100 chalk farm road
london NW1 8EH

100

flood risk assessment & sustainable drainage strategy
conisbee

august 2013

one housing group

conisbee

100 Chalk Farm, Chalk Farm,

London, NW1 8EH

Flood Risk Assessment

(Permitted Development Application)

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1.0 INTRODUCTION

Conisbee have been appointed as Civil Engineering Consultants to undertake a Flood Risk Assessment for the change of use from Office use (Use Class B1) at ground to fourth floor levels to Residential use (Use Class C3) to provide 46 new dwellings; comprising 41no. one bedroom units and 5no. two bedroom units at 100 Chalk Farm, Chalk Farm, Camden in London.

This Flood Risk Assessment will be undertaken in accordance with the best practice guidance stated in National Planning Policy Framework (NPPF), PPS25 – Development and Flood Risk pursuant to Local Authority approval and to informing the design.

2.0 BACKGROUND

This flood risk assessment refers to the following documents.

2.1 General Documentation

2.1.1 National Planning Policy Framework (NPPF) (TSO, March 2012) and Planning Policy Statement 25 (PPS25) Development and Flood Risk (TSO, March 2010)

The National Planning Policy Framework and the PPS25 set out government policy on development and flood risk. The aim is to ensure that flood risk is taken into account at all stages of the planning process and that inappropriate development is not undertaken within areas of flood risk.

3.0 EXISTING SITE

3.1 Location

The site is located at NGR 538308,184297 in Chalk Farm, London. The site forms a rectangular shape and is bound on its sides by the following:

- To the north the site is immediately bound by Chalk Farm Road with local high street shops located on the opposite side of the road.
- To the west the site is immediately bound by the Round House with Chalk Farm underground station located further east.
- To the south the site is immediately bound by the North London Rail line with a new medium scale residential block on located further south on Juniper Crescent.
- To the east the site is bound by a small access road leading to the Morrisons Fuelling Station with the Stables Market located further west.

3.2 Existing Site Description and Topography

The existing site consists of two adjacent office buildings, using members of staff for One Housing Group. A five storey office block is located along the front whilst a three storey office block is located along the back of the site. The site also contains a double storey car park and an access road. The site area measures approximately 2,762m².

In terms of topography the site has a retaining wall running along its frontage with the footway; the level at street level is approximately 28.50m AOD, whilst those immediately behind the wall within the site are at a level of approximately 30.75m AOD. Internally the site rises steeply from levels of 30.75m AOD along its frontage to an elevation of 32.75m AOD along its back. The existing topographical site survey is contained in Appendix A.

3.3 Ground Conditions

Geological Maps from Envirocheck and the Intrusive Geotechnical Investigation indicate that the site is underlain by made ground up to a depth of 5.5m, which is underlain by a London Clay bedrock geology. The geological maps and Borehole Logs are contained in Appendix B.

Aquifer Designation

The Environment Agency has recently amended their aquifer designations so that they are consistent with the Water Framework Directive. Both the Superficial (Drift) and Bedrock geology indicate that this site is not underlain by an Aquifer.

Source Protection Zone

Groundwater provides a third of our drinking water in England and Wales, and it also maintains the flow in many of our rivers. In some areas of Southern England, groundwater supplies up to 80% of the drinking water that you get through your taps. It is crucial that we look after these sources and ensure that your water is completely safe to drink.

The site is not located within a Source Protection Zone.

3.4 Existing Site Drainage

The site currently consists of two office blocks and a double storey car park served by short sections of both surface water and foulwater networks prior to combining and outfalling into the Thames Water sewer running along Chalk Farm Road. The Thames Water records of the public sewers found within the vicinity of the site are contained in Appendix C.

The locations and conditions of this drainage have been confirmed by the CCTV drainage survey also contained in Appendix C.

3.5 Existing Site Characteristics

The existing hydrological characteristics for the site are as follows:

- Area of Development Site = 2,762m^2
- Total Existing Impermeable Area assessed to be 98% = 2,710m^2
- Existing run off rate Q_{WR}= 37,60l/s
- Infiltration rate = Unknown

4.0 PROPOSED DEVELOPMENT

4.1 Description

The change of use proposals are for the change of use from Office use (Use Class B1) at ground to fourth floor levels to Residential use (Use Class C3) to provide 46 new dwellings, consisting of the following:

- *4no. x studio's at 32 to 35 m^2*
- *33no. x 1bed at circa 38 m^2 (pocket Living type flat)*
- *4no. x 1bed at circa 50 m^2*
- *1no. x 2bed 4 person at circa 63 m^2*
- *4no. x 2bed 3 person at circa 62 m^2*

4.2 Vulnerability Classification

Table D.2: Flood Risk Vulnerability Classification, Annex D of PPS25 shows that the intended residential use of the proposed housing development has a Vulnerability Classification of "More Vulnerable". However the site lies in Flood Zone 1, of the EA River Flood maps.

Table D.2: Flood Risk Vulnerability Classification

Essential Infrastructure	• Essential transport infrastructure (including mass evacuation routes) which has to cross the area at risk. • Essential utility infrastructure which has to be located in a flood risk area for operational reasons, including electricity generating power stations and grid and primary substations; and water treatment works that need to remain operational in times of flood. • Wind turbines.
Highly Vulnerable	• Police stations, Ambulance stations and Fire stations and Command Centres and telecommunications installations required to be operational during flooding. • Emergency dispersal points. • Basement dwellings. • Caravans, mobile homes and park homes intended for permanent residential use. • Installations requiring hazardous substances consent.[19] (Where there is a demonstrable need to locate such installations for bulk storage of materials with port or other similar facilities, or such installations with energy infrastructure or carbon capture and storage installations, that require coastal or water-side locations, or need to be located in other high flood risk areas, in these instances the facilities should be classified as 'Essential Infrastructure'[20]).
More Vulnerable	• Hospitals. • Residential institutions such as residential care homes, children's homes, social services homes, prisons and hostels. • Buildings used for: dwelling houses; student halls of residence; drinking establishments; nightclubs; and hotels. • Non–residential uses for health services, nurseries and educational establishments. • Landfill and sites used for waste management facilities for hazardous waste.[21] • Sites used for holiday or short-let caravans and camping, **subject to a specific warning and evacuation plan**.

4.3 Sequential Test

The Environment Agency Flood Plain map indicates that this site is located in Flood Zone 1. Flood Zone 1 comprises of land assessed as having a less than 1 in 1000 annual probability of river or sea flooding in any year (<0.1%). Table D.3: Flood Risk Vulnerability and Flood Zone 'Compatibility', Annex D of PPS25, shows that the development is appropriate for this zone and therefore the Exception Test is not required.

Table D.3[23]: Flood Risk Vulnerability and Flood Zone 'Compatibility'

Flood Risk Vulnerability classification (see Table D2)		Essential Infrastructure	Water compatible	Highly Vulnerable	More Vulnerable	Less Vulnerable
Flood Zone (see Table D.1)	Zone 1	✔	✔	✔	✔	✔
	Zone 2	✔	✔	Exception Test required	✔	✔
	Zone 3a	Exception Test required	✔	✗	Exception Test required	✔
	Zone 3b 'Functional Flood plain'	Exception Test required	✔	✗	✗	✗

Key:

✔ Development is appropriate

✗ Development should not be permitted

Secondly the site is a 'brownfield' office building site. The site is an area which supports residential uses.

5.0 DEFINITION OF THE FLOOD HAZARD

5.1 Sources of Flooding

The North London Strategic Flood Risk Assessment (SFRA) was prepared for the 7 North London Boroughs of Barnet, Camden, Enfield, Hackney, Haringey, Islington and Waltham Forest in order to identify the potential sources of flooding for this area, in accordance with Annex C of PPS25, which may affect the site. These sources are discussed below.

5.1.1 Fluvial Flooding

The North London SFRA states that Camden has no fluvial watercourses within its borough boundaries. The River Fleet, which is formed from two springs on Hampstead Heath is the largest of London's subterranean rivers and historically drained to the Camden area. The River Fleet historically originates from springs on Hampstead Heath and drains to the Thames approximately via Kentish Town, Camden Town and Holborn. Through Camden and the City of London the Fleet is now entirely incorporated within the sewer network, owned and maintained by Thames Water.

Regents Canal runs from the west to east and bisects Camden borough. British Waterways are charged with maintaining the Regents Canal. They actively operate a series of sluices and gates along the Canal for navigation and flood risk management purposes. The site is located 500m north of the nearest reaches of Regents Canal at a higher elevation, therefore this site can be considered to be at low risk from fluvial flooding.

5.1.2 Tidal Flooding

This site is remotely located from the Thames therefore it is not at risk from Tidal Flooding.

5.1.3 Overland Flooding

Overland flooding can occur when high intensity rainfall overwhelms man made drainage systems or cannot soak into the ground. Excess water can flow across the ground following the contour gradient and cause flooding downstream. It is exacerbated by steep topography. The site is located midway between Hampstead Heath and West Heath with the topography falling gently towards West Heath.

The North London Strategic Flood Risk Assessment does not state this site is in an area susceptible overland flood. Therefore the site is not at risk from overland flooding.

5.1.4 Groundwater Flooding

For bedrock geology the groundwater profile through London shows relatively little change in elevation, however, the topography of the North London sub-region shows significant variation, with a general fall in an easterly direction from the higher ground in Barnet to the Lee Valley,

where much of the area is only a few metres above sea level. As expected, groundwater levels are closest to the surface around watercourses, particularly in the low lying Lee Valley. The groundwater levels in the Lee catchment are significantly closer by approximately 30m to the surface, whilst those in Camden are at depths between 80m and 90m beneath ground levels. GARDIT operate an ongoing abstraction scheme across London to maintain the level of the groundwater table in the Chalk Bedrock which is assisted by the London Clay impermeable geology. Therefore there is no risk of groundwater flooding from the underlying bedrock geology.

However the groundwater has a different characteristic for the superficial shallower geology. In places the London Clay layer is overlain by deposits of gravels and silts. This is most prominent in the Lee Valley and East of Hackney where alluvium deposits from the River Lee are in evidence. There are also notable outcrops of gravels and silts further to the west in Enfield, Stanmore gravels in Barnet and gravel outcrops on Hampstead Heath. These gravel and silt deposits are much more permeable than the underlying clay layer and flooding can occur at the edges of these deposits and outcrops when the groundwater percolating through the permeable layer meets the impermeable clay layer, causing the water to flow out at surface level, appearing as small springs. Hampstead Heath lies on a silty sand layer on top of the London clay. During rainfall events water drains through the sands before reaching the impermeable layer beneath, causing the formation of springs which feed the Highgate Ponds and form the source of the River Fleet. The nearest ponds to the site are the Hampstead Ponds located 2.50km northeast of the site.

5.1.5 Sewer and Surface Water Flooding

Sewer Flooding

Traditionally sewer networks are designed to cope with storm events up to and including the 1 in 30 year storm event. If this storm event is exceeded surface water flooding would occur following the topography of the area subjected to the flooding event.

The North London SFRA states that surface water and sewer flooding poses a moderate flood risk to the Borough. In particular reference to this site if the capacity of sewer networks was exceeded flood waters would discharge through the gullies and manholes accumulating at the low points along the road. High rainfalls levels and flood events are a recurring feature in Camden due to the nature of summer thunderstorms and the topography of Hampstead. The report suggests that the similarities between floods in 1975 and 2002 and concludes that these flood events have not been recently created by changes in the global climate.