

Flood Warning and Evacuation Plan: 46 Queen Square, Bristol, BS1 4LY

PURPOSE & OBJECTIVES

This Flood Warning and Evacuation Plan (FWEP) has been produced to raise awareness of the potential risk of flooding at the site, to detail the scope of Flood Warnings and the estimated lead time should a flood event be predicated. It also details how the FWEP is triggered, by who and when. It outlines what actions are required by those responsible for the site to ensure that those involved with the development or occupying the building remain safe should a flood event occur.

The FWEP describes the evacuation procedure and details where safe refuge can be found. It is based on the template and guidance published by Bristol City Council's Civil Protection Unit.

The FWEP addresses a planning condition listed on application ref. 23/01314/F and planning permission granted in November 2023. Condition no. 8 requires the following to be contained in the FEP:

"No building or use hereby permitted shall be occupied or the use commenced until the applicant has submitted to and had approved in writing by the Local Planning Authority a Flood Warning and Evacuation Plan (FEP). This Plan shall include the following information:

During Demolition/Construction Process

- * command & control (decision making process and communications to ensure activation of FEP);*
- * training and exercising of personnel on site (H&S records of to whom and when);*
- * flood warning procedures (in terms of receipt and transmission of information and to whom);*
- * site evacuation procedures and routes; and*
- * provision for identified safe refuges (who goes there and resources to sustain them).*

During Occupation of Development

- * occupant awareness of the likely frequency and duration of flood events;*
- * safe access to and from the development;*
- * subscription details to Environment Agency flood warning system, 'Floodline'.*

Reason: To limit the risk of flooding by ensuring the provision of a satisfactory means of flood management on the site."

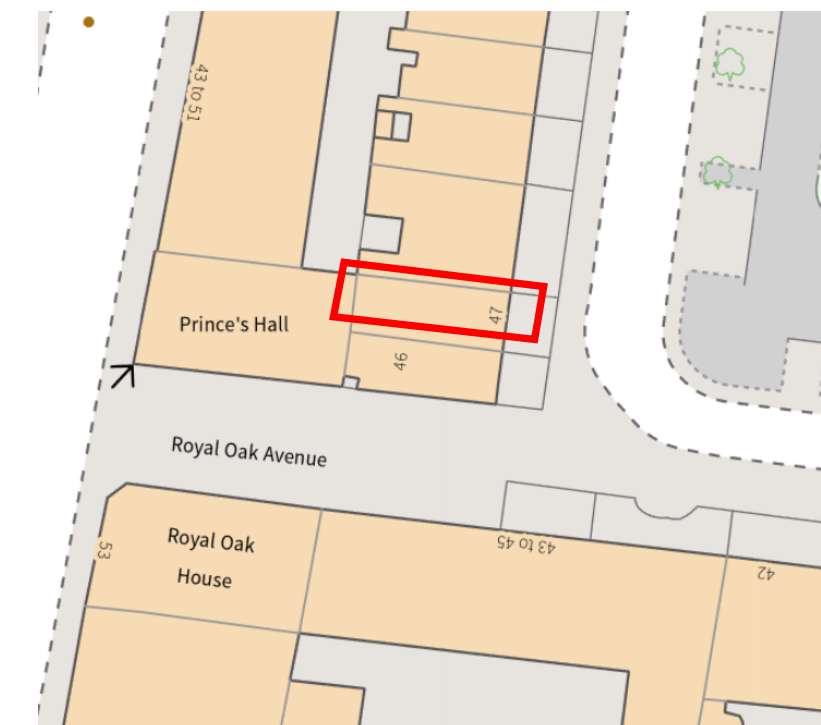
THE SITE & DEVELOPMENT

The property is located in central Bristol on the west side Queen Square at its south west corner at the end of a terrace of period buildings (Photo 1). It is accessed from the main entrance facing south onto Royal Oak Avenue (figures 1 & 2). There is no vehicular access or other entrances to the building.

Planning permission has been granted to convert the building into a large house in multiple occupation (HMO) with 9no. bedrooms for students.



Photo 1. No. 46 Queen Square prior to conversion from office into a 9-bed house in multiple occupation.



Figures 1 & 2. The site location in central Bristol at the south western corner of Queen Square.

FLOOD RISK & MITIGATION

Based on information within the Flood Risk Assessment produced by GeoSon Ltd (ref. 73052 dated March 2023) that accompanied the 2023 planning application, the Environment Agency's Flood Map for Planning, the majority of the site is within Flood Zone 1 (low risk) but with a small portion at the western edge location in Flood Zone 2 (medium risk) (figure 3). However, Bristol City Council's Level 1 Citywide SFRA (2020) shows the site to be located within the future 2080s and 2120s Flood Zone 3 extents.

Comparing the existing topographic spot heights taken along Royal Oak Avenue (9.66m AOD - 9.89m AOD) with 2120 Tidal 200-year / Fluvial 2-year (+70% CC) flood level at the site (10.35m AOD) indicates that the walkway adjacent south of the building (Royal Oak Avenue) may experience flood depths of between 0.46m and 0.69m.

The front courtyard is reportedly raised 250mm higher than the surrounding walkways. Therefore flood depths of up to 0.1m are anticipated in this area.

Meanwhile, the ground floor of the property is elevated at least to 10.59m AOD, approximately 0.24m above the design flood level. Therefore, the floor will remain flood free during the 2120 Tidal 200-year / Fluvial 2-year (+70% CC) flood event.

On this basis, safe refuge can be provided on the upper floors of the property itself.

Safe access and egress to and from the property can be provided via the stepped entrance onto Royal Oak Avenue. From here, contractors and future residents and site users should travel east along the footpath into the centre of Queen Square. This route is located entirely outside of the design tidal/fluvial flood extent from 100m north east of the site.

As per recommendations in the Flood Risk Assessment, resilient measures are to be introduced into the building as part of the conversion to limit the extent of potential water ingress into the basement.

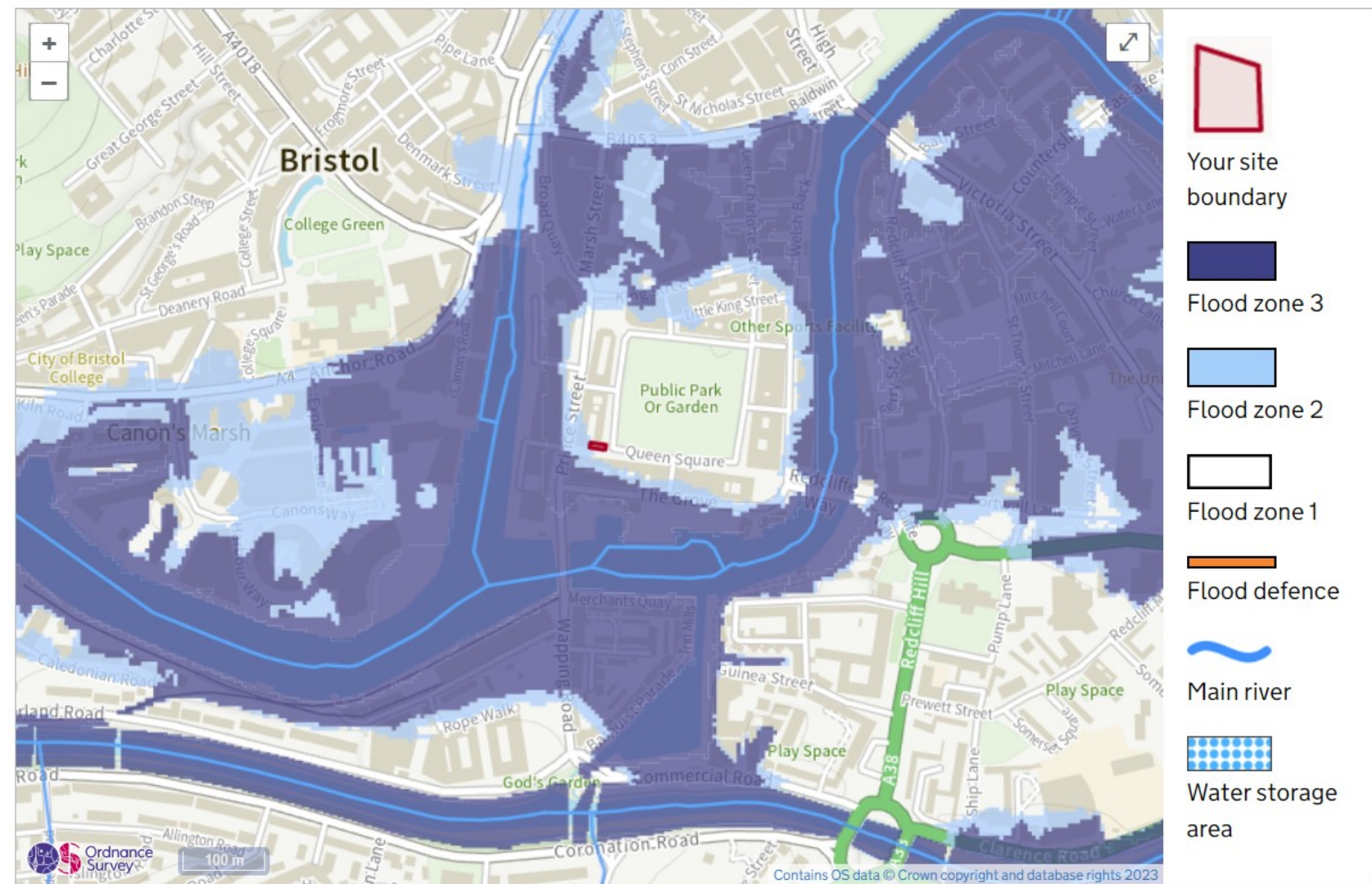


Figure 3. The Environment Agency's Flood Map for Planning with the site identified (in red) partly within Flood Zone 2 (medium risk) but within the majority in Flood Zone 1 where there is a low risk of flooding.

DEVELOPMENT PHASE

The conversion works will be undertaken by Construction & Real Estate Ltd, the owner and developers of the property. The development will be project managed by Senior Manager from Construction & Real Estate Ltd who will be the principal point of contact and decision maker. They will oversee the input of sub-contractors. Construction & Real Estate Ltd will sign up to the Government operate a flood forecasting and warning service.

The Senior Manager will ensure this FWEP is followed and that all personal, sub-contractors and visitors to the property are aware of the potential flood risk and that in the event of flood they should exit the property and proceed to Queen Square for safe refuge (figure 4).

Briefings will take place at the outset of the development commencing, and as and when new personnel or sub-contractors attend the site.

Should a flood event be predicted, all personnel and sub-contractors will be advised not to attend the site.

RESIDENTIAL OCCUPATION

The future residents will be informed of the potential flood risk information within the tenancy pack from the property agent and with a copy of this PWEP kept on a notice board within the main communal area of the property.

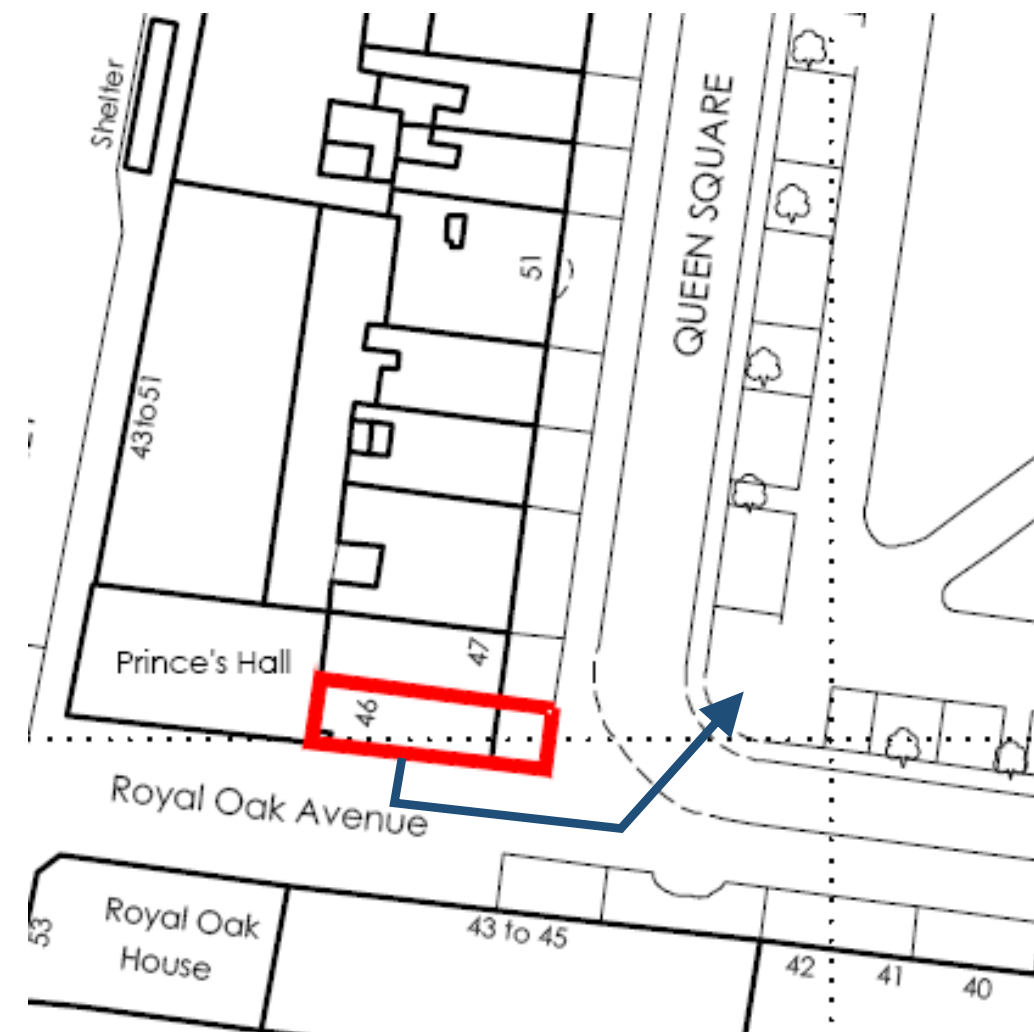


Figure 4. Evacuation route in the event of flooding to higher ground.

FLOOD WARNINGS

The Government operate a flood forecasting and warning service operated by the Flood Forecasting Centre (a partnership between the Environment Agency and Met Office). This relates to areas at risk of flooding from rivers or the sea, which relies on direct measurements of rainfall, river levels, tide levels, in-house predictive models, rainfall radar data and information from the Met Office.

The flood warning service can be signed up to and this operates 24 hours a day, 365 days a year.

Contacts:

Call Floodline for advice

Telephone: 0345 988 1188

Textphone: 0345 602 6340

www.gov.uk/sign-up-for-flood-warnings

If flooding is forecast, warnings are issued using a set of easily recognisable codes. A description of the codes is provided in

Appendix 1.

FLOODLINE REGISTER

Construction & Real Estate Ltd are to manage the property and are responsible for activation of the FWEP. Once the premises are operational they will register with the Flood Warnings Service to receive flood warnings through this system and advice.

They will also ensure that future tenants of the property are also aware of the flood issues and that they also sign up to the warning services. The tenants will take responsibility for the evacuation of the building in the event of a predicted flood event, taking the route shown in Figure 4.

FLOOD WARNING TIME

For the site, based on forecasted tides and predicted weather conditions, the estimated lead time for flood warnings is 6 hours. A more accurate estimation is likely to be provided when the Flood Forecasting Centre issue their warnings. Given the lead-time for warnings, Construction & Real Estate Ltd will have time to inform their tenants, should the need arise.

FLOOD PROTECTION

As per the flood risk assessment that accompanied the planning application, resilient measures are proposed to resist inundation of the basement. The ground floor and upper floor accommodation should remain above the predicted flood risk.

COMMAND & CONTROL

Once a Flood Warning has been received by Construction & Real Estate Ltd they will ensure their tenants are also aware of the warning. They will discuss the warning, recent weather activity, estimated impact time, before deciding on the relevant course of action.

If immediate flooding is forecast if safe egress from the building cannot be achieved, then tenants will be advised to take refuge on the buildings upper floors to await rescue by the emergency services.

RESPONSE ACTIONS

Site Evacuation Procedures & Routes

In the event of a Flood Warning, tenants will be required to leave the property and make their way to higher ground in Queen Square, as shown in Figure 4.

Safe Refuge

The ground and upper floors of the building can be used for safe refuge if absolutely essential, by anyone who has not managed to leave the site. However, this is considered to be as an absolute last resort and if needed, would be due to a failure to heed warnings.

Reoccupation of the Site

Return to the property will only take place when the Flood Warning has ended and the emergency services/local authority have confirmed the area is safe to return to.

Upon return, the site will be inspected Construction & Real Estate Ltd who will check for hazards and to ensure power has been restored. If necessary, cleaning will take place to remove any biological hazards.

TRAINING & EXERCISING

All relevant Construction & Real Estate Ltd staff and personnel who will be involved with the site (virtually or on site) will be informed of the FWEP and the Flood Warning System. The flood risk and warning system will be explained and they will be trained in what actions to take should a flood event occur.

A Health & Safety record will be kept providing details of which staff have been briefed on the FWEP and trained on the procedure for ensuring the safe evacuation of the site.

This Plan will form part of the Health & Safety at Work Register maintained by Open 24 Seven.

DOCUMENT CONTROL




This FWEP is owned, maintained, and updated by Construction & Real Estate Ltd who will manage the site. They will from time to time update the FWEP, as and when new information is available and issue copies to their tenants.

A formal review will be undertaken few years as a result of lessons identified after a flood event or exercise, following major changes of personnel or policy, or following any change to the flood risk or warning process.

As part of their training, all relevant Construction & Real Estate Ltd staff will be asked to advise the Senior Manager of any changes in circumstances that may materially affect the FWEP in any way.

Further information is available on the websites listed in **Appendix 2.**

Appendix 1. Flooding Warning Codes

<p>Flood Alert</p> 	<p>Key Message: Flooding is possible. Be prepared</p> <p>Timing: 2 hours to 2 days in advance of flooding</p> <p>Actions: Be prepared for flooding Prepare a flood kit of essential items Monitor local water levels and flood forecasts</p>
<p><i>Flood Alerts are to warn people of the possibility of flooding and encourage them to be alert, stay vigilant and to make early preparations for flooding.</i></p>	
<p>Flood Warning</p> 	<p>Key Message: Flooding is expected. Immediate Action Required</p> <p>Timing: Half an hour to 1 day in advance of flooding</p> <p>Actions: Act now to protect your property Block doors with flood boards or sandbags and cover airbricks and other ventilation holes Move family, pets and valuables to a safe place Turn off gas, electricity and water supplies if safe to do so Keep a flood kit ready Move cars, pets, food, valuables and important documents to safety</p>
<p><i>Flood Warnings are to warn people flooding is expected and encourage them to take immediate action to protect themselves and their property.</i></p>	
<p>Severe Flood Warning</p> 	<p>Key Message: Severe flooding. Danger to life</p> <p>Timing: When flooding poses a significant threat to life and different actions are required</p> <p>Actions: Stay in a safe place with a means of escape Be ready should you need to evacuate from your home Co-operate with the emergency services Call 999 if you are in immediate danger</p>
<p><i>Severe Flood Warnings are to warn people of a significant risk to life or significant disruption to communities caused by widespread or prolonged flooding, and encourage them to take immediate action to protect themselves and follow the advice of the emergency services.</i></p>	
<p>Warnings no longer in force (no icon)</p>	<p>Key Message: No further flooding is currently expected for your area</p> <p>Timing: When river or sea conditions begin to return to normal</p> <p>Actions: Be Careful. Flood water may still be around for several days and could be contaminated If you've been flooded, ring your insurance company as soon as possible.</p>
<p><i>Warnings are removed to inform people that the threat has now passed.</i></p>	

Appendix 2. Further Sources of Information

Flood Warning Information Service:

www.fws.environment-agency.gov.uk/app/olr/register

Current Flood Warnings:

www.flood-warning-information.service.gov.uk/warnings

Am I at Risk of Flooding?

www.gov.uk/check-flood-risk

Prepare a Flood Plan for your home or business

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

Improving the flood performance of new buildings: flood resilient construction.

www.gov.uk/government/publications/flood-resilient-construction-of-new-buildings

National Planning Policy Framework and the Planning Practice Guidance.

www.gov.uk/government/collections/planning-practice-guidance