd (GSE). The authors' qualifications do not comply with the requirements of CPG Basements.

5.2 The BIA has confirmed that the proposed basement will be founded within the London Clay. The pool construction comprises reinforced concrete retaining walls constructed using a 'hit and miss' sequence with piles to support the swimming pool. Contradictory information is presented with respect to the extent of underpinning proposed.

5.3 It is accepted that there are no impacts to subterranean flows. Mitigation measures are provided to deal with localised perched water during construction.

5.4 The amount of hardstanding will not change. However, the screening should be reviewed to confirm the development will not impact the hydrology of the local and wider area.

5.5 The allowable bearing pressures should correspond with the values specified by the geotechnical ground investigation report and should be used consistently in all calculations.

5.6 A Ground Movement Assessment (GMA) has been carried out and the building damage assessment states that damage to neighbouring properties will not exceed Burland Category 1 (very slight). However further justification to support the ground movement and building damage assessment conclusion should be provided.

5.7 It is accepted that the surrounding slopes to the development site are stable.

5.8 It cannot be confirmed the BIA complies with the requirements of CPG: Basements and the Principles for Audit set out in the Basement Impact Assessment (BIA) Audit Service Terms of Reference & Audit Process, specifically:

- The person(s) undertaking the BIA do not hold qualifications relevant to the matters being considered, in accordance with the requirements set out in CPG: Basements.
- The conclusions have not been arrived at based on all necessary and reasonable evidence and considerations, in a reliable, transparent manner, by suitably qualified professionals, with sufficient attention paid to risk assessment and use of cautious or moderately conservative engineering values/estimates.
- The conclusions of the various documents/details comprising the BIA are not consistent with each other. The conclusions are not sufficiently robust and accurate to support the grant of planning permission in accordance with Policy A5 of the Local Plan, in respect of:
  - maintaining the structural stability of the building, the ground and any neighbouring properties to within limits set out in the policy/guidance;
  - avoiding cumulative impacts on ground and structural stability or the water environment in the local area.

5.9 Queries and comments on the BIA are described in Section 4 and Appendix 2.

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Appendix 1

Consultation Responses

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Residents' Consultation Comments

Surname	Address	Date	Issue(s) raised	Response
The Heath and Hampstead Society	-	Not provided	Clarity of drawings	Revised sections and drawings within the BIA have been considered in this audit
Hampstead CAAC	-	25th November 2024	Elevation drawings require more detail	Revised sections and drawings within the BIA have been considered in this audit
Multiple objections and comments (37 count)	-	February 2025	Slope stability Damage to neighbouring properties Potential flooding	Queries have been raised regarding the structural calculations and building damage assessment Hydrology and hydrogeology impact have been considered in this audit
SC Rankin	30 Parliament Hill, London NW3 2TN	Not provided	Shrink swell Damage to neighbouring properties	Paragraph 4.12 Queries have been raised regarding the structural calculations and building damage assessment

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Appendix 2

Audit Query Tracker

Audit Query Tracker

Query No	Subject	Query	Status	Date closed out
1	BIA	Author's qualifications do not comply with CPG basements.	Open – See 4.1	
2	Hydrology	Screening to be reviewed to determine that all potential risks and impacts identified	Open – See 4.10	
3	Construction method	Conflicting underpin information is presented and confirmation on the number of underpin stages/lifts is required.	Open – See 4.16	
4	Stability	The allowable bearing pressure used in structural calculations should be used consistently and align with the values recommended in the ground investigation report. Conflicting structural loads are noted between GSE design calculations and the GMA (BIA appendices D and G). BIA pages 121 to 158 are missing.	Open – See 4.18	
5	Stability	Justification to support the building damage assessment is requested and GMA must model all construction stages.	Open – See 4.21	

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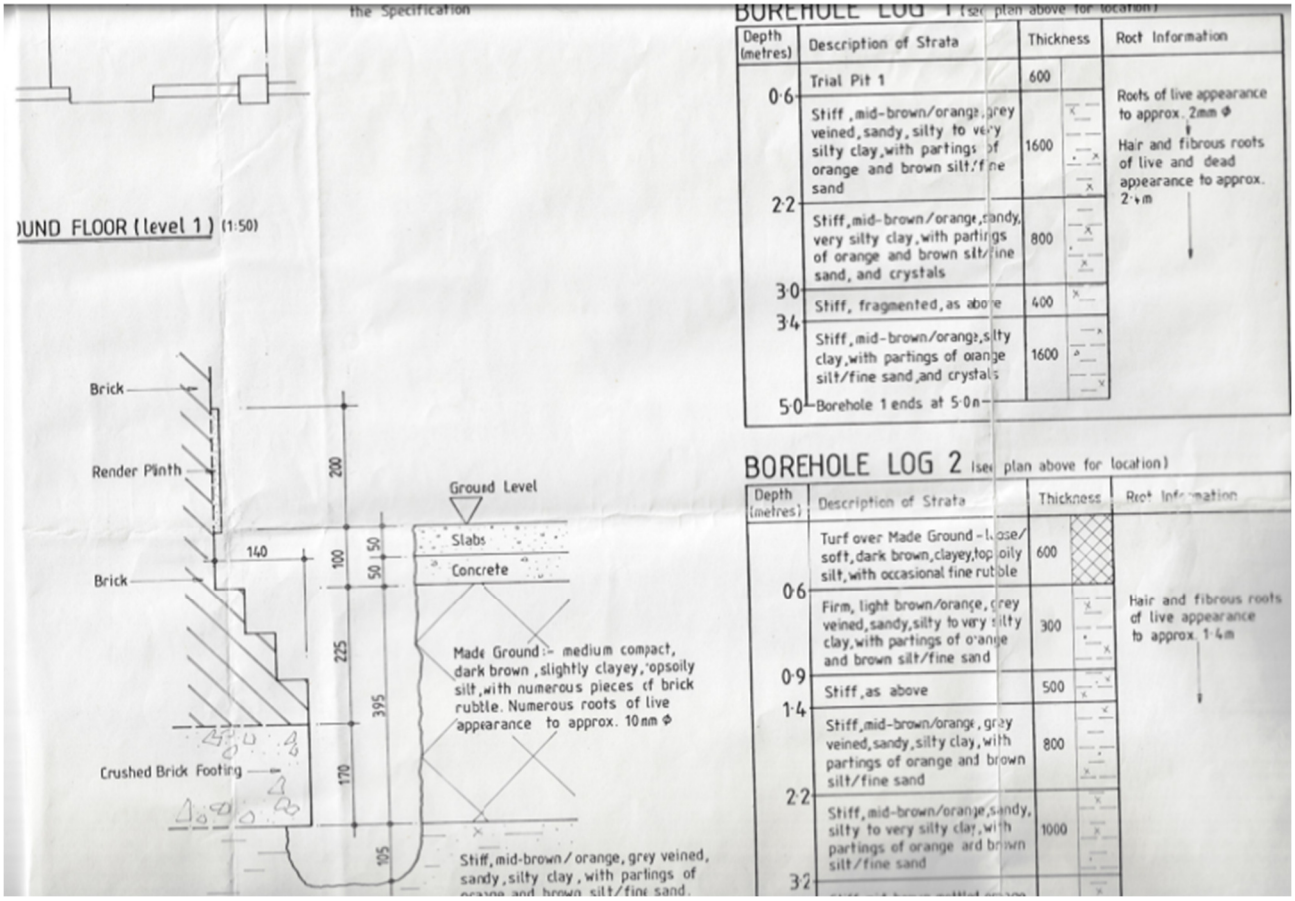
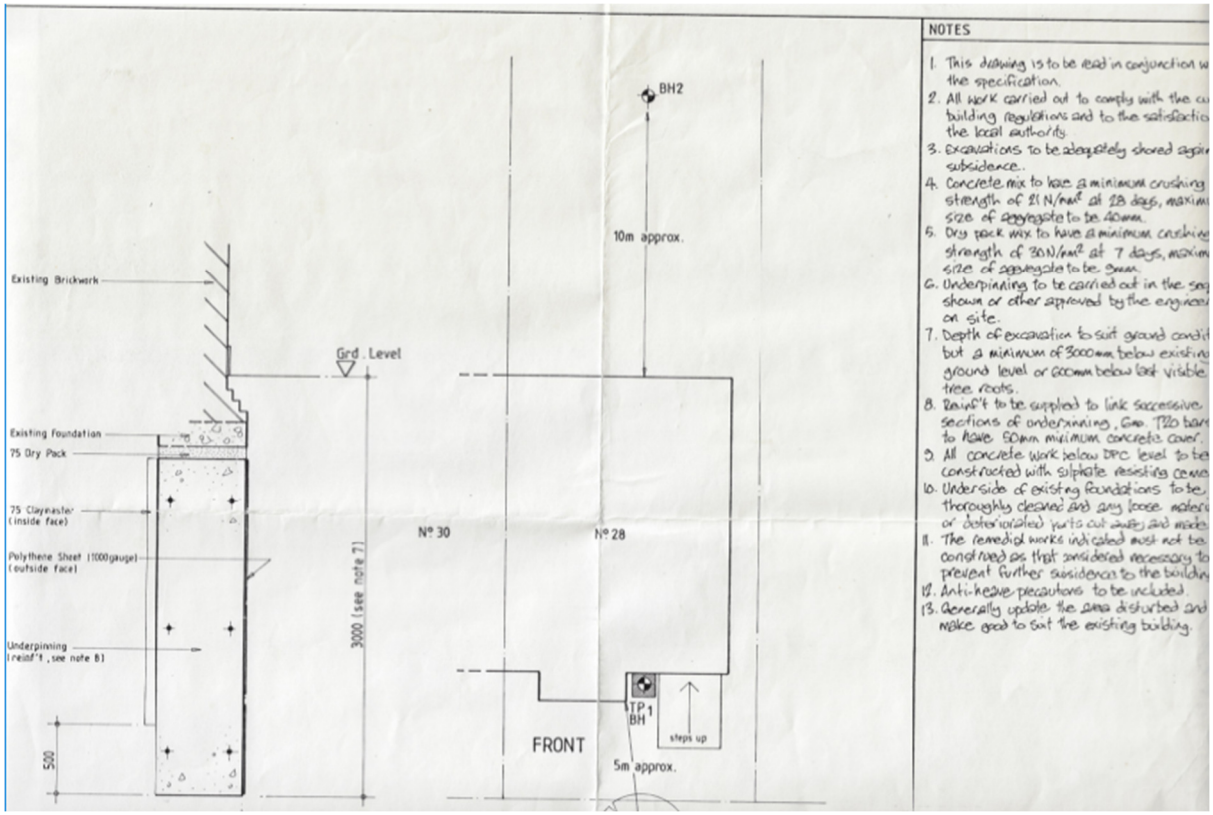
Appendix 3

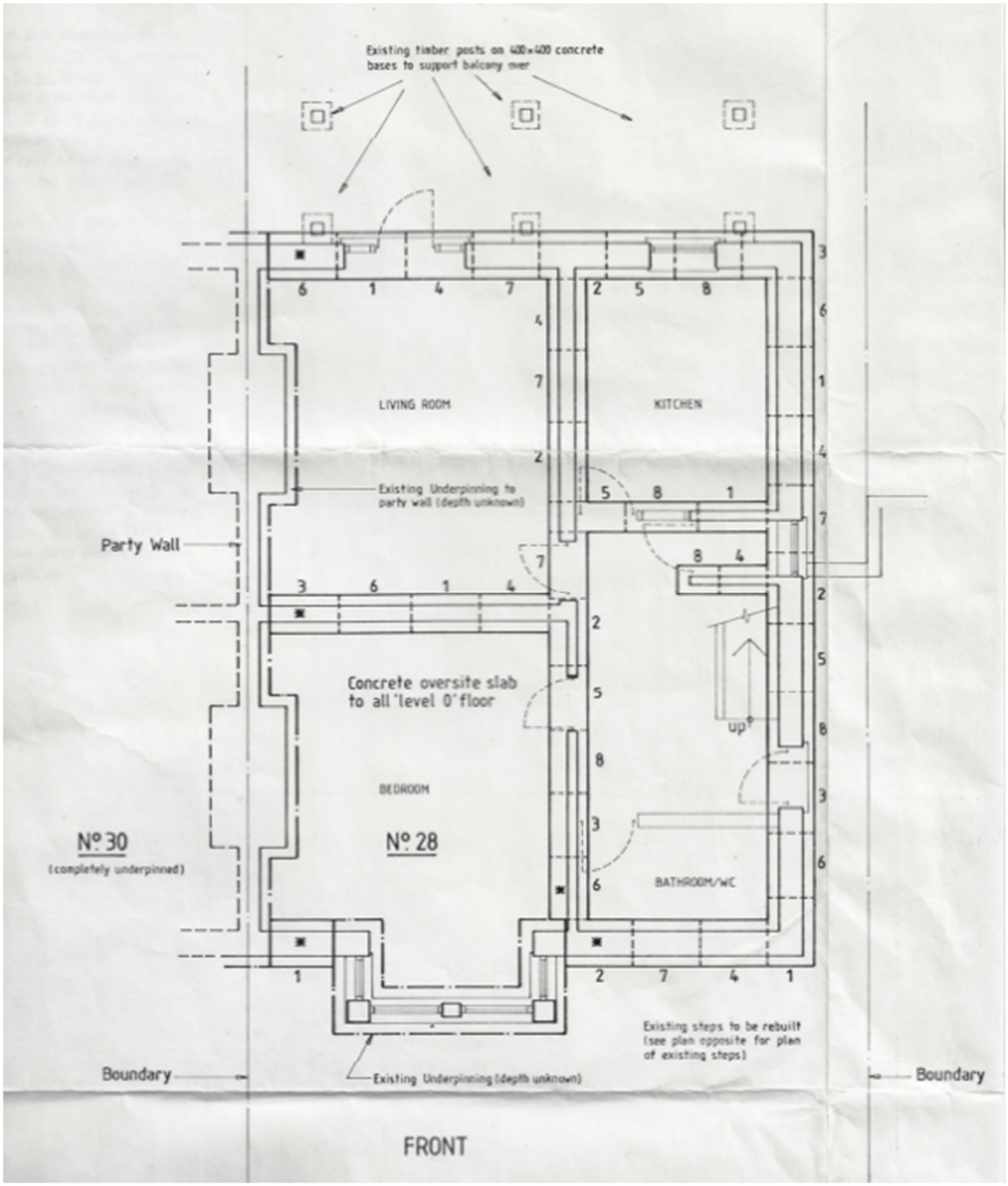
Supplementary Supporting Documents

Notes on Original Underpinning 1997



Original Bore Holes information





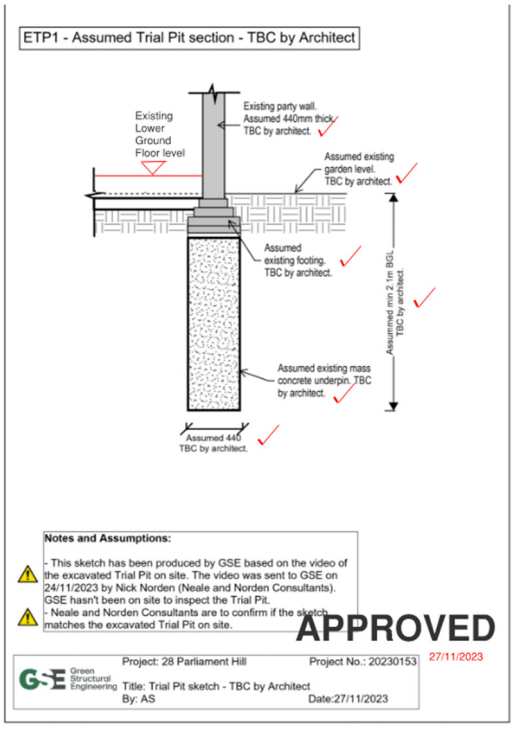
Underpinning Plan carried out Circa 1997-1999 part of original drawings

A trial pit was dug here in Nov 2023

Video sent to Engineer at GRE

Recent trial pit Underpin exposure of 1999 whole building underpin 9th Nov 2023.

Submission by GRE



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