



## FLOOD RISK ASSESSMENT

29 GONDAR GARDENS,  
LONDON,  
NW6 1EP.





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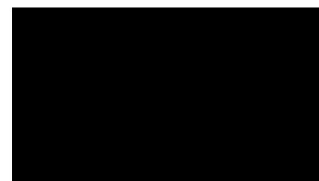


## VERSION CONTROL

**PROJECT NAME:** 29 GONDAR GARDENS, NW6 1EP

**REPORT TITLE:** FLOOD RISK ASSESSMENT

Revision Record	Rev.	Date	Status	Description	Name/Signature	
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## 1. INTRODUCTION

- 1.1 Star Design Solutions has been commissioned by Mr & Mrs Dynowski to prepare a flood risk assessment in support of a planning application for a residential redevelopment at West Hampstead, London. The redevelopment consists of a conversion and an extension to the existing basement level.
- 1.2 As shown in figure 1, the redevelopment is located in Flood Zone 1 (land assessed as having a less than 1 in 1000 annual probability of river and sea flooding in any year in accordance with the Technical Guidance to National Planning Policy Framework); therefore the main purpose of this report is to consider the management of surface water run-off from the development and the risk of flooding from non-fluvial sources.

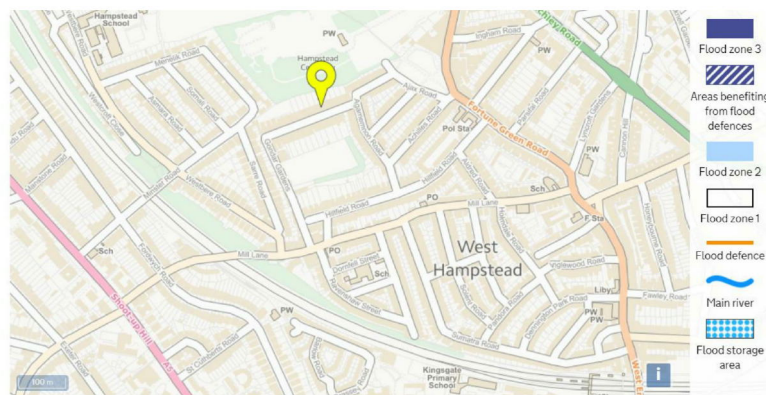


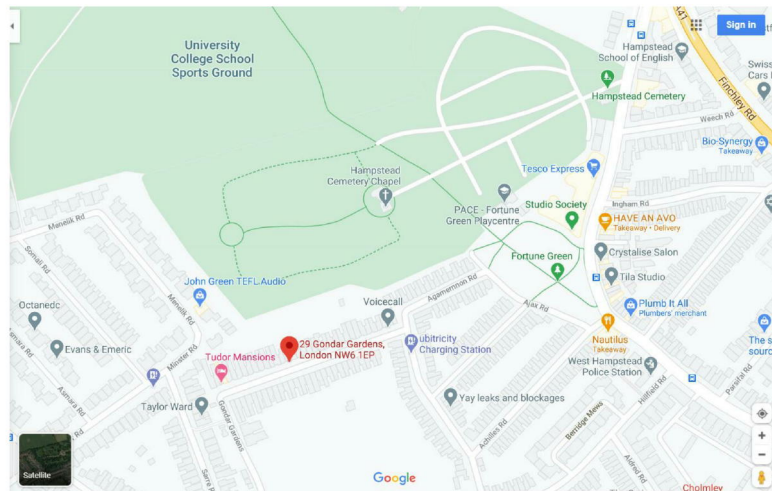
Figure 1 –Environment Agency Fluvial Flood Map

- 1.3 This area falls under the jurisdiction of the London Borough of Camden and is covered within the 'Level 1 Strategic Flood Risk Assessment' (SFRA) issued in July 2014, which considers local flood risk issues with respect to spatial planning.



## 2. THE SITE

2.1 The development is located immediately to the south of the University College School Sports Ground, which is also within the vicinity of the Hampstead Cemetery. The site is surrounded by other existing buildings and properties, with West Hampstead Station located approximately 0.99km south-east of the site and A41 Finchley Road located 0.59km east of the site. The location of the site is shown in Figure 2 below.



**Figure 2 –Site Location**

2.2 The site is irregular in shape but is approximately up to 6m wide by 24m long. The overall topography of the site relatively flat.

2.3 The Ordnance Survey National Grid reference for the center of the site is 524758mE, 185273mN.

2.4 The existing development is brownfield site and covers an area of approximately 0.01Ha.

## DESCRIPTION OF EXISTING HYDROLOGY

2.5 The site is located south-west of Golders Hill Park and Hampstead Heath, which includes various lakes and basins.



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#### **VULNERABILITY CLASSIFICATION, SEQUENTIAL AND EXCEPTION TESTS**

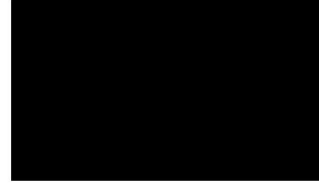
2.6 With reference to Table 2: 'Flood Risk Vulnerability Classification' in the NPPF, buildings that include basement dwellings is classed as 'highly vulnerable'. However as stated previously the proposal relates to an extension at basement level, in which the basement is not used for residential purposes with internal access to the upper floors. Hence this development can be classed as '*more vulnerable*'.

2.7 The sequential test should be applied to developments located within a flood plain, in order to steer them to areas with lower risk of flooding. The proposal is a householder development and is not associated with the creation of a separate unit of residential accommodation, located in Flood Zone 1 (low risk). Hence a sequential test is not needed.

2.8 Table 3: 'Flood Risk Vulnerability Classification' in Technical Guidance to the NPPF document classifies the proposed type of development as appropriate for Flood Zone 1 without having to address the exception test.



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### 3. PROPOSED DEVELOPMENT

3.1 The existing structure is a late 19th or early 20th century mid terrace property originally comprising four stories. The above property comprises ground, first and second floor in the main house, with loft floor level. The external and party walls are of solid masonry which extend down to a corbelled brick footing. The internal load bearing walls are also of masonry up to first floor level.

The ground floor, upper floors and the pitch and flat roofs are of suspended timber floor.

The property is generally in its original structural form although there been some minor internal structural alterations.

3.2 The proposed works involve the development of the basement floor level with the inclusion of a master bedroom and an en-suite, two separate bedrooms, a bathroom as well as two light wells at the front and the rear of the property. There will also be an additional access to the ground floor via the front light well.



## 4. QUANTIFYING FLOOD RISKS

### FLOODING FROM RIVERS

- 4.1 The primary risk of flooding is based upon the fact that the proposed development is located in an area that could potentially flood if the flood defenses were not in place. Considering the height of these flood defenses and the fact the Thames Barrier is in place, the chances of them being overtopped or breached are low. However, even though the flood defenses reduce the risk of flooding they do not eliminate risk completely. The reduction in flood risk that the defense provides depends on the standard of protection, the performance and the reliability of the defense.

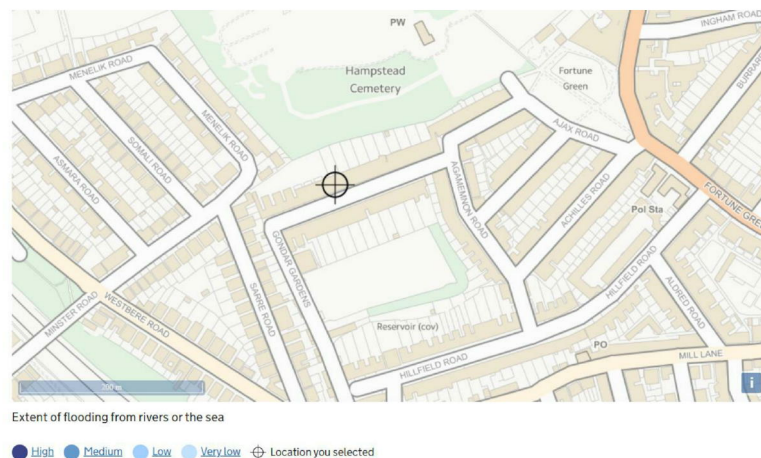


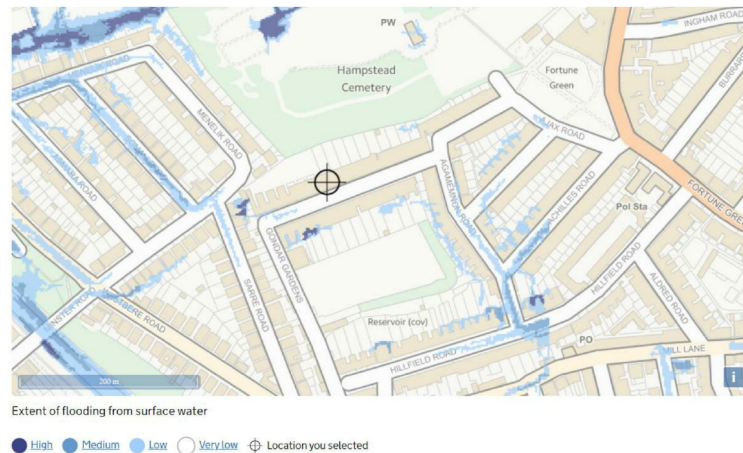
Figure 3 –River Flood Risk Map

- 4.2 The risk and potential consequences of pluvial flooding on the development based on figure 3 is therefore considered to be very low.

### SURFACE WATER FLOODING

- 4.3 Flooding from overland flows is caused by very heavy rainfall in areas where natural and artificial channels run at full capacity and are unable to cope with the excess of water.





**Figure 4 –Surface Water Flood Risk Map**

4.4 The risk and potential consequences of surface water flooding on the development based on figure 4 is shown mostly to be at very low risk.

4.5 The proposals will not alter the surface water run-off within the site due to no additional impermeable areas being created. It is envisaged that the surface water will run-off in the same way that it is does at present.

#### **GROUND WATER FLOODING**

4.6 Groundwater flooding is caused by increased groundwater levels generated by prolonged periods of rainfall.

4.7 The SFRA groundwater flooding map shows that the development is not in an area with potential for groundwater flooding to occur at surface. The map shows it is close to a previous groundwater flooding incident, however the SFRA states that incidents were often small-scale and site specific. The site has a largely impermeable land cover that would limit the potential for groundwater to rise to the ground surface. Hence it can be deduced the site is less vulnerable to groundwater flooding.

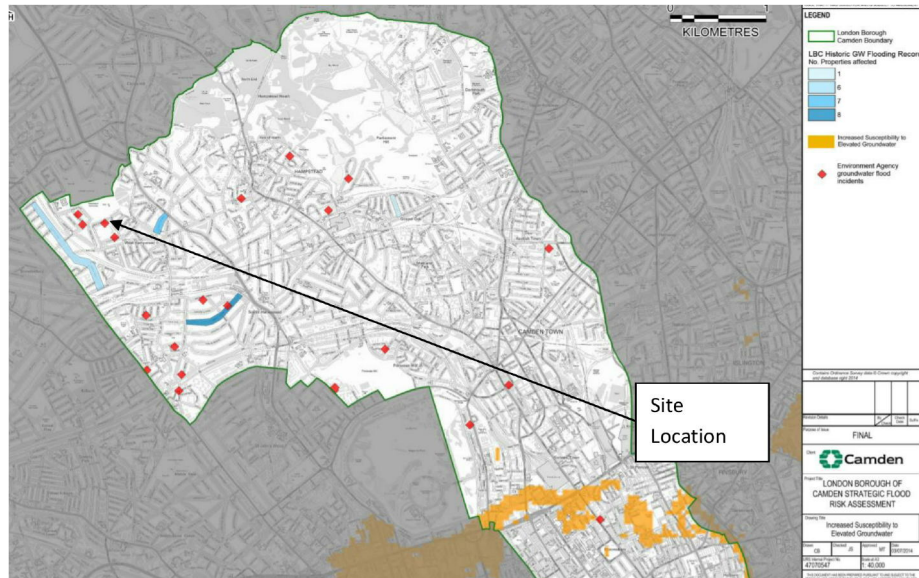


Figure 5 –Groundwater Flood Risk Map

## FLOODING FROM ARTIFICIAL SOURCES

4.8 Flooding from artificial sources can be defined as a failure of manmade infrastructure or human intervention that causes flooding. Consideration should be given to features such as reservoirs, canals, water features and lakes where water is retained above natural ground level. The SFRA states that there have been no recorded incidents of reservoir flooding within London Borough of Camden, and that based on the historical evidence reservoir flooding is extremely unlikely to happen.



## 5. MITIGATION MEASURES

### EXISTING GROUND FLOOR

- 5.1 The internal ground floor is concrete slab at the rear renewed with damp proofing membrane throughout. The existing rear garden levels shall be retained without any further alterations.

### EXISTING SOLID MASONRY WALLS

#### Lime Based Plaster:

- 5.2 Lime based plaster products have good water resistance properties and once installed over a water resistant render, such as sand/cement or proprietary sealant, will provide effective resistance to flooding.
- 5.3 Following immersion in floodwater lime based plasters over a water resistant render should dry out quickly and should not deteriorate even if subjected to repeated exposure to floodwater. The water resistant render beneath the plaster reduces water penetration into the underlying masonry, allowing the wall to dry out more quickly without the need to remove the plaster finish. Hence repair costs can be reduced.

#### Hydraulic lime:

- 5.4 Hydraulic lime finishes with water resisting additives can also provide effective flood resistance for masonry walls, both internally and externally. As with lime based plaster, hydraulic lime coatings have good water resistance properties and can allow walls to dry out without the need for replacement following immersion in floodwater.

#### Walls - General Repairs:

- 5.5 Any existing damaged areas of masonry walls, including mortar joints applicable to the proposed conversion will be repaired and re-pointed accordingly. Any signs of damp penetration to walls will be repaired by chemically injected damp proof course and waterproofing slurry if required. All joints around window & door openings will be repaired & sealed accordingly and this will also apply to any existing exposed services inlet and outlets.

#### Internal Stud Walls:

- 5.6 Internal timber stud walls to be constructed using WBP timber sections. Plasterboard sheets can be replaced with timber panels, using WBP bonded plywood, but this is unlikely to provide a good finish for decorations. Alternatively, plasterboard can be replaced horizontally thus reducing the amount of plasterboard replacement should flooding re-occur.

### WATER EFFICIENT MEASURE

- 5.7 All new and existing shower heads will be replaced with water efficient shower heads. All toilets (old and new) flush system will dual flush. All white goods (e.g. washing machine) will be water efficient appliances.



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#### **PROPOSED BASEMENT**

5.8 For basement walls and floor, tankering system will be installed by a competent contractor. The applicant confirms that for walls DELTA-MS500 fixed with delta Qwik-Seal Plugs, DELTA-MS20 on the floor, both sealed with Tape and delta corner strip at the joints. DELTA Drainage Channel installed around the perimeter of the room collecting the ground water draining away to a Dual V3 Sump Pump. Delta system will be installed by a delta certified approved competent contractor. It is recommended to use delta dual V3 package pumping station with inlet from drainage channel system. This package plant is design discharge maximum of 2.2l/s with 220l storage tank.

#### **DRAINAGE**

5.9 The existing drainage serving the property is a combined surface water and foul system. Non-return valve will be fixed and maintain by the property owner to protect the dwelling from future flooding due to surcharging of public sewer systems. All existing external gullies will be upgraded to modern standards in order to handle surface water. A full length drainage channel will be positioned in front of the rear end of the building and will act as primary barrier to prevent water from entering the property with secondary gullies placed within the rear garden area.



## 6. CONCLUSION

- 6.1 The proposed works involve the development of the basement floor level with the inclusion of a master bedroom and an en-suite, two separate bedrooms, a bathroom as well as two light wells at the front and the rear of the property. There will also be an additional access to the ground floor via the front light well.
- 6.2 The redevelopment is located in Flood Zone 1 (land assessed as having a less than 1 in 1000 annual probability of river and sea flooding in any year in accordance with the Technical Guidance to National Planning Policy Framework)
- 6.3 There are no records suggesting that the site experienced any historical flooding events.
- 6.4 With the site being located in Flood Zone 1, a safe access/egress route to higher floor from the basement would be provided during 1 in 100 year event

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