

PRICE & MYERS

Flood Risk Assessment
58 Regent's Park Road, London

April 2012



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Abbreviations

EA	Environment Agency
FFL	Finished Floor Levels
FRA	Flood Risk Assessment
AOD	Above Ordnance Datum
NPPF	National Planning Policy Framework
SFRA	Strategic Flood Risk Assessment
SUDS	Sustainable Urban Drainage Systems
LDD	Local Development Documents
LPA	Local Planning Authority

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1. Introduction

Price & Myers have been commissioned to undertake the Flood Risk Assessment (FRA) for the proposed redevelopment of 58 Regent's Park Road in London.

This FRA has been carried out in accordance with National Planning Policy Framework (NPPF), along with advice and guidance from the Environment Agency (EA) and CIRIA documents.

NPPF states that an appropriate FRA will be required for all development proposals of 1Ha or greater in Flood Zone 1, or for any development within flood zones 2 or 3. The site is within flood zone 1 and is smaller than 1 Ha, but the proposed building includes a lowered floor below existing ground floor level in an area that is vulnerable to pluvial flooding. Therefore, the FRA must be focused on flood mitigation measures in order to prevent overland flows from entering the house.

2. Site Description and Location

The subject site location is shown in figure 2. The site occupies an area of approximately 0.04 Ha at OSGR TQ 281837. The site is within an urban area of London and is surrounded by existing houses. It falls to the south with a maximum level difference of approximately 1m and an average ground level of approximately 32.5m AOD. The existing house with soft and hard landscaped areas currently occupy the site. Access to the site is available by Regent's Park Road which bounds the site to the south.



Figure 1. Existing Development

Longitude West 00915

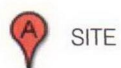
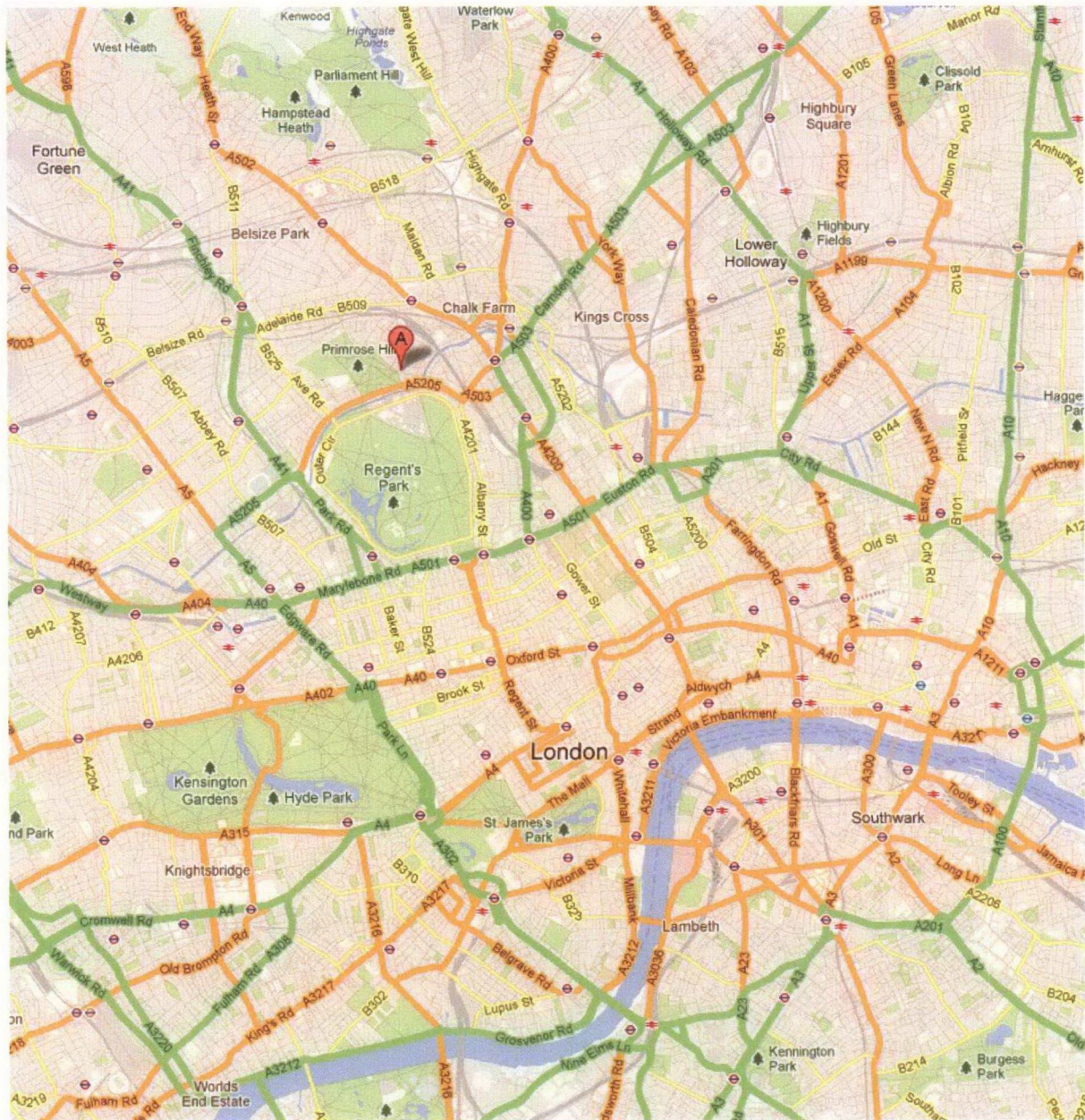


Figure 2. Site Location

3. Development Proposal

It is proposed that the site is to be redeveloped for residential purposes. The proposals involve the refurbishment of the existing five-storey building with a minor rear and lower floor extension. The proposals will have minor affect to the external areas. Access to the proposed development will be available from Regent's Park Road.

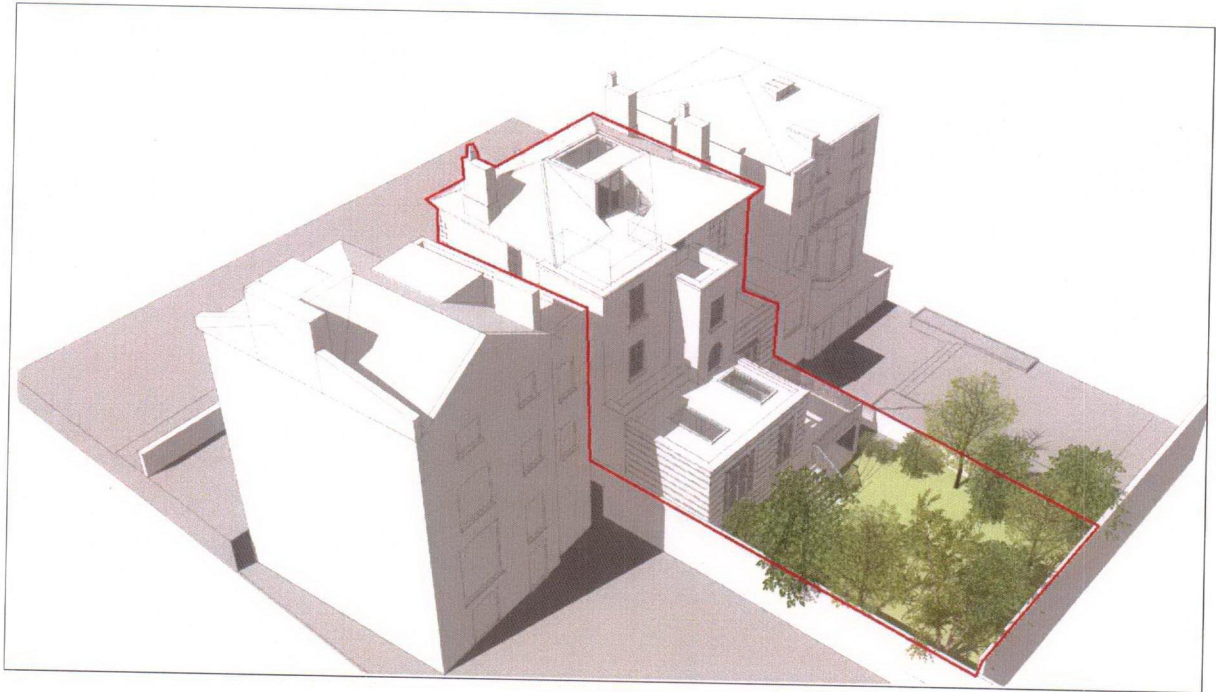


Figure 3. Proposed Development

4. Flood Risk Assessment

4.1 Flood Risk from Watercourses

The nearest watercourse to the site is Regent's Canal, which runs approximately 200 meters to the south and to the east of the site. However, there is not a risk of flooding from Rivers as identified on the Environment Agency (EA) indicative flood outline map. The map shows that the site lies within flood zone 1 (Figure 4).

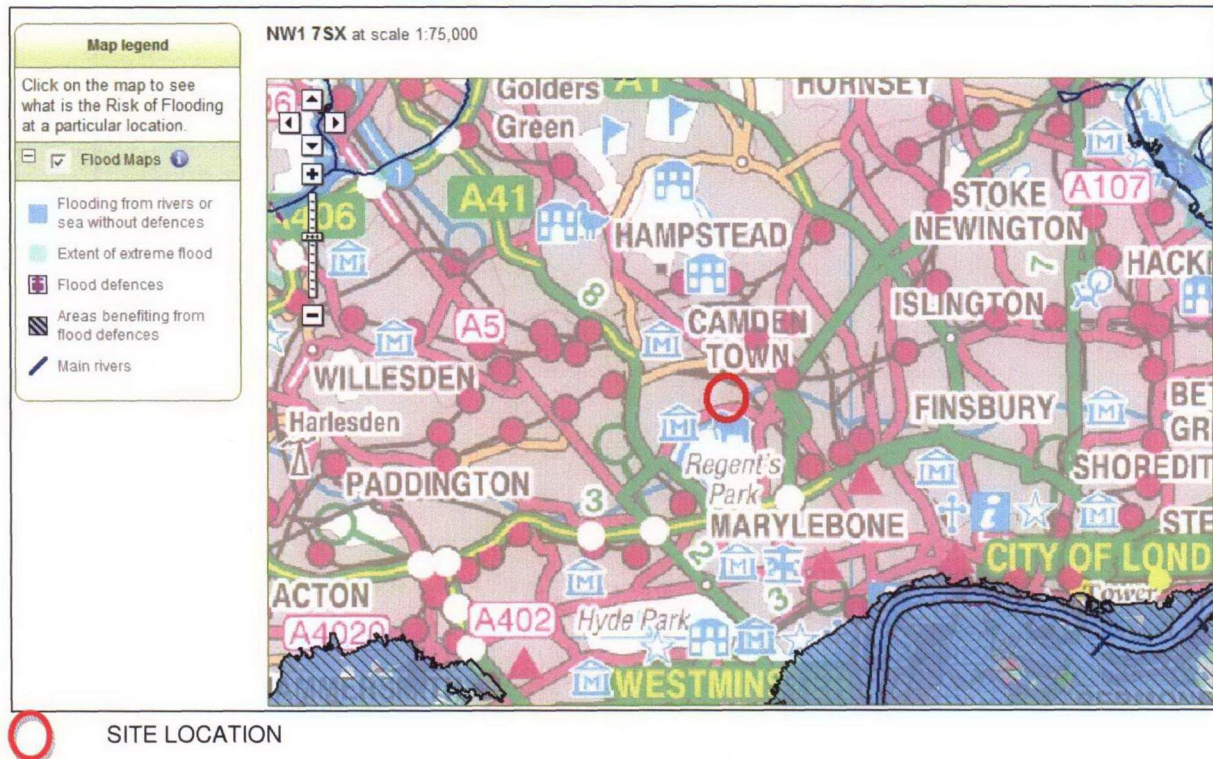


Figure 4. Environment Agency Indicative Floodplain Map

4.2 Flood Risk from Groundwater

A ground investigation report for the site was not available at the time that this study was undertaken. The British Geological Survey map for North London (sheet 256) confirms that this area is entirely underlain by the London Clay formation (figure 5).

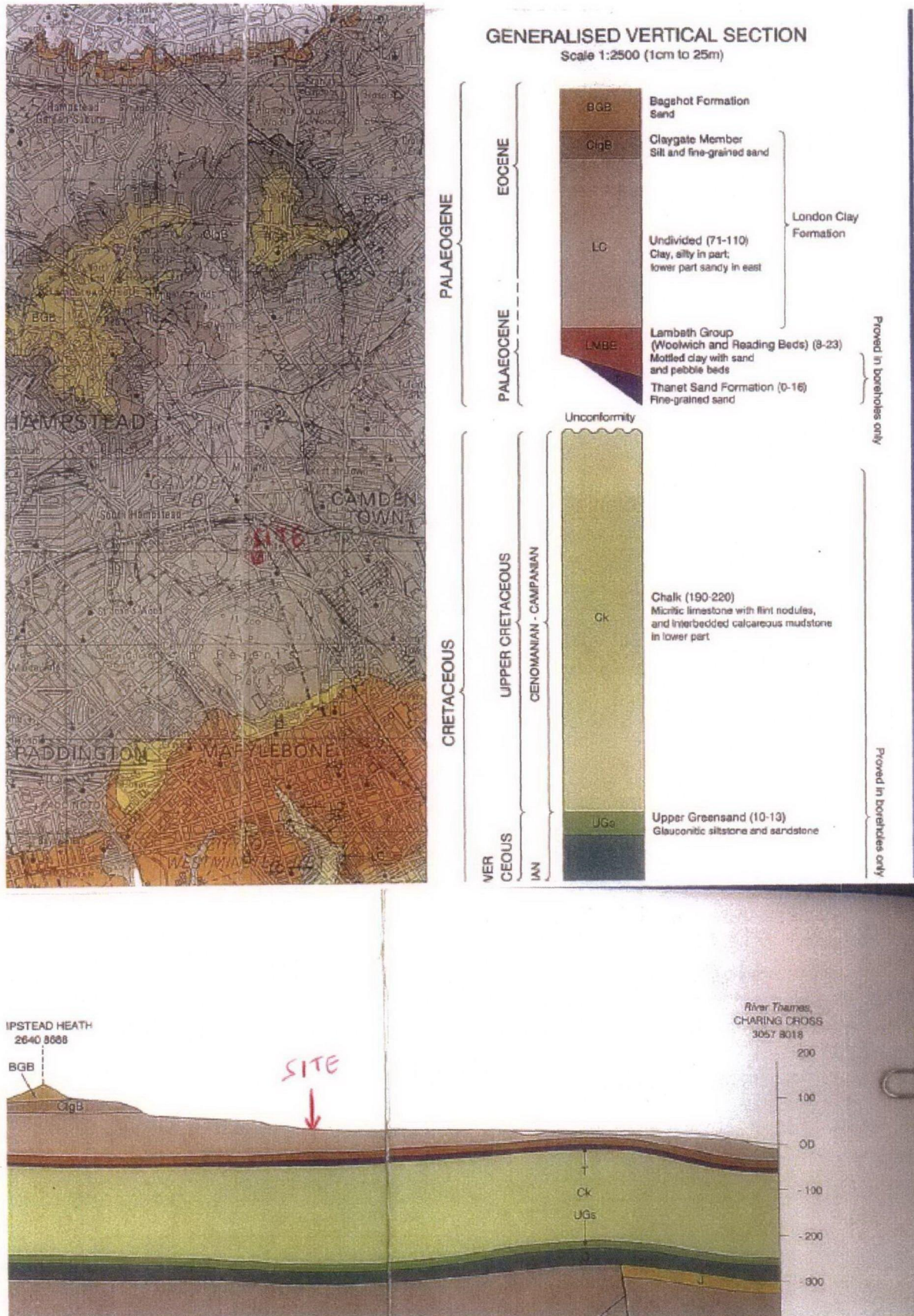
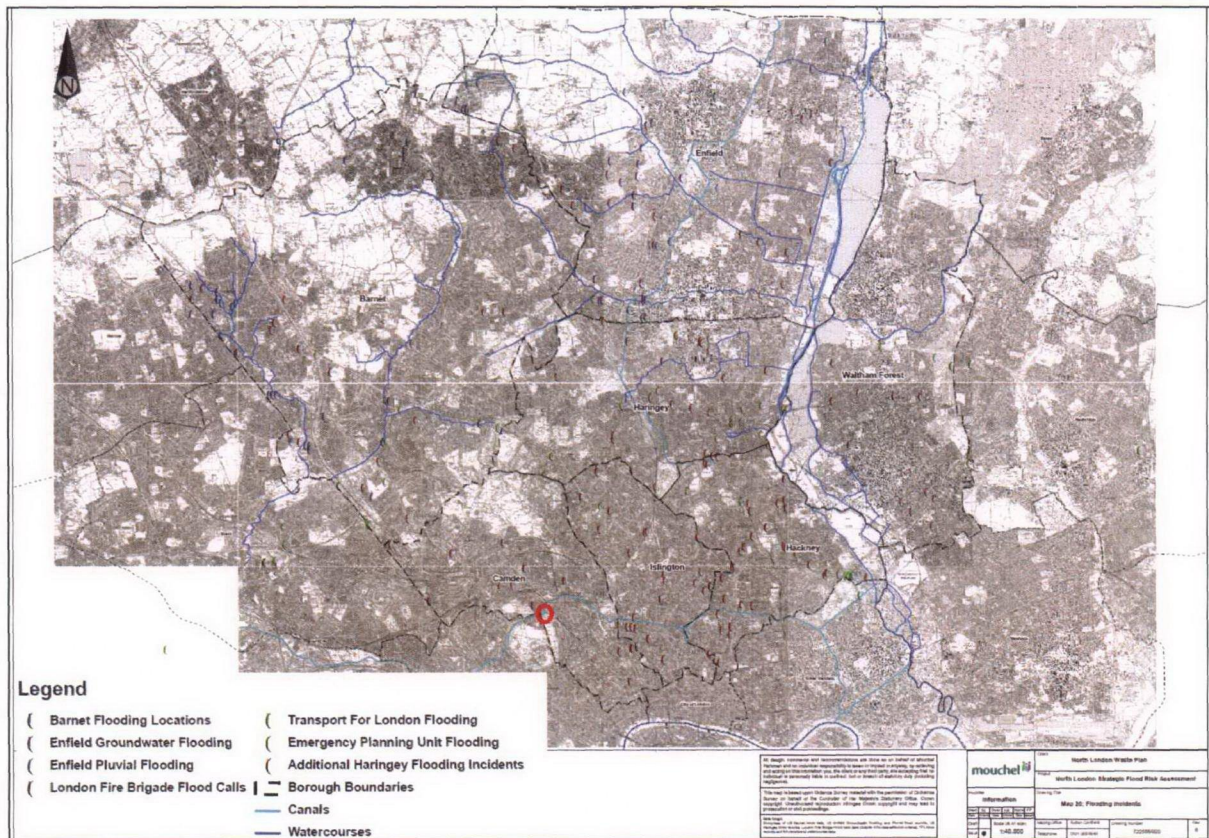
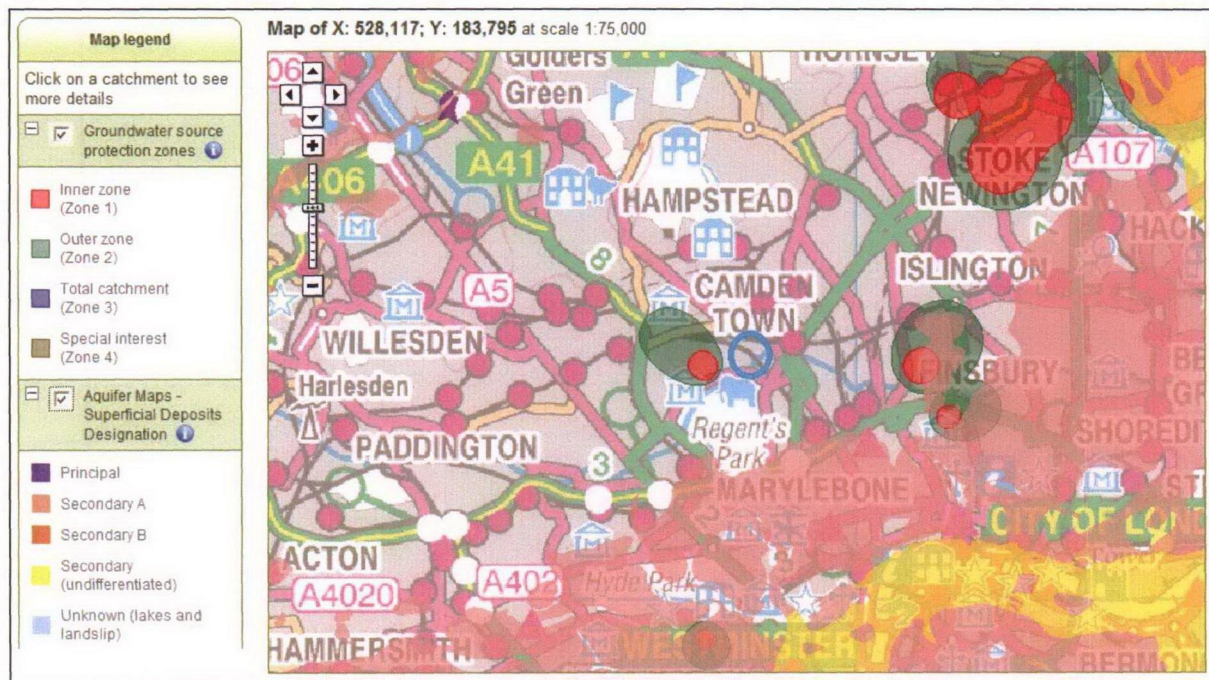


Figure 5. Extract from British Geological Survey map for North London

North London Strategic Flood Risk Assessment (SFRA) also confirms this information. Therefore, the flood risk from ground water is low, as a thick clayed (impermeable) layer prevents groundwater from rising near the ground surface in this location. Figure 6 shows the reported flood incidents in this area (it must be noted that this map covers all forms of flooding including groundwater). The map shows that the emergency services contacted in the past for a flood incident near the site; however, it is thought that the flooding was related to pluvial flooding.



The EA's groundwater source protection zones map also confirms that the site is outside the source protection zones and it is not underlain by an Aquifer (figure 7). Therefore, the proposed development will not affect the local hydrogeology.

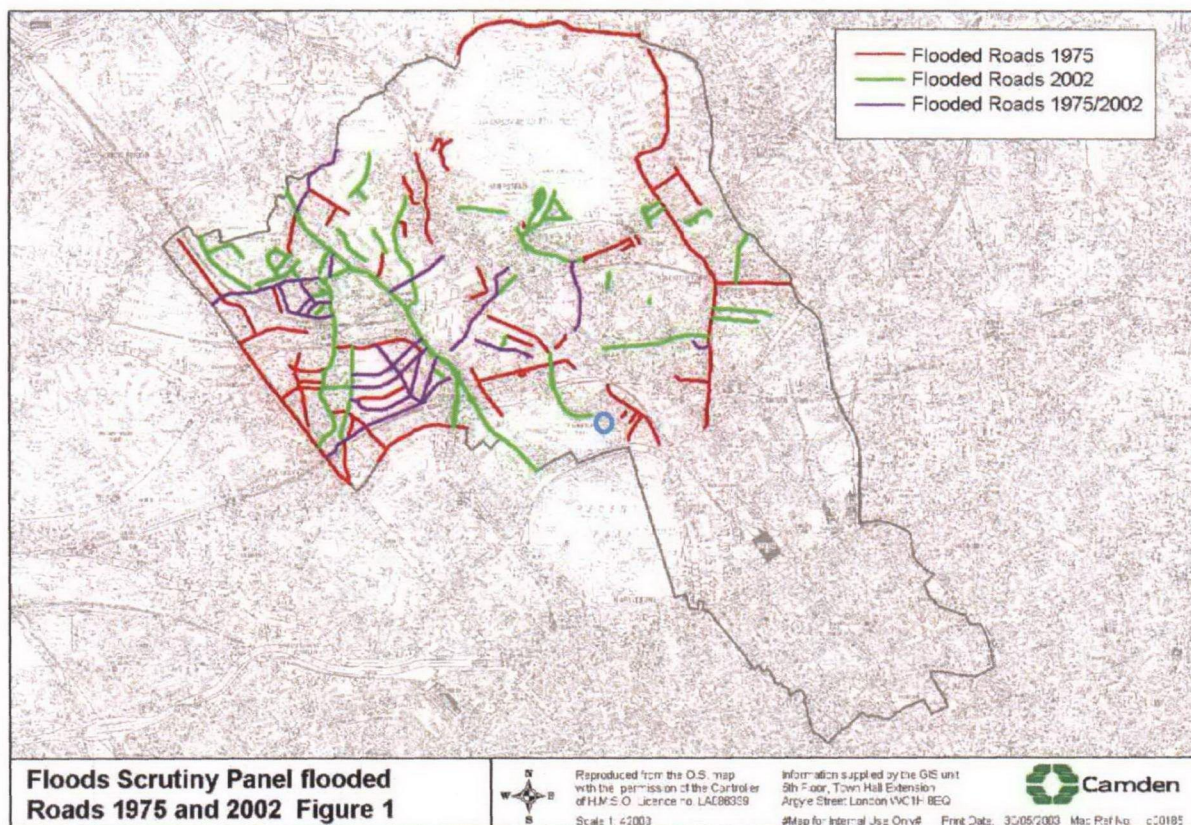


Site Location

Figure 7. Environment Agency Groundwater Source Protection Zones Map

4.3 Flood Risk from Sewers and Overland Flows

The SFRA states that "the flood event on the 7th August 2002 was caused by excessive rainfall causing the main sewer system to become completely inundated. The surcharge pressure forced the water to back onto the streets through manholes and gully gratings and into residents' homes at basement and ground floor level. It was stated that "Any blocked or otherwise deficient Camden Council highway gullies could not have caused flooding on this scale" as the flood water could not drain to the trunk sewer". "Floods in Camden" report, prepared by London Borough of Camden in June 2003 provides a map that shows which roads and areas were flooded in 1975 and 2002 floods. Floods in Camden, Appendix 4 also names the roads that were flooded in these two storms. In accordance with this document Regent's Park Road was not affected by flooding in either events.



Site Location

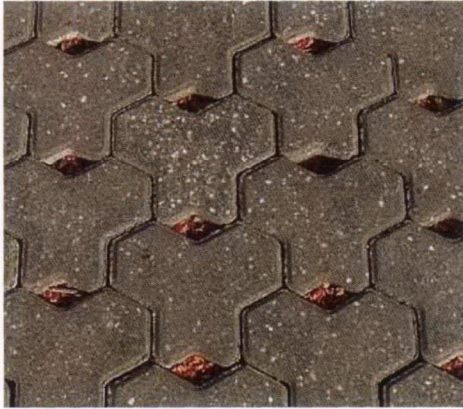
Figure 8. Historical Flood Records (Extract from Floods in Camden)

Historical records confirm that the site and the surrounding areas were not flooded in the past. However, the proposals include a lower floor level that is defined as "highly vulnerable" in NPPF because is particularly vulnerable to all forms of flooding. External access to the lower floor level is provided from the rear side of the house where existing steps lead to the existing lower floor level. Therefore the proposals will not increase the flood risk to the property, as they do not introduce new openings that could increase direct surface water to the lower ground floor level of the building. The topographical survey drawing confirms that the site falls to the north. Therefore the building prevents any overland flow paths from directing water to the lower floor level (if surface or sewer water flood the Regent's Park Road). However, it is proposed a wall be provided on either side of the stairs directing surface water flows away from the stairs (250mm minimum depth). Any surface water entering the site will flow alongside the side walls and eventually will flow in a northern direction where the ground slopes leaving the site without flooding the lower floor level.

5. Run-off Assessment

The proposed development will increase the footprint of the building by approximately 32m². However, some paving at the rear garden and an existing timber summerhouse will be removed compensating for the increase in hardstanding areas on site. Therefore, no surface water attenuation is required, as the proposals will not increase the impermeable areas on site.

However, Sustainable Drainage Systems (SUDS) such as permeable pavement and rainwater harvesting must be considered in the detail drainage design. Although flow control attenuation will not be provided, these systems will provide a betterment to the drainage network by recycling rainwater and delaying the peak flow rates from the site to the public sewers.



Permeable pavements are mainstream types of pavement surface suitable for trafficking that also act as the drainage system. Permeable pavements deal with surface water close to where rainfall hits the ground. This is known as "source control" and is a fundamental part of the SUDS philosophy. They may be used for practical, economic and environmental reasons as well as to satisfy planning and building regulation requirements.

Permeable pavements are very effective at removing pollution from runoff. The pollutants may either remain on the surface or may be flushed into the underlying pavement layers where many of the pollutants are filtered, trapped or degrade over time making them more effective at removing a wider range of pollutants from runoff than oil separators. It is proposed any new paved areas on site to be permeable providing some form of attenuation and water treatment before discharging to the public sewers. This will also omit the need for gullies and pipes in this area providing also a sustainable drainage option.



It is also proposed that gravity drainage is constructed (where achievable) with anti-backflow valves preventing flooding from surcharged sewers. Backflow prevention valves must also be provided for the pumped network that will serve the lower floor level.

6. Conclusions & Recommendations

- In accordance with NPPF this site falls within flood zone 1. *Areas with little or no potential risk of flooding (annual probability less than 0.1% for fluvial flooding), which are already developed.* Proposed developments in these areas have no restrictions provided that the surface water drainage proposals will not increase the flood risk on site and the surrounding areas.
- The proposals will not increase the flood risk to the existing development on site, as they will not introduce additional openings to the ground level that could divert flood water to the lower floor level.
- The existing house and side walls will prevent any overland flows from entering the lower floor level through the stairs' opening.
- The proposals will not affect the local hydrogeology, as the extension of the lower floor level will be constructed in fairly impermeable ground conditions (London Clay). Therefore the proposed development will not affect groundwater flows in the area and subsequently will not increase the flood risk from groundwater on site or the surrounding areas.
- Surface water from the site will drain to the public sewers mimicking existing conditions.
- SUDS techniques must be considered during the detailed drainage design.
- Anti backflow valves will be provided preventing backflow from surcharged public sewers from flooding the property.
- Therefore, the proposed redevelopment has an acceptable flood risk within the terms and requirements of NPPF.

Appendix A Topographical Survey Information

