JANUARY 2014

ads consultancy

31 PERCY STREET, LONDON, W1T 2DD

STRUCTURAL ENGINEER'S REPORT: BASEMENT IMPACT ASSESSMENT

The Institution of Structural Engineers

13104/R_001_A/SN/ASA

1.0 Introduction

We, *ads consultancy*, were requested by *GGC Design Ltd* to compile a structural report consisting of a *Basement Impact Assessment (BIA)* as outlined in the *Camden Planning Guidance CPG4: Basements and Lightwells* and associated demolition and construction method statements to supplement the planning application for the proposed development at 31 Percy Street, London, W1T 2DD. We are Chartered Engineers (Engineering Council UK) and Members of both the Institution of Structural Engineers and the Institution of Engineering and Technology. We have considerable experience in the design and construction of retro-fitted basements in London and have worked on several prestigious basement developments with the UK's top basement Contractors as both Design and Build Engineers and Project Engineers for the Client

2.0 Site Description

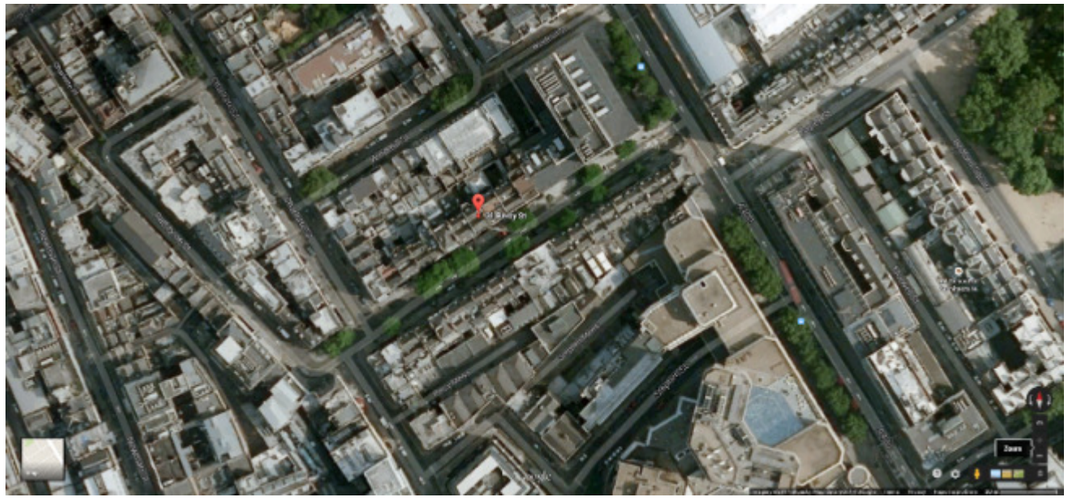
The site is situated on 31 Percy Street, in an area which consists of both commercial and residential premises. The site is circa 500m North-North-West of Tottenham Court Road Underground Station and circa 300m South of Goodge Street Underground Station.

The property is a Victorian mid-terraced four storey building consisting of a basement, with ground floor, first floor, second floor and third floor as well as an extension at the rear (ground floor level).

The building is constructed in solid London stock masonry load bearing external walls, with internal load bearing timber stud walls and suspended timber floor joists and timber pitched roof rafters. Buildings of this type and age are typically built off corbelled brick foundations, however at this stage this is unknown and will need to be properly assessed during the site investigation exploratory works.

3.0 Scheme Proposal

The scheme consists of the demolition of the existing lower ground floor rear extension and constructing a new larger extension at a slightly lower level. The new extension will border with both 30 Percy Street to the right and with 9 & 10 Windmill Street to the rear. The new lower ground floor excavated void will be formed via mass concrete underpins to the existing perimeter party walls with a new reinforced concrete ground bearing slab. The underpins will be constructed in circa 1.0m sections and in a staggered sequence similar to that of typical underpinning. This would negate the need for major temporary works to the existing building and the existing solid masonry party walls. The underpinned retaining walls below the party walls will be detailed in such a way as to not obstruct the adjoining neighbouring buildings from creating basements below their properties in the future should that be required (refer to the attached drawings and sketches in the Drawing Appendix at the rear of this report).



Aerial view of 31 Percy Street, taken from Google Maps

Existing rear elevation of 31 Percy Street, with existing extension to the left

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4.0 Site Investigation

No site investigation has been carried out to the site to date.

A detailed site investigation will be carried out prior to works commencing on site to determine the structural characteristics of the soil along with determining whether any contaminants are present in the soil.

From consultation with the British Geological Survey (BGS) maps, it appears that the site is located over the Lynch Hill Gravel formation. (http://mapapps.bgs.ac.uk/geologyofbritain/home.html)

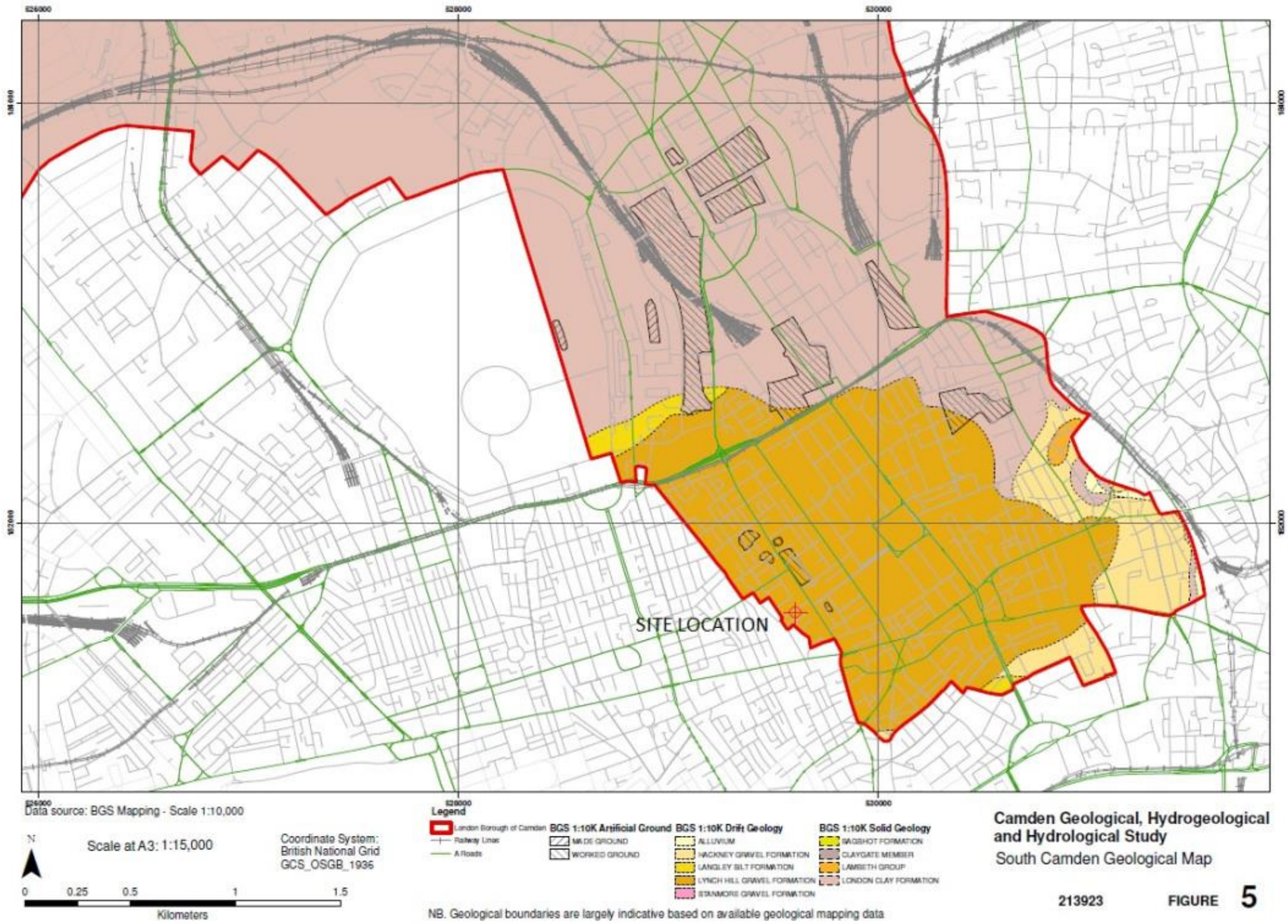
In accordance with the Arup report "*Camden geological, hydrogeological and hydrological study: Guidance for subterranean development*", Issue 1, November 2010, Appendix E, a desktop study screening has been carried out to determine the proposed development's impact on:

a) Surface flow and flooding;
b) Subterranean (groundwater) flow; and
c) Slope Stability, respectively:

4.1 Surface flow and flooding

"Question 1: Is the site within the catchment of the pond chains on Hampstead Heath?"

No, the site falls within the Secondary Aquifer. (see attached adjacent map)



British Geological Survey (BGS) Maps of North Camden

(extract from Arup report Camden geological, hydrogeological and hydrological study: Guidance for subterranean development)

"Question 2: As part of the proposed site drainage, will surface water flows (e.g. volume of rainfall and peak run-off) be materially changed from the existing route?"

No, the proposed site drainage will be reconnected into the existing outfall drain and hence follow the same route as existing.

"Question 3: Will the proposed basement development result in a change in the proportion of hard surfaced / paved external areas?"

No, proportion of hard surfaced or paved external areas will remain the same as existing.

"Question 4: Will the proposed basement result in changes to the profile of the inflows (instantaneous and long-term) of surface water being received by adjacent properties or downstream watercourses?"

No, the surface water collected by the proposed development (during construction and long-term) will not affect the profile of surface water inflow received by adjacent properties or downstream watercourses. The surface water will remain within the footprint of the property and discharge via the existing outfall drain mentioned in question 3 above and not be able to discharge to any adjoining properties.

"Question 5: Will the proposed basement result in changes to the quality of surface water being received by adjacent properties or downstream watercourses?"

No, see question 4 above.

"Question 6: Is the site in an area known to be at risk from surface water flooding, such as South Hampstead, West Hampstead, Gospel Oak and King's Cross, or is it at risk from flooding, for example because the proposed basement is below the static water level of a nearby surface water feature?"

No, the site is not in an area known to be at risk of surface water flooding or below the water level of any nearby water features (see map below)

4.2 Subterranean flow

"Question 1a: Is the site located directly above an aquifer?"

Yes, the site falls within the Secondary Aquifer. The detailed site investigation will establish the level of the water table within the Secondary Aquifer. (see attached map on sheet 3)

"Question 1b: Will the proposed basement extend beneath the water table surface?"

From review of historic site investigation records of the immediate surrounding area, it does not appear that the proposed basement will extend below the water table surface. (http://mapapps2.bgs.ac.uk/geoindex/home.html)

"Question 2: Is the site within 100m of a watercourse, well (used/disused) or potential spring line?"

No.

"Question 3: Is the site within the catchment of the pond chains on Hampstead Heath?"

No.

"Question 4: Will the proposed basement development result in a change in the proportion of hard surfaced / paved areas?"

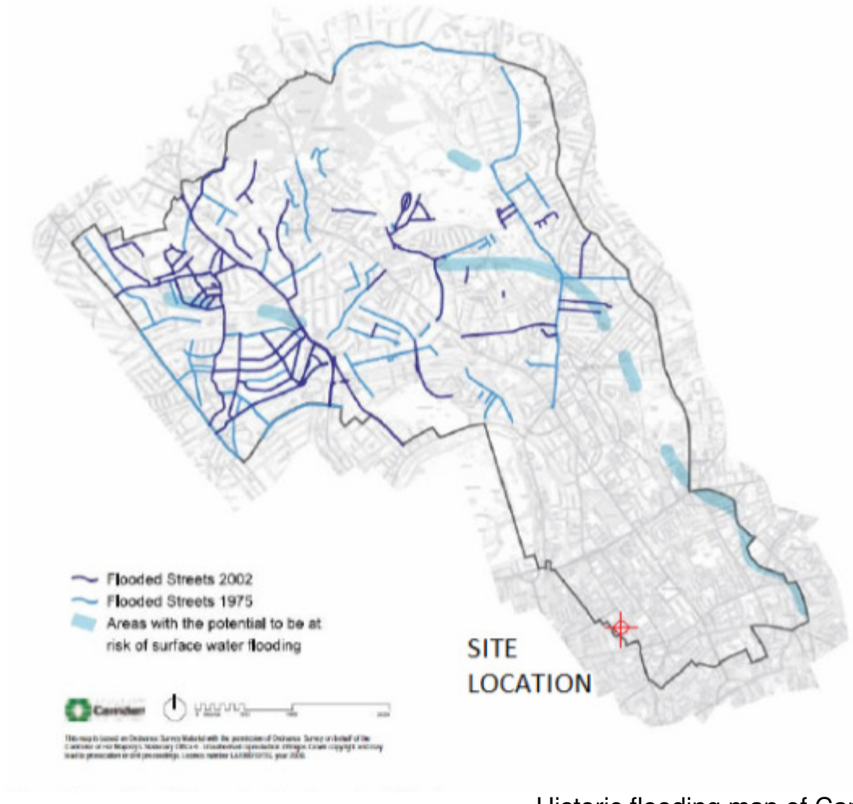
No, proportion of hard surfaced or paved external areas will remain proportionately the same.

"Question 5: As part of the site drainage, will more surface water (e.g. rainfall and run-off) than at present be discharged to the ground (e.g. via soakaways and/or SUDS)?"

No, no surface water will be discharged into the ground via soakaways or SUDS.

"Question 6: Is the lowest point of the proposed excavation (allowing for any drainage and foundation space under the basement floor) close to, or lower than, the mean water level in any local pond (not just the pond chains on Hampstead Heath) or spring line."

No



Historic flooding map of Camden
(extract from Arup report Camden geological, hydrogeological and hydrological study: Guidance for subterranean development)

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4.3 Slope Stability

"Question 1: Does the existing site include slopes, natural or manmade, greater than 7°? (approximately 1 in 8)"

No, the existing site is relatively level.

"Question 2: Will the proposed re-profiling of landscaping at site change slopes at the property boundary to more than 7°? (approximately 1 in 8)"

No, the proposed site is relatively level.

"Question 3: Does the development neighbour land, including railway cuttings and the like, with a slope greater than 7°? (approximately 1 in 8)"

No, the existing adjoining properties, etc are relatively level.

"Question 4: Is the site within a wider hillside setting in which the general slope is greater than 7°? (approximately 1 in 8)"

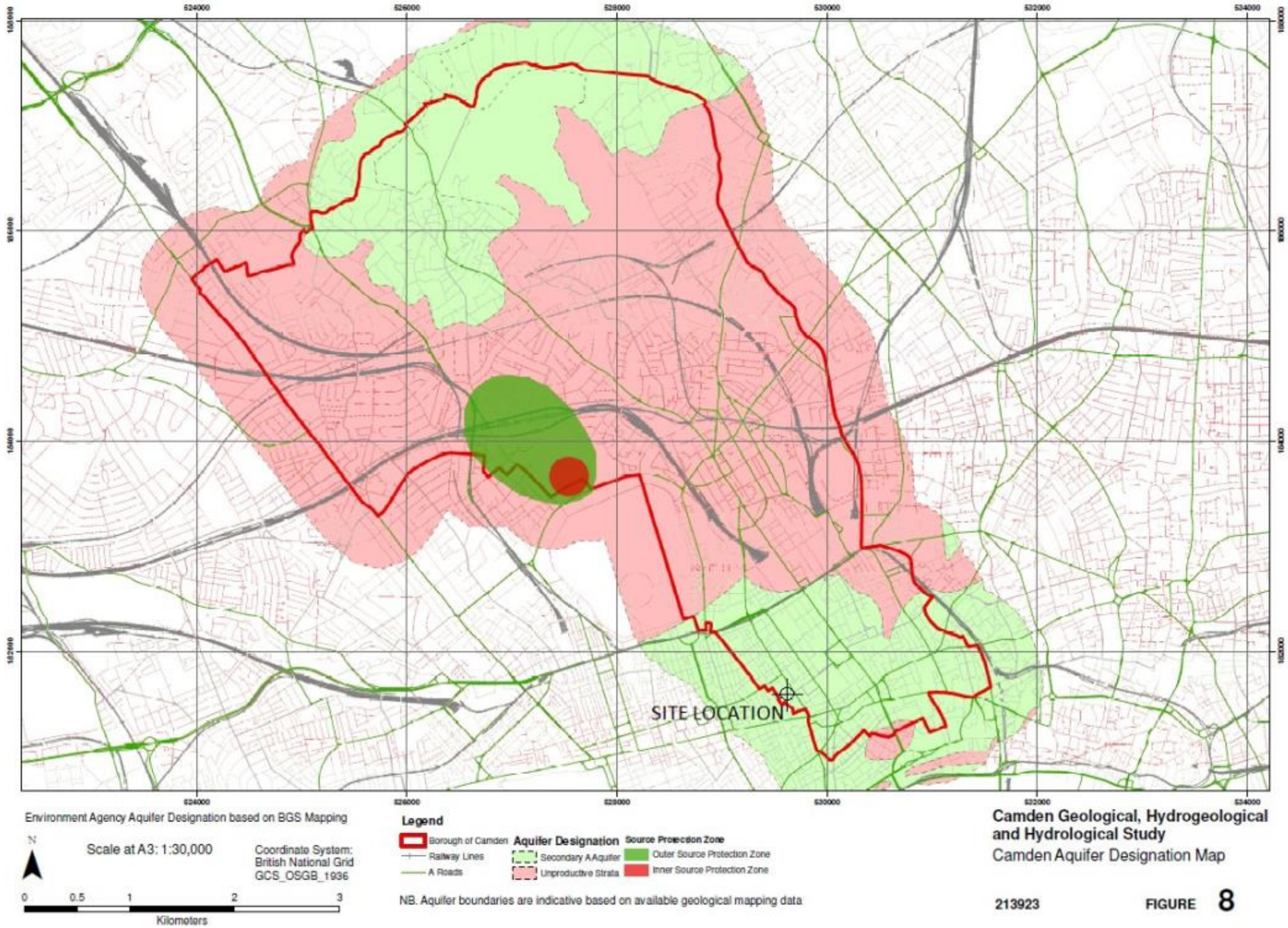
No, the existing adjoining wider landscape, etc is relatively level.

"Question 5: Is the London Clay the shallowest strata at the site?"

This is unknown at this stage; the detailed site investigation will determine this.

"Question 6: Will any tree/s be felled as part of the proposed development and/or are any works proposed within any tree protection zones where trees are to be retained?

No.



British Geological Survey (BGS) and Environment Agency Aquifer Designation Maps of Camden

(extract from Arup report Camden geological, hydrogeological and hydrological study: Guidance for subterranean development)

"Question 7: Is there a history of seasonal shrink-swell subsidence in the local area, and/or evidence of such effects at the site?"

No, there are no nearby trees.

"Question 8: Is the site within 100m of a watercourse or a potential spring line?"

No.

"Question 9: Is the site within an area of previously worked ground?"

No, the site is not within an area of previously worked ground. This will be accurately determined after the detailed Site investigation has been carried out.

"Question 10: Is the site within an aquifer? If so, will the proposed basement extend beneath the water table such that dewatering may be required during construction?"

Yes, the site falls within the Secondary Aquifer. The detailed site investigation will establish the level of the water table within the Secondary Aquifer (see attached map on sheet 3).

"Question 11: Is the site within 50m of the Hampstead Heath ponds?"

No.

"Question 12: Is the site within 5m of a highway or pedestrian right of way?"

No.

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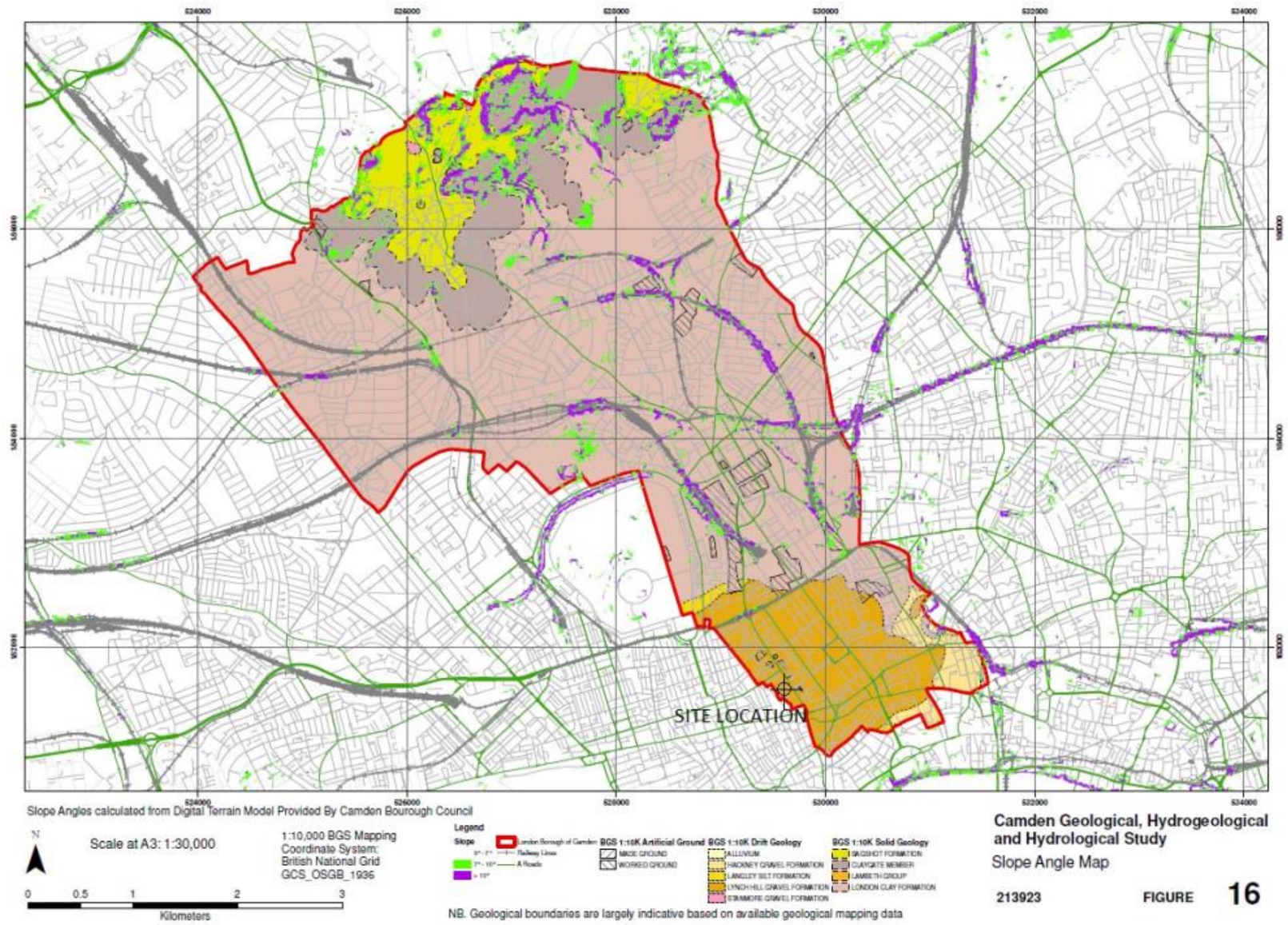
"Question 13: Will the proposed basement significantly increase the differential depth of foundations relative to neighbouring properties?"

No, it will only marginally increase the differential depth of foundations to neighbouring properties.

"Question 14: Is the site over (or within the exclusion zone of) any tunnels, e.g. railway lines?"

No.



British Geological Survey (BGS) Slope Angle Maps of Camden

(extract from Arup report Camden geological, hydrogeological and hydrological study: Guidance for subterranean development)

5.0 Construction Methodology

1) Once the existing extension structure has been sufficiently demolished and the site is made safe, underpinning of the existing perimeter masonry walls will commence.

2) Provide temporary propping and associated bracing to all existing perimeter walls to prevent any potential movement.

3) Commence mass concrete underpinning of existing surrounding walls to the property as indicated on the proposed ground floor plan. Sequencing of underpinning is to be agreed with the Contractor and Structural Engineer prior to works commencing. Contractor must ensure that adequate temporary lateral supports are installed during construction sequence. This is to provide lateral stability to the new mass concrete underpins and the adjoining structures.

4) After all the underpinning works have been completed commence on the excavation of the remaining central section of the new extension, ensuring at all times that adequate lateral supports have been installed and maintained at all stages. This is in order to maintain the lateral stability of the newly underpinned surrounding walls.

5) Once the excavations have been completed complete construction of the new reinforced concrete ground bearing slab as indicated on the proposed drawings.

6) Remove all lateral supports in the new basement ensuring at all times that Health and Safety Procedures have been adhered to.

7) In the event that minor ingress of ground water occurs during the execution of the works this will be dealt with by the use of temporary sump pumps. In the permanent condition waterproofing to the new extension will be based on the Architects proposed details.

6.0 Conclusion

1) As the proposed works only require the lowering of the existing ground level by circa 700mm we do not anticipate there would be any negative impact on surface water flow, subterranean flow and slope stability. Also if works are carried out in strict accordance with our detailed structural designs and drawings etc. there will be no negative impact on any of the adjoining properties' structures.

Examples of Temporary Support to Underpins and Construction of raft slab

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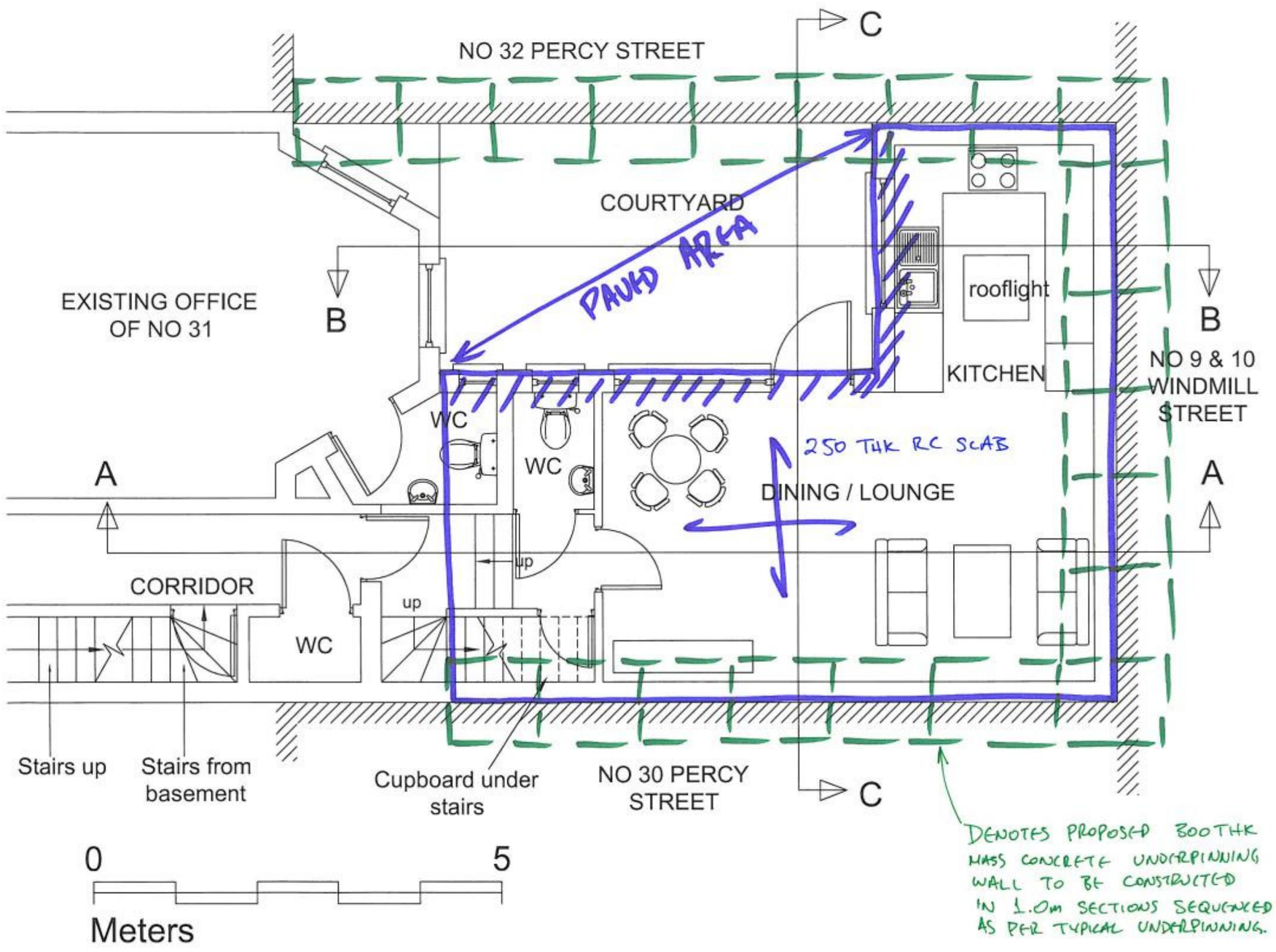
Drawing Appendix



NOTES

The Contractor must verify all dimensions at the site before setting out, commencing work, or making any shop drawings. Any discrepancies must be reported to the Contract Administrator before proceeding.

DO NOT SCALE FROM THIS DRAWING

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MARKED IN OUR COMM...
09 JAN 2014
Signed SN
13104/Sk01

Rev	Revision notes	Initials	Date
-	-	-	-

GGC DESIGN LTD
CHARTERED ARCHITECT
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g.g.calton11@btinternet.com

PROJECT
31 PERCY STREET, CAMDEN
NEW 2-BED TWO STOREY APARTMENT

DESCRIPTION
PROPOSED GROUND FLOOR PLAN

SCALE	DRAWN BY	CHECKED BY	DATE
1:50 @ A3	SAM, GC	GC	24/11/12

DRAWING No
31 PS / P / 05

REV

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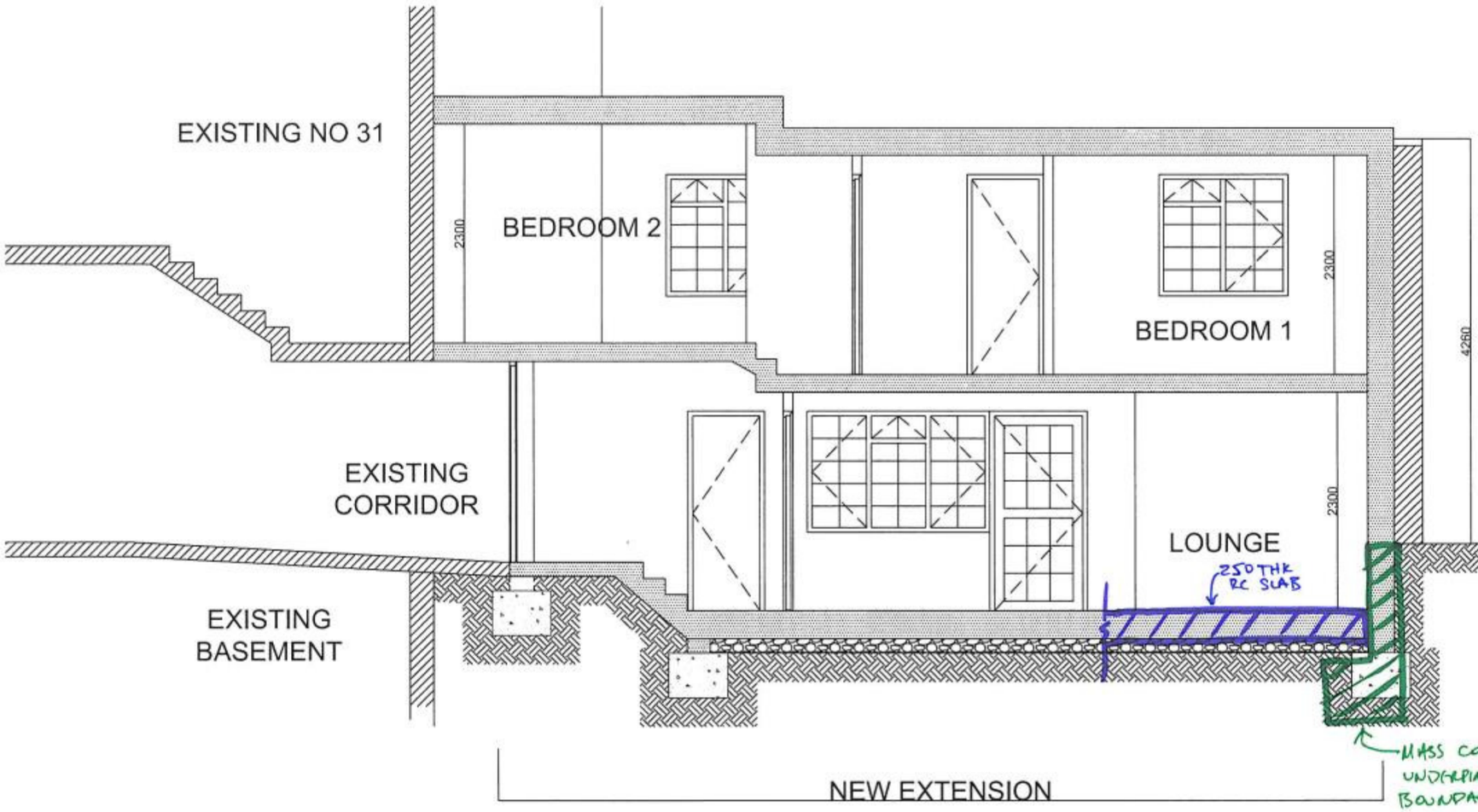

SECTION AA

0 5

Meters

NOTES

The Contractor must verify all dimensions on the site before setting out, commencing work or making any shop drawings. Any discrepancies must be reported to the Contract Administrator before proceeding.

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PROJECT
31 PERCY STREET, CAMDEN
NEW 2-BED TWO STOREY FLAT DEVELOPMENT

DESCRIPTION
PROPOSED SECTION A-A

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31 PS / P / 08

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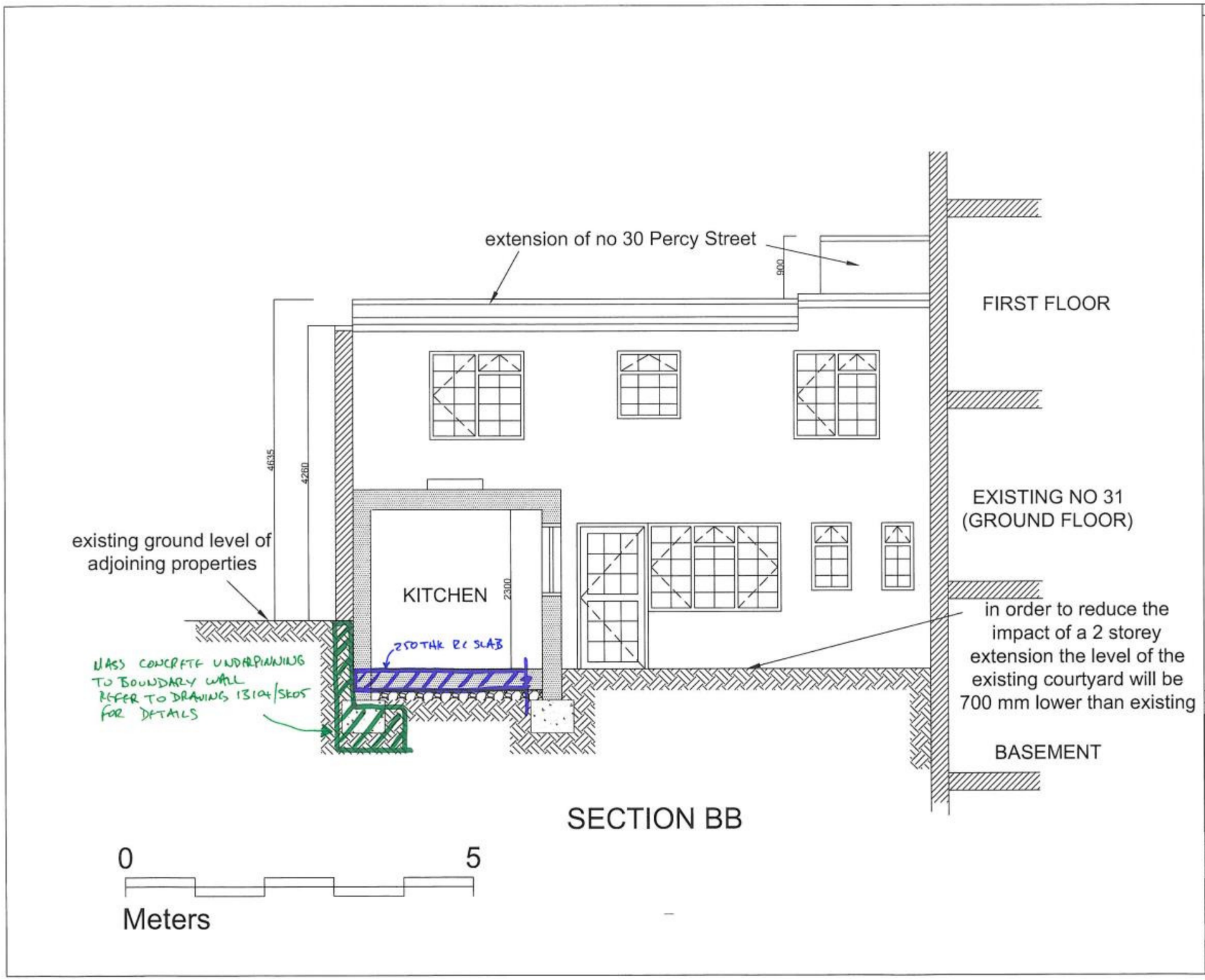

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PROJECT
31 PERCY STREET, CAMDEN
NEW 2-BED TWO STOREY APARTMENT

DESCRIPTION
PROPOSED SECTION B-B

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31 PS / P / 09

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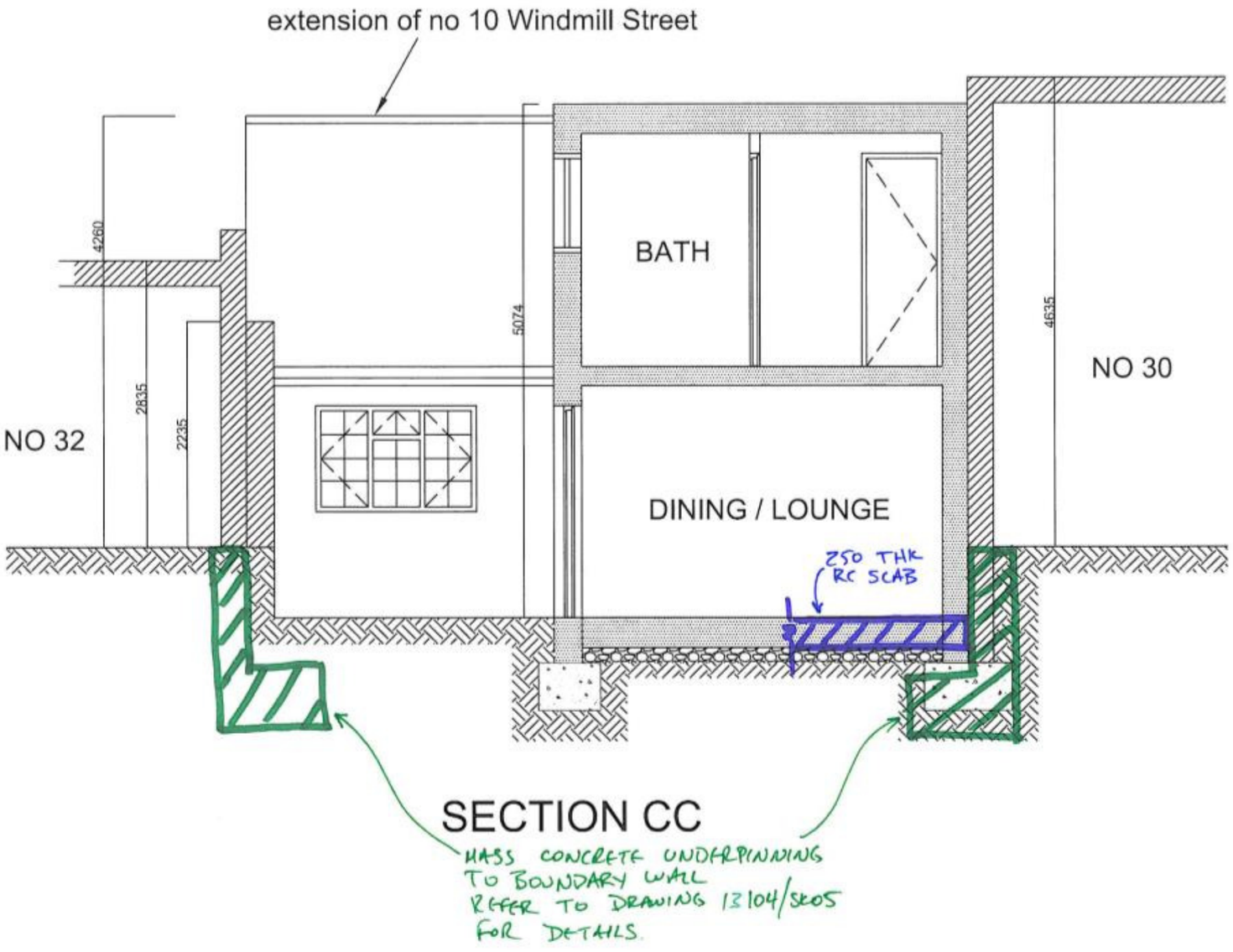

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13104/SK04

Rev	Revision notes	Initials	Date
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PROJECT
31 PERCY STREET, CAMDEN
NEW 2-BED TWO STOREY APARTMENT

DESCRIPTION
PROPOSED SECTION C-C

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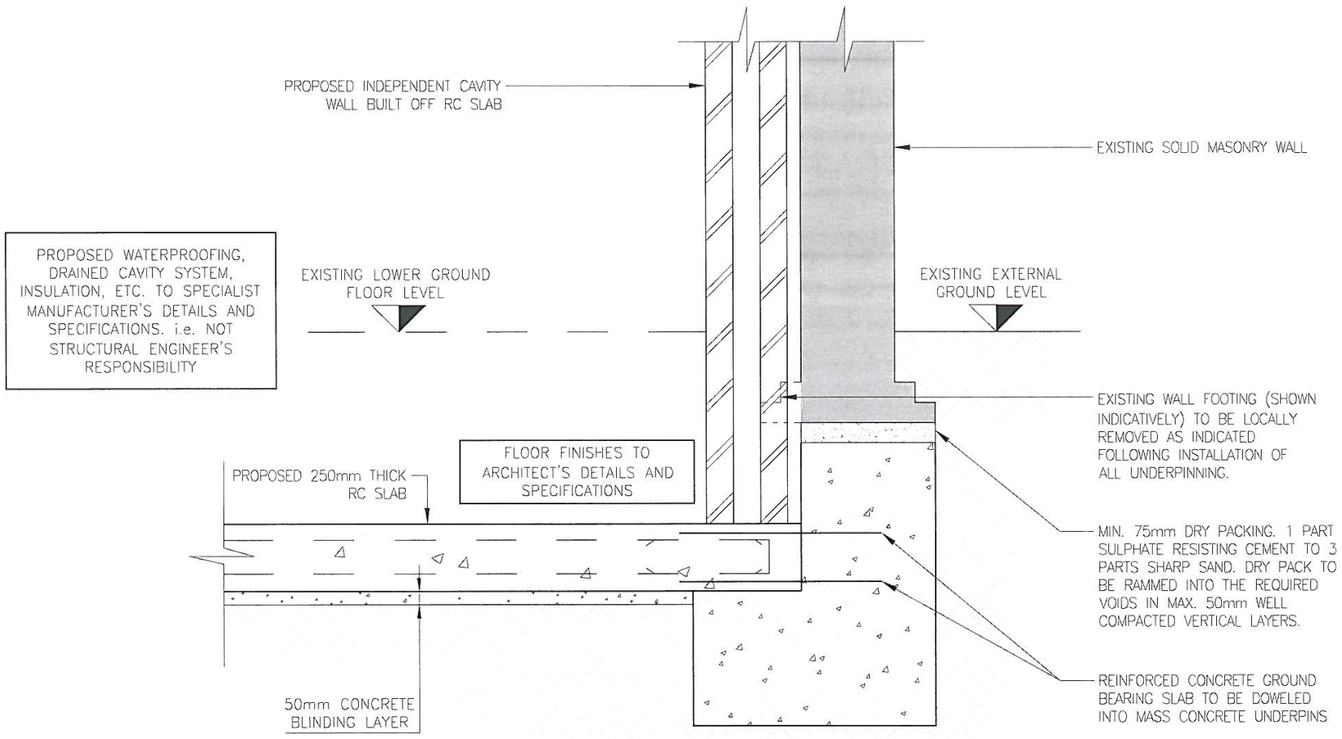
09 JAN 2014
Signed SN

13104/SK05



TYPICAL MASS CONCRETE UNDERPIN WALL DETAIL

SCALE 1:20 @ A3

Revision	Description	By	Appd	Date

Drawing Status: PRELIMINARY

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Client: PATH PROPERTIES

Architect: GGC DESIGN LTD

Project: 31 PERCY STREET
LONDON W1T 2DD

Title: TYPICAL UNDERPIN WALL DETAIL

Drawn: SN	Chkd/Appd: ASA	Date: JAN '14
Cad File: 13104_CURRENT.dwg		Scale: 1:20 @ A3
Drawing Number: 13104/SK05		Revision: P1