102 Camden Mews, Camden, London

Basement Impact Assessment (Screening and Scoping)

On behalf of: **City and County Group Ltd**

Project Ref: 32472/3501 | Document: R001/rev0| October 2014

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Document Control Sheet

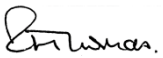
Project: **102 Camden Mews, Camden, London**

Project Ref: **32472/3501**

Document: **Basement Impact Assessment (Screening and Scoping)**

Doc Ref: **R001/rev0**

Date: **October 2014**

	Name	Position	Signature	Date
Prepared by:	Arie Zamler	Senior Engineer		24/10/2014
Approved and Reviewed by:	Richard Thomas	LLP Director		24/10/2014
For and on behalf of Peter Brett Associates LLP				

Issue	Date	Description	Prepared	Reviewed	Approved
rev0	Oct 2014	Issued final to Client	az	rht	rht

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Contents

Guidance Notes

Figures

Appendices

1.0 Introduction

Peter Brett Associates LLP, PBA, have been retained by City and County Group Limited, the Client, to undertake a screening and scoping study for the Basement Impact Assessment (BIA) of the proposed redevelopment of a residential property located at 102 Camden Mews, Camden, London, NW1 9AG.

The report has been carried out to review the potential impacts that the proposed basement has on the stability, the hydrogeology and the hydrology in the vicinity of the property. It is understood that a planning application (Application Ref: 2014/5589/P) for the demolition of the existing dwelling and garages and the construction of a basement and a two storey dwelling was submitted to the London Borough of Camden (LBC). LBC has requested that a Basement Impact Assessment (BIA) be carried out to support the planning application for the proposed dwelling and basement.

The assessment has been carried out generally in accordance with the Camden Borough Council Camden Planning Guidance CPG4 – Basements and Lightwells (LBC, 2013) that provides guidance on basement development.

The methodology used in the basement impact assessment includes a phased approach to assess potential impacts to neighbouring properties and water environment. The methodology used for this report follows the guidance given in CPG4 and in the Guidance for subterranean development (Arup, 2010) which has five stages as follows:

- **Stage 1 - Screening** Identify whether there are matters of concern which should be investigated using a Basement Impact Assessment.
- **Stage 2 - Scoping** Produces a statement that defines further the matters of concern identified in the screening stage.
- **Stage 3 - Site investigation and Study** – Is undertaken to establish the baseline ground conditions.
- **Stage 4 - Impact Assessment** Is undertaken to determine the impacts from the proposed basement and any mitigation measures proposed.
- **Stage 5 - Review and Decision Making** Review is carried out by Camden Council in respect of the BIA and the residual impacts of the proposed basement.

The baseline conditions at the site are presented in **Sections 2.0** and **3.0**. Screening and Scoping, if required are presented in **Section 4.0**.

The guidance requires the proposed development to mitigate against any potential effects of ground and surface water flooding, and groundwater, if required, to ensure that the proposed basement does not impact neighbouring property or the water environment by way of changing the groundwater or surface water drainage regimes. The assessment in the report has been undertaken using information available in the public domain with regard to hydrogeology, stability and hydrological settings of the Site.

A stability assessment is carried out as part of this report to consider the impact that the proposed basement may have on the stability in the area of the property and to estimate the risk of large scale ground instability such as landslides etc. as a result of the proposed development.

The report includes a hydrogeological assessment on the likely impact of the proposed works on the local groundwater regime. The assessment was carried out using readily available published information and ground investigation data from similar sites in the same geological settings.

Guidance on the context of this report and any general limitations or constraints on its content and usage are given in a guidance note included after the text of this report

2.0 The Site

2.1 Site Location

The Site is centred on Ordnance Survey (OS) National Grid Reference TQ 298 848 at 102 Camden Mews NW1 9AG in the eastern part of London Borough of Camden as shown on **Figure 1**, Site Location Plan.

2.2 Site Description

Historically the Site was undeveloped until the 1870s when terraced housing was constructed along Camden Mews. The Site and its immediate surroundings have remained in residential use since.

The Site is largely rectangular in shape with overall plan dimensions of about 10 m by 8 m. The Site is occupied by a two storey dwelling at the north end of the Site and by two garages at the southern end. The Site fronts on to Camden Mews to the northwest, bounded to the northeast and southwest with terraced properties, and communal gardens to the southeast.

There are two trees and a hedge within the communal gardens situated in the immediate vicinity of the Site. The Arboricultural Report submitted to support the planning application for the proposed development concluded that pruning is not required for any of the retained trees or shrubs in the vicinity of the Site. Furthermore the report concluded that the proposed dwelling is situated outside of the assessed Root Protection Area (RPA) of all of the trees in the vicinity of the Site (GHAT, 2012).

The Site is situated on ground that gently slopes to the southwest towards the River Fleet (now culverted) about 0.6 km southeast of the Site. The ground level at the junction of York Way and Cliff Road situated about 80 m to the northeast of the site is about 50 m Ordnance Datum (OD) falling to about 45 m OD at the junction of Camden Road with Torriano Avenue, about 110 m south of the Site. The ground level in the vicinity of the Site is about 47 m OD.

The overall slope angle of the ground assessed using the topographical contours on the OS map is estimated to be about 2 degrees to the horizontal. According to the slope angle map included in the Guidance for subterranean development for Camden the Site is situated in an area where the slope angle is less than 7 degrees (Arup, 2010).

2.3 Proposed Development

The proposed development comprises the demolition of the existing dwelling and garages, and the construction of a two/three storey dwelling and single storey basement across the footprint of the existing property and garages.

Plans and sections provided by the Architect Dols Wong that show the layout of the existing and the proposed dwelling and basement are included in **Appendix 1**.

3.0 Geology, Hydrogeology and Hydrology

3.1 Geology

3.1.1 Published Geology

The 1:50 000 scale geological map of the area (BGS, 2006) and the geological memoir (BGS, 2004) indicate that the Site lies directly on the London Clay Formation underlain by the Lambeth Group (formerly denoted the Woolwich and Reading Beds) and Thanet Sand Formation with the Seaford and Newhaven Chalk Formations (formerly denoted the Upper Chalk) present at depth.

It is expected that the natural deposits are overlain by Made Ground associated with the former and current developments of the Site.

3.1.2 Historical Borehole Records

The British Geological Survey (BGS) archives contain records of a number of boreholes in the vicinity of the property. Copies of a number of borehole records have been obtained from the archives have been reproduced and presented in **Appendix 2**.

The BGS borehole locations are shown on the Site Location Plan, **Figure 1**.

The historical borehole records indicate that the solid geology in the vicinity of the property comprises the London Clay Formation locally below a thin layer of Made Ground. The London Clay Formation is recorded to comprise soft, firm to stiff increasing to hard with depth brown and grey fissured CLAY locally silty with partings of fine sand. The London Clay was investigated to a maximum depth of 21 m below ground level. All the available records indicate that groundwater was not encountered during the drilling of the boreholes.

3.2 Hydrogeology

The published groundwater vulnerability map of the area (NRA, 1995) indicates the London Clay Formation is classified as an Unproductive Strata (formerly non-aquifer), these are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow.

3.3 Hydrology

The nearest water course is the River Fleet situated about 0.6 km to the southwest of the Site flowing in general direction to the southeast towards the River Thames. The River Fleet was culverted in the 1870s during the residential development around the river.

The Regent's Canal was constructed by the 1810s and is situated about 1.0 km to the southwest of the Site.

The ponds of Hampstead Heath Site are situated about 1.0 km to the northwest of the Site. The Site is not situated within the catchment of these ponds.

4.0 Screening and Scoping

4.1 Introduction

This section of the report is undertaken to determine the potential impacts from the proposed basement, based on the baseline conditions as established in the previous sections.

A screening process in accordance with CPG4 is undertaken to determine whether or not a full 'Basement Impact Assessment' is required for the proposed development. In the case that there are likely impacts caused by the proposed basement development then a scoping is required to determine the scope of work required. A series of checklists for screening including proposed mitigation measures (if required) are presented in the following sections.

A number of screening tools are recommended in the CPG4 and in the Guidance for the subterranean development (Arup, 2010) that include a series of questions within a screening flowchart for three categories; groundwater flow; land stability; and surface water flow. Responses to the questions are tabulated below in the relevant sections.

4.2 Hydrogeological Initial Assessment

4.2.1 Hydrogeological Screening

The screening assessment by PBA for the proposed basement at the site following the screening flowcharts in CPG4 (Camden, 2013) is presented in the table below.

Table 4.1 Subterranean (groundwater) Screening Assessment

	Screening Flowchart Questions	Answer
1(a)	Is the site located directly above Aquifer	No, the site lies directly on the London Clay Formation
1(b)	If Yes 1(a) will the proposed basement extend beneath the groundwater table?	Not Applicable
2	Is the Site within 100 m of a watercourse, well or potential spring line?	No
3	Is the Site within the catchment of the pond chain on Hampstead Heath?	No
4	Will the proposed basement development result in change in area of hard surfaced/paved area?	No
5	As part of site drainage, will more surface water then present be discharge to the ground?	No
6	Is the lowest point of the proposed excavation close to, or lower than the mean water level in any local pond or spring line?	Not Applicable

4.2.2 Hydrogeological Scoping

The above screening flowchart has identified that there are no potential issues related to groundwater that requires further assessment.

4.3 Slope Stability Initial Assessment

4.3.1 Slope Stability Screening

The screening assessment by PBA for the slope stability at the site is presented in the table below.

Table 4.2 Slope Stability Screening Assessment

	Screening Flowchart Questions	Answer
1	Does the Site include slopes natural or man made greater than 7degrees?	No
2	Will the proposed re-profiling of landscaping at site change slopes at the property boundary to more than 7degrees?	No
3	Does the development neighbour land, including railway cuttings and the like, with a slope greater than 7 degrees?	No
4	Is the site within a wider hillside setting in which the general slope is greater than 7 degrees?	No
5	Is the London Clay the shallowest strata at the site?	Yes
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
7	Is there a history of seasonal shrink swell subsidence in the local area, and/or evidence of such effects at the site?	Unknown
8	Is the site within 100m of a watercourse or a potential spring line?	No
9	Is the site within an area of previously worked ground?	No
10 (a)	Is the site within an aquifer?	No
10 (b)	If yes to (a), will the proposed basement extend beneath the water table such that dewatering may be required during construction?	Not Applicable
11	Is the site within 50m of the Hampstead Heath ponds?	No
12	Is the site within 5m of a highway or pedestrian right of way?	Yes
13	Will the proposed basement significantly increase the differential depth of foundations relative to neighbouring properties?	Yes
14	Is the site over (or within the exclusion zone of) any tunnels, e.g. railway lines?	No

The above screening flowchart has identified the following potential issues that need to be assessed further:

Q5 London Clay is the shallowest strata on site.

Q7 The London Clay is known to be affected by seasonal shrink swell subsidence.

Q12 The proposed basement is bounded by a pavement of Camden Mews.

Q13 The proposed basement will significantly increase the differential depth of foundations relative to neighbouring properties.

4.3.2 Stability Scoping

Based on the screening flowchart the overall ground stability in the vicinity of the property can be scoped out and does not require further assessment.

Excavation and construction of the new basement will potentially cause some strain in the surrounding ground potentially triggering associated movement in adjacent buildings and the pavement adjacent to the basement.

A Stage 3 Ground Investigation has been commissioned to confirm the ground conditions at the Site.

The proposed basement will be designed by the Structural Engineer appointed for the scheme in accordance with current legislation, British Standards and industry guidance and the design will include

mitigating potential movements of adjacent structures. Furthermore, the Structural Engineer, Contractor and temporary works designer will address potential stability issues during temporary works and stipulate the construction method of the basement to address any stability issues.

The London Clay is a very plastic shrinkable clay with a high shrinkage or swelling potential in respect of changes in moisture content resulting from seasonal or climatic changes, or from the effects of vegetation. The phenomenon is addressed by geotechnical engineers and foundations designers via established codes of practice, technical standards and guidance. The impact of existing and any new foundation elements within the tree root zone of influence of trees or within the surface zone of seasonal influences, will be addressed and designed accordingly by the Structural Engineer appointed for the scheme.

A Stage 4 Impact Assessment will be undertaken by the Structural Engineer and submitted to LBC to determine the above impacts from the proposed basement and any mitigation measures proposed.

It should be noted that this report does not assess the stability of temporary or permanent works during the construction, design of retaining walls and foundations, assessment of ground movement behind retaining walls, clay shrinkage or heave etc. All these issues will be addressed during the design of the basement by the structural and geotechnical engineers responsible for these aspects of the works.

4.4 Surface Water Screening Assessment

4.4.1 Surface Water Screening

The screening assessment by PBA for the surface water drainage regime and flood risk at the site is presented in the table below.

Table 4.3 Surface Water and Flooding Screening Assessment

	Screening Flowchart Questions	Answer
1	Is the site within the catchment of the pond chains on Hampstead Heath?	No
2	As part of the site drainage, will surface water flows (e.g. rainfall and run-off) be materially changed from the existing route?	No
3	Will the proposed basement development result in a change in the proportion of hard surfaced / paved areas?	No
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
5	Will the proposed basement result in changes to the quality of surface water being received by adjacent properties or downstream?	No

4.4.2 Surface Water Scoping

The above screening has identified that there are no potential issues related to surface water flooding that requires further assessment.

5.0 Conclusions

5.1 Groundwater

The potential impacts from the proposed basement on the groundwater regime in the vicinity of the property are scoped out by the screening study and do not require further assessment.

This is because the Site is situated in the London Clay Formation which is a Non Aquifer with a very low permeability so that any changes to the groundwater regime will be negligible. On this basis, it is concluded that the proposed basement can be constructed without any risk of detrimental effect on the groundwater regime.

5.2 Stability

It is considered that the proposed basement at 102 Camden Mews will not have a negative impact on the overall ground slope stability in the vicinity of the property.

Potential strain on the ground during and/or following the basement construction triggering movement of adjacent properties and/or pavements will need to be assessed further. Similarly, the high shrinkage or swelling potential of the London Clay Formation in respect of changes in moisture content will need to be addressed.

In accordance with the guidance for the Basement Impact Assessment in CPG4 (LBC, 2013) a Stage 3 ground investigation has been commission and will be carried out at the site. A Stage 4 Impact Assessment will be undertaken by the Structural Engineer to determine the local stability and temporary works impacts from the proposed basement and any mitigation measures proposed.

5.3 Surface Flow and Flooding

The potential impacts from the proposed basement on the surface water regime in the vicinity of the property are scoped out by the screening study and do not require further assessment.

References

Arup (2010) Camden geological, hydrogeological and hydrological study. Guidance for sub terrain development. Ove Arup & Partners Ltd, London.

BGS (2004) Geology of London, Special Memoir for 1:50 000 Geological sheets 256 (North London), 257 (Romford), 270 (South London) and 271 (Dartford) England and Wales. British Geological Survey, Keyworth, Notts.

BGS (2006) North London, England and Wales Sheet 256, Solid and Drift Geology, 1 to 50 000 scale. British Geological Survey, Keyworth, Notts.

GHAT (2012) Arboricultural and Planning Integration Report: 102 Camden Mews, London, NW1 9AG. Report Ref: GHA/DS/1980:12. GHA trees arboricultural consultancy, Farnham Common, Bucks.

LBC (2013) Basements and lightwells, Camden Planning Guidance CPG4. London Borough of Camden, London.

NRA (1995) Groundwater Vulnerability of West London, Sheet 39, 1 to 100 000 scale groundwater vulnerability map. Environment Agency (formerly National Rivers Authority), Bristol.

Guidance on the Context of the Report

This report has been prepared within an agreed timeframe and to an agreed budget that will necessarily apply some constraints on its content and usage. The remarks below are presented to assist the reader in understanding the context of this report and any general limitations or constraints. If there are any specific limitations and constraints they are described in the report text.

i) The opinions and recommendations expressed in this report are based on statute, guidance, and best practice current at the time of its publication. Peter Brett Associates LLP (PBA) does not accept any liability whatsoever for the consequences of any future legislative changes or the release of subsequent guidance documentation, etc. Such changes may render some of the opinions and advice in this report inappropriate or incorrect and we will be pleased to advise if any report requires revision due to changing circumstances, especially those over one year old. Following delivery of any report PBA has no obligation to advise the Client or any other party of such changes or their repercussions.

ii) Some of the conclusions in this report may be based on third party data. No guarantee can be given for the accuracy or completeness of any of the third party data used. Historical maps and aerial photographs provide a “snap shot” in time about conditions or activities at the site and cannot be relied upon as indicators of any events or activities that may have taken place at other times.

iii) The conclusions and recommendations made in this report and the opinions expressed are based on the information reviewed and/or the ground conditions encountered in exploratory holes and the results of any field or laboratory testing undertaken. There may be ground conditions at the site that have not been disclosed by the information reviewed or by the investigative work undertaken. Such undisclosed conditions cannot be taken into account in any analysis and reporting.

iv) Unless specifically stated to the contrary, this report does not purport to be a “Geotechnical Design Report” as defined in Clause 2.8 of Eurocode 7 (Geotechnical Design BS EN 1997-1:2004). Some of the data contained herein and used to support any geotechnical assessment presented in this report may be historical or for other reasons not fully compliant with the requirements of that code.

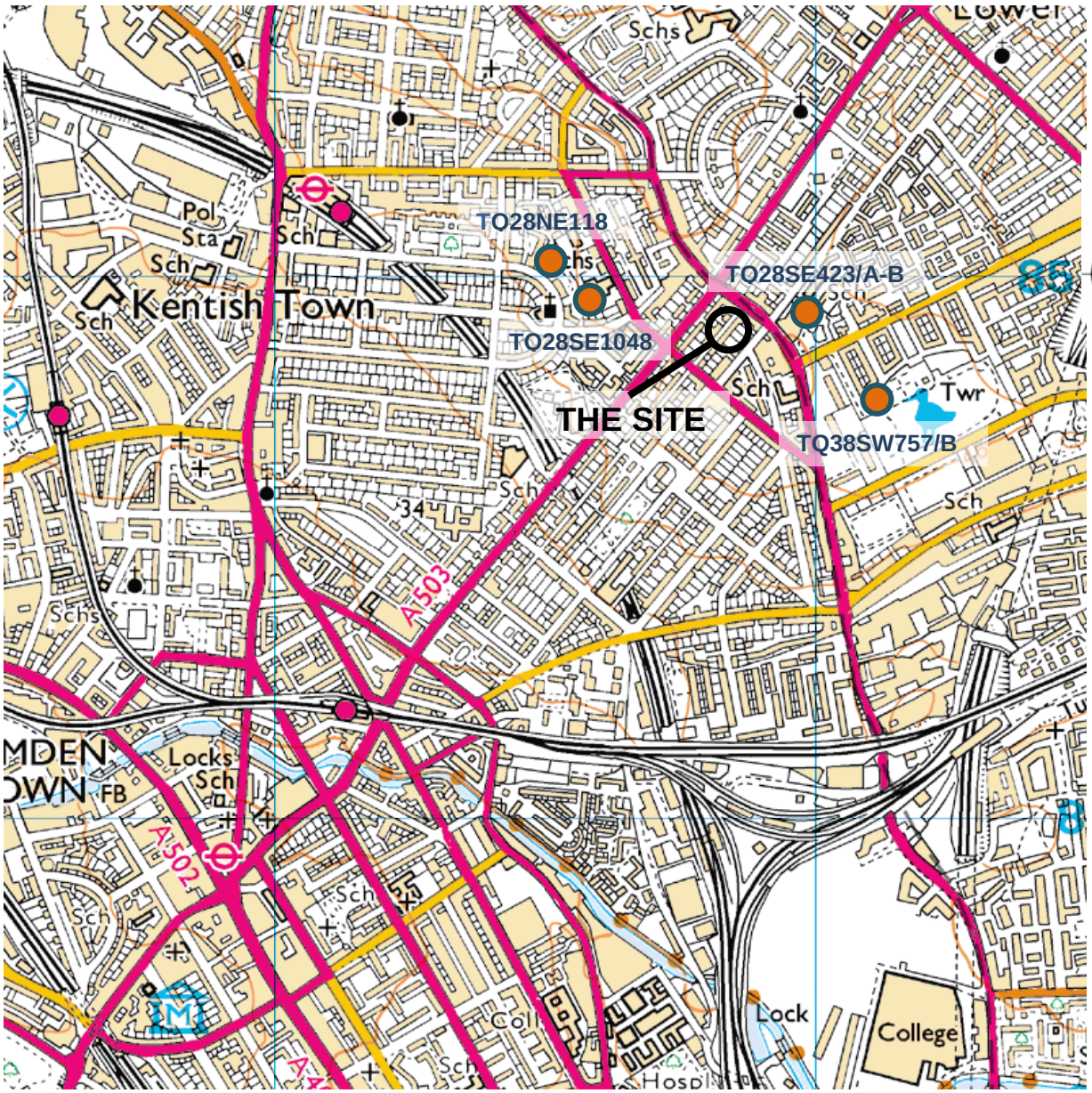
v) It should be noted that groundwater levels, groundwater chemistry, surface water levels, surface water chemistry, soil gas concentrations and soil gas flow rates can vary due to seasonal, climatic, tidal and man made effects.

vi) This report has been written for the sole use of the Client stated at the front of the report in relation to a specific development or scheme. The conclusions and recommendations presented herein are only relevant to the scheme or the phase of project under consideration. This report shall not be relied upon or transferred to any other party without the express written authorisation of PBA. Any such party relies upon the report at its own risk.

vii) The interpretation carried out in this report is based on scientific and engineering appraisal carried out by suitably experienced and qualified technical consultants based on the scope of our engagement. We have not taken into account the perceptions of, for example, banks, insurers, other funders, lay people, etc., unless the report has been prepared specifically for that purpose. Advice from other specialists may be required such as the legal, planning and architecture professions, whether specifically recommended in our report or not.

viii) Public or legal consultations or enquiries, or consultation with any Regulatory Bodies (such as the Environment Agency, Natural England or Local Authority) have taken place only as part of this work where specifically stated.

FIGURES



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National Grid Reference	TQ 298 848
Coordinates	N51:32:53 W0:07:44
Nearest Post Code	NW1 9AG

Key

Approximate Location of Boreholes for which BGS hold records

pba peterbrett
Caversham Bridge House, Waterman Place, Reading, RG1 8DN
Tel 0118 950 0761 Fax 0118 959 7498

Client

CITY AND COUNTY GROUP LIMITED

SITE LOCATION PLAN

102 CAMDEN MEWS, LONDON

Date	Oct 2014
A4 Scale	1:12 500
Drawn	az
Checked	az
Figure	1

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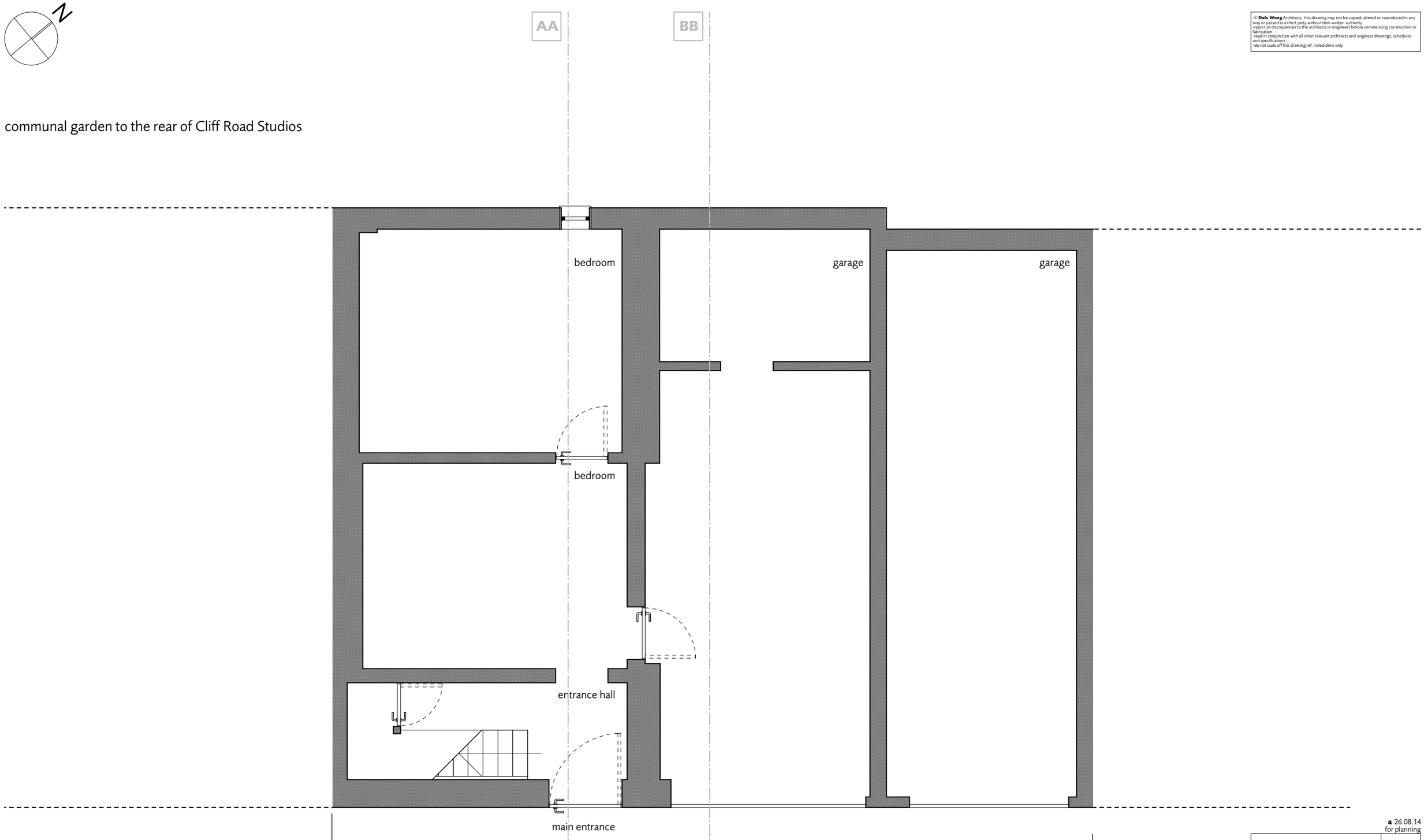
APPENDIX 1

communal garden to the rear of Cliff Road Studios



a 26.08.14
for planning

existing ground floor plan **101a**

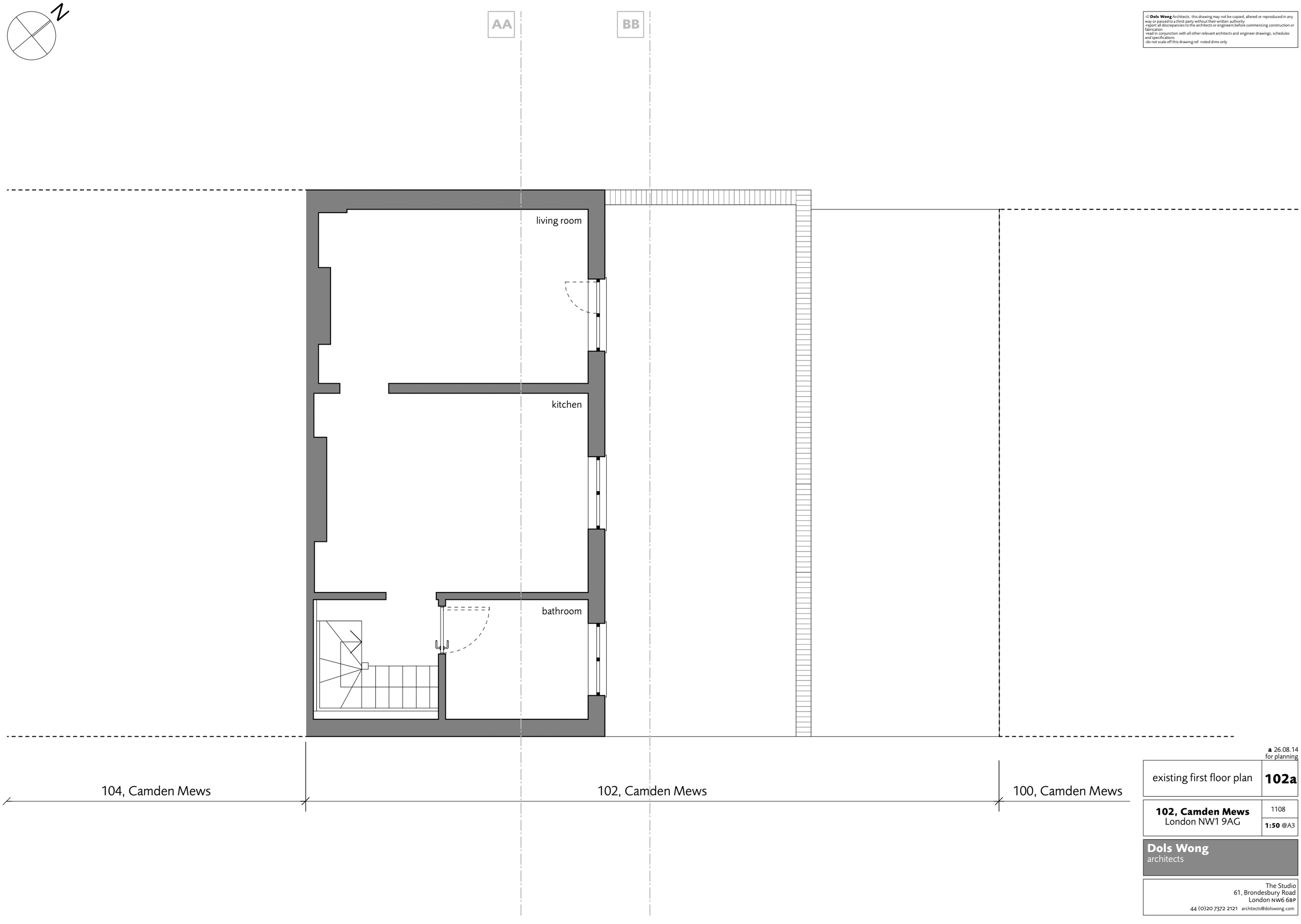
102, Camden Mews
London NW1 9AG

1108

1:50 @A3

Dols Wong
architects

The Studio
61, Brondesbury Road
London NW6 6BP
44 (0)20 7372 2121 architects@dolswong.com



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for planning

existing first floor plan **102a**

102, Camden Mews
London NW1 9AG

1108

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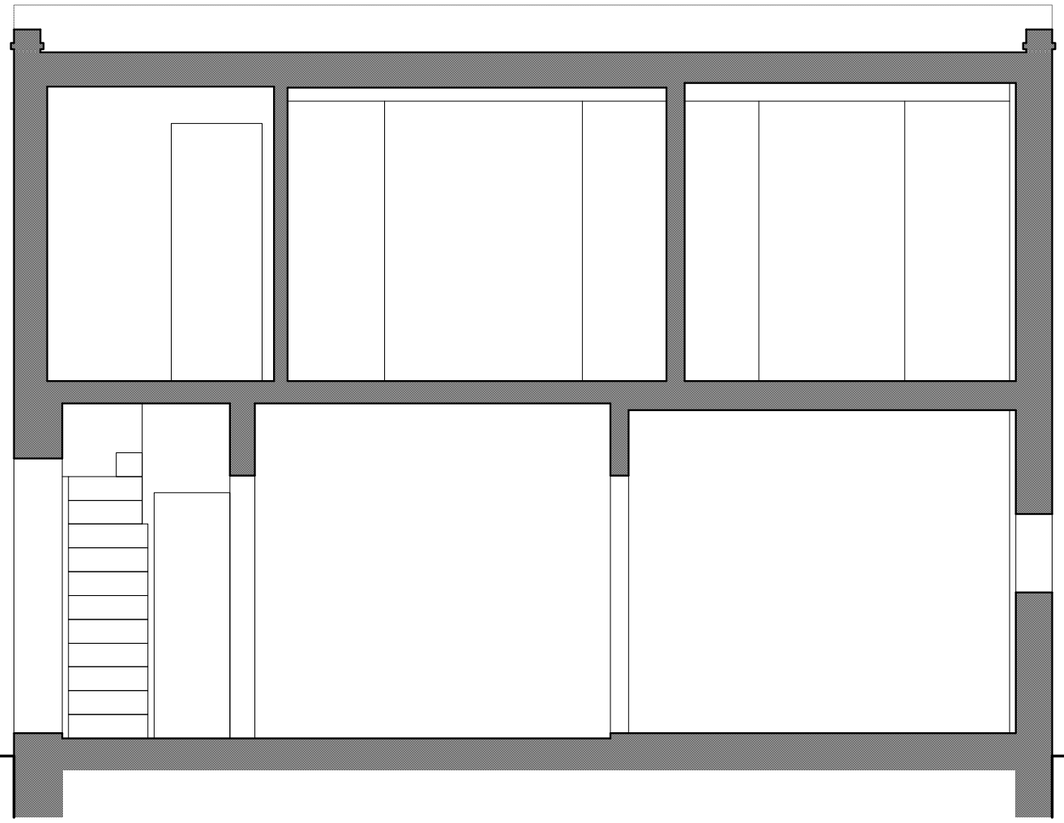

Camden Mews

communal garden to the rear of Cliff Road Studios

a 26.08.14
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existing section AA	**110a**
102, Camden Mews London NW1 9AG	1108 **1:50** @A3

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Camden Mews

communal garden to the rear of Cliff Road Studios

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existing section BB

111b

102, Camden Mews
London NW1 9AG

1108

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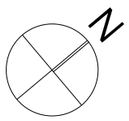
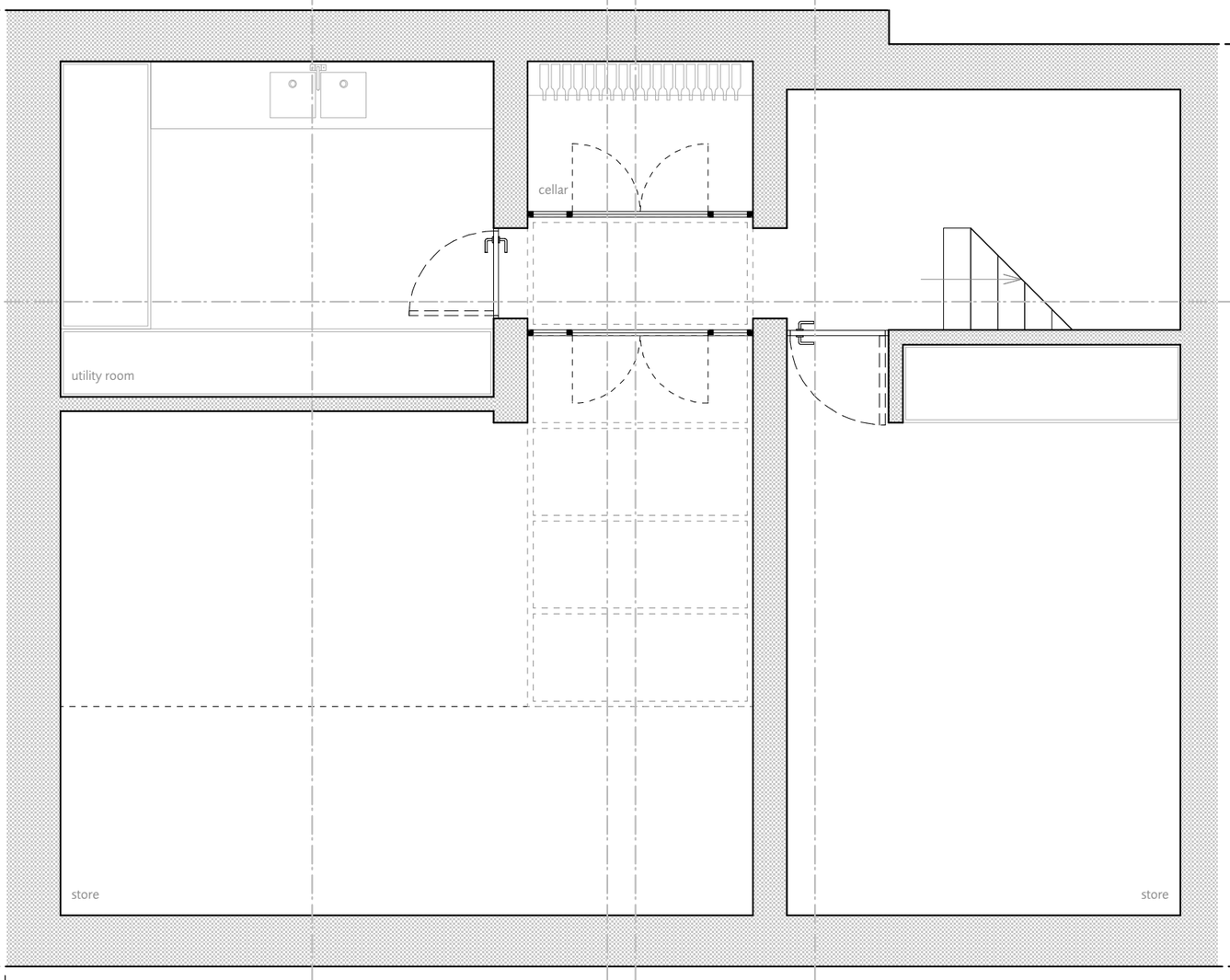


AA BB CC DD

EE



104, Camden Mews

102, Camden Mews

100, Camden Mews

c 26.08.14
for planning

proposed
basemet plan

120c

102, Camden Mews
London NW1 9AG

1108

1:50 @A3

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existing walls to be made good and retained

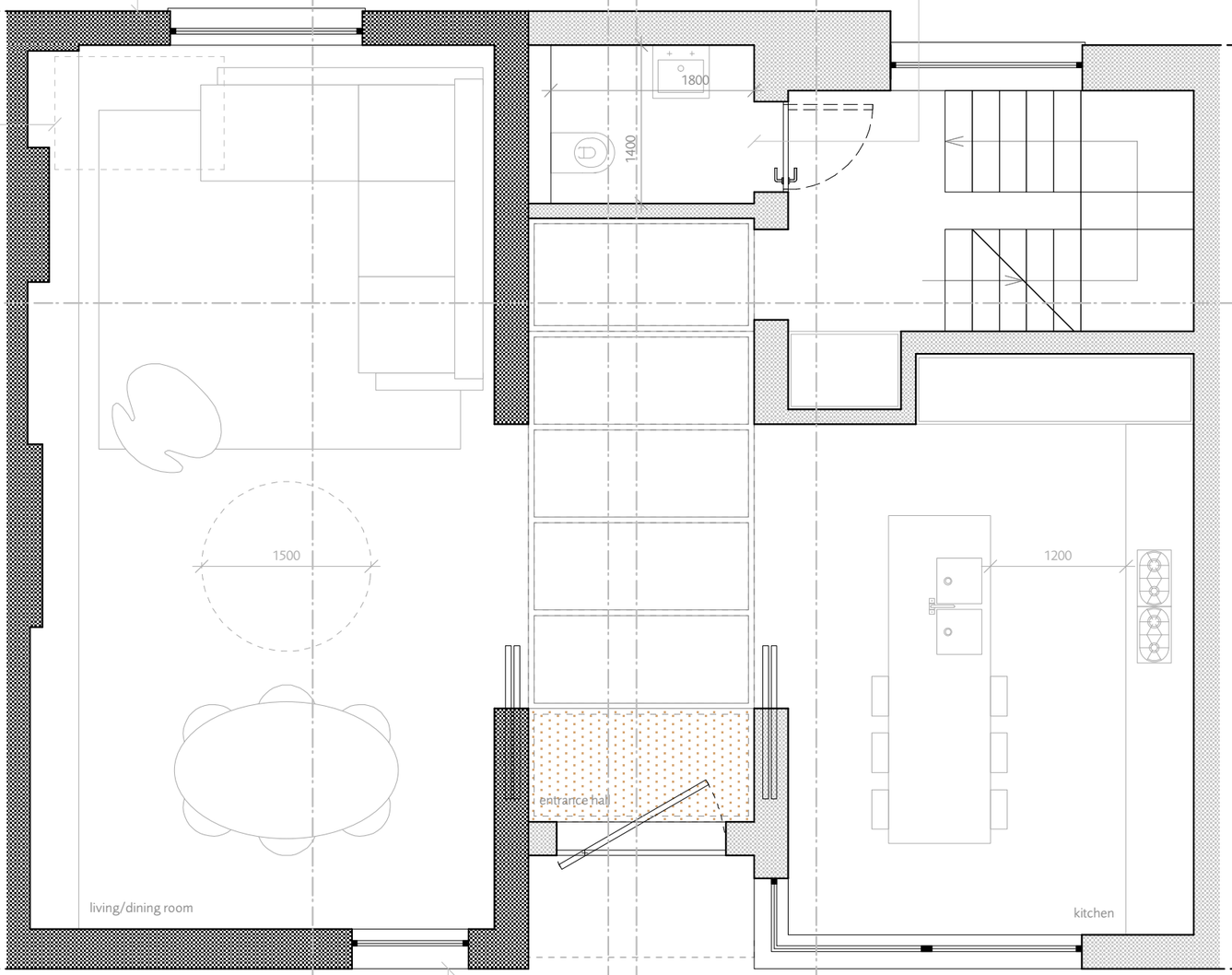
AA BB CC DD

toilet areas dimension to comply with Criterion 14 of LIFEHOME CRITERIA, provisions for the installation of a floor level shower

communal garden to the rear of Cliff Road Studios

potential position for a through-floor lift

EE



104, Camden Mews

102, Camden Mews

100, Camden Mews

exisitng opening to be retained

c 26.08.14
for planning

proposed ground floor plan	**121c**
102, Camden Mews London NW1 9AG	1108
	1:50 @A3

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existing walls to be made good and retained

AA BB CC DD EE

potential position for a through-floor lift

bedroom 2

1000

800

master bedroom

900

915 915

1100

990

bedroom 3

existing openings to be retained

c 26.08.14
for planning

proposed
first floor plan

122c

102, Camden Mews
London NW1 9AG

1108

1:50 @A3

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existing painted facing brick wall made good and repainted

glass balustrade on top of existing wall to reach the required 1100 mm

new glass link building

painted render to match bricks colour

new double glazed aluminum windows

new double glazed aluminum windows

104, Camden Mews

102, Camden Mews

100, Camden Mews

double glazed frosted glass screen to existing opening

main door

timber cladding

painted render

new double glazed aluminum windows at high level

c 26.08.14
for planning

proposed front elevation	**125c**
102, Camden Mews London NW1 9AG	1108 **1:50** @A3

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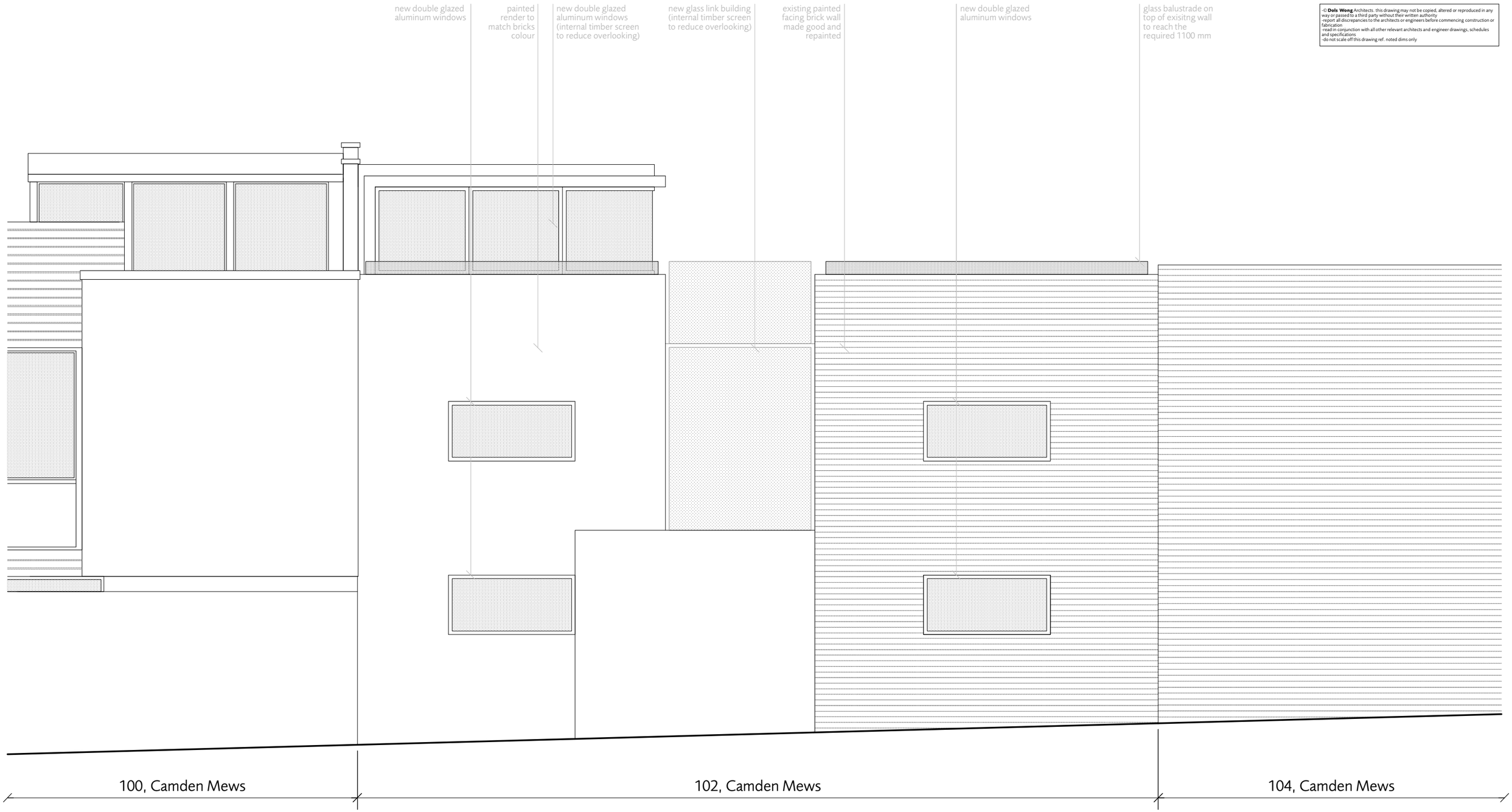

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for planning

proposed rear elevation	**126a**
102, Camden Mews London NW1 9AG	1108 **1:50** @A3

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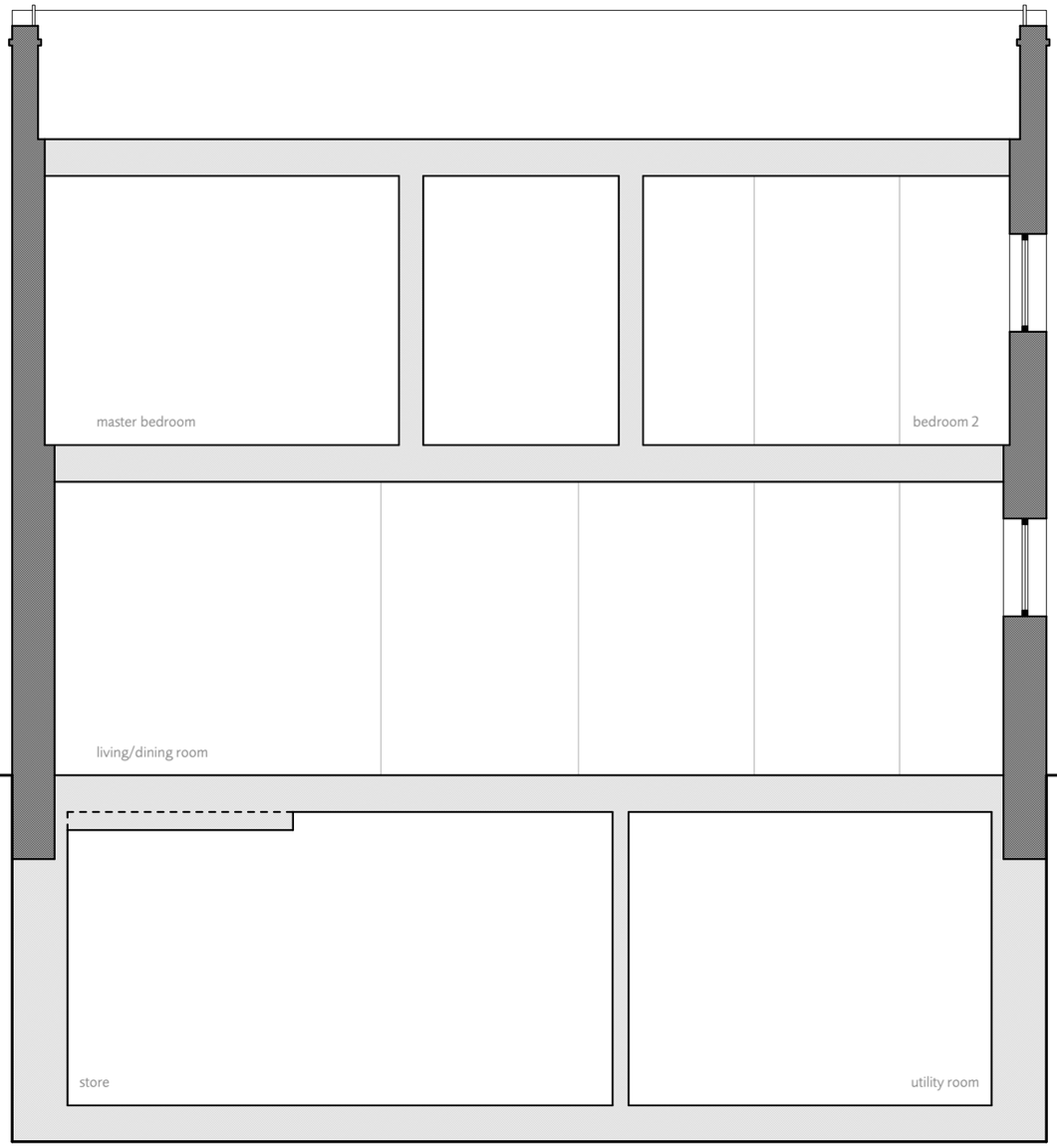

a 26.08.14
for planning

proposed section AA	**130a**
102, Camden Mews London NW1 9AG	1108 **1:50** @A3

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London NW6 6BP
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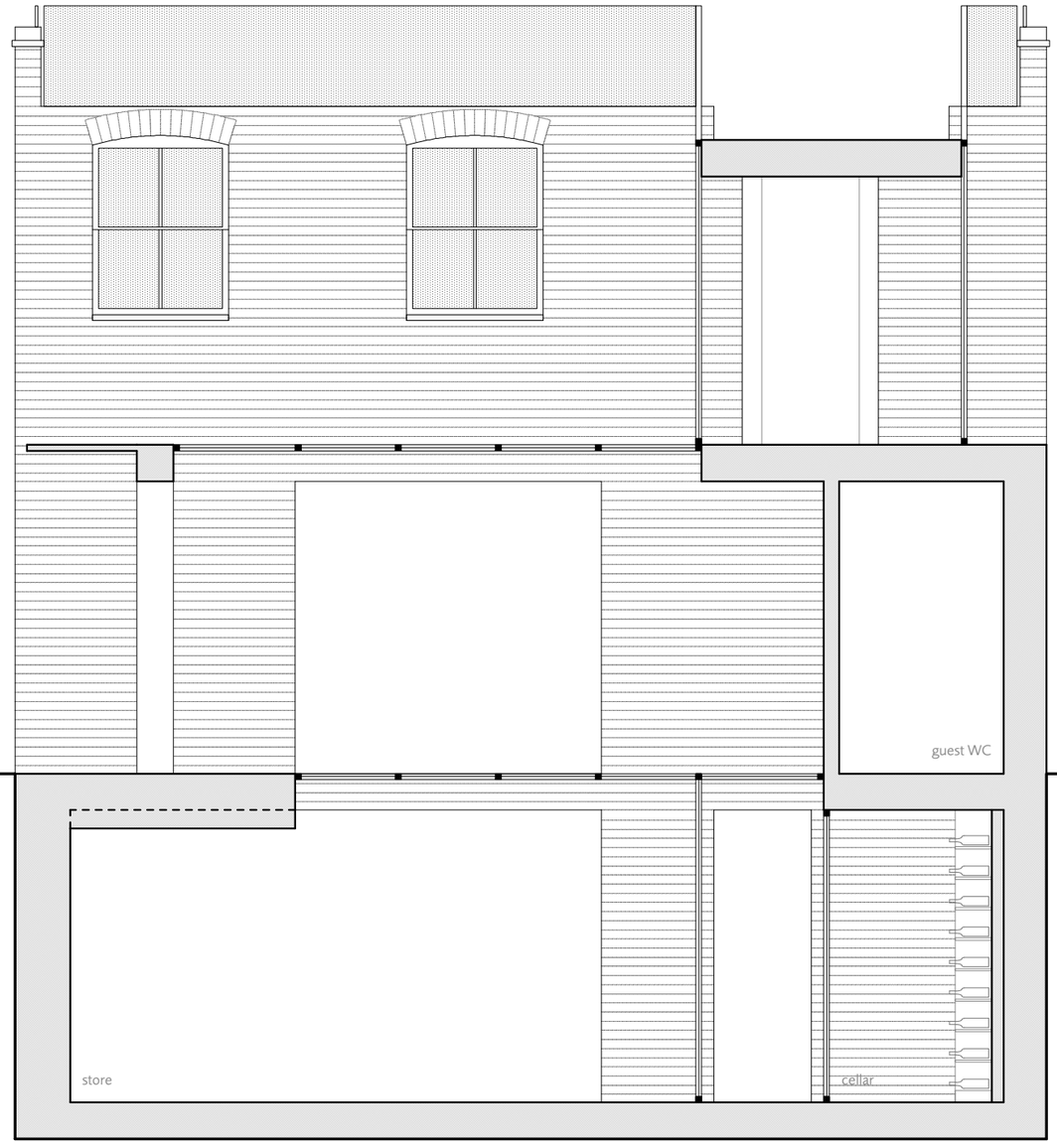


Camden Mews

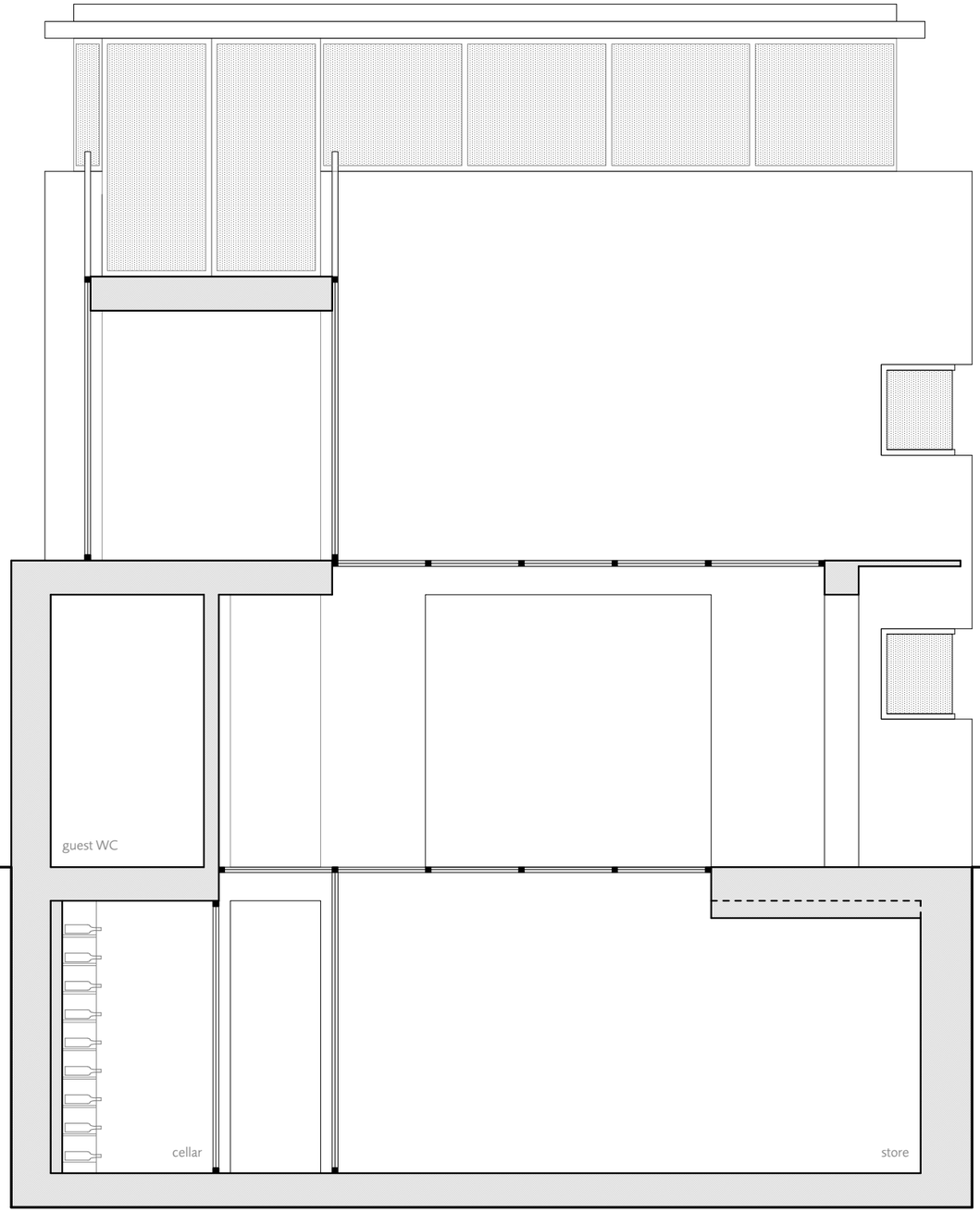
communal garden to the rear of Cliff Road Studios

a 26.08.14
for planning

proposed section BB	**131a**
102, Camden Mews London NW1 9AG	1108 **1:50** @A3

Dols Wong
architects

The Studio
61, Brondesbury Road
London NW6 6BP
44 (0)20 7372 2121 architects@dolswong.com



communal garden to the rear of Cliff Road Studios

Camden Mews

a 26.08.14
for planning

proposed section CC **132a**

102, Camden Mews
London NW1 9AG

1108

1:50 @A3

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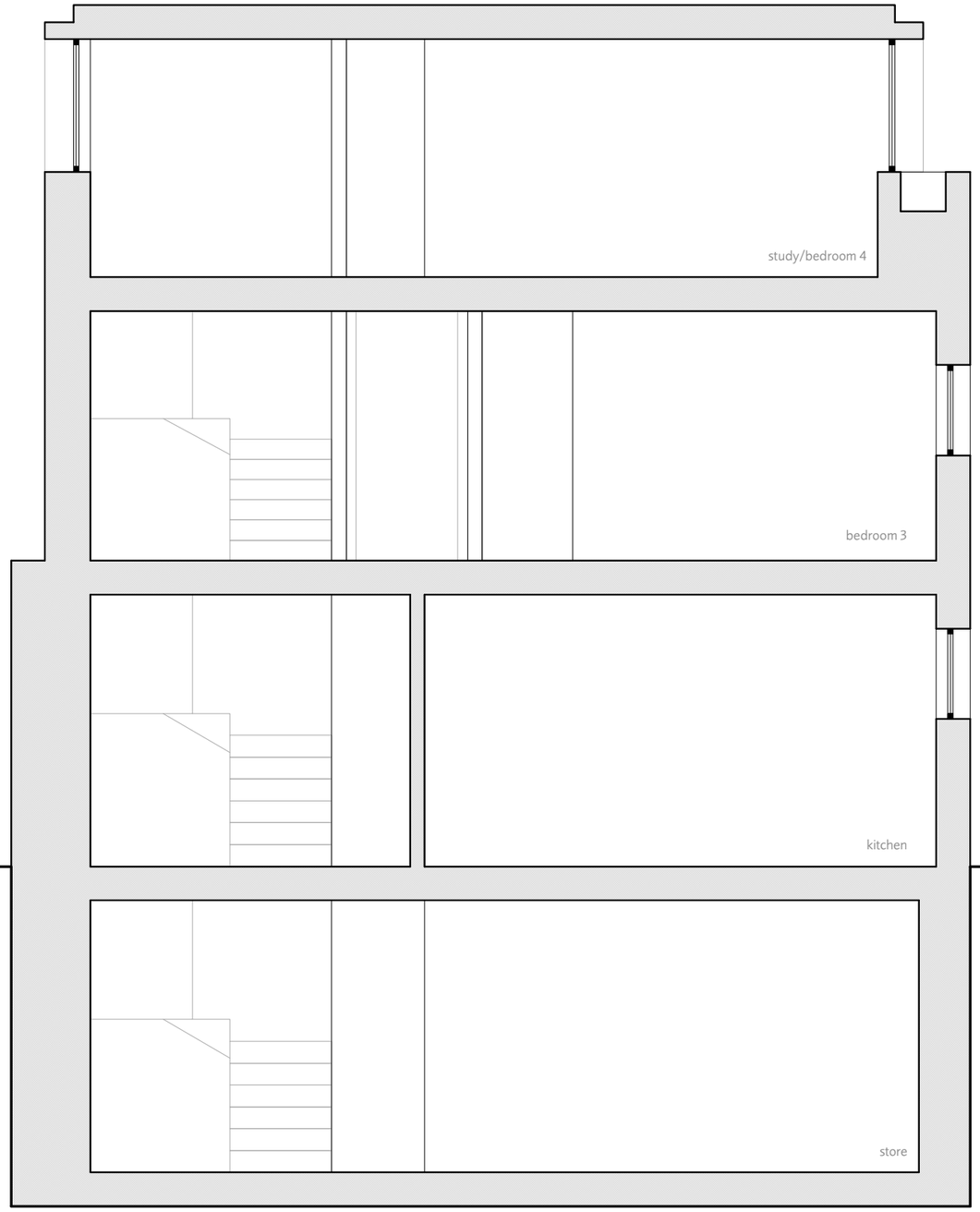

communal garden to the rear of Cliff Road Studios

Camden Mews

a 26.08.14
for planning

proposed section ΩΩ	**133a**
102, Camden Mews London NW1 9AG	1108 **1:50** @A3

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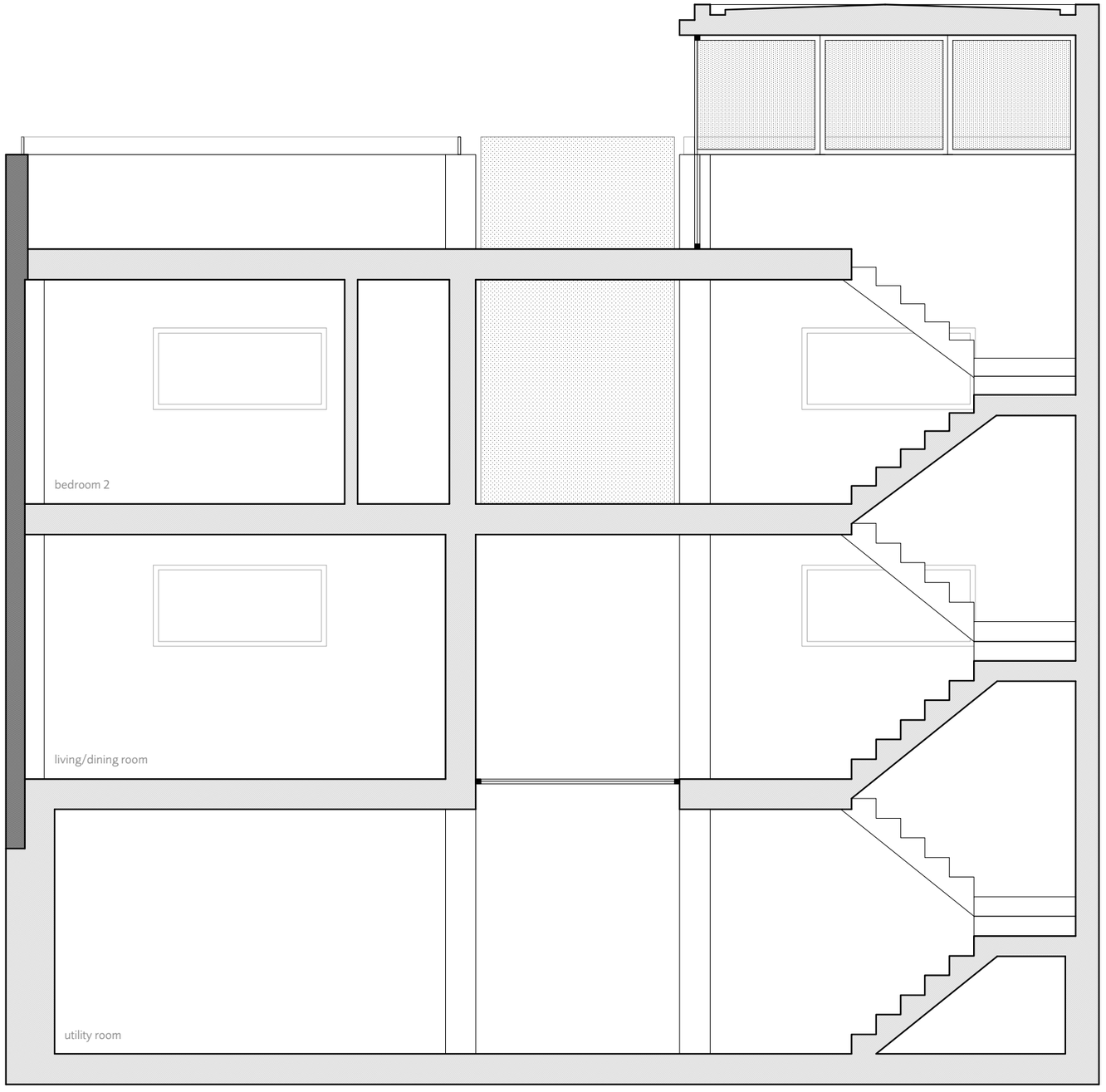

a 26.08.14
for planning

proposed section EE	**134a**
102, Camden Mews London NW1 9AG	1108 **1:50** @A3

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London NW6 6BP
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APPENDIX 2

BGS Reference: TQ28SE423/A-B
British National Grid: 529980, 184930
Depth 9.14 m

GEOLOGICAL SURVEY OF GREAT BRITAIN

RECORD OF SHAFT OR BORE FOR MINERALS

(For Survey use only)

6-inch Map Registered No.

Box
TQ 28 SE / 423 B

Name of Shaft or Bore given by Geological Survey:
HANGER FORD INFANTS SCHOOL - BH. 2

Name and Number given by owner:

For whom made E.L.C

Town or Village ..... County .....

Exact site ..... { Attach a tracing from a map, or a sketch-map, if possible.

Purpose for which made Trial

Nat. Grid Reference
2998 8493

1" N.S.Map No.	1" O.S.Map No.	Confidential or not
256		

Ground Level at shaft / bore relative to O.D. ..... If not ground level give O.D. of beginning of shaft / bore .....

Made by ..... Date of sinking Sept 1968

Information from ..... Date received .....

Examined by .....

SPECIMEN NUMBERS AND ADDITIONAL NOTES

(For Survey use only) Geological Classification	Description of Strata	Thickness Ft.	Thickness In.	Depth Ft.	Depth In.
	BH2 +163.0 49.68m 3'-0" 0.91m Made ground (brick rubble and dark clay.) 1.52m Made ground (grey fissured clay with traces of brick.) 13'-0" Brown mobbled fissured clay. 5.49m 12'-0" Brown fissured clay. 30'-0" 9.14m				

(3412) Wt.32837/PS.154 2m 10/64 G.W.B.Ltd. Gp.863

DATION ENGINEERING Ltd.

BOREHOLE LOG

TQ/28NE/118

2952-8501

LOCATION : OSENEY CRESCENT

BOREHOLE No. : 1

BOREHOLE DIA. : 8"

GROUND LEVEL :

DATE (Start) : 27-6-1964

WATER LEVEL : Borehole dry.

Description	Thickness	Depth	Sample	Remarks
Peaty TOPSOIL.	1'-0"	0'-0" / 1'-0" (0.31)	1	
Soft to firm brown CLAY. LC (w).	4'-0"	5'-0" (1.52)	2	28 blows to drive 1'-0"
Firm brown CLAY. LC (w)	2'-6"	7'-6" (2.28)	3	
Firm brown slightly silty CLAY. LC (w)	5'-0"	12'-6" (3.81)	4	30 blows to drive 1'-0"
			5	
			6	81 blows to drive 1'-0"
			7	
			8	29 blows to drive 1'-0"
Stiff brown silty CLAY changing to stiff to hard. LC	22'-6"		9	
			10	42 blows to drive 1'-0"
			11	
			12	25 blows to drive 1'-0"
			13	
		35'-0" (10.67)	14	31 blows to drive 1'-0"
			15	
Hard grey CLAY. LC	4'-6"		16	43 blows to drive 1'-0".
		39'-6" (12.03)		BOREHOLE COMPLETED.

DISTURBED SAMPLE ▮ : UNDISTURBED SAMPLE – STANDARD PENETRATION TEST

TION ENGINEERING Ltd.

BOREHOLE LOG

TQ/28NE/118
2952-8001.

LOCATION : OSENEY CRESCENT BOREHOLE No. : 2

BOREHOLE DIA. : 8" & 6" GROUND LEVEL :

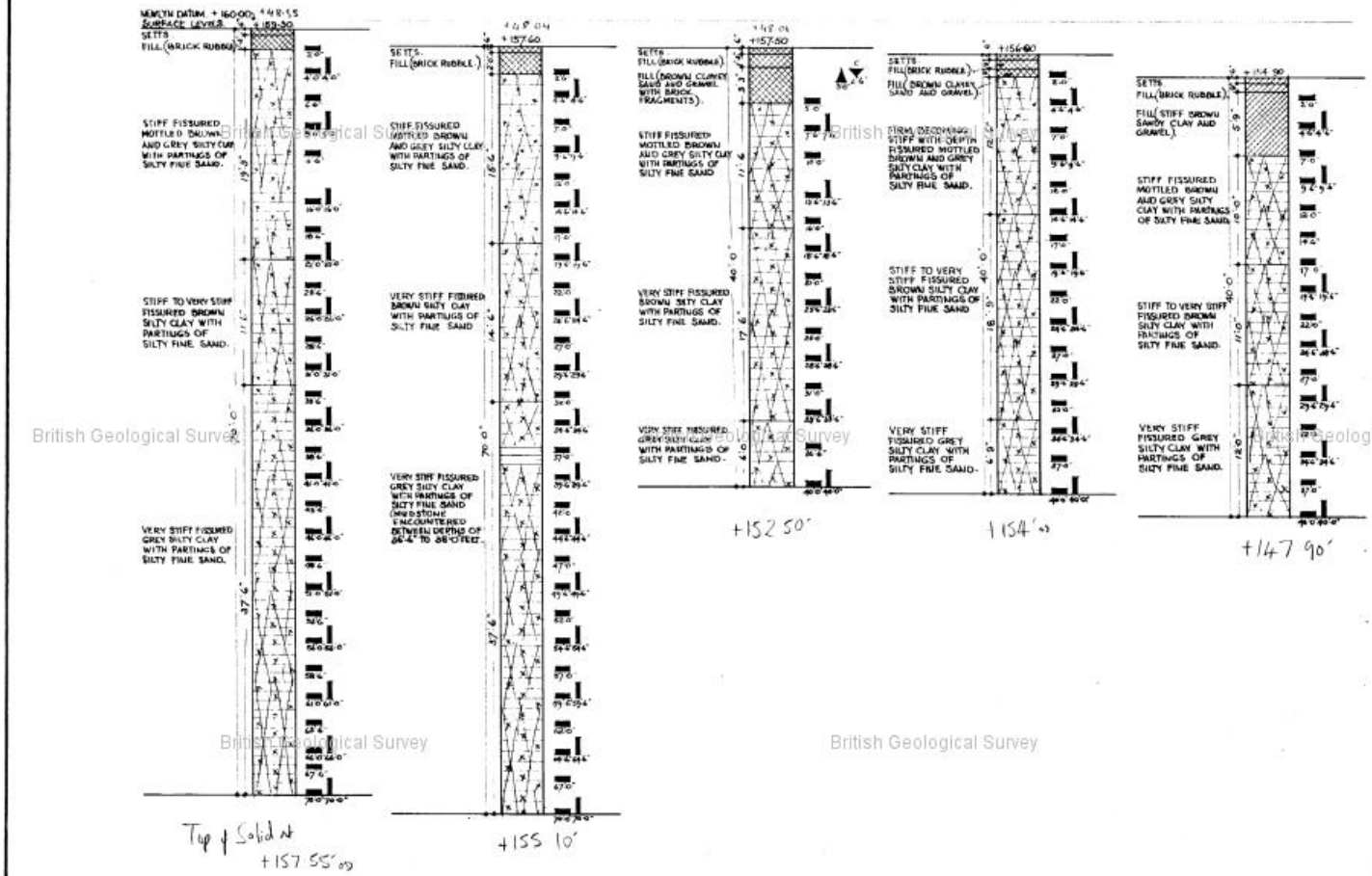
DATE (Start) : 18-6-1964 WATER LEVEL : Borehole dry.

Description	Thickness:	Depth	Sample	Remarks
MADE GROUND: MADE	0'-3"	0'-0" 0'-3" 0.09	1	
Soft brown CLAY.	4'-3"			
LC (V)		4'-6" 1.37	2	39 blows to drive 1'-0"
			3	
			4	68 blows to drive 1'-0"
Firm grey/brown CLAY.	18'-0"			
LC.			5	75 blows to drive 1'-0"
			6	58 blows to drive 1'-0"
		22'-6" 6.85	7	
			8	51 blows to drive 1'-0"
Stiff LONDON CLAY.	16'-6"		9	63 blows to drive 1'-0"
			10	74 blows to drive 1'-0"
		39'-0" 11.88	11	
			12	39 blows to drive 1'-0"
Hard LONDON CLAY.	12'-1"		13	48 blows to drive 1'-0"
		51'-1" 15.57	14	56 blows to drive 1'-0"

BOREHOLE COMPLETED. DISTURBED SAMPLE STANDARD PENETRATION TEST

BGS Reference: TQ38SW757/B
British National Grid (27700) : 530100,184790
Depth: 21.34 m

TQ 38 SW/757



NOTES

SOIL SYMBOLS AS C.P 2001 (1957).
INDICATES DISTURBED SAMPLE.
" UNDISTURBED "
" BULK DISTURBED "
" DYNAMIC CONE PENETRATION TEST.

FOR KEY PLAN SHOWING POSITION OF BORINGS ALSO SECTIONS OF BORINGS SEE DRAWINGS Nos HO/672/04, 06 AND 07.

REVISIONS

No.	Date

LONDON COUNTY COUNCIL
ARCHITECT'S DEPARTMENT
HOUSING DIVISION
Waterloo 5000 Extension:

Herbert Bennett
Architect to the Council
Drawn: Checked: W.W.L.

Job
CALEDONIAN MARKET, ISLINGTON.

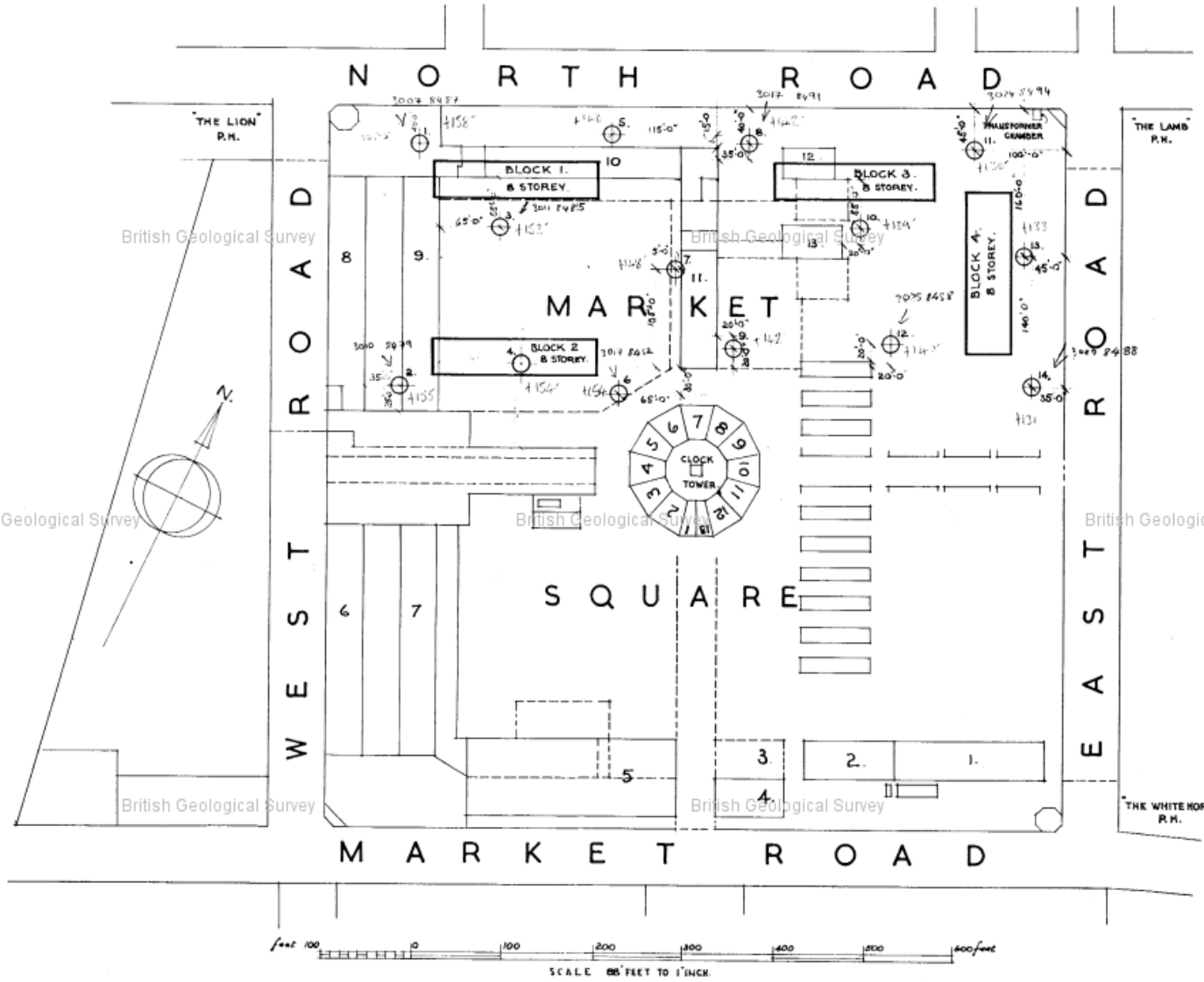
Title
TRIAL BORINGS Nos 1, 2, 3, 4 AND 5.

Scale (VERTICAL)	Date
8' FEET TO 1" INCH	25. 6. 64.

Div	Job No.	Drwg.	Rev.
HO	672	05	

TQ 38 SW/757

NOTE:-
TRIAL BORINGS Nos 1,2,8,9,11 AND 14 TO 70'0 DEEP.
" " " 3,4,5,6,7,10,12 AND 13 TO 40'-0" DEEP.



NOTES

REVISIONS

No.	Date

LONDON COUNTY COUNCIL
ARCHITECT'S DEPARTMENT
HOUSING DIVISION
Waterloo 5000 Extension:

Hubert Bennett
Architect to the Council
Drawn: Checked: W.W.L

Job
CALEDONIAN MARKET
ISLINGTON.

Title
TRIAL BORINGS.
1 TO 14.

Scale	Date
88 FEET TO 1 INCH	24-1-64.

Div	Job No.	Drwg.	Rev.
HO	672	04.	

BGS Reference: TQ28SE41048
British National Grid: 529980,184930
Depth: 3.05 m