FLOOD RISK ASSESMENT REPORT

31 Woodville Road, Thornton Heath, UK

JULY 13, 2019

WALIYU ODITAYO

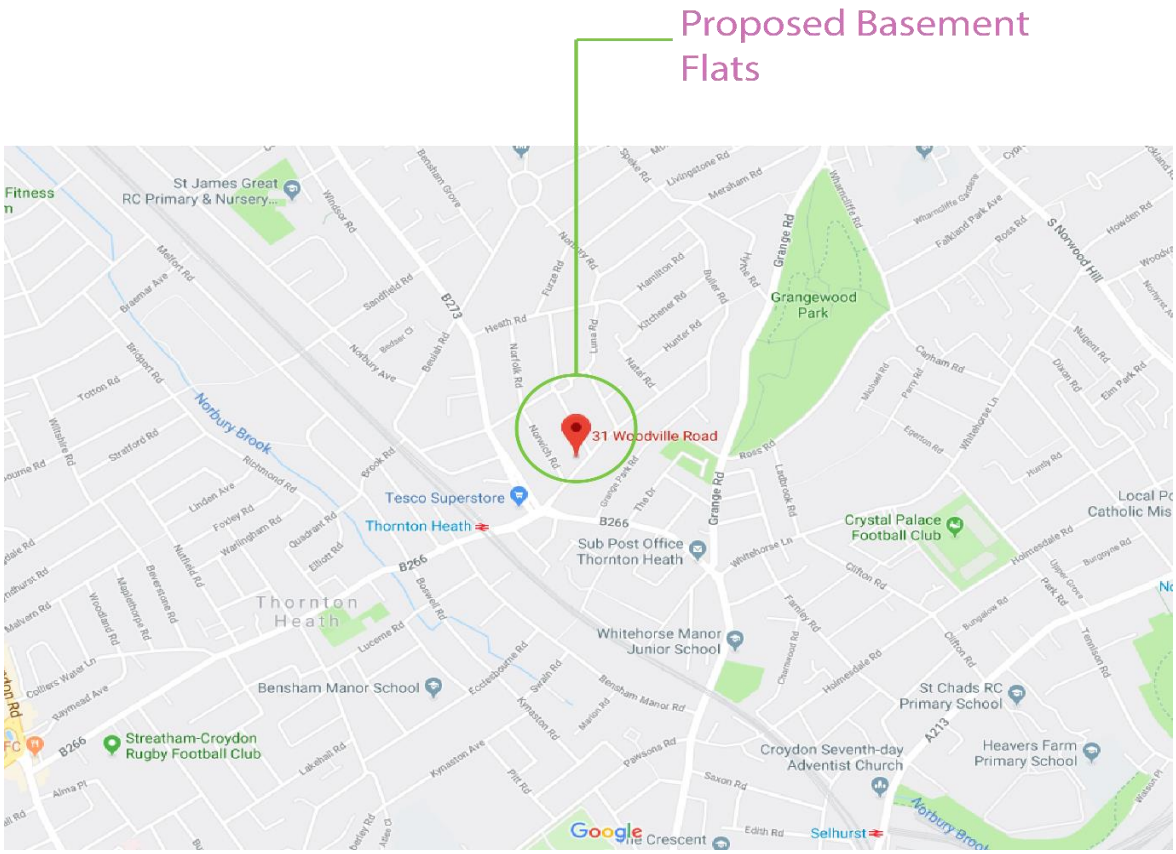
FLOOD ASSESMENT REPORT

Introduction

The purpose of this flood risk assessment is to assess the potential for flooding as a result of the development proposal taking account of all reasonable mechanisms of flooding. Planning policy for flood risk is set out in the National Planning Policy Framework (NPPF) technical guidance published in March 2012. The policy document sets out key planning objectives in relation to land usage and flood risk management. The development proposals are designed to be compliant with the requirements of the National Planning Policy Framework

---

Site information



The proposed development site is located at **31 Woodville Road, Thornton Heath, UK** and is situated along WoodVille Road that comprises of mostly multi-storeyed blocks, townhouses,

and small commercial stores with varied type facades but mostly tiled roofs. Looking over the lifetime of the proposed development, a flood assessment is required in order to particularly identify and mitigate flood risk to the basement flats that are on a lower level from the lot area and cause a flood risk to the dwelling in its very nature.

Vulnerability Classification

Table 2 in the NPPF technical guidance (Flood Risk Vulnerability Classification) assesses the flood risk vulnerability of a site based on its site operations. Based on this assessment and the proposed site operations it has been concluded that the site falls within the category of 'less vulnerable'.

The Flood Map for Crydon Area produced by the Environment Agency indicates that the site falls predominantly within Flood Zone 1 & 2. The proposed building will be located entirely within Flood Zone 2.

Using the Sequential Test set out in the NPPF, Less Vulnerable development uses are permitted in Flood Zones 1 & 2 (refer to Table 3 below), and therefore the development site will comply with planning policy and pass the Sequential Test.

Table 3: Flood risk vulnerability and flood zone 'compatibility'

Flood risk vulnerability classification (see table 2)		Essential infrastructure	Water compatible	Highly vulnerable	More vulnerable	Less vulnerable
Flood zone (see table 1)	Zone 1	✓	✓	✓	✓	✓
	Zone 2	✓	✓	Exception Test required	✓	✓
	Zone 3a	Exception Test required	✓	×	Exception Test required	✓
	Zone 3b functional floodplain	Exception Test required	✓	×	×	×

Key: ✓ Development is appropriate.
× Development should not be permitted.

PROPOSED DEVELOPMENT

BASEMENT DWELLING

31 Woodville Road,

Thornton Heath, UK

The development proposal for the above mentioned site is the development of Basement Flats under the existing dwelling. The proposed development is therefore classified as flood risk vulnerability classification Flood Risk 2. The new basement flats proposed also fall to this flood vulnerability classification. The lifetime of the proposed development is assumed to be at least 100 years.

Identification and Definition of Potential Flood Hazards

The following four flood sources have been identified to potentially effect flooding after excavation and implementation of the proposed basement dwelling.

1. **Flooding from the Sea and Rivers (Fluvial)**

River flooding mainly occurs when the river's catchment area receives larger volumes of water (for Example through rainfall) than the river channel can cope with. This results in river levels rising causing flooding outside of the primary channel.

The closest rivers to the site are the small river to this proposed development is River Cray 1km approx. from the site which flows northwards into another small River Darent, and then northwards to the Thames.

The EA Flood plan in this section shows the site to be outside of the zone of fluvial flooding from both River Cray and River Darent.

2. **Flooding from Land (Pluvial)**

The majority of the developed area of the site is covered by paved areas or roofed buildings. All of the surface water run-off that is produced is collected within the site's drainage system before connecting to the municipal line for handling and processing.

Intense rainfall, which can often be of short duration and which is unable to soak into the ground or enter drainage systems, can run quickly off the land and result in local flooding. In developed areas, this flood water can be polluted with domestic sewage if foul sewers surcharge and overflow.

Due to current lot grading and basement excavation proposed in the upcoming addition, the site is faced with the risk of pluvial flooding and a few measures may be necessary to mitigate surface run-off as well as sewer flooding.

The threat from pluvial flooding is local, and it's highly unlikely that the flooding will affect neighboring properties in the area, thus measures will only deal with the possibility of flooding in this property.

3. **Flooding from Sewers**

The foul water drainage joins the municipal sewer line for treatment.

Sometimes lateral sewer lines maybe overwhelmed by a heavy storm or showers over extended periods. This will cause flooding in the low areas, as the basements in the site.

There is a sewer line along Woodville Rd. and thus such an eventuality will be considered in flood proofing the proposed basement extension.

4. **Flooding from Groundwater**

Groundwater flooding occurs when the water levels in the ground rise above surface elevations. It is most likely to occur in low lying areas underlain by permeable rocks (aquifers) or may be localized gravels in valley bottoms underlain by less permeable rocks. Water levels below the ground can rise during wet winter months, and fall again in the summer as water flows out into the rivers.

Groundwater flooding may take weeks or months to dissipate because groundwater flow is much slower than surface flow and water levels thus take much longer to fall.

The British Geological Survey (BGS) have assessed the maximum Groundwater Susceptibility within 25m of the site as being 'very high', however there are no reported instances of groundwater flooding from the current occupiers around the area.

Proposed Drainage Strategy

Several measures are being proposed to reduce damage to people and property with the basement dwellings construction.

1. **Uncontaminated roof waters:**

Uncontaminated rainwater will be collected through a system of gutters to storage in two 5m3 tanks for household use such as water closets and laundry.
The excess will then be channeled to a storm sewer below the basement level connecting to the main municipal line on **Woodville Road.** Surface waters from the soil and other solids will be treated in a suitable catch pit manhole and oil interceptor prior to discharging to the main line outside. For emergencies when the main sewer is out of service, a French hole will be placed strategically and blended into the yard, to drain away any surface runoff into the ground.

2. **Roadways and Car Parking:**

Surface waters generated within the roadways and car parking areas will collected with a system of channel drainages and discharged to the storm lateral to the main line. As for uncontaminated roof water, lot grading and landscaping will drain the runoff and drainage

towards several French holes blended into the yard. It is also recommended that finished floor levels on the ground floor should be set/maintained a minimum of 150mm above immediate surrounding ground levels. Finished ground levels should be designed to direct overland flows away from built development.
In severe weather or other adverse event, some flooding may enter the basement dwellings. Several measures are being proposed to deal with this eventuality. The first set of measures is to prevent water entering the basement through seepage. For this, preventative methods will focus on:

a. Waterproofing the basements

Water proofing admixtures and cement will be used with the concrete, mortar and plastering on basement level. A layer or damp proof membrane will be laid on before casting basement slab to further curb seepage from failures in walls and floor waterproofing.

b. Weep Tiles

A weep tile system will also be installed, to drain away surface water from around basement walls on the outside. This will be coupled with filling material around the basement, and more clayey than sandy soil will be used to prevent water from seeping into the area around foundation walls.

Where flooding does actually find its way in the basement level, the following corrective measures will be put in place to reduce/eliminate the consequential damage.

a. Sump Pit and Sump Pump

A positively pumped device will be incorporated within the basement to reduce the residual risk posed by sewer and/or pluvial flooding. This arrangement will allow flooding to be pumped to a point on the lot discharging into the system of drainage channels. A backup power generator, for when there is a power outage will also be provided for and installed.

b. Floor Screed treatment

The floor will also be treated to incline smoothly to fall to the direction of the sump pit to allow flooding to drain into the sump pit for pumping to ground level.

c. Drainage Floor Traps

Apart from the measures discussed above, a system of floor traps will also be considered as an emergency measure, to collect and drain water on the basement levels away to a deep soak pit located away from the basements (typically not less than 100m away) to drain.

Conclusions

The proposed basement dwellings development is not considered likely to put the site or any adjacent sites at a higher risk of flooding, or give rise to any significant flood risk in the future as a result of climate change in its projected life time, as its situated a safe distance away from the nearest oceans.

There will also be no significant increase in wastewater flows or detriment to the nearby sewer network posed from wastewater flows from the development.

Once the measures outlined are put in place, the threat of flooding in the basement will be significantly reduced and where it happens in severe events, the damaging effect will be managed effectively, to avoid damage to property and people.