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# BASEMENT IMPACT ASSESSMENT

Project Number: 7722
Plan Reference Number: TQRQM23208102847762

## 34 Chester Terrace

### London Borough of Camden

### London, NW1 4ND

Date of Issue - 02th October 2023

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34 Chester Terrace

NW1 4ND

# Document History and Status

| Revision | Date | Comments |
|---|---|---|
| | | |

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# Contents

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# 1. Brief

1.1. G+B Architects is preparing a planning application for a basement alteration at 34 Chester Terrace, London, NW1 4ND. This report should be read in conjunction with all relevant architects' drawings.

1.2. This report is prepared in accordance with LB Camden SPD guidance on Subterranean Development, considering the effects of the proposed development on the local hydrology, geology and potential impacts to neighbours and the wider environment.

1.3. Some third-party documents have been used in preparation of this document such as British Geological Survey Maps and LB Camden GHHS.

# 2. Description

2.1. The existing building is a five storey house of conventional construction. External walls are of solid masonry with upper floors and internal partitions of timber.

2.2. Existing external vaulted basement has a headroom between 1100 to 1880mm.

2.3. It is connected to a (handed) identical property from both sides and is in a road of similar buildings.

2.4. Properties on both sides (i.e. 33 and 35 Chester Terrace) have carried our similar basement extensions through TZG Partnership and there therefore is prior knowledge of such alteration(s).

2.5. The property is located at approximately 37m AOD on a negligible slope of less than 1:100.

2.6. The rear facade is lower than the front facade by approximately 1.5m thus the current lower back floor is half a storey below road level and ground floor half a storey above.

2.7. The entirety of Chester Terrace is listed Grade I and is additionally surrounded by a number of other listed buildings and the Grade I listed Regent's Park.

2.8. Geology and Flood Risk

i. The local geology is Made Ground over London Clay (see Appendix II – nearby borehole log from British Geological Survey, Ref. TQ28SE13). The basement walls are Category 2 (CIRIA C580) and thus trial pits are proposed in order to finalise the structural design. The trial pits will not be carried out prior to submitting the planning application. However, TZG Partnership have designed numerous basements in the vicinity and our experience suggests the local geology is very constant.

ii. The property is not within a Flood Plain according to Environment Agency published information and GHHS Flood map (see Appendix I). There are no known subterranean water courses (the River Fleet is within a culvert).

iii. From knowledge gained from other basements in the area dealt with by TZG, groundwater flow is not expected to be adversely affected by the proposed construction. Water flow is minimal through London Clay other than occasional perched water – these trapped "lenses" can flow into excavations but can be dealt with by pumping. Ground water may flow over the top of the London Clay but such flows are minimal and any obstruction provided by this basement is considered to be negligible especially as the topography is flat.

# 3. Proposed Structure

3.1. It is proposed that the existing external vaulted basement area at the front of the property be deepened by approximately 1200 mm.

3.2. Existing internal vault walls will be removed and steel box frame installed to support the masonry arches above.

3.3. The new basement slab will form a reinforced concrete raft foundation. Due to the removal of soil, there is a net reduction in loading on the London Clay at formation level, thus no piles are required to transfer loads.

3.4. The new retaining walls will be formed by underpinning the existing main walls; at certain locations below the street the existing masonry wall will be replaced by the new RC structure at full height.

# 4. Construction Methodology

4.1. The method statement should be read in conjunction with drawing TS001_A and TS002_A (see Appendix III).

4.2. The form of construction will be hand dug conventional reinforced concrete underpinning carried out sequentially to ASUC guidelines.

4.3. Installation of new steel beams

4.2.1 Remove existing slab to allow casting strip foundation at proposed slab level around internal walls, making sure the excavation for the strip foundation is planked and strutted.

4.2.2 Install needles through existing internal walls supported by props.

4.2.3 Remove existing internal walls to architectural specification.

4.2.4 Underpin existing walls where proposed columns are to be installed.

4.2.5 Install permanent steel box frame and cast over ground beam.

4.2.6 Remove props when steel frame is installed and concrete cured.

4.4. Underpinning of existing walls:

4.1.1 Excavate to basement level with 45-degree berms all around.

4.1.2 Excavate pits beneath existing walls. These are to be in a sequence based on the CADBE mnemonic (or any other accepted sequence). Pits will be no more than 1m wide and maybe less if ground or wall conditions dictate. At full replacement of rear walls horizontal props are to be installed.

4.1.3 Individual excavation to be planked and strutted against adjacent vertical earth faces once depth exceeds 900mm.

4.1.4 Cast a reinforced concrete base and kicker. Cast a vertical retaining wall/underpin dry-pack against the existing brick structure and leave propped against the base.

4.1.5 Continue with the CADBE sequence until the perimeter walls have been underpinned and propped.

4.5. Install remaining reinforced concrete basement slab connecting to toes and strip foundation.

4.4. The above methodologies have been successfully utilised and fine tuned over the past 20 years since the start of the proliferation of basement extensions and building alterations.

# 5. Damage Prediction to Adjacent Properties

5.1. We have carried out calculations based on “Embedded Retaining Walls – guidance for economic design. CIRIA C580. London 2003”. These calculations show that predicted movement showed result in negligible damage (category 0). (see Appendix IV)

5.2. Preliminary calculations have been carried out to assess the effect of loads onto the London Clay. Based on these calculations the size of the foundation was chosen so that the bearing stresses under the new foundation do not exceed that of the original foundations. (see Appendix V)

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# 6. Screening

6.1. A screening process has been undertaken and the findings are described below.

| Question | Response | Details |
|---|---|---|
| 1a. Is the site located directly above an aquifer? | No | Appendix I - Watercourses |
| 1b. Will the proposed basement extend beneath the water table surface? | No | Appendix II. Previously done projects of similar extensions on both sides of the property showed no water ingress. |
| 2. Is the site within 100mof a watercourse, well (used / disused) or potential spring line? | No | Appendix I - Watercourses |
| 3. Is the site within the catchment of the pond chains on Hampstead Heath? | No | Appendix I - Watercourses |
| 4. Will the proposed basement development result in a change in the proportion of hard surfaced / paved areas? | No | See architectural drawings. |
| 5. As part of 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 | See architectural drawings. |
| 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 | Appendix II |

6.2. Slope Stability

| Question | Response | Details |
|---|---|---|
| 1. Does the existing site include slopes, natural or man-made greater than 7 degrees (approximately 1 in 8)? | No | Appendix I – Slope Angle Map |

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| | | |
|---|---|---|
| 2. Will the proposed re-profiling of landscaping at the site change slopes at the property boundary to more than 7 degrees (approximately 1 in 8)? | No | See architectural drawings. |
| 3. Does the development neighbour land, including railway cuttings and the like, with a slope greater than 7 degrees (approximately 1 in 8)? | No | Appendix I – Slope Angle Map |
| 4. Is the site within a wider hillside setting in which the general slope is greater than 7 degrees (approximately1 in 8)? | No | Appendix I – Slope Angle Map & Location Map |
| 5. Is the London Clay the shallowest strata at the site? | Yes | Appendix II |
| 6. Will any trees be felled as part of the development and/or are any works proposed within any tree protection zones where trees are to be retained? | No | Nearest tree is about 10m away as measured form google maps. |
| 7. Is there a history of seasonal shrink-swell subsidence in the local area and/or evidence of such effects at the site? | No | Previously done project of similar extension on both side of the properties showed no seasonal shrink-swell. |
| 8. Is the site within 100m of a watercourse or a potential spring line? | No | Appendix I - Watercourses |
| 9. Is the site within an area of previously worked ground? | No | Only the neighbours at both sides had similar basement extension. |
| 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? | No | Appendix II |
| 11. Is the site within 50m of the Hampstead Heath Ponds? | No | Appendix I – Location Map |
| 12. Is the site within 5m of a highway or pedestrian right of way? | No | Appendix I – Location Map |
| 13. Will the proposed basement significantly increase the differential depth of | No | Neighbouring properties at both sides have undergone |

| | | |
|---|---|---|
| foundations relative to neighbouring properties? | | similar basement extension through TZG Partnership. |
| 14. Is the site over (or within the exclusion zone of) any tunnels, e.g. railway lines? | No | Appendix I – Transport Infrastructure. |

6.3. Surface Water and Flooding

| Question | Response | Details |
|---|---|---|
| 1. Is the site within the catchment of the ponds chains on Hampstead Heath? | No | Appendix I – Location Map & Watercourses |
| 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 | See architectural drawings |
| 3. Will the proposed basement development result in a change in the proportion of hard surfaced / paved external areas? | No | See architectural drawings |
| 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 | See architectural drawings and Appendix I - Watercourses |
| 5. Will the proposed basement result in changes to the quality of surface water being received by adjacent properties or downstream watercourses? | No | See architectural drawings |
| 6. Is the site in an area identified to have surface water flood risk according to either the Local Flood Risk Management Strategy or the Strategic Flood Risk Assessment or is it at risk from flooding, for example because the proposed basement is below the static water level of nearby surface water feature. | No | Appendix I – Local Flood Risk Zones |

6.4. Non-technical summary of screening process.

i. The screening process has not identified any issues to be carried forward to scoping for further assessment.

ii. The other potential concerns considered within the screening process have been demonstrated to be not applicable or not significant when applied to the proposed development.

# 7. Summary

7.1. The proposed basement is relatively small scale in relation to the overall geology, hydrology and topography of the area. Ground conditions are such that on a macro scale there will be no significant impact on soils, land use, water quality and hydrology. Any impact in the immediate vicinity will be temporary only and the scale will be negligible.

7.2. TZG has carried out similar basement extension on either side of the property (i.e. 33 and 35 Chester Terrace) and have prior knowledge of the alteration.

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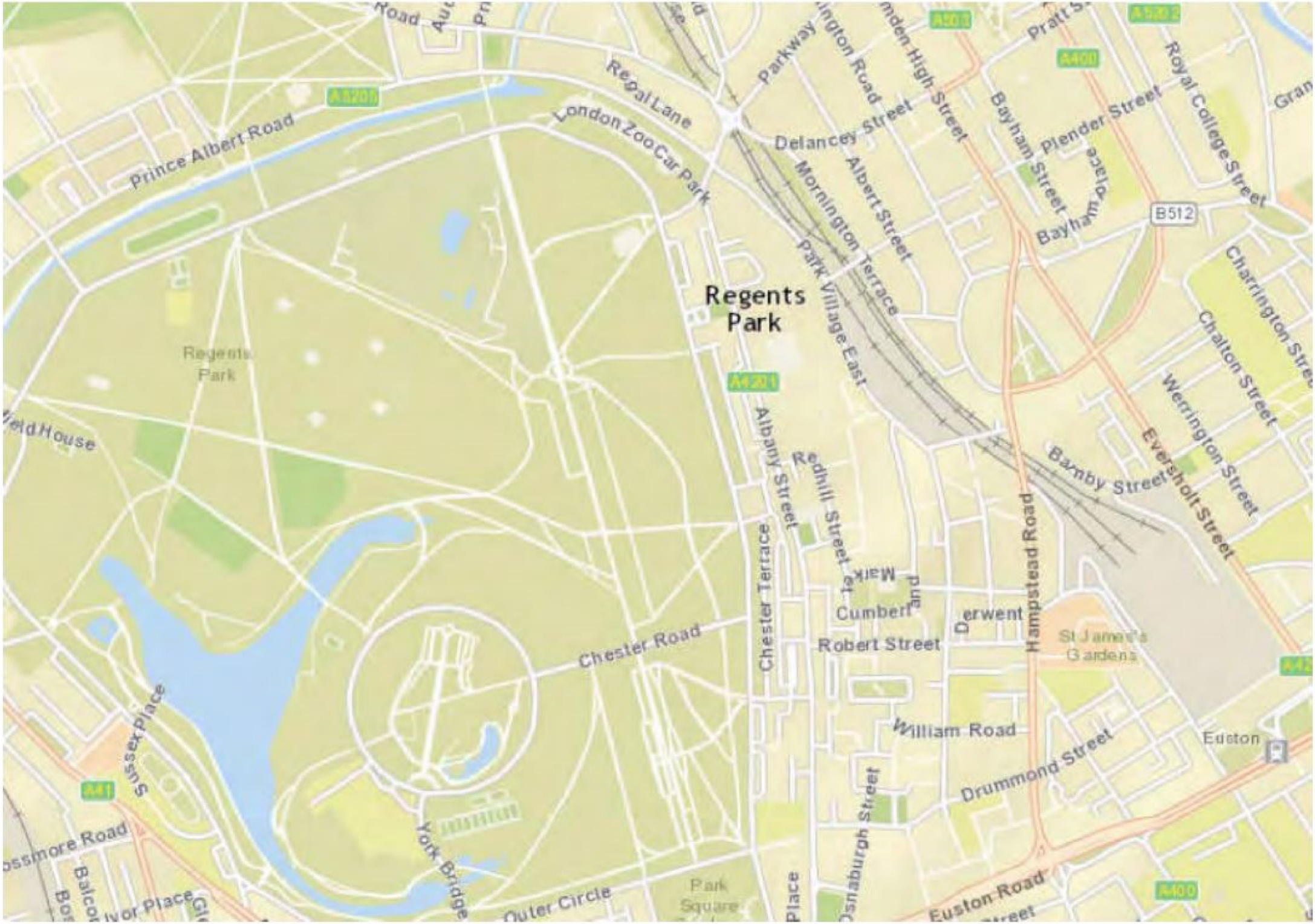
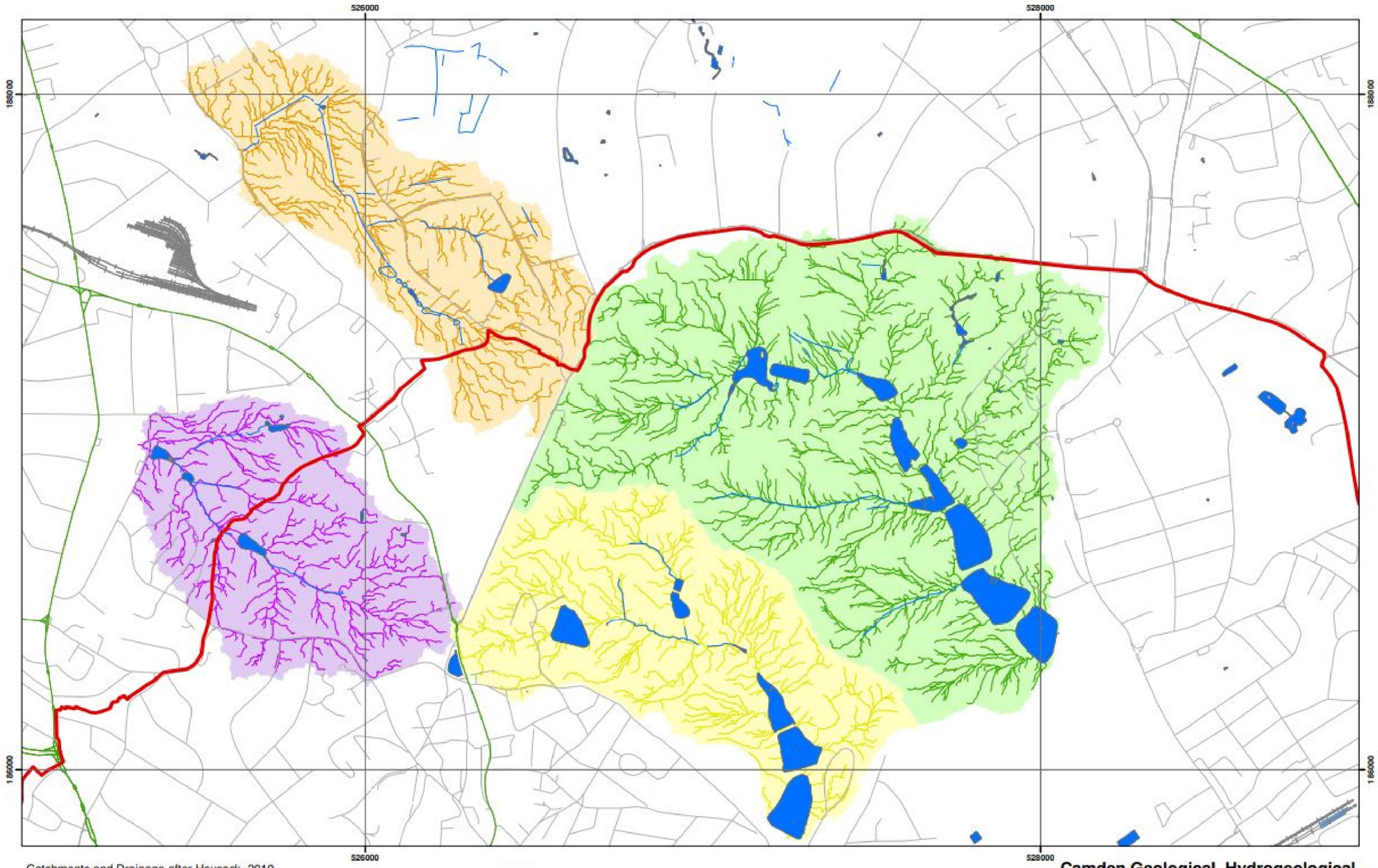
# APPENDIX I

Location Plan
Critical Drainage Areas / Local Flood Risk Zones
Slope Angle Map
Watercourses
Transport Infrastructure


Regents Park
Prince Albert Road
Regal Lane
London Zoo Car Park
Delancey Street
Albert Street
Mornington Terrace
Park Village East
Parkway
Camden High Street
Bayham Street
Bayham Place
Plender Street
Royal College Street
B512
Charrington Street
Chalton Street
Werrington Street
Eversholt Street
Barnby Street
Hampstead Road
Chester Terrace
Albany Street
Redhill Street
Market
Cumberland
Derwent
Robert Street
St James's Gardens
Chester Road
William Road
Drummond Street
Euston
Euston Road
Osnaburgh Street
Park Square
Outer Circle
York Bridge
Sussex Place
Ivor Place
A41
A400
B512




Catchments and Drainage after Haycock, 2010

N

Scale at A3: 1:10,000

Coordinate System:
British National Grid
GCS_OSGB_1936

0 0.125 0.25 0.5 0.75 1
Kilometers

**Legend**

- London Borough of Camden
- Railway Lines
- A Roads
- Surface Water
- Highgate Chain Catchment
- Golders Hill Chain Catchment
- Hampstead Chain Catchment
- Hampstead Heath Extension Chain Catchment

**Camden Geological, Hydrogeological and Hydrological Study**

Hampstead Heath Surface Water Catchments and Drainage

213923 FIGURE **14**

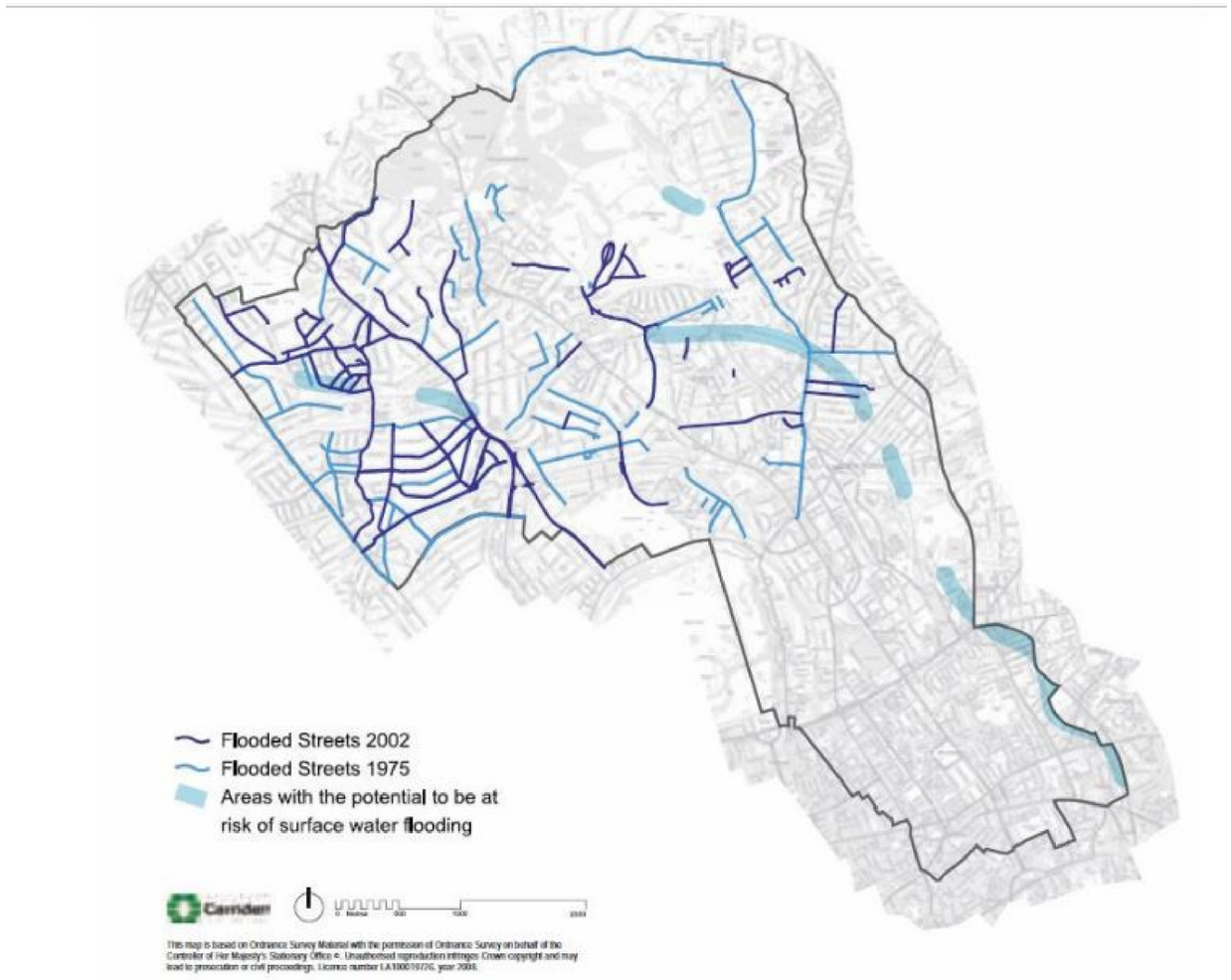
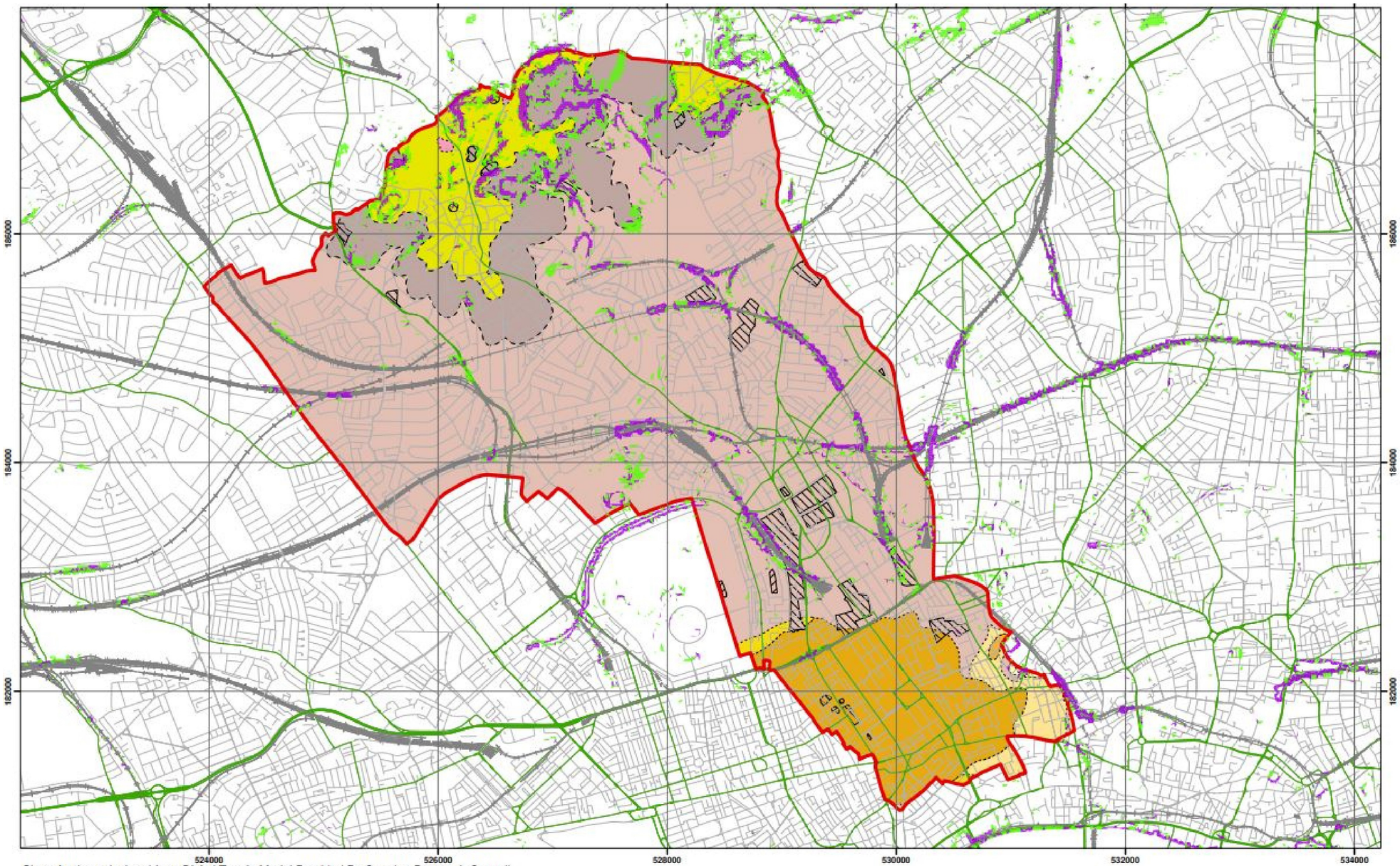



Figure 5 from Core Strategy, London Borough of Camden

**Camden Geological, Hydrogeological and Hydrological Study**
Flood Map

**213923** **FIGURE 15**




Slope Angles calculated from Digital Terrain Model Provided By Camden Bourough Council

N

Scale at A3: 1:30,000

1:10,000 BGS Mapping
Coordinate System:
British National Grid
GCS_OSGB_1936

0 0.5 1 2 3
Kilometers

**Legend**

**Slope**
- London Borough of Camden
- 0° - 7°
- 7° - 10°
- > 10°
- Railway Lines
- A Roads

**BGS 1:10K Artificial Ground**
- MADE GROUND
- WORKED GROUND

**BGS 1:10K Drift Geology**
- ALLUVIUM
- HACKNEY GRAVEL FORMATION
- LANGLEY SILT FORMATION
- LYNCH HILL GRAVEL FORMATION
- STANMORE GRAVEL FORMATION

**BGS 1:10K Solid Geology**
- BAGSHOT FORMATION
- CLAYGATE MEMBER
- LAMBETH GROUP
- LONDON CLAY FORMATION

NB. Geological boundaries are largely indicative based on available geological mapping data

**Camden Geological, Hydrogeological and Hydrological Study**

Slope Angle Map

213923 FIGURE **16**