

# South Hampstead Flood Action Group

Report on South Hampstead Flood Mitigation Advice  
and other property level protection measures  
following the floods of July 2021



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## Executive Summary

Warwick York were commissioned by the South Hampstead Flood Action Group to prepare a series of flood mitigation and property protection reports following the flooding in July 2021. Many properties in the locality were affected by what appears to be surface water flooding. Various local authority and other bodies have produced, or are producing, reports on what happened during the floods of July 2021. References are made to these external reports. We have reproduced the non-technical sections of these stage one, stage two, and stage three reports, but the stage four report is still to be published, in the coming months.

Warwick York have not commented on the causes of the flooding, as our role was to advise and suggest different types of mitigation measures. We understand that Thames Water and other utility companies will be proposing various measures mainly in respect of non-return valves. Many of the residents asked how effective and how non-return valves worked. In our reports we have included a description of what these valves do and how effective they are. As part of the package of support we offer, we are quite happy to advise residents on the proposals yet to be made by Thames Water and the other utilities.

Warwick York has undertaken eight individual surveys of various properties supplied to us by the South Hampstead Flood Action Group. We asked for several distinctive properties to show the wide range of construction and layout of properties in the area. Some of these properties were flooded to a depth of over 1.5 m whilst others escaped with just a few millimetres of water. Many flats are below ground level, it is a characteristic of the area and the fact that many of these homes have been converted from traditional single use properties into flats and apartments. In many cases what used to be the basement of the buildings are now fully functioning self-contained flats. Anything that is below normal ground level and road level is susceptible to flooding. By the nature of the topography floodwater will find its way to the lowest level and in many cases into the garden areas of these basement flats.

Within the report there is a typical survey of one of these properties, with personal details redacted, showing the style and type of the survey and the recommendations can be made for individual properties. For the eight properties that were surveyed we have made various recommendations and obtained typical quotations to provide property level protection at these properties. These quotations should be taken as a guide for other similar properties in the area. See Appendix A for example quotations.

A full range of mitigation measures and their suppliers is documented in this report, we have also produced the Warwick York Flood Protection Guide, which we will provide separately.

The National Flood Forum blue pages website lists several companies who provide flood protection services. [www.bluepages.org.uk](http://www.bluepages.org.uk) for more information.

**Laurence Waterhouse FRSA, MRICS**

**June 2022**

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# 1. Introduction

- 1.1 We include the following information as supplied by the South Hampstead Flood Action Group. This gives a background to the history of the flood events that have happened over 20 years' in the South Hampstead area.
- 1.2 Letter from South Hampstead Flood Group to Thames Water, included below:

Oct 2021

Thames Water



Email: [Redacted]

Dear [Redacted],

## RE: Action in response to climate change impacts

In July (2021) South Hampstead was badly flooded, many properties by sewer back flow, clearly indicating a severe drainage problem in the area.

In some properties the flooding was 1.5 metres deep, resulting in many thousands of pounds worth of damage to local homes and businesses, as well as hugely disrupted lives. Many properties were also flooded by raw sewage when their toilets and showers backed up.

It is clear from Camden Council's map of the areas flooded in 1975 and 2002 that the same areas were flooded again, as shown by the map of flooded properties compiled by local residents. (The 2021 data is likely to be an under-representation of the problem.)

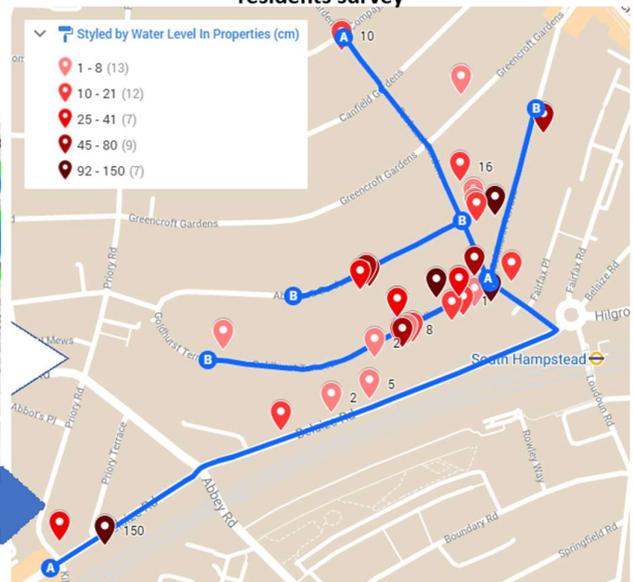
Map of flooded Properties in 1975 and 2002



1975 flooded streets

2002 flooded streets

Map of flooded Properties in 2021 based on limited residents survey



These videos show how severe this flooding was:

<https://twitter.com/lunanana/status/1414620842516959241?s=20>

<https://twitter.com/lunanana/status/1414620355440914449?s=20>

The area around the Goldhurst Terrace, Fairhazel Gardens intersection is particularly vulnerable because it sits at the bottom of a very long hill leading down from the highest point in London (Whitestone Pond in Hampstead).

The Thames Water drainage system was unable to cope with the July downpour. With climate change predicted to bring even more extreme rainstorms, urgent action must be taken to prevent more extensive and drastic flooding. Thames Water needs to significantly enlarge and improve the drainage in South Hampstead and in the streets that lead down to it from Hampstead.

The flooding is causing extremely serious problems for the affected properties' ability to obtain flood damage insurance: some have already been told that this will no longer be available. This is a matter of great concern to those impacted and one over which they have no control, as it is Thames Water's responsibility alone to properly maintain their drainage system.

Camden Council is already playing its part, for example, by cleaning the local gullies every three months, and checking them every few weeks, but the key problem is the size of your drains.

We are aware that following the July floods you are conducting a review. Camden Council conducted a review after the 2002 floods, and also published the 2013 Camden Flood Risk Management Strategy. Both of these recommended that action be taken in South Hampstead, yet little or nothing has been done.

It is clear that the recommendations made by those previous reviews need to be actioned. South Hampstead must be a priority for urgent action.

Swiss Cottage ward councilors have pledged funding for new SUDS schemes, which will help. But we also need Thames Water's assistance as you can make the biggest difference.

Thames Water needs to plan for climate change impacts now. Statutory design standards for storm/combined sewer capacities should be reviewed immediately to accommodate projected climate impacts.

We would like to meet you as soon as possible to discuss this in more detail.

Yours sincerely,

## 2. Reports on Flooding from July 2021

2.1 A series of reports (The London Flood Review) which were commissioned following the flooding in many parts of the capital in 2021.

2.2 The London Flood Review reports can be found at this web link <https://londonfloodreview.co.uk/>. An excerpt from the report is detailed below:

*The London Flood Review has been set up to examine the flash flooding that affected many parts of the capital in July 2021. The review seeks to better understand the extent and causes of these floods, to assess how the drainage systems performed, and to recommend how the increasing risks of future flooding events can be managed.*

*The review, which has been commissioned by Thames Water, will play an integral part in ensuring the company future proofs its infrastructure to protect its customers, their communities and the environment as such severe weather events look set to become the norm across the UK.*

*The review will also play an important role in improving collaborative working between all parties responsible for managing future flooding risks. As part of its focus, the review will provide insights on London's wider drainage infrastructure and broader recommendations that could be adopted by all organisations with surface water management responsibilities.*

### Background

*On 12 July and 25 July 2021, several London boroughs experienced severe flooding, causing damage to property and infrastructure, and disrupting people's lives and livelihoods. To establish why this flooding happened, and how similar events may be managed in the future, Thames Water commissioned an independent expert group (IEG) to lead an Independent Review into the flooding. The review consists of four key stages: – Stage 1: What? – An objective review of the available data relating to the flooding on 12 and 25 July 2021 – Stage 2: Why? – An investigation into the flooding mechanisms and root causes that led to flooding on 12 and 25 July 2021 – Stage 3: How? – An assessment of how well Thames Water's assets, including flooding alleviation schemes, critical pumping stations and the overall sewer network, performed on 12 and 25 July 2021 – Stage 4: What next? – Recommendations to improve current flood mitigation processes and improve resilience to future flooding events.*

2.3 The conclusions from the Stage 2 report can be found on page 39 of the report as follows;

*The SWMP indicates that the Hampstead area, which is where the two Hotspots are located, was badly affected by a flood event in 2002 where the drainage system was overwhelmed, indicating a historical sewer flooding issue. This is supported by model-predicted high level surcharge at trunk sewer 'Mid Level Sewer No2 line'. A letter from several Camden stakeholders, including the MP and Camden Council, indicate that the severe flooding in South Hampstead, in the vicinity of both Hotspots, was caused by sewer backflow and some properties affected by raw sewage flooding, further confirming the sewer system was, again, overloaded. The severity of flooding in South Hampstead indicated in the letter seems to far outweigh the level of reported flooding in the ASFHD, suggesting there may be some under-reporting of flooding in this area. The letter from the Camden stakeholders also links to some videos taken by residents showing the severity of surface water runoff, indicating that surface water being unable to enter the system due to rainfall intensity was likely to be a key component of the cause of flooding. The surface water analysis of the events indicates flooding from surface water would collect at Belsize Road (in Hotspot 1) and this is supported by the surface water mapping of the event indicating that water is not getting into the drainage system. This indicates that the predominant mechanism of flooding in Hotspot 1 was surface water runoff not being able to enter the system due to the intensity of the event. The primary flooding mechanism for Hotspot 2 is less clear, as there is a wide range of isolated flood events over a large area some being above ground flooding, and some being below ground flooding. High level surcharge at the trunk sewer resulting in below ground flooding and is more likely the primary factor in this area, rather than surface water flooding. However this observation is made with low confidence. Hotspots 1 and 2 are not considered to be influenced by tide levels or pump failure*

2.4 The non-technical reports for stage 1,2,3 have been sent separately.

### 3. EXAMPLE: Property Level Flood Report with recommendations

- 3.1 The following is an example report from one of the SHFAG clients. The property chosen was a composite of typical properties in the area since all the properties are similar in general construction.
- 3.2 This property is constructed over four floors and includes habitable accommodation on the sub ground level, ie in the original basement.
- 3.3 The Property Level Flood report is included for information only.

#### Property Level Flood Report with Recommendations (Redacted)

Please note that the executive summary and contents page have been removed for inclusion in this report.

#### 1. Introduction

##### 1.1 General Details

<b>Survey date</b>	10 <sup>th</sup> February 2022
<b>Client Ref</b>	REDACTED
<b>Name of client</b>	REDACTED
<b>Mobile</b>	-
<b>Email</b>	-
<b>Address</b>	-
<b>Town</b>	South Hampstead, London
<b>Postcode</b>	-
<b>Describe reason for survey</b>	To investigate property resilience and resistance measures that are appropriate to protect the property from future flooding.
<b>Describe type of property?</b>	Residential

##### 1.2 Scheme Background

Property Flood Resilience (PFR) - also known as Property-Level flood Protection (PLP) - measures are now being investigated as a beneficial option to manage future flood risk and help reduce damage

##### 1.3 Definitions

**Protection Measures:** Resistance measures aiming to reduce the amount of floodwater entering the property, such as door barriers and automatic airbricks.

**Adaptation Measures:** Resilience measures aiming to reduce the damage caused by floodwater which has entered the property, such as tiled floors and raised electric sockets.

**Property Flood Resilience:** The outcome achieved by installing both protection and adaptation measures.

**Annual Exceedance Probability (AEP)** (if applicable): The likelihood of a flood happening is best described as the chance or probability of a particular sized flood occurring in one year. For example, “there is a 1 in 100 chance of flooding in any given year.” This is usually described as a 1% annual exceedance probability (AEP) flood. So, a 1% AEP is equivalent to a 1 in 100-year flood in any one year.

**Main River:** Any watercourse marked as a Main River on a Main River map, as designated by Defra in England or the Welsh Government in Wales. The Environment Agency and Natural Resources Wales have powers to conduct flood defence work on Main Rivers.

Generally, the Environment Agency is responsible for managing the flood risk posed by Main Rivers and the sea in England. Local Authorities are responsible for managing the flood risk posed by surface water sources, groundwater and ordinary watercourse and the local water company is responsible for sewer related flooding.

#### 1.4 Flood resilience and resistance measures

It should be noted that it is not possible to completely prevent flooding, flood resilience and resistance measures are designed to mitigate flood risk and reduce damage and adverse consequences. They will help you to recover more quickly following a flood event. Flood resilience and resistance measures are explained further in sections 1.3, 6 and 7 of this report.

It is particularly important that you prepare your individual flood plan, which should address any remaining flood risk and recognise that flood resistance measures can be overwhelmed by a bigger flood event.

Information on preparing a personal flood plan is provided in section 10.2.

Please refer to the Environment Agency website for further information: [www.gov.uk/check-flood-risk](http://www.gov.uk/check-flood-risk)

Any alterations to the property after the installation of flood protection measures may lead to barriers no longer being able to be installed or protect the property as designed and/or may create routes for water to bypass the measures installed.

#### 1.5 This report

This report outlines the survey findings and the core package of flood resistance measures which may be available.

The survey was restricted to locations that were reasonably apparent by inspection from ground level from both inside and outside the property. No excavations were made to try to locate other entry points.

It should be noted that the options described here are an outline, for further discussion and agreement between the homeowner, appointed supplier/installer and Local Authority. Further agreement will also be needed with the appointed contractor concerning the specifics of any installation works. It is the responsibility of the contractor to ensure that all installations and modifications to the property are compliant with all relevant regulations, standards and guidance.

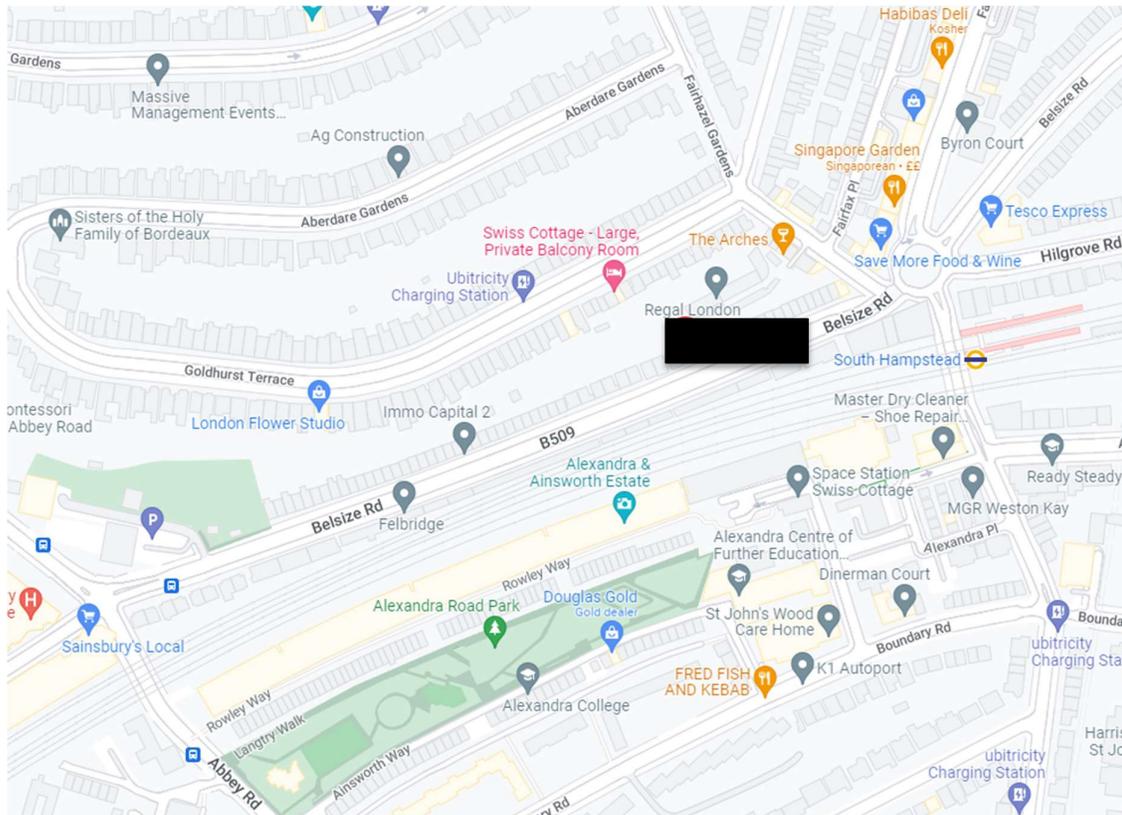
## 2. Detailed property information

### 2.1 Property Location

Lying in the residential area of South Hampstead, in the London Borough of Camden, this Victorian property is located at [REDACTED]

There are no open watercourses near this property. Please note that there are several subterranean rivers and combined sewers. With the original route of the Kilbourne stream believed to have been within 200m from the client's property.

Figure 1. Property Location



### 2.2 Brief Property description

Built in the 1860's, this brick built Victorian villa is semi-detached with an extension to the rear in the form of a conservatory. The walls are constructed from solid brick wall to the original property, the conservatory is a cavity wall construction. The floors are solid throughout, with a mix of tiles, floorboard and carpet overlain.

This property currently benefits from aluminium demountable flood barriers to the side entrance and rear conservatory entrance.

### 3. Assessment of flood risk

Flood risk summary for the area around [REDACTED]

#### Surface water

##### High risk

What this information means:

This flood risk summary reports the highest risk from surface water within a 20m radius of this property.

High risk means that each year this area has a chance of flooding of greater than 3.3%.

This information is suitable for identifying:

- which parts of counties or towns are at risk, or have the most risk
- the approximate extent and depth of flooding

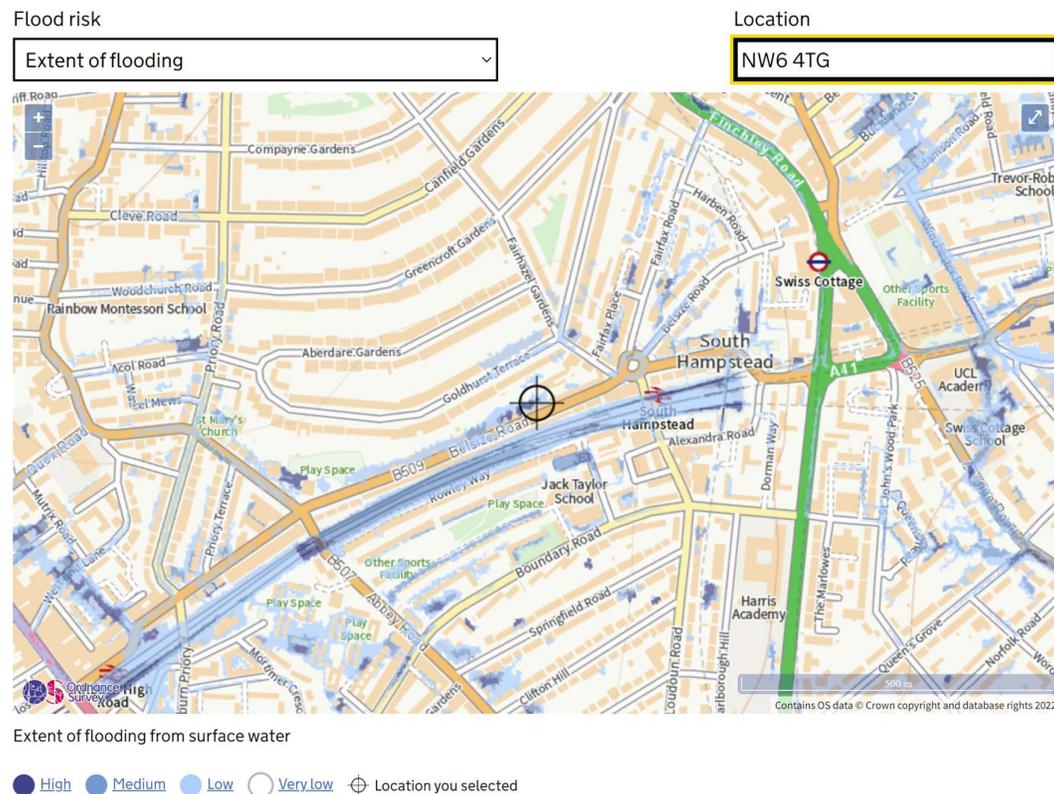
It's unlikely to be reliable for a local area and very unlikely to be reliable for identifying individual properties at risk.

Surface water flooding, sometimes known as flash flooding:

- happens when heavy rain cannot drain away
- is difficult to predict as it depends on rainfall volume and location
- can happen up hills and away from rivers and other bodies of water
- is more widespread in areas with harder surfaces like concrete

Lead local flood authorities (LLFA) are responsible for managing the flood risk from surface water and may hold more detailed information.

Your LLFA is **Camden council**.



## Rivers and the sea

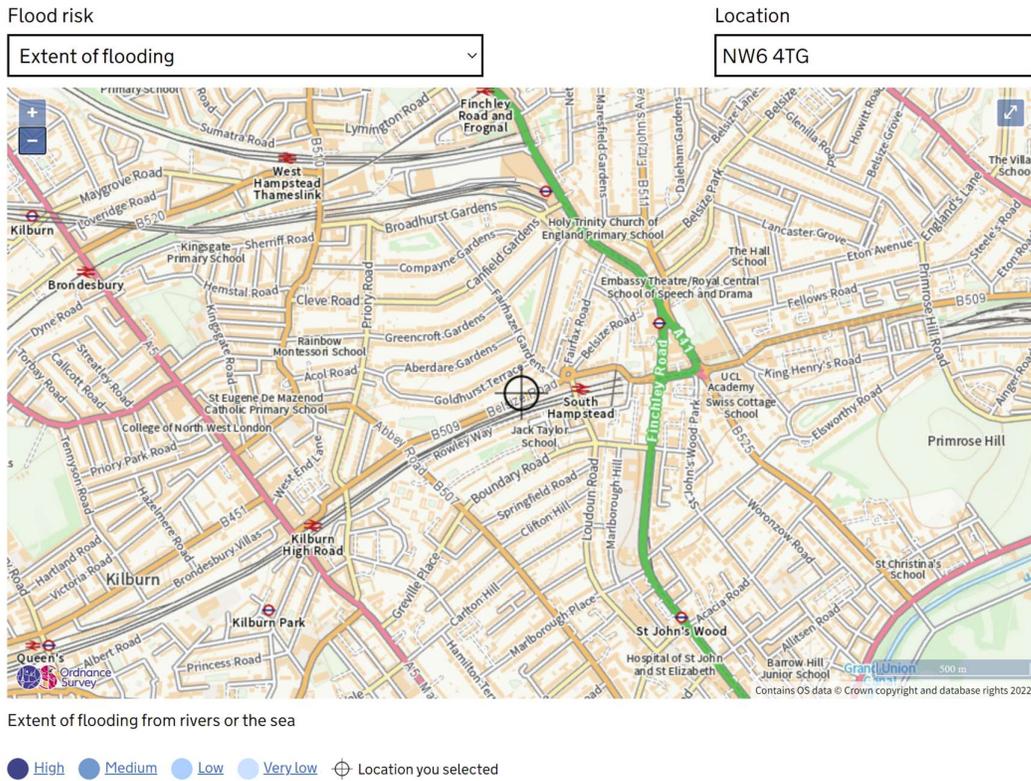
### Very low risk

This flood risk summary is not property specific.

Very low risk means that each year this area has a chance of flooding of less than 0.1%.

This service takes into account any flood defences.

The Environment Agency is responsible for managing the flood risk from rivers and the sea.



#### 4. Results of the survey

	<b>Survey date</b>	10 <sup>th</sup> February 2022
	<b>Client Ref</b>	
	<b>Name of client</b>	
	<b>Mobile</b>	
	<b>Email</b>	
	<b>Address</b>	
	<b>Town</b>	
	<b>Postcode</b>	
1.	<b>Describe reason for survey</b>	Following flooding in summer 2021 the client would like to understand what measures can be adopted to protect the property from future flooding.
2.	<b>Describe type of property?</b>	Residential. Client moved to property in [REDACTED]
3.	<b>Is the property within the EA flood warning system?</b>	No
4.	<b>Is the property listed or in a conservation area?</b>	No. The property is not listed but is part of an estate restricted by covenants related to the aesthetics of the property, such as door and window fixtures and fittings.
5.	<b>What year (approx.) was the property built?</b>	1860-65
6.	<b>Does the property have an history of flooding</b>	Yes
7.	<b>If so, what was the date of this flood?</b>	2002 and July 2021.
8.	<b>Is there a watercourse nearby?</b>	No. Please note that several subterranean streams, including the Fleet River, are culverted beneath the streets and head towards the Thames.
9.	<b>If so, please name the watercourse</b>	The Fleet River, Fleet CSO, Kilbourne Stream
10.	<b>How did the flood water enter the property?</b>	Through doors and assumed through airbricks.
11.	<b>Describe how the property flooded including flow routes into property, existing flood prevention measures.</b>	<p>Soon after the client completed their purchase in [REDACTED] a flash flood led to flooding at the lower ground floor. The rear garden is below the level of the neighbouring street, [REDACTED]. Surface water flowed from the rear garden through the conservatory doors and airbrick. Early bailing out of water helped to limit the damage. The flood height was above internal floor level, (carpets were soaked but no units or electrical items).</p> <p>During the summer floods, July 2021, [REDACTED] [REDACTED]. Neighbours called the client to inform them of the flood but were unable to help as there was no access to the rear of the property. The anecdotal evidence from the neighbour was that the flood water was building up behind the rear garden wall [REDACTED] [REDACTED]. Water levels became excessive, and it breached the wall, pushing it over, creating a tidal wave of water to flow across the garden towards</p>

		the conservatory. There was approximately 2 ½ feet of water against the external wall.
12.	<b>Depth of the external flooding (mm)</b>	2 ½ ft against the external wall
13.	<b>Depth of the internal flooding (mm)</b>	9 inches in conservatory. 4-5 inches throughout the kitchen and dining room. The utility room is raised above the level of the adjacent rooms, and this was not flooded.
14.	<b>What is the style of property?</b>	Semi-detached, mid-Victorian house.  The main entrance is elevated above ground level. The property is four stories high.
15.	<b>What is the property built from?</b>	London brick, solid wall. Conservatory construction is a brick cavity wall.
16.	<b>Does any part of the property have a suspended floor, a basement, or any other structure below ground level?</b>	No
17.	<b>What is the construction of the floor?</b>	Solid concrete
18.	<b>Which rooms (if any) have a suspended floor or basement, on the ground floor.</b>	NA
19.	<b>What is the depth of the floor void?</b>	NA
20.	<b>Is the ground floor at one level only? If no, please describe.</b>	The conservatory is the lowest ground level. Step up into the Kitchen/Dining area. Step up into W/C. Further step up into Utility room (this room was not flooded)
21.	<b>Has there been any work undertaken on the foundations? If yes, when was this?</b>	No
22.	<b>Is the exterior wall finish well maintained and to a high quality?</b>	Good for the age of the property. There is spalling to some brickwork and several miscellaneous holes around ground level. It is not known what these holes have been drilled for.
23.	<b>Does the property have a conservatory or sunroom that is suitable for flood defence to 0.9m?</b>	Yes. See photos.
24.	<b>Does the property have a cellar or basement?</b>	Yes. The cellar is accessed through a separate door and is situated before the access door to the side return.
25.	<b>Was the basement/cellar flooded?</b>	Yes. This is not a basement, but a lower ground floor level.
26.	<b>What is the basement/cellar used for?</b>	The lower ground level is a habitable area and houses the dining kitchen, lower ground bedroom, bathroom, Utility room. There is an attached conservatory
27.	<b>Does the property have a ground floor toilet or shower/bath?</b>	Yes. No foul water discharged through the system.
28.	<b>Does the property have airbricks?</b>	Yes.
29.	<b>If so, how many?</b>	TBC by contractor. Several airbricks have been covered with a cement upstand at the pavement/elevation abutment.  One airbrick located inside conservatory – double airbrick, 6 inches high. This is located outside the lower ground floor bedroom and is thought to be a route for the flood water to access the building.  One airbrick on rear wall, double size, and original casing. This may need a smart airbrick inserting behind the original façade to protect the aesthetics of the building.
30.	<b>Are there any vents to protect?</b>	Yes
	<b>DOORS AND WINDOWS</b>	

31.	<b>How many doors to the front of the house?</b>	ONE
32.	<b>Describe these door(s)</b>	Main entrance. Timber door and frame. This door is elevated above ground level and does not pose a flood risk
33.	<b>How many doors to the side of the house?</b>	ONE
34.	<b>Describe these door(s)</b>	Side door. Timber door and frame. This door has a demountable barrier in place.
35.	<b>How many doors to the rear of the house?</b>	ONE
36.	<b>Describe these door(s)</b>	Rear conservatory. Timber double door (French window) and frame. This door has a demountable barrier in place.
	<b>Any further comments</b>	The client is looking for a passive solution such as automatic flood doors, as the last flood happened when the client was unable to deploy the barriers in time.

### Routes of water ingress

#### 4.1 Doorways and Windows

There are TWO doorways which present a direct ingress route for water.

The main entrance to the front of the property is raised approximately 2.5m above ground level and accessed by steps. This is not a route for ingress of water.

The rear is accessed via a side return gate/door. The property has a side door constructed of solid timber with timber frame. This currently has a 300mm high demountable barrier installed.

The rear patio doors span approx. 1400mm, are constructed from solid timber and are protected by a 300mm high demountable barrier.

#### 4.2 Flooring

The construction of the flooring is solid concrete throughout with a mix of tiles or carpet overlain, this has been confirmed by the property owner.

#### 4.3 Airbricks and air vents

There are several airbricks located at the along the side and rear of the property, some have been covered by a concrete upstand at the pavement elevation abutment. These need solutions for which the Contractor is to investigate. Should floodwater pond against the property, the airbricks would provide a direct ingress route for flood water.

#### 4.4 Walls

The external walls of the property appear sound, however there are several minor gaps and holes which could permit ingress. If flood water were to remain in contact for an extended period, it may seep into the property. This is especially true for any areas where the pointing and brickwork has degraded slightly.

#### 4.5 Foul drainage

Inundation of the foul drainage may cause sewage to back up along the system, resulting in internal flooding via manholes and/or downstairs W/C.

#### 4.6 Domestic wastepipes

There are several wastepipes located at the rear of the property which could present an ingress route. Solutions are required for these issues.

#### 4. Photographs

**NOTE:** The photographs below are an example of the type of photographs included in the report, these do not relate to one specific property.

Rear Elevation	Front elevation	
Photo redacted	Photo redacted	
Side return door	Drain to rear of property	Side door
		
Side elevation – airbrick partially covered with concrete skirting	Air brick to rear of property covered up	
		

<p>Downpipe, waste pipe and miscellaneous holes</p>	<p>Miscellaneous holes</p>
	
<p>Flood damage to stair well exit from ground floor to rear garden</p>	<p>Location of demountable barrier fixing and airbrick cover</p>
	

## 6. Measures to Reduce Flood Risk

### 6.1 Introduction

Property Flood Resilience (PFR) options have been assessed as being suitable for this property. The primary intention is to develop a cost-effective and practical range of PFR options within the immediate curtilage of the property, to help mitigate and reduce the effect of flooding. Any other local options are also noted for further consideration where feasible or practical.

The focus has been on assessing means to restrict the entry of floodwater to the property (flood resistance) using proprietary measures available through the scheme. More invasive options such as 'tanking' (sealing floors and walls) are excluded as this can be very disruptive and costly (typically £10,000 to £30,000). Tanking involves detailed structural surveys and is usually used for properties with cellars. Underfloor voids are not usually treated in this way.

Associated disruption in terms of removal of downstairs flooring would result in significant costs that exceed available budgets however, flood resilience options are also identified (section 9) which the property owner may wish to fund privately outside of the PFR scheme.

The protection of gardens, garages and outbuildings is excluded from the scheme unless there are direct implications for the main building.

### 6.2 Impact of Flood Water

In the event of direct internal flooding, there would be more significant damage to furniture and personal belongings at a low level. Electrical supply to the property could also be lost. Depending on the depth and duration of flooding, the average cost of repair is £30,000 and flooding could result in being out of your property for (on average) 9 months or more.

Information on preparing a personal flood plan is provided in section 10.2.

### 6.3 Design criteria

This property is constructed from solid brick wall, the construction of the floors is mainly cast concrete with tiles overlain. There is a risk of flooding above the threshold level. Mitigation of flooding is recommended through resistance measures.

To determine the possible height of flood mitigation required, Warwick York compared the reported depths of standing flood water, both external and internal. See section 4.

Research carried out for the Department for Communities and Local Government (DCLG) and the Environment Agency has recommended that the use of resistance measures should generally be limited to a nominal protection height of 600mm above Ground Level: the lowest point of ground abutting the external property walls. This is because the structural integrity of the property may be compromised above this level, which may increase the risk of cracks in brickwork, which could lead to further water ingress to the property.

It is recommended that protection levels, such as installing door barriers, would not exceed the 600mm nominal protection height. However, it is possible to install measures above the nominal protection height, most door barriers on the market are Kitemark approved up to a height of 900mm above Ground Level.

The proposed mitigation height for this property is the nominal protection height of 600mm above Ground Level. This height fully satisfies the criteria laid down by local authorities for this scheme. If the installation of flood protection measures is required up to the maximum protection height of 900mm, the suitability of measures will need to be verified by a structural engineer but will be provided at the owner's risk.

It should be noted that the recommended mitigation measures described would not be expected to cause an increase of flood risk to other properties or other parts of the local community. They will help mitigate against flood risk at this property but, as with any flood alleviation scheme, flood risk cannot be removed completely. Emergency plans should be in place that describe the installation of measures but also take note of and prepare for the residual flood risk. Information on preparing a personal flood plan is provided in section 10.2.

As the flood risk posed to a property cannot be removed completely, it is recommended that PFR products are deployed in conjunction with pumps of a sufficient capacity. Pumps will manage the residual flood risk not addressed by resistance measures alone, such as rising groundwater. A pump of a sufficient capacity will aim to evacuate groundwater and/or seepage to outside the property at a similar rate to which it can infiltrate, thus minimising the internal water level. The property owner may wish to consider purchasing either a battery back-up or a petrol generator for use with pumps in case electricity supply to the property is lost during a flood event. Care should be taken to ensure safe installation, use and maintenance of any battery back-up and/or generator, safe storage of fuel and venting of exhaust fumes.

It should be noted that the options described here are outline, dependent on scheme funding approval and for further discussion and agreement between the homeowner, appointed supplier/installer and the Local Authority. Further agreement will also be needed from the appointed contractor concerning the specifics of any installation works. It is the responsibility of the contractor to ensure that all installations and modifications to the property are compliant with all relevant regulations, standards and guidance.

## 7. Details of Recommendations

### 7.1 Products available through the scheme

This section outlines the details of recommended measures.

If funding is secured, a core package of measures will be provided for eligible properties. The type of product recommended will consider suitability for the property, homeowner preferences and the ability of the homeowner to deploy.

BSI Kitemark approved products should be installed (where applicable), designed to provide suitable mitigation at the property, given the level and sources of flood risk. All dimensions will be verified by an installer before the works commence. (Building aperture products PAS1188-1).

<https://www.bsigroup.com/en-GB/about-bsi/mediacentre/press-releases/2007/3/Opportunity-to-review-the-publicly-available-specification-for-floodprotection-products/>

By contributing funds, homeowners may be able to upgrade the installation of the core package of PFR measures recommended for their home, for example, upgrading door barriers to flood doors. More costly and invasive options (such as tanking the property) are excluded and would also have to be funded privately.

A range of approved products can be found in the National Flood Forum's Blue Pages Directory at [www.bluepages.org.uk](http://www.bluepages.org.uk)

Further guidance can also be found at:

<https://nationalfloodforum.org.uk/about-flooding/reducing-your-risk/protecting-your-property>

<https://nationalfloodforum.org.uk/about-flooding/reducing-your-risk/property-protection-advisor/>

#### 7.1a Door and window barriers

Door and window barriers provide a relatively low-cost, simple-to-use and quick means to help prevent the direct entry of floodwater into a property. The effectiveness depends on the seal around the individual frame, cill, surrounding wall and ground and the ability of the homeowner to deploy them under flood circumstances.

#### 7.1b Flood Proof Doors

There are many flood doors and barriers on the market, but all should comply with PAS 1188 the British Standard – known as the Kitemark. Under the rules of the funding scheme all products (where applicable should carry BSI KITEMARK PAS1188 CERTIFICATION FOR FLOOD PROTECTION PRODUCTS). The testing includes a series of static water tests at different depths and duration, plus wave and current tests.

Flood proof doors are available in uPVC or in a composite material. The average cost for a uPVC door including installation is £1500 to £2500 depending on style. Composite doors which have a coloured wood grained finish cost between £2500 to £3500 depending on style.

**NOTE:** Prices can vary for wider openings/aperture, or for size of glazing panels/sidelights.

#### **Emergency Evacuation- Flood Doors**

To allow emergency evacuation from the building during a flood, an existing inward opening door should be provided with a door barrier, rather than a standard flood door. If water is standing against a flood door, generally, the only option available to evacuate the property is by opening this door resulting in water entering the property. Agreement of the most suitable product will be made following discussion between the client and product installer/manufacturer.

#### 7.1.c. Airbrick and Air Vent Protection

Automatic airbricks provide a low-cost and simple-to-use means to help limit the entry of floodwater through airbrick openings. Automatic airbricks maintain ventilation in dry conditions, but automatically close as water levels rise above the level of the airbricks.

Air vents should be removed and sealed if redundant. If the air vents are in use, it is advisable to raise them above flood level or as high as possible. When air vents are not able to be raised above flood level, protection options should be discussed with, and provided by, the contracted supplier to limit the ingress of water via these openings.

A registered Gas Safe engineer should visit the property and inspect the existing vent with respect to ventilation provision for compliance with The Gas Safety (Installation & Use) Regulations and advise the installer and the Local Authority accordingly for how to best manage flood ingress through the vent(s) whilst maintaining adequate and safe ventilation. A Gas Safe Engineer's certificate should be obtained confirming all findings and works completed.

#### 7.1.d. Non-Return Valves

Non-return valves act to allow drainage flow from the property but contain a valve to stop floodwater or sewage from surging back into the property. These are installed in-situ and operate automatically.

#### 7.1.e. Pumps and Sumps

It is recommended that an electric, high capacity, dewatering (Submersible/Skimmer/Puddle) pumps are used in conjunction with the above measures, where appropriate.

##### **Skimmer/puddle pumps**

Skimmer / Puddle pumps are a special type of submersible pump that do not need to be fully submerged in water. They can pump to very low levels of water (i.e. a puddle) without the pump overheating or becoming damaged. This removes the need for a chamber to be dug. They are ideal for solid floors to keep any ingress of water to manageable measures.

##### **Submersible pumps**

Submersible pumps are used to drain flood or wastewater. The smallest models are known as basement drainage pumps. Simple to operate, they are usually controlled by a float directly connected to the pump body which starts and stops the motor. They are best suited to areas where there is standing or rising water such as a subfloor void, cellars and basements. They can either be freestanding or counter in an integral box(ump).

It is recommended that all pumps be wired into a separate ring circuit independent from the electrical circuit since low level plugs and sockets will need to be isolated in a flood. All this work must be carried out by a qualified electrician.

#### 7.1.f. Inspections and sealing

This provides a low-cost and simple means to limit ingress of water around small pipes and cables. A durable silicone-based sealant injected into small gaps and around the entry points can provide a waterproof seal.

**Recommendation:** Rake out existing sealant around service pipe and cable entry points, service boxes and vents and re-seal. This includes the gas and electric supply. This should be carried out up to a maximum height of 600mm above Ground Level.

**NOTE:** This survey will be restricted to such locations as are reasonably apparent by inspection from ground level, from both inside and outside the property. No excavations will be made to try to locate other entry points.

#### 7.1.g. Inspections and re-mortaring

This provides a low-cost and simple means to limit ingress of water through application of mortar to cracks and holes in the property walls.

**Recommendation:** Inspect all external and internal walls and apply mortar to seal all cracks and holes, including around service entry points, up to a maximum height of 600mm above Ground Level.

**NOTE:** This survey will be restricted to such locations as are reasonably apparent by inspection from ground level, from both inside and outside the property. No excavations will be made to try to locate other entry points.

#### 7.1.h. Waterproof Walls

This provides a low-cost and simple means to improve the water-resistance of walls. A colourless, breathable, water-resistant coating is sprayed or painted onto surfaces, limiting damage to walls caused by contact with water during flooding. For particularly vulnerable areas, a coloured waterproof render may be applied.

**Recommendation:** Application of a waterproof render to a maximum height of 600mm above ground level. Application of a specialist breathable waterproof sealant to all other external walls and internal walls up to a maximum height of 600mm from Ground Level.

**NOTE:** It is recommended that this is re-applied in accordance with the manufacturer's guidance.

# Recommendations

The following recommendations and proposals follow best practice in the flood protection industry.

**One of the main concerns at this property re. water ingress, is the condition of the exterior brickwork wall. See image below.**

**Our prime recommendation is:** There needs to be a gap between the wall and any paving/hardstanding (to allow drainage) The hardstanding needs cutting back to a distance of 100mm to create a gap between the edge of the hardstanding and the brickwork. This will allow for drainage into the substructure and prevent splashback against the brickwork. This should be followed by the inspection of all external walls, raking out and repointing to all existing joints and application of mortar/sealant to all cracks and holes, including around service entry points, up to a maximum height of 900mm above Ground Level.



Plus, the application of a specialist breathable waterproof coating to all external walls, up to a maximum height of 900mm above Ground Level. A typical product and range of sealants are produced by Stormguard – see details below (other similar products are available):

## Recommend

<https://www.safeguardeurope.com/products/stormdry-system/stormdry-express-repair-mortar>

**Enhanced Protection**

**FD-Coat for Flood Defence**  
Stormdry® FD-Coat Flood Defence is a permanent water-resistant coating that will enable walls to resist the entry and passage of water at heights of up to 0.6 metres. The clear finish and its semi-breathable properties make Stormdry® FD-Coat an ideal part of any flood defence system.  
Stormdry® FD-Coat is designed to be used as part of the Safeguard Flood System and is an important component in both flood-resilience and flood-resistance specifications.

**CB-Coat for Bridging Wider Crack**  
Stormdry® CB-Coat Crack-Bridging Waterproofing is a clear resilient waterproof coating that provides enhanced protection on walls with networks of cracks of up to 0.6 mm in width.  
To fix isolated cracks up to 10 mm in width, use Stormdry® XB-Mortar. The ready-mixed and quick-drying mortar is easily applied directly to cracks using a standard mastic gun.

**EP-Board Reduces Heat Loss**  
Stormdry® EP-Board is a highly-insulating plasterboard system for replastering internal walls. The advanced hybrid MgO/Aerogel boards are only 13 mm in width and yet provide a very high level of insulation. The combined application of both Stormdry® Masonry Protection Cream and Stormdry® EP-Board to a damp solid brick wall can reduce heat loss by 60%.

CRACK MEASURE: 8x

WATERPROOFS MASONRY FOR 25 YEARS - BBA APPROVED - VERIFIED BY ENERGY SAVING TRUST

**The Benefits of Stormdry® Protection**

**Easier to Use and Longer Lasting than Its Competitors**  
Only a single coat of Stormdry® Masonry Protection Cream needs to be applied in order to provide complete protection against rain penetration for 25 years. Competing treatments may require 2 – 3 coats and only last for 2 – 3 years.

**Deeper Penetration to Bridge Hairline Cracks**  
Stormdry® Masonry Protection Cream penetrates up to 10 mm into masonry, compared to only 1 – 2 mm for traditional liquid waterproofers. This allows the cream to penetrate beyond the depth of hairline cracks and prevent water ingress far more effectively than competing products.

**Allows Damp Walls to Dry 0**  
A Stormdry® treated wall is still breathable. It lines pores of masonry materials, instead of blocking them. This means that even though the entry of liquid water is blocked, water vapour is able to freely pass through the wall, allowing any residual moisture to evaporate and the wall to dry out. This makes Stormdry® ideal for application in situations where wall drying is required, such as protection of compromised cavity wall insulation.

**A Wet Wall is a Cold Wall**  
Stormdry® Masonry Protection Cream stops rain penetrating external walls, keeping them warm and dry. The Energy Saving Trust has granted Stormdry® verified status, as high levels of moisture in the masonry, such as those in exposed locations, will lose heat faster than dry walls. Keeping walls dry by applying Stormdry® will maximise their thermal performance.

Shallow penetration means less protection. Deeper penetration means more protection.

HAIRLINE CRACKS ARE UNPROTECTED, ALLOWING WATER INTO THE INTERIOR. HAIRLINE CRACKS ARE PROTECTED, PREVENTING WATER SIPPING INTO THE INTERIOR.

EXTERIOR 0°C INTERIOR 20°C. BREATHABLE. AIR FLOW THROUGH MICRO PORES.

EXTERIOR 0°C INTERIOR 20°C. REDUCED HEAT LOSS. TYPICAL HEAT LOSS AREA IN UK HOMES.

WALLS 35%.

Alongside the measures listed in the previous pages, the client will need to protect the property from water ingress through apertures and doors by installing one of the two following options and the additional measures.

The client will need to protect the property from water ingress through apertures and doors by installing one of the three following options to the external doors and the additional measures on the following pages.

**Option 1 – Flood Resistant Measure - Supply and installation of demountable aluminium flood barriers.**

It is entirely feasible to protect this property using demountable flood barriers, though the current size barriers would not have protected the property against the flood height experienced in July 2021. It is recommended that if the client was to pursue this option, that a 600mm high barrier be installed. Aluminium barriers are preferred since they are made of a stronger and more robust material and can therefore withstand greater water pressures than composite/uPVC flood barriers.

Type of Barrier	Location	No
Demountable aluminium flood barrier 600mm high (Standard size)	Side standard door	1
Demountable aluminium flood barrier 600mm high (approx. 1400mm)	Rear conservatory door	1

**Option 2 – Supply and installation of removable flood barriers.**

If the client would prefer not to have fixtures permanently installed, then a suitable demountable barrier without any fixtures such as the Dam Easy flood barrier could be considered. [Dam Easy Flood Barrier - Flood Gate \(dameasyfloodbarriers.com\)](http://dameasyfloodbarriers.com)



**Option 3 – Passive Protection Measure - Supply and installation of automatic flood door.**

The client may wish to install an automatic flood door, which provides passive protection. Options available must be kitemarked to BS 851188-1:2019, such as [Flood Defender Composite Doors - M3 Global Flood Technologies Ltd \(m3floodtec.com\)](http://m3floodtec.com)

A range of colours and styles are available, with or without side panels.



It may be more economic to install a uPVC standard size automatic flood door rather than composite. Barriers as per Option 1, may still be required in certain locations. For example, the client may wish to install an automatic flood door to the side door and barriers to the rear. In the event of an emergency, the client will have safe egress from the building via the Main front entrance door and can have both lower ground floor doors replaced with automatic options.

Type of Flood Proof Door	Location	No
Automatic flood door with protection height to 600mm above threshold (Standard size)	Side standard door	1
Automatic flood door with protection height to 600mm above threshold (French Windows)	Rear conservatory door	1

**NOTE**

Whilst it may be more economic to install a uPVC/composite automatic flood door, it is understood that the client would prefer a 'like for like' material. Currently, there are no BSI kitemarked timber flood doors on the market, however the client may wish to explore the following option.

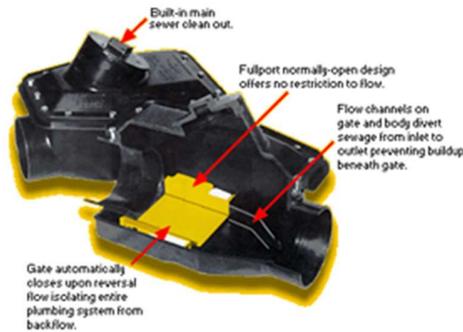
A bespoke flood resistant hardwood door could be manufactured for this property, such as the Flood Divert flood resilient door. This would be an aesthetically pleasing solution and blend with the character of the property. It must be noted by the client that this product is not kitemarked. [FloodDivert hardwood flood resilient door](#)

**Additional Protection Measures**

4. All manholes require installation of full-port non-return valve (NRV) on foul sewer connections and where appropriate for surface water drainage. Contractor/supplier to locate and measure size.
5. Supply and installation of domestic non-return valves, for the domestic waste pipes identified. Exact number to be confirmed. Contractor/supplier to locate and measure size.

- Supply and installation of a shower anti flood valve (NRV) to prohibit the discharge of foul air and flood water entering the property. Suggest [90mm Shower Trap with Non-Return Valve | McAlpine Plumbing Products](#), other products are available.

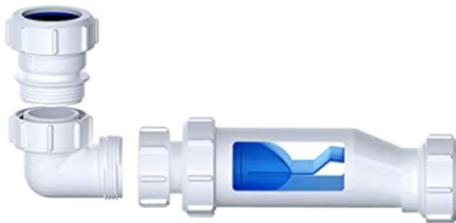
Example NRV



Example NRV retrofitted to existing sewer connection.



Example waste pipe NRV



Example shower NRV



- The inspection of all service and drainage pipe entry/exit points and application of silicone sealant as required, to a maximum height of 600mm above Ground Level.
- The inspection of all external and internal walls and application of mortar/sealant to all cracks and holes, including around service entry points, up to a maximum height of 600mm above Ground Level
- Application of a specialist breathable waterproof coating to all external walls, up to a maximum height of 600mm above Ground Level. A typical product and range of sealants are produced by Stormguard (other similar products are available):
- Supply of TWO electric pumps associated drainage piping and electrical wiring at two locations on the ground floor including wiring and discharge pipes. Recommend the Tsurumi LSC1.4S puddle sucker pump. [Tsurumi LSC1 4S - Puddle Sucker Pump \(floodandwaterpumps.co.uk\)](#) Other similar pumps are available.

The LSC1.4S is capable of pumping water down to just 1mm, making it the perfect choice of pump if you are looking to pump either big or small areas of water that can be found on flat surfaces. Due to the design, and the dual-position outlet port, the outlet hose for this pump can be positioned vertically or horizontally. To prevent the backflow of water coming from the discharge hose, there is an integral swing check valve included. The automatic model for fixed installations we suggest the SwitchH20 and Panel. It allows automatic pumping down to 5mm.



11. Supply FOUR packs of Hydrosnake smart sandbags <http://gravitasint.com/products/hydrosnake/> (similar alternative products are available).
12. Recommend the installation of TWO Flood Buzz see <http://gravitasint.com/products/floodbuzz/> located at front and rear of property (similar alternative products are available).
  - The size of apertures (doors and patio doors etc) needs to be determined/measured by the contractor during a site visit.
  - Likewise, the number of vents/airbricks/non return valves etc need to be determined on site and suitable proposals (inc. samples) should be shown to the homeowner.

There are many flood protection companies who would be willing to tender for the above work.

Please find details at [bluepages.org.uk](http://bluepages.org.uk)

**If the preventative measures above do not meet your individual requirements, consideration should also be given to flood resilience measures in Section 9.**

## 8. Future Maintenance of Measures

Following installation, the homeowner will be solely responsible for the deployment, storage, maintenance, and replacement of the flood protection measures.

Details of the maintenance requirements for individual flood measures will be issued by the installer and ownership handed to the homeowner once installation is complete.

It is recommended that all products which require deployment prior to a flood (e.g., door barriers) are tested annually and stored:

- indoors
- not resting on seals (ideally hung from walls)
- bagged (to prevent vermin damage)
- easily accessible
- protected from extreme temperatures and UV light.

Alterations made to the property perimeter post-installation may mean measures such as barriers can no longer be installed, nor protect the property as designed and/or may create routes for water to bypass the measures installed. It is recommended that any such alterations are undertaken with property flood protection in mind and steps are taken to reduce the increased likelihood of water ingress into the property.

All flood mitigation products should be handed over to the new owner, should the property ever be sold.

## 9. Flood Resilience

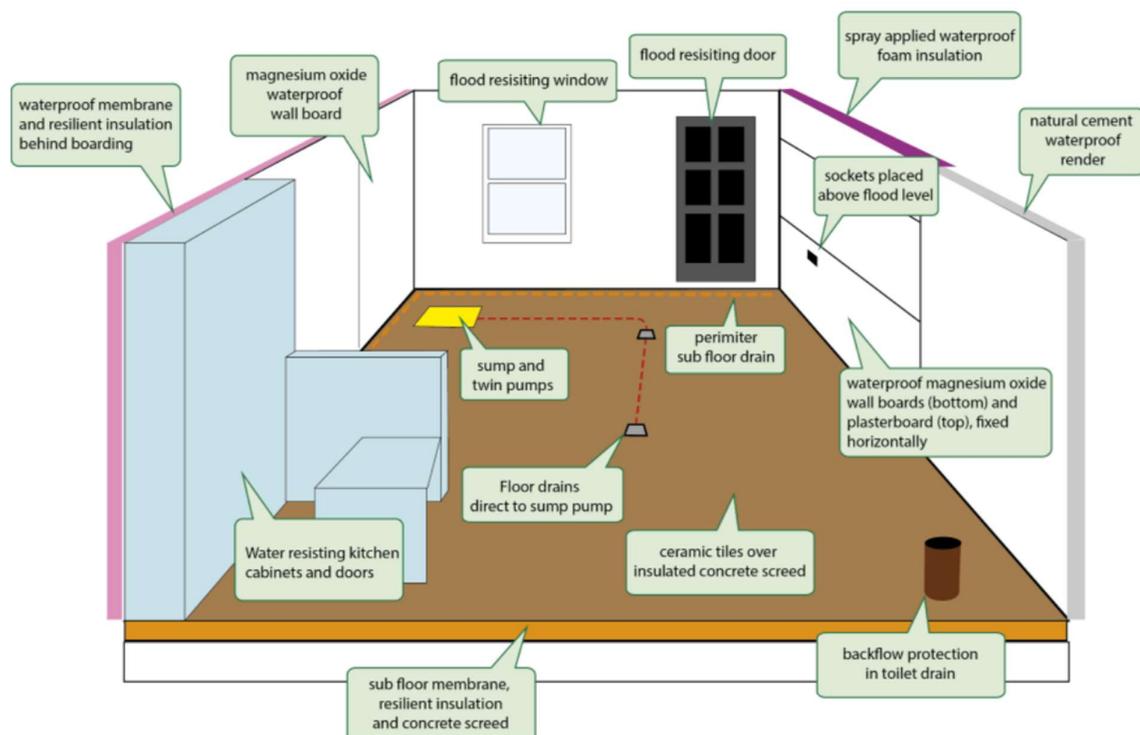
For the reasons mentioned in Section 1.4 of this report, the installation of the recommended measures will not guarantee that the property will be watertight. There may also be hidden water ingress routes, or the standard provided by the mitigation measures may be exceeded.

A flood 'resilience' approach aims to reduce the impact and damage caused by floodwater once it enters a property, resulting in quick and easy cleaning, drying, recovery and reoccupation of the property. This could potentially eliminate the need for an insurance claim. Resilient measures usually involve changes to the fabric of the building so no action is needed to activate them in the event of a flood. Undertaking a resilience approach directly after your home has flooded presents an opportunity to reinstate the property with water resilient materials and design.

Options that you can consider include.

1. Installation of water resilient skirting and water resilient plaster or membranes to internal walls.
2. Installation of water resilient floor coverings, such as ceramic tiles instead of carpet.
3. Raise kitchen utilities/white goods and raise or install flood resilient kitchen units.
4. Raise the electrical junction box, electrical sockets and any exposed circuitry to ensure they are situated above the maximum expected height of flooding.
5. Raise or seal the gas and electricity service meter boxes to minimise damage to the gas and electricity supply during flooding.
6. Raise the boiler to ensure it is situated above the maximum expected height of flooding.
7. Purchase an electric dewatering pump to help evacuate any floodwater that does enter the property, limiting the level of internal flooding.

Figure 2. Graphic to illustrate property flood resilience created by BRE Flood Resilient Repair House. Image courtesy of [www.floodguidance.co.uk](http://www.floodguidance.co.uk)



## 9.1 Typical costs

To undertake the following measures, you are likely to be looking at paying the following typical costs.

<b>Flood Resilience Measures</b>	<b>4.01</b>	Replace ovens with raised, built-under type	Raising oven off floor above flood level	700-780
	<b>4.02</b>	Replace chipboard kitchen/bathroom units with plastic units	Fit plastic kitchen and/ or bathroom units to minimise water damage.	5000-5520
	<b>4.03</b>	Move electrics well above likely flood level	Re-wiring of electrics (such as socket points) above flood level.	760-840
	<b>4.04</b>	Mount boilers on wall	Raise boiler above flood level.	1080-1200
	<b>4.05</b>	Move service meters above likely flood level	Raise service meters above flood level	1620-1800
	<b>4.06</b>	Garage/Driveway barrier	Driveway gate or garage barrier to resist flooding.	2000-3000
	<b>4.07</b>	Replace sand-cement screed on solid concrete slabs with dense screed	Dense water-resistant screed to replace sand-cement screed	2000 +
	<b>4.08</b>	Replace timber floor with solid concrete		8210-9070
	<b>4.09</b>	Replace chipboard flooring with treated timber floorboards	Replace floor (including joists) to make water resistant.	920-1020
	<b>4.10</b>	Replace floor including joists with treated timber to make it water resilient	Replace floor including joists with treated timber to make it water resilient	3490-3850
	<b>4.11</b>	Install chemical damp-proof course below joist level	Install damp proof course to resist groundwater flooding.	6250-6910

It will be important to continue with any practices for protecting furniture, carpets, electrical goods, personal belongings and documents (e.g. insurance policy documents, photographs) to safeguard such items in the event that water does enter the property.

## 10. Flood Preparedness

The importance of anyone in a basement flat having a secondary escape route if flooding prevents them getting out. Modern legislation requires a secondary escape route for all properties but in many cases many of these flats were converted prior to this legislation being in force and it is a serious concern.

This is why it is important to have a early warning of any potential flooding and under no circumstances should residents remain in the flats/apartments when flooding is likely to occur.

### 10.1 Flood warnings

The Environment Agency operates a Flood Information Service for areas deemed to be at a risk of fluvial or coastal flooding.

This service is found on the website: <https://flood-warninginformation.service.gov.uk/>.

Through this service you can sign up to receive Flood Alerts, Flood Warnings and Severe Flood Warnings.

More information is available from the Environment Agency website at:

<http://www.gov.uk/check-if-youre-at-risk-of-flooding>

The Met Office has a responsibility for providing weather warnings for the UK and issues Severe Weather Warnings to warn of severe or hazardous weather which has the potential to cause danger to life or widespread disruption. Warnings are issued through the National Severe Weather Warning service, available on the Met Office website: <http://www.metoffice.gov.uk/public/weather/warnings>

It is recommended you sign up for Severe Weather Warning email alerts, also available on the Met Office website: <http://www.metoffice.gov.uk/about-us/guide-to-emails>

### 10.2 Flood plans

Check there is a Community Flood Action Plan in place.

This Community Flood Action Plan should list the lines of communication amongst the residents and emergency contact numbers. It should also include details of a “buddy system,” whereby a local resident or neighbour can deploy any mitigation measures should a property owner not be present or may require assistance. The Community Flood Action Plan will help to identify those residents who may require assistance in deploying any flood mitigation measures. It should also identify evacuation procedures.

Residents are also encouraged to develop or review their own, individual Personal Flood Plan, which will help to identify a list of actions which can be quickly put in place during a flood event to minimise the disruption caused. The Environment Agency has prepared a template for individual flood plans, which is available by visiting: <https://www.gov.uk/prepare-for-flooding/future-flooding>

This individual flood plan should link in with the Community Flood Action Plan.

This Community Flood Action Plan will list the lines of communication amongst the residents, emergency contact numbers and will identify the community volunteers and resources available in the community. It will also include details of a “buddy system,” whereby a local resident or neighbour can deploy any mitigation measures should a property owner not be present, or where they may require assistance.

The Community Flood Action Plan will help to identify those residents who may require assistance in deploying any flood mitigation measures and identify evacuation procedures.

## 11. What Next?

The introduction of the ‘Flood Re’ reinsurance scheme, as agreed between the Government and insurance companies, was launched in April 2016. Flood Re is designed to provide homeowners at risk of flooding with access to affordable flood protection cover.

Following issue of your PLF report, it is important to fully consider the recommendations made and the type of products you feel would be suitable for you and your property.

It is recommended that you:

1. Prepare or review and update your own individual flood plan to verify the actions taken to help reduce the impact of flooding, as well as the time taken to recover following an event (Section 10.2).
2. Continue talks within your local community, the South Hampstead Flood Action Group and create a Community Flood Action Plan (Section 10.2) or confirm that the existing Action Plan is up to date.
3. Consider which of the recommendations is most appropriate for your needs, see PFR measures recommended, (Section 7).
4. Consider installing any resilience measures that may be of benefit to your property (Section 9).

The National Flood Forum is a charity dedicated to supporting and representing communities and individuals at risk of flooding across the UK.

For an independent directory of flood protection products and services, please visit the National Flood Forum's Blue Pages Directory: <http://www.bluepages.org.uk>

### 11.1 Flood Re

The introduction of the 'Flood Re' reinsurance scheme, as agreed between the Government and insurance companies, was launched in April 2016. Flood Re is designed to provide homeowners at risk of flooding with access to affordable flood protection cover. **Please note that the scheme does not extend to properties with more than three flats.**

Further information is available from: <http://www.floodre.co.uk/>

It should be remembered that the installation of property level flood protection measures does not guarantee a reduction in insurance premiums or excesses.

## 12. Contact details

Laurence Waterhouse FRSA, MRICS

**Warwick York Chartered Surveyors and Flood Consultants**

Web: <https://www.warwickyork.co.uk>

Email: [info@warwickyork.co.uk](mailto:info@warwickyork.co.uk)

Tel: 07562 417687

END OF EXAMPLE REPORT

## 4. Advice for residents & local businesses

There are several things that you can do to mitigate the effects of flooding and help address issues within the wider community of South Hampstead.

1. **Report blocked drains so they can do their job.** Please report any local gullies that are blocked through the following website <https://www.camden.gov.uk/report-street-issue#rgky>
2. **Keep the sewer system clean so it can do its job.** It seems like an obvious measure, but sewer systems can clog up with household waste, debris, sediment, tree roots and leaves. Don't put cooking fats, oils, gravy, and food down your drains. Instead of pouring them down the sink, collect them in a container like a jam jar or yoghurt pot. Leave them to cool, and once they've set, scoop them out and pop them straight in the bin. See Thames Water website for advice on how to dispose of these: <https://www.thameswater.co.uk/about-us/responsibility/bin-it>
3. **Love your loo.** Make sure that only wastewater, toilet tissue and human waste go down the toilet. Wet wipes and sanitary items also contribute to the most troublesome blockages in our sewer network. (Not wet wipes, sanitary products, cotton wool, dental floss, condoms etc even if they claim to be 'flushable'. If they have a 'fine to flush' mark, it's ok.)
4. **Be keen to keep your front garden green.** Please think before deciding to pave over your front garden (or if you have done this already ensure it has effective drainage). Concrete is not permeable. It does not absorb rainwater. It blocks it and redirects it to the drainage systems which, in turn, often become clogged and then the water overflows into the streets and pavements. Unchecked, this will cause flooding.

You can keep in touch with South Hampstead Flood Action Group on:  
[floodactionsouthhampstead@gmail.com](mailto:floodactionsouthhampstead@gmail.com)

## 5. Summary and next steps

Warwick York has undertaken eight individual surveys of various properties supplied to us by the South Hampstead Flood Action Group. The properties were showcased to highlight the wide range of construction and layout of properties in the area. Some of these properties were flooded to a depth of over 1.5 m whilst others escaped with just a few millimetres of water. All the properties have differing needs in terms of protection, but all are recommended to at least consider resilience measures that will help the resident clear up in the event of possible future flooding.

As a next step we advise that it is important to get independent professional advice. This will check for all possible points where water can easily seep in, such as doors, windows, air bricks and even the toilet. You can either go direct to a manufacturer, who will provide a survey as part of their overall package. However, most people choose to have an independent survey.

Independent surveyors can be found in The National Flood Forum blue pages section for independent flood assessments i.e. <http://bluepages.org.uk/listing-category/surveys-independent-flood-risk-assessments/>

Be aware that any surveyor that recommends only one product has probably not surveyed the property correctly. Most properties need a combination of measures, such as door guards and air brick covers, along with other remedial work. A good surveyor will also consider other nearby properties, previous flooding and the location of drains.

The National Flood Forum blue pages website lists several companies who provide flood protection services. [www.bluepages.org.uk](http://www.bluepages.org.uk) for more information.

See Appendix A for example quotations for properties surveyed in South Hampstead and Appendix B for details of the National Flood Forum Property Level Protection Self-Assessment Form.

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## Appendix A - Examples of contractor quotations

The following quotations for supply and fix of flood protection measures are example quotations for properties surveyed in South Hampstead.

# QUOTE



The Enterprise Center,  
Cranbourne Road,  
Potters Bar EN6 3DQ

0208 442 0872  
info@ukfda.com | www.ukfda.com



QUOTE NUMBER:	LW-SH 001
DATE:	30/05/2022
P.O/REF:	[REDACTED]

QTY	ITEM DESCRIPTION	NET	TOTAL
1	Front Door -Face Fixed Demountable Aluminium Flood Barrier Approx. 1000mm wide x 600mm high*	£631.00	£631.00
1	SMART Airbricks*	£60.00	£60.00
1	Non Return Valve 110mm*	£85.00	£85.00
2	Domestic Non Return Valve*	£20.00	£40.00
1	Application of a Water Resistant Masonry Sealant to a height of 600mm	£300.00	£300.00
1	Installation of above measures, to include all necessary groundworks, removing and recycling of all waste, inclusive of all materials and labour. Sealing of Pipe and cable entry points and minor repointing as required. Testing of operation of measures and full demonstration to customer.*	£1,075.00	£1,075.00
*	Quantity of Airbricks, NRVs and precise door measurements tbc during pre-install survey and costs revised accordingly		
		SUBTOTAL	£2,191.00
		VAT	£438.20
		<b>TOTAL DUE</b>	<b>£2,629.20</b>

# QUOTE



The Enterprise Center,  
Cranbourne Road,  
Potters Bar EN6 3DQ

0208 442 0872  
info@ukfda.com | www.ukfda.com



QUOTE NUMBER:	LW-SH 002
DATE:	30/05/2022
P.O/REF:	[REDACTED]

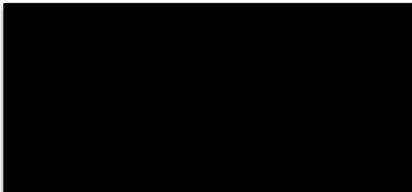
QTY	ITEM DESCRIPTION	NET	TOTAL
1	Front Door - Dameasy Flood Barrier	£495.00	£495.00
1	SMART Airbricks*	£60.00	£60.00
1	Non Return Valve 110mm*	£85.00	£85.00
2	Domestic Non Return Valve*	£20.00	£40.00
1	Application of a Water Resistant Masonry Sealant to a height of 600mm	£300.00	£300.00
1	Installation of above measures, to include all necessary groundworks, removing and recycling of all waste, inclusive of all materials and labour. Sealing of Pipe and cable entry points and minor repointing as required. Testing of operation of measures and full demonstration to customer.*	£718.00	£718.00
*	Quantity of Airbricks, NRVs and precise door measurements tbc during pre-install survey and costs revised accordingly		
		SUBTOTAL	£1,698.00
		VAT	£339.60
		<b>TOTAL DUE</b>	<b>£2,037.60</b>

# QUOTE



The Enterprise Center,  
Cranbourne Road,  
Potters Bar EN6 3DQ

0208 442 0872  
info@ukfda.com | www.ukfda.com



QUOTE NUMBER:	LW-SH 003
DATE:	30/05/2022
P.O/REF:	[REDACTED]

QTY	ITEM DESCRIPTION	NET	TOTAL
1	Front Door - uPVC Flood Resistant Door*	£2,200.00	£2,200.00
1	SMART Airbricks*	£60.00	£60.00
1	Non Return Valve 110mm*	£85.00	£85.00
2	Domestic Non Return Valve*	£20.00	£40.00
1	Application of a Water Resistant Masonry Sealant to a height of 600mm	£300.00	£300.00
1	Installation of above measures, to include all necessary groundworks, removing and recycling of all waste, inclusive of all materials and labour. Sealing of Pipe and cable entry points and minor repointing as required. Testing of operation of measures and full demonstration to customer.*	£1,075.00	£1,075.00
*	Quantity of Airbricks, NRVs and precise door measurements tbc during pre-install survey and costs revised accordingly		
		SUBTOTAL	£3,760.00
		VAT	£752.00
		<b>TOTAL DUE</b>	<b>£4,512.00</b>

# APPENDIX B – Property Level Protection Self-Assessment Tool

## Independent assessment tool from the National Flood Forum

The National Flood Forum also provide a free 'ready reckoner' system for assessing your overall flood risk.

### Property Protection Advisor

The Property Protection Advisor is a simple 'ready reckoner' tool that helps raise awareness of the options available and provides an initial estimate of the costs of resistance measures for different types of properties. Designed and developed by leading flood management consultants JBA Consulting, it was funded by the Department for Environment, Food and Rural Affairs (Defra) as part of their work to reduce the impact of flooding.

Use the Property Protection Advisor to generate a report for your individual property or community. The report will identify the indicative cost of measures and provide useful links to further information and advice.

Please note that any information that you provide will only be used to inform your report and will not be passed on to third party organisations.

<https://nationalfloodforum.org.uk/about-flooding/reducing-your-risk/property-protection-advisor/>