

**Fanuc House
1 Station Approach
Ruislip
HA4 8LF**

Flood Action Plan

September 2018

Jaysam

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1 Introduction

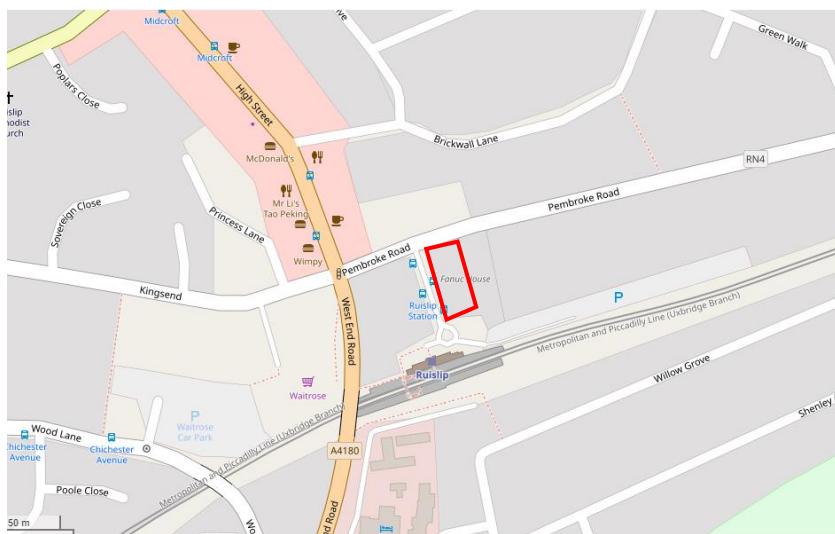
1.1 This Flood Action Plan has been prepared to provide information and advice on what to do in the event of a flood at Fanuc House or the local area. This Flood Action Plan should be provided to the management and residents of Fanuc House as part of a 'Welcome Pack' at the beginning of each occupancy.

1.2 The Flood Action Plan covers the following:

- The existing and proposed flood risk to the site;
- What to do before a flood;
- What to do during a flood;
- What to do after a flood;
- Mitigation Measures and Evacuation Routes;
- Roles of Other Bodies;
- Relevant Contacts;
- Sources of Additional Information.

1.3 The site owner/manager or an appointed management company should also be aware of the contents of Sections 3 to 9.

1.4 The site is located at Fanuc House, 1 Station Approach, Ruislip HA4 8LF (grid ref. 509522 E, 187095 N). Ruislip is within the administrative boundary of the London Borough of Hillingdon. The site is in the town centre, close to shops, amenities and Ruislip tube station. The site location is shown on **Figure 1**.



(Contains data available under Open Database Licence © OpenStreetMap contributors source: openstreetmap.org)

Figure 1: Site Location



Site boundary

- 1.5 The Environment Agency (EA) mapping shows the site to be located within Flood Zone 1. This is defined as having a probability of less than 1 in 1000 of river (or fluvial) flooding in any year, and is considered to be a 'Low' risk fluvial flood zone.
- 1.6 The Flood Risk Assessment prepared by RAB Consultants in December 2016 (Ref. 1263B) concluded from EA mapping and site-specific modelling that the site is at risk of flooding from surface water (or pluvial) during extreme rainfall events. The site is also in a surface water overland flowpath, and it is important not to block the flowpath as this could result in an increased flooding to others. The 2016 FRA should be consulted for further information on the local flood risk and proposed mitigation measures.
- 1.7 This Flood Action Plan has been prepared for the development of 40 residential apartments located over four stories. There will also be a surface level and basement car park/plant area.
- 1.8 It will be the responsibility of the site manager/owner or an appointed management company to review and implement the Flood Action Plan, and to ensure that the residents and visitors are aware of the risk to the area. It is also the responsibility of the site manager/owner to provide new residents with a copy of this Flood Action Plan at the beginning of a new occupation or tenancy.
- 1.9 The contents of this document are as follows:

Section 2 sets out the surface water flood risk to the site.

Section 3 details how to prepare for a flood.

Section 4 discusses what to do during a flood and the evacuation route.

Section 5 explains what to do after a flood.

Section 6 sets out the roles of other bodies.

Section 7 identifies the relevant contacts.

Section 8 explains how the plan should be updated.

Section 9 includes additional sources of information.

2 Surface Water Risk Assessment

2.1 The FRA prepared by RAB Consultants (2016) identifies the primary flood risk to the site is from surface water. Surface water modelling was carried out and demonstrated a flowpath from the north west at Pembroke Road towards the south east. Although the surface water modelling does not include details such as drainage features, it does provide an overview of the likely depths and flowpaths associated with a 1 in 100 year (+40%CC) surface water flood. **Figure 2** shows the surface water flowpaths from the model for the existing site.

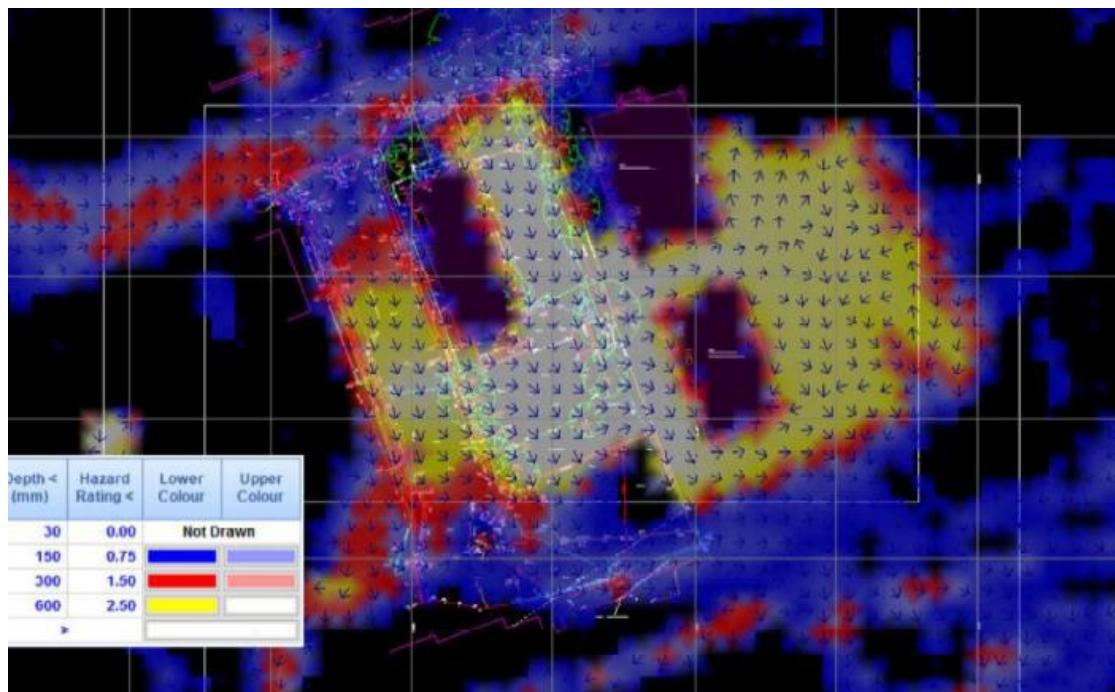


Figure 2: Existing site surface water modelling output (RAB Consultants FRA 2016)

2.2 **Figure 3** shows the surface water risk for the proposed development site, i.e. with the inclusion of the new building with the proposed ground levels and car parking areas.

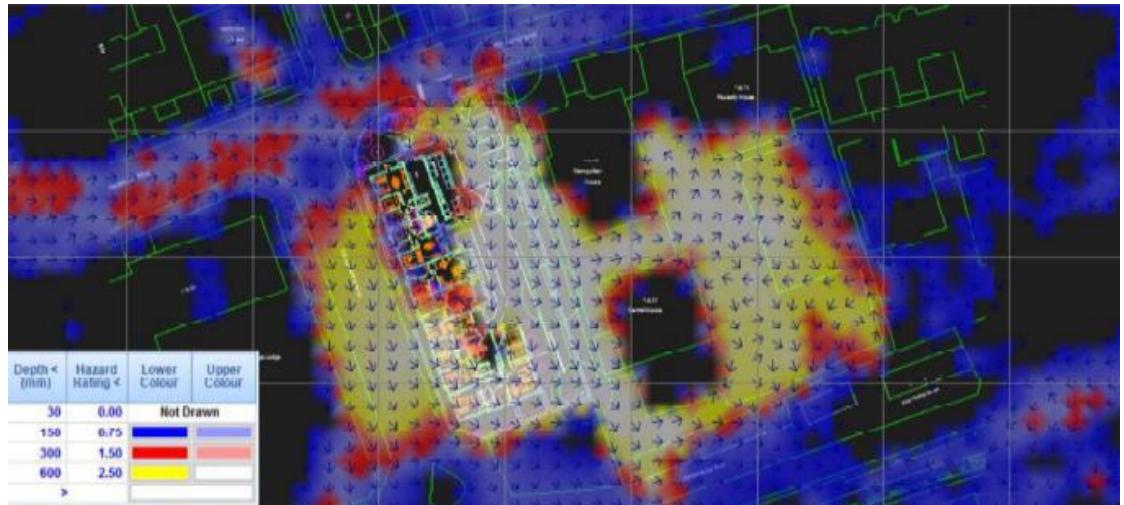


Figure 3: Proposed site surface water modelling output (RAB Consultants FRA 2016)

The Environment Agency (EA) surface water mapping also indicates the risk to the site, although this is a high-level overview and does not include site-specific topographic information. The EA surface water map is included at **Figure 4** and shows the site is in a 'Medium' to 'Low' risk area.

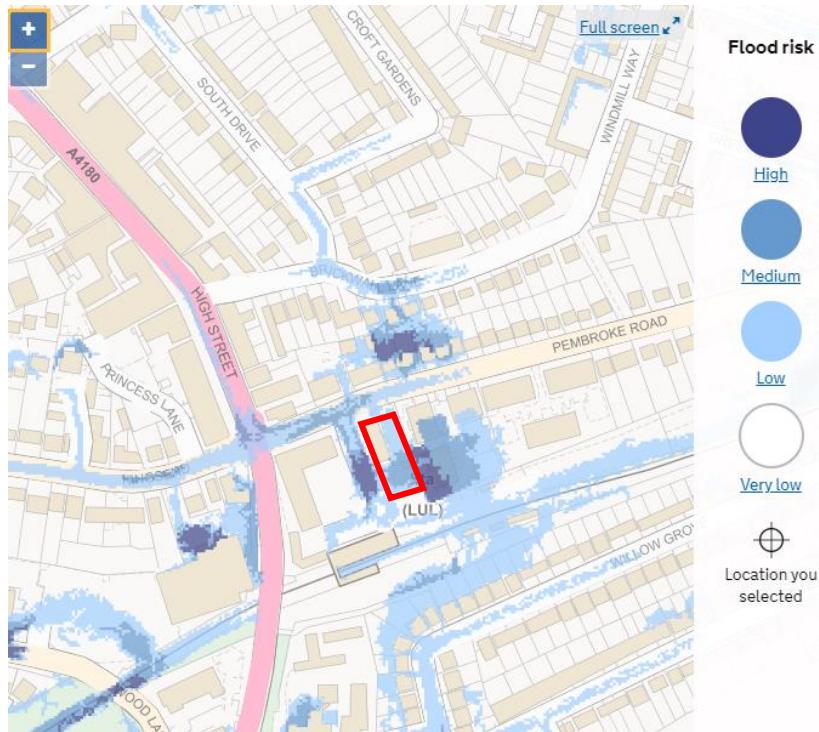


Figure 4: EA Surface Water Map (Source: <https://flood-warning-information.service.gov.uk/long-term-flood-risk/map> © Environment Agency copyright and database rights 2017. © Ordnance Survey Crown copyright. All rights reserved.)

2.3 The FRA states that the modelling provides a 'worst case' scenario assuming there are no surface water drainage systems in place. The 1 in 100 year (+40%CC) flood level is estimated to be 46.75m AOD in this scenario. The proposed finished floor levels on the ground floor are set at 47.25m AOD, which provides a 0.50m freeboard. This means that the ground floor apartments will remain safe and dry during this extreme flood event.

2.4 Table 1 below estimates the flood depths across different parts of the site during a 1 in 100 year (+40%CC) flood which could reach a level of 46.75m AOD. The ground levels and proposed levels are based on the topographic survey and proposed development levels.

Location	Ground Level/Proposed Development Levels (m AOD)	Estimate flood depth (m)
Station Approach Road	46.95 to 46.10m AOD	0m to 0.65m
Adjacent to building at Station Approach Road	46.90 to 46.45m AOD	0m to 0.30m
Proposed site access from Pembroke Road to car park ramp	46.90 to 46.50m AOD	0m to 0.25m
Terrace	47.25m AOD	0m
Land east of access to swale	46.60 to 45.45m AOD	0.15m to 1.30m (note: 1.30m is within swale)
Garden and land to the south of building	46.45 to 45.75m AOD	0.30m to 1.30m

Table 1: Summary of estimated flood depths across site based on surface water level of 46.75m AOD and proposed elevations

2.5 Other mitigation measures to ensure the overland flowpaths remain and the development is safe are:

- Inclusion of a self-raising flood barrier at the entrance to the basement car park. When the water reaches a specified depth, the barrier will rise and prevent overland flows from entering the basement car park.
- All basement car park vents and pipework will be located above the 1 in 100 year (+40%CC) flood level of 46.75m AOD.

- A swale will be located along the eastern boundary of the site to direct overland flows from Pembroke Road towards the south east, to replicate the existing scenario. The swale will provide 39.52m³ flood storage volume and will allow water to collect here before overtopping the swale and continuing to the south east.
- The southern end of the building includes a void space beneath the ground floor slab and the external ground level. This will enable the existing flowpath from Station Approach Road to continue through the site as it would in the existing situation.
- A conveyance ditch along the length of the western boundary will also help to direct flows across the site.
- Floodplain compensation within the site boundary will ensure there is no increase to offsite flood risk.

2.6 In addition to the mitigation measures above, flood warning notices should be located around the site and in communal areas to make residents and visitors aware of the risk. In particular, a flood warning notice should be located in the basement car park so that people know that they may not be able to move their vehicle in the event of a flood if the flood barrier rises.

2.7 An example of a flood warning notice is show in **Figure 5**.

FLOOD WARNING NOTICE

This site is at risk of surface water flooding

IN THE EVENT OF A FLOOD, THE FLOOD BARRIER AT THE TOP OF THE RAMP WILL RISE TO PROTECT THE CAR PARK.

THE CAR PARK WILL BE CLOSED WHILE THE FLOOD BARRIER IS UP AND YOU WILL NOT BE ABLE TO MOVE YOUR VEHICLE.

LEAVE THE CAR PARK BY FOOT USING THE INTERNAL STAIRS OR THE LIFT. DO NOT ATTEMPT TO MOVE YOUR VEHICLE UNTIL THE FLOOD BARRIER HAS LOWERED. IT IS UNSAFE TO DRIVE THROUGH FLOODWATER.

PLEASE CONTACT THE BUILDING MANAGEMENT FOR FURTHER DETAILS ON xxxxxxxxxxxxxxxxxxxx

Figure 5: Example Flood Warning Notice

2.8 The information contained within Sections 3 to 9 should be included in a 'Welcome Pack' and provided to each resident when they move into the development. This information should also be readily available in the reception areas and any communal areas where information is displayed for residents and visitors.

3 What to do before a flood – Be Prepared!

Flood Warning System

- 3.1 **ALL RESIDENTS of the new dwellings, and the owner/manager of the development, should provide their mobile phone number and/or landline phone number so that they can receive a flood warning.**
- 3.2 The site is at risk of surface water flooding, and flood sensors have been located on the building facing Station Approach Road, and on the self-raising flood barrier to the basement car park. The flood sensor adjacent to Station Road is installed 0.15m above the ground level and the sensor on the flood barrier will trigger if the barrier begins to rise. CCTV cameras will be installed close to each of the sensors to monitor the flood progress.

In the event of a flood, the flood sensor(s) will send an alert to the building management and maintenance company.

It is the responsibility of the building management and maintenance company to check the CCTV cameras to ensure the sensor was triggered due to a flood and not due to any other reason. The maintenance company may also attend the site to check the situation.

Once the site is confirmed to be flooding, a flood warning text message will be distributed to all residents to inform them of the risk to the premises. A phonecall will be made to the residents who have provided only a landline number.

ANNUAL REVIEW

- 3.3 **This Flood Action Plan should be reviewed at least annually by the site management and each individual resident, and the following actions should be taken in line with Environment Agency guidance:**
 - Reading the plan and updating the contacts list.
 - Prepare and maintain a **flood kit** to contain items which are essential for evacuation.
 - Although it is unlikely to be required, it is recommended that each resident of the proposed development should try to have in place a local friend or family member who they can stay with should evacuation be necessary.
 - Check your insurance cover – ensure it covers flood damage
 - Know how to turn off the gas, electricity and water mains supplies if applicable
 - Think about what items you would want to move to safety during a flood

3.4 The **flood kit** will also be useful for general emergency situations and should be stored where it can be easily accessed and should include:

- A torch
- Blankets or a sleeping bag, warm clothing and waterproofs
- A first-aid kit, including a supply of any essential medication
- A list of useful telephone numbers
- A supply of bottled water
- A stock of non-perishable food items
- A portable radio and supply of batteries
- Wellington boots or similar waterproof boots

3.5 It is important that these emergency measures are in place **before** a flood event so that should evacuation be required residents do not spend time organising belongings and household members (such as small children) at a time when an evacuation should be taking place.

4 What to do during a flood – Act now!

FLOOD WARNING

- 4.1 Upon receiving a Flood Warning, the individual residents should be aware that they may not be able to leave their homes until the floodwater recedes. Evacuation is unlikely to be necessary as all residential apartments are located above the flood level.
- 4.2 When a Flood Warning has been received, the flood barrier protecting the basement car park will be raised and it will not be possible to move your vehicle.
- 4.3 Cars can become unstable and can be washed away when flooding occurs. The AA notes that a vehicle can become unstable in 300mm of floodwater, and advises that people should not attempt to drive through floodwater greater than 100mm in depth. It is not advised to drive out of the surface level car parking spaces if the site begins to flood as the depth could be up to 350mm.
- 4.4 When a Flood Warning is issued the following action should be taken by management and residents:
 - Reconsider travel plans.
 - Listen to and watch for weather and flood warnings on local radio and television stations
 - Check that a flood kit has been prepared.
 - Evacuation is unlikely to be necessary, but it is recommended to make preliminary arrangements for evacuation, for example to stay with a local friend or family member. Locate keys for locking windows and tools for switching off gas and electricity supplies if evacuation becomes necessary.
 - Check with neighbouring homes that they are aware of the situation and have prepared accordingly.
 - Move family, pets and valuables to a safe place.
- 4.5 If floodwater has reached the site and safe access is no longer available, residents should remain in their homes which will remain safe and dry.

Preparing for Emergencies

- 4.6 The London Borough of Hillingdon has lots of useful information on how to prepare for a flood on their website. This can be accessed here: <https://www.hillingdon.gov.uk/article/33416/During-a-flood>
- 4.7 It is recommended that residents familiarise themselves with this information.

Evacuation

- 4.8 When a Flood Warning is issued, the site is beginning to flood. The residential apartments will remain above the flood level, but the external areas may flood and access and egress will be lost during an

extreme event. It is highly recommended that residents either remain in their homes or leave the premises quickly and safely before the access becomes flooded.

If safe access has been lost, residents should not attempt to walk or drive through floodwater and should remain in their homes until floodwater recedes.

- 4.9 **Figures 6 and 7** show the safe evacuation route out of the area which is onto Pembroke Road and to the west towards the High Street (A4180). Once on the High Street, residents can go either north or south to the 'very low' surface water risk areas.
- 4.10 Residents should arrange alternative accommodation with friends or family living nearby, or at local hotels or bed and breakfasts if they choose to leave the site during a flood event. Residents should not rely on the emergency services to rescue them, as they will be focused on those most vulnerable. However, if they are in immediate danger, the residents should contact 999 and await assistance.

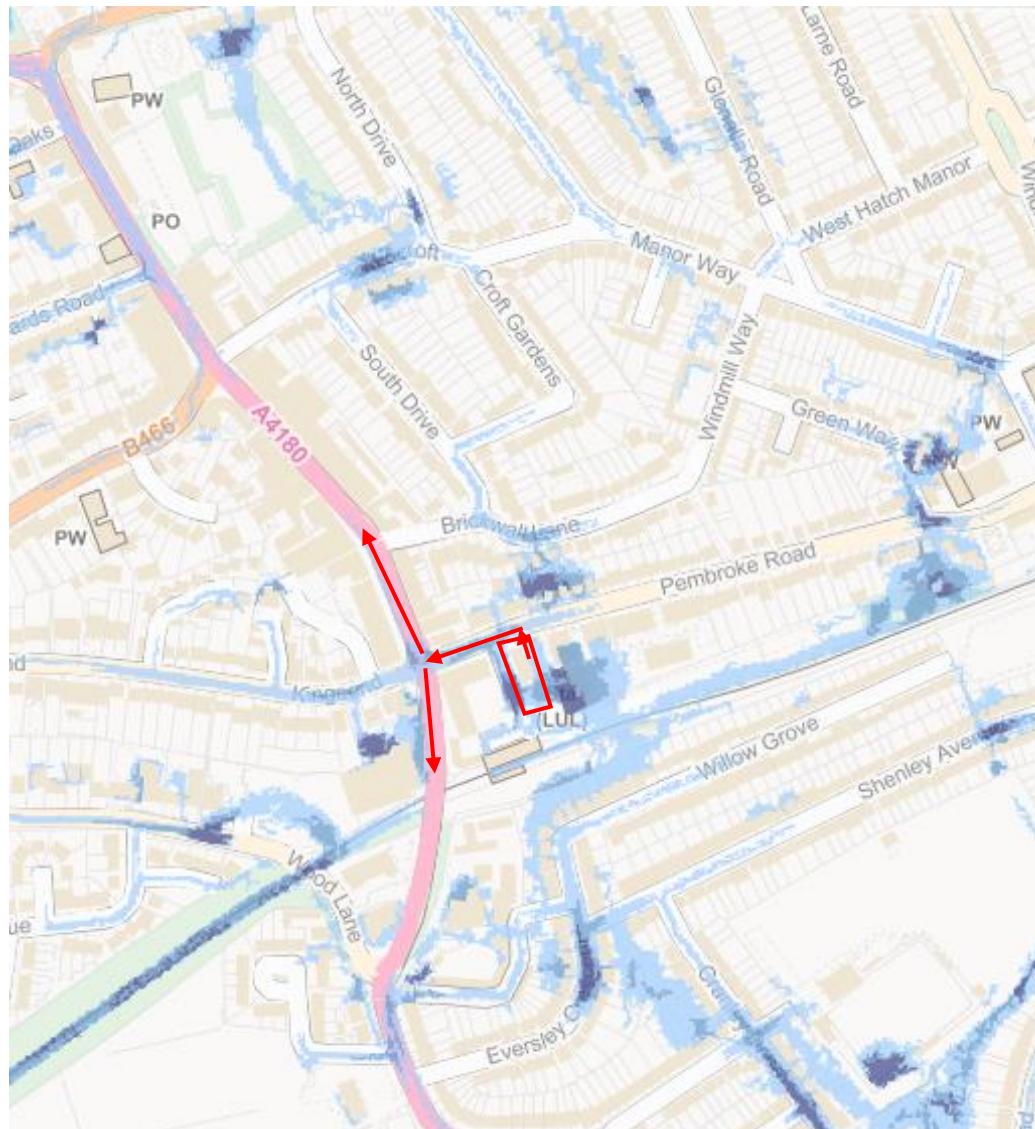


Figure 6: Evacuation Route and EA Floodmap for Planning



(EA Floodmap for Planning © Environment Agency copyright and/or database rights 2015. All rights reserved. © Crown Copyright and database right. All rights reserved. Environment Agency, 100024198, 2015)

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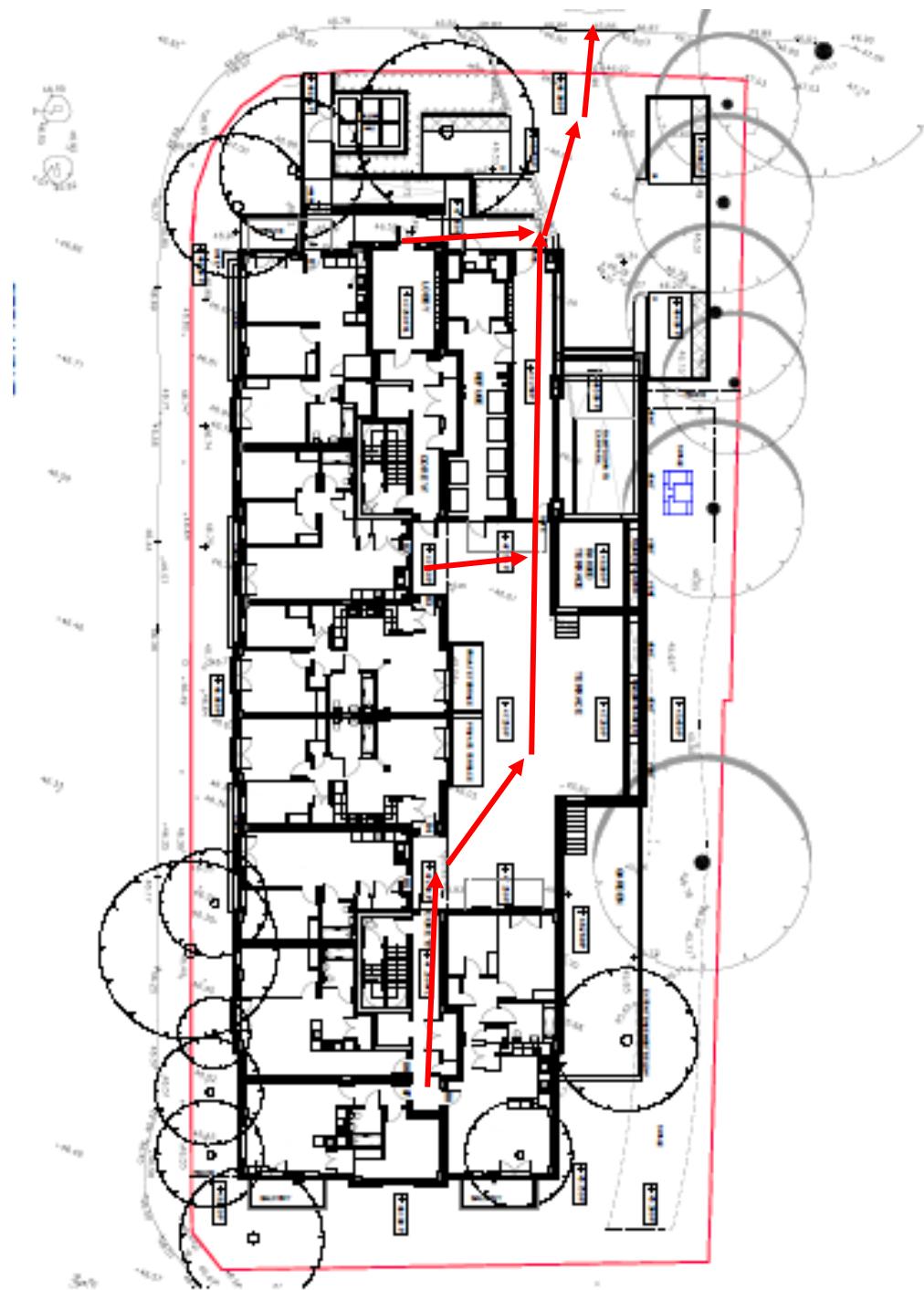


Figure 7: Evacuation Route from Fanuc House Ground Floor to Pembroke Road

5 What to do after a flood – Returning to your homes

Flood Water Recedes - Warnings No Longer in Force

When warnings are no longer in force, no further flooding is currently expected in your area; however flood water may still be present.

- 5.1 Residents/building management should contact the Local Authority to check that it is safe to return to their property. Floodwater should not have entered the apartments as they are located above the estimated 1 in 100 year (+40%CC) flood level and the flood barrier is designed to protect the basement car park. However, if for any reason floodwaters have entered an apartment or the basement car park, it will need to be cleaned, disinfected, repaired and fully dried out prior to re-occupation. It must be checked that the building is safe before entering the building, and if there are any doubts professional opinion should be sought.
- 5.2 If there is any doubt that appliances may be water damaged they must be checked before switching the power or gas back on. Contact your insurance company as soon as possible to get their approval before arranging any clean-up or repairs. Do not throw away damaged goods until your insurer has authorised you to do so. It is a good idea to take photographs of the damage.
- 5.3 **The onset of flooding can occur quickly and it is vital that residents evacuate the premises quickly and safely if they choose to do so, before safe access is lost. In particular, more vulnerable people such as the elderly or disabled will take longer to evacuate the area, so it is important to ensure that these people have enough time to leave the premises.**
- 5.4 **It is not recommended to drive through floodwater, and residents will not be able to move their vehicles from the basement car park once the flood barrier has raised. The flood barrier will lower once the floodwater begins to recede and as long as the access road is clear of water, residents will then be able to move their vehicles.**

6 Roles of Other Bodies

6.1 There are many organisations that will play a part in response to a major flooding incident; emergency services, utility companies and voluntary agencies to name but a few. Below are the roles and responsibilities of some of the principal organisations that will be involved in the early stages of a response.

6.2 **MET Office:** The Met office issues severe weather warnings for heavy rain, snow, severe gales etc. These warnings are delivered directly to Local Authorities, the emergency services and the media.

6.3 **Police:**

- Co-ordination of the emergency services at a major flood event, as well as helping to save lives and protect property
- Establishment of cordons where practical to facilitate the work of the emergency services
- In conjunction with other emergency services, to evacuate people from properties at risk, if necessary
- Collation and dissemination of casualty information

6.4 **Fire & Rescue:**

- Saving lives and rescuing trapped people
- Provide monitoring procedures in respect of health and safety of those persons operating within an established cordon
- Carry out essential damage control measures including pumping out flood water and salvage work
- Rendering humanitarian services in support of the Local Authority

6.5 **Environment Agency (EA):**

- **The EA do not provide warnings relating to surface water flood events, but may be involved if river levels locally rise as a result of extreme rainfall.**
- Predicting flooding from statutory main rivers and the sea including the location, timing and magnitude
- Issuing of Flood Warnings (as a result of river flooding) to partner agencies and ensuring that the public are warned and informed
- Maintenance and operation of sea and river flood defences. Checking defences and undertaking essential repairs as required
- Monitoring and clearing blockages of culverts and repairing breaches of defences
- Support the Police and Local Authority by providing materials, equipment and manpower as far as resources and other duties permit
- Advisory role in dealing with pollution issues as a result of flooding

6.6 **Local Authority**

- Providing flood evacuation points for shelter and temporary accommodation

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- Providing support to the emergency services
- Mitigation of the effects of an emergency on people, including emergency feeding, accommodation and welfare.
- Co-ordination of the voluntary sector response
- Information services to the public and media
- Environmental health advice
- Rehabilitation of the community and restoration of the environment
- Further information on the role of Hillingdon Borough Council during an emergency and advice on flooding is found on the Council website here: <https://www.hillingdon.gov.uk/flooding>

6.7 Utility Companies

- In the event of a flood, will secure their services and equipment to ensure continuity of supply
- Repair services disrupted by flood
- Provide alternative means of supply during service disruption if life and death health risks are identified.

7 Relevant Contacts

7.1 The emergency contact details below should be checked annually by the management of the premises and individual residents. As this document is at a pre-development stage many of the details are yet to be confirmed and marked below as **TBC**.

Electricity provider:	TBC
Gas provider:	TBC
Water company:	Thames Water (priority services 08459 200800)
Telephone provider:	TBC
Insurance company and policy number:	TBC
Local council:	London Borough of Hillingdon General Switchboard: 01895 250111 https://www.hillingdon.gov.uk/residents
Local radio station:	BBC Radio One or Hayes FM
Travel/weather info:	www.bbc.co.uk
Description of location to close off utilities:	
-Electricity:	TBC
-Gas:	TBC
Location of Emergency Kit:	TBC
Family member / friend contact and address details for temporary evacuation:	TBC
Fire Brigade (local number):	020 8555 1200
NHS:	111
Hillingdon Hospital:	01895 238282

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7.2 It is useful to keep a note of the location of cut off valves in the event that utilities need to be turned off in an emergency. **Figure 8** can be used to record this information along with any other notes relevant to switching off utilities.

Service	Location of Cut-off Switches and Valves	Notes (e.g. who is responsible to do this, where is the key kept)
Electricity		
Gas		
Water		
Telephone/IT		

Figure 8: Utilities Information

8 Updating the Plan

- 8.1 It is intended that this Flood Action Plan be a live document to be managed by the building managers of the development, and also by each resident of the development.
- 8.2 The plan should be reviewed:
 - On first occupation
 - Every 3 years following first occupation or;
 - As a result of lessons identified following a flood event or exercise, or;
 - Following changes of ownership/use of the property or;
 - Following changes to the Flood Warning process.
- 8.3 A record of any changes made to this plan should be kept in the table below for information:

Date of Review	Changes to Plan	Issued to

9 Sources of Additional Useful Information

9.1 Am I at risk of Flooding?

<https://flood-warning-information.service.gov.uk/long-term-flood-risk/map>

9.2 Make an Emergency Flood Plan for your Home

- <https://www.gov.uk/prepare-for-a-flood>
- www.environment-agency.gov.uk/homeandleisure/floods/38329.aspx

9.3 Preparing your home or business for flooding

- <https://www.gov.uk/prepare-for-a-flood>
- <https://www.gov.uk/prepare-for-a-flood/make-a-flood-plan>

9.4 Before, During and After a Flood – Advice Guides

- www.environment-agency.gov.uk/homeandleisure/floods/114724.aspx

9.5 Hillingdon Borough Council Information

- <https://www.hillingdon.gov.uk/flooding>