



Flood Risk Evacuation Plan

AEG02991_BS6_Bristol_01

degadea

Flood risk, water and environment

Site Address:
200 Cheltenham Road,
Bristol,
BS6 5QZ

UK Experts in Flood Modelling, Flood Risk
Assessments, and Surface Water Drainage Strategies

degadea

Flood risk, water and environment

Document Issue Record

Project: Flood Risk Evacuation Plan

Prepared for: Yunzhang Lin

Reference: AEG02991_BS6_Bristol_01

Site Location: 200 Cheltenham Road, Bristol, BS6 5QZ

Consultant		Date
Author	Nick Darling-Drewett	18/10/2023
Document Check	Alex Brennan	19/10/2023
Authorisation	Doug Swinbanks	20/10/2023

Please Note:

This report has been prepared for the exclusive use of the commissioning party and may not be reproduced without prior written permission from Aegaea Limited. All work has been carried out within the terms of the brief using all reasonable skill, care, and diligence. No liability is accepted by Aegaea Limited for the accuracy of data or opinions provided by others in the preparation of this report, or for any use of this report other than for the purpose for which it was produced. Where reference has been made to probability events, or risk probability, it does not ensure that there is no risk or that there is no residual risk from an extreme, unlikely or unforeseen flood event over the lifetime of the development.

1. Flood Warning and Evacuation Plan (FEP)

Summary

- 1.1. Aegaea have been instructed to produce a Flood Warning and Evacuation Plan (FEP) to assist with the discharge of Condition 7 of Bristol City Planning Permission Ref 22/04079/F.
- 1.2. The site is 200 Cheltenham Road, Bristol, BS6 5QZ (Figure 1). The site is currently a takeaway at ground floor.

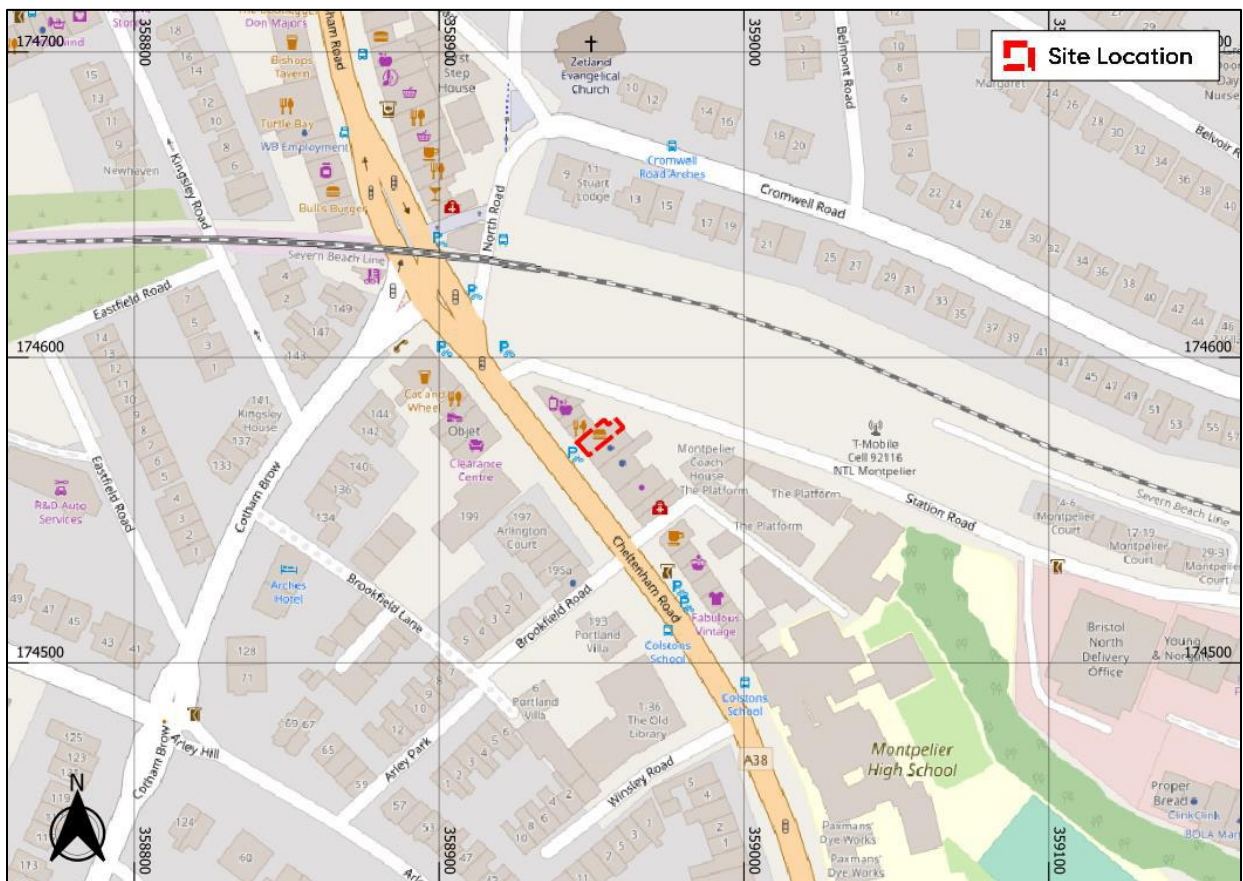


Figure 1: Site Location (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors. Contains public sector information licensed under the Open Government Licence v3.0)

- 1.3. Planning Permission 22/04079/F is or the Erection of single-storey rear extension to provide additional kitchen space, and change of Use of Ground Floor from Hot-Food Takeaway (Sui Generis) to Restaurant (Class E).

1.4. Condition 7 of Planning Permission 22/04079/F states:

7. C26 Flood Evacuation Plan - Commercial Property

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:

** 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).*

The FEP shall be reviewed at intervals not exceeding 3 years, and will form part of the Health & Safety at Work Register maintained by the applicant.

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

1.5. As such, this FEP has been produced to assist with the discharge of the above condition.

Flood Risk

1.6. The site is in Flood Zone 2 (medium risk of fluvial flooding) based on the EA Flood Map for Planning (Figure 2). It is noted that the Flood Zone 2/3 extent within the vicinity of the site is not hydraulically linked to any other Flood Zone. It appears to originate from the Cranbrook only and be isolated. This may be due to the culverted nature of the Cranbrook.

1.7. The EA have provided outputs from their Bristol Strategic Flood Risk Assessment (SFRA) 2019 v19 Model. This data indicates that the site would remain unaffected in all modelled fluvial and tidal events on the River Avon (Figure 3).

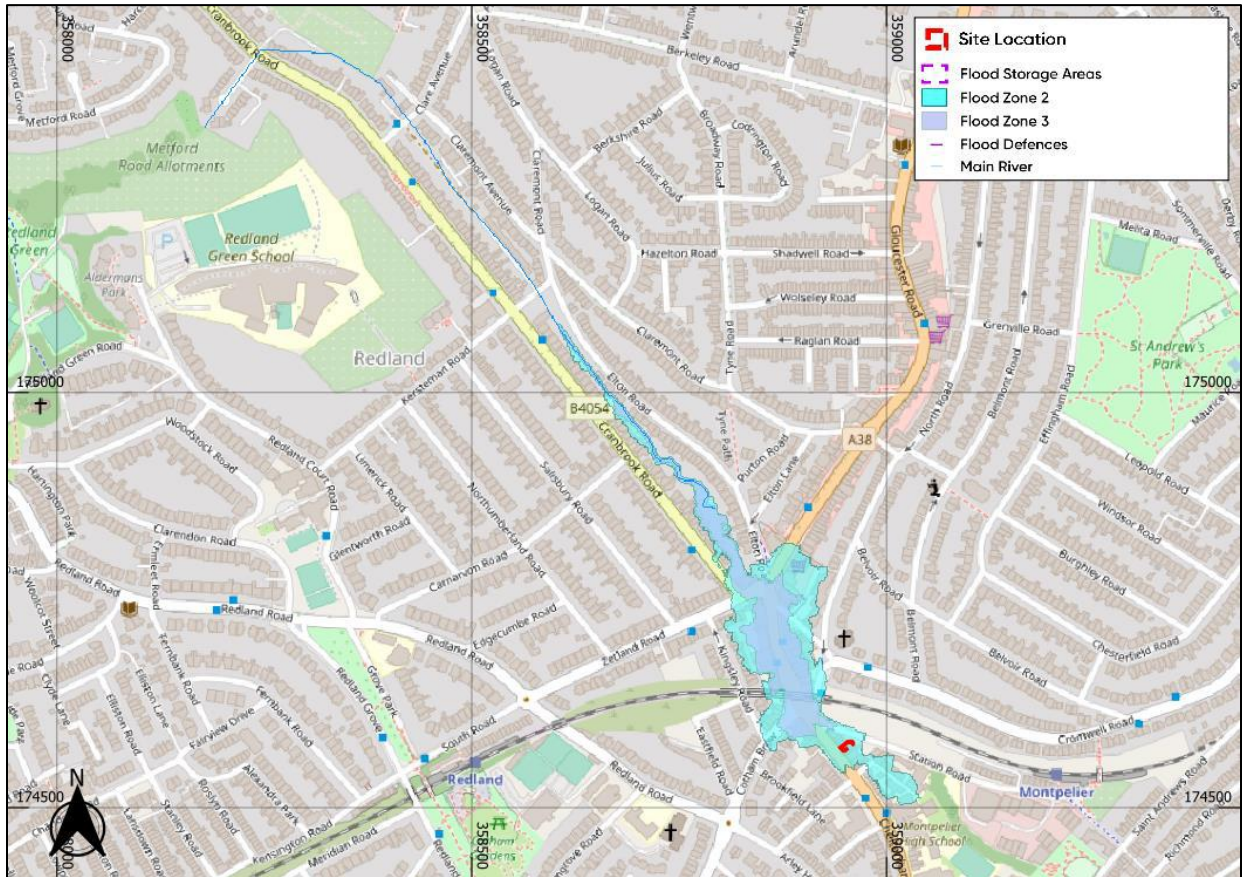


Figure 2: EA Flood Map for Planning (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors. Contains public sector information licensed under the Open Government Licence v3.0)

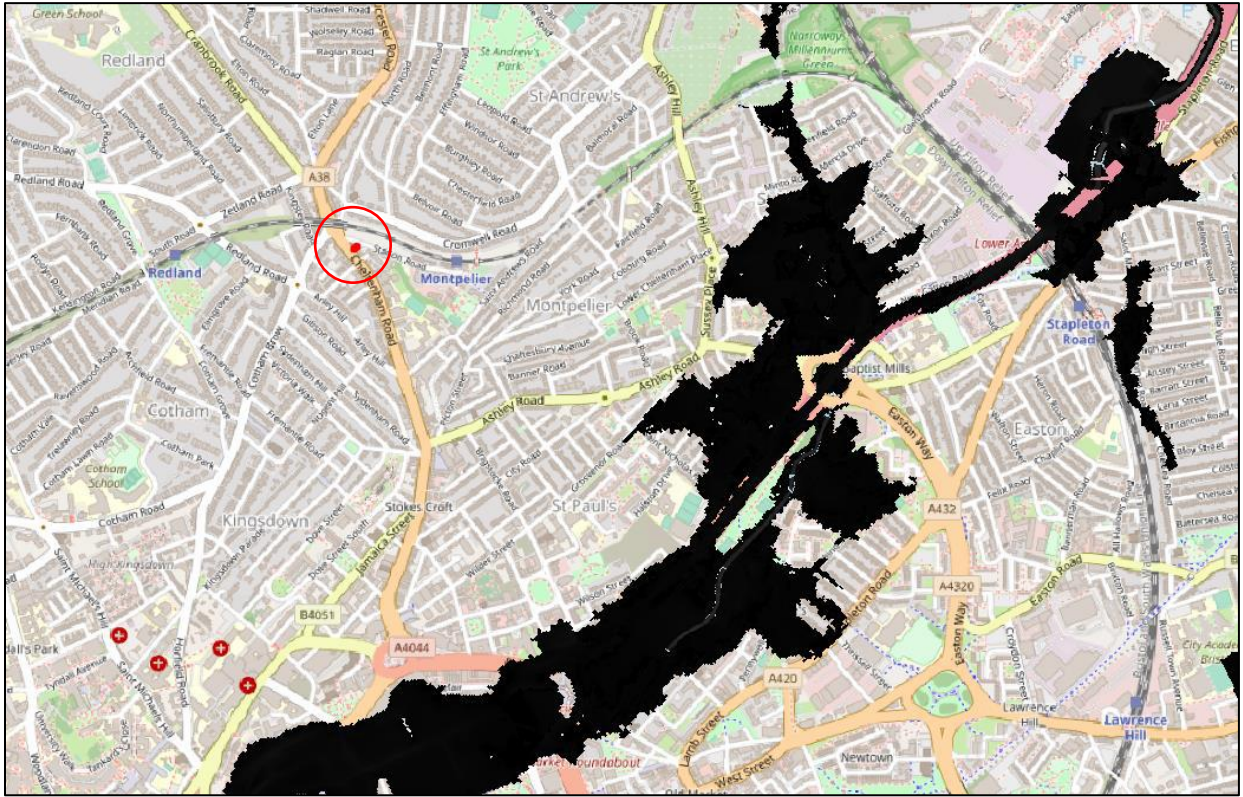


Figure 3: EA Modelled '2120 T200 F2CC' Flood Extents (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors. Contains public sector information licensed under the Open Government Licence v3.0)

- 1.8. The EA have provided outputs from their Bristol ExCows Model. This data indicates that the site could be partially affected in the 1:100 year +CC (30%) event on the Cranbrook (Figure 4). As can be seen from Figure 4, the hazard rating on site would be less than 0.75 (Low Hazard) but northwest on Cheltenham Road would be between 1.25 and 2.00 (Danger for Most) in places. As such, it is not recommended to evacuate the site to the northwest.

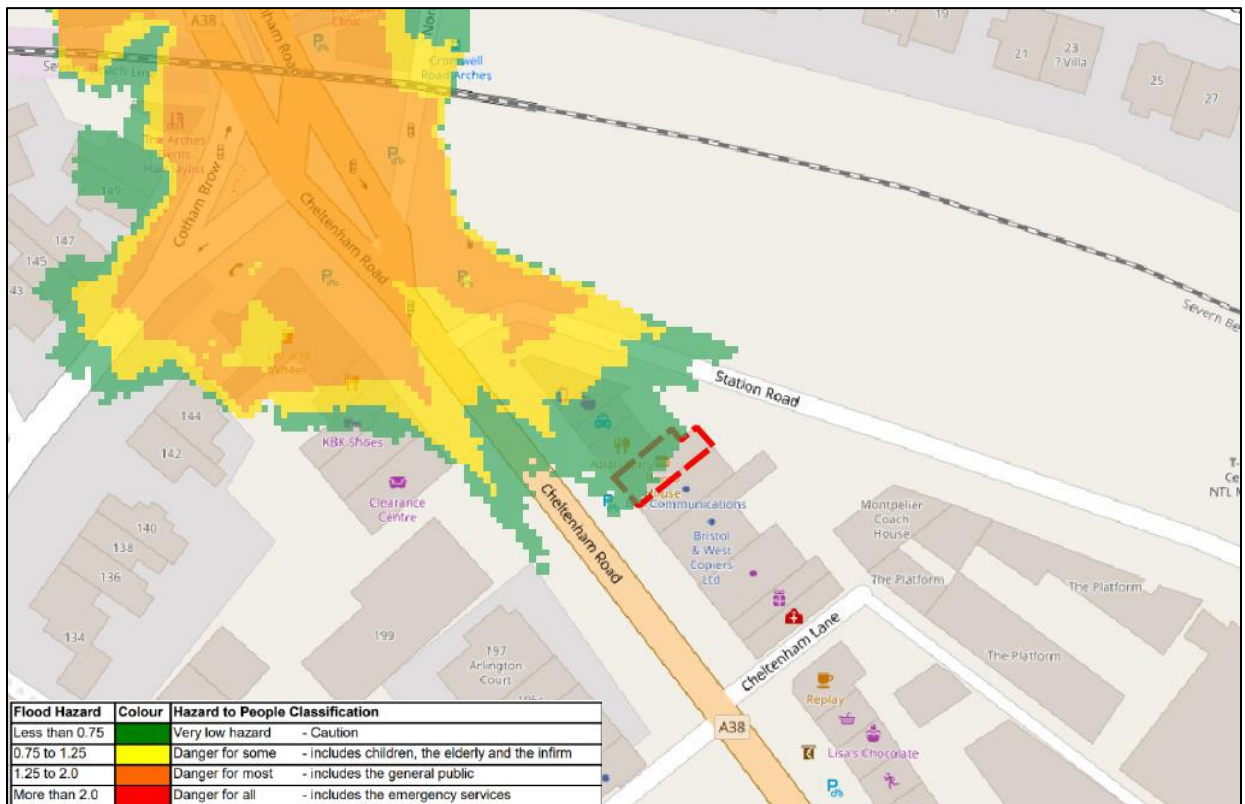


Figure 4: EA Modelled 1:100 year +CC (30%) Flood Hazard Ratings (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors. Contains public sector information licensed under the Open Government Licence v3.0)

- 1.9. Review of the EA Risk of Flooding from Surface Water (RoFSW) dataset indicates that the site mostly at a 'Very Low' risk of pluvial flooding, but could be partially affected in the modelled 'Medium' risk event – which is equivalent to a 1 in 100 year event (Figure 5). It should be noted that the modelled 'Medium' risk event (1 in 100 year) is actually greater than the modelled 'Low' risk event (1 in 1000 year) in terms of flood extent immediately adjacent to the site. To the northeast of the site, the modelled 'Low' risk extent is greater.

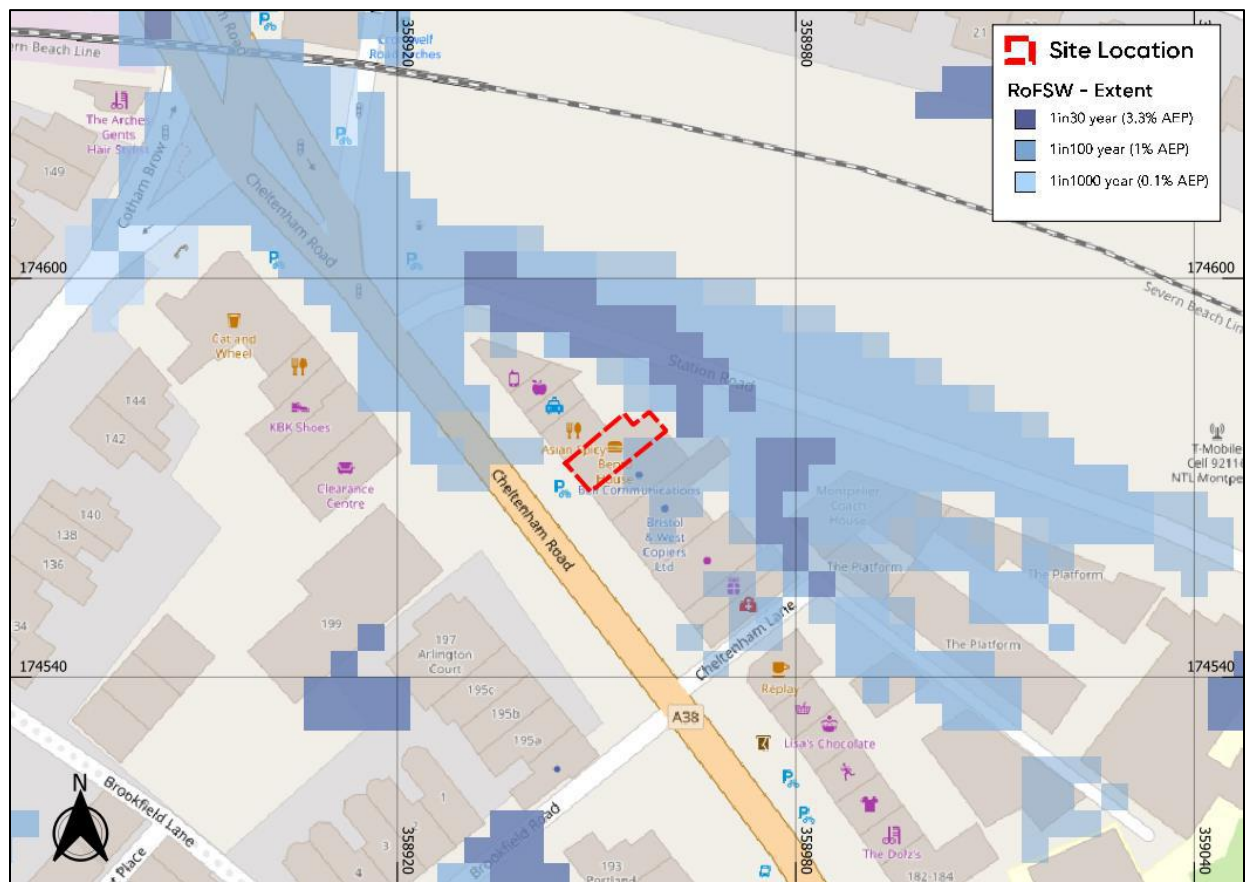


Figure 5: EA Risk of Flooding from Surface Water (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors. Contains public sector information licensed under the Open Government Licence v3.0)

2. Command & Control

- 2.1. The persons/ positions considered responsible for the activation of the FERP are:
- Owner
 - Restaurant Manager
 - Shift Manager
- 2.2. The most senior member of staff on site (based on the above roles) at the time of a trigger event (see below) is responsible for the activation and implementation of the FERP.

Trigger Events

- 2.3. Although the site is in Flood Zone 2 as per the EA Flood Map for Planning, it is not within an EA Flood Warning Area. There is a Flood Alert Area approximately 25m from the site (Bristol Frome Catchment) and thus the management staff should sign up for alerts for this area.
- 2.4. Furthermore, the owners, restaurant and shift managers should sign up to the Met Office Severe Weather Warning Service.
- 2.5. Therefore, the trigger events for implementation of the FEP are considered to be the receipt of either a Flood Alert from the EA, or a Red Weather Warning from the Met Office.
- 2.6. If either of the above trigger events occur, the responsible persons should notify the other persons and begin activation of the FEP discussed herein, as the probability of flooding in the area would increase following these triggers.
- 2.7. The trigger event for ending the FERP implementation for this site would be considered lifting of any issued Flood Alert or Red Weather Warning.

3. Flood Warning Procedures

EA Flood Alert and Warning

3.1. Although the site is in Flood Zone 2 as per the EA Flood Map for Planning, it is not within an EA Flood Warning Area. There is a Flood Alert Area approximately 25m from the site (Bristol Frome Catchment) and thus the management staff should sign up for alerts for this area (Figure 6).

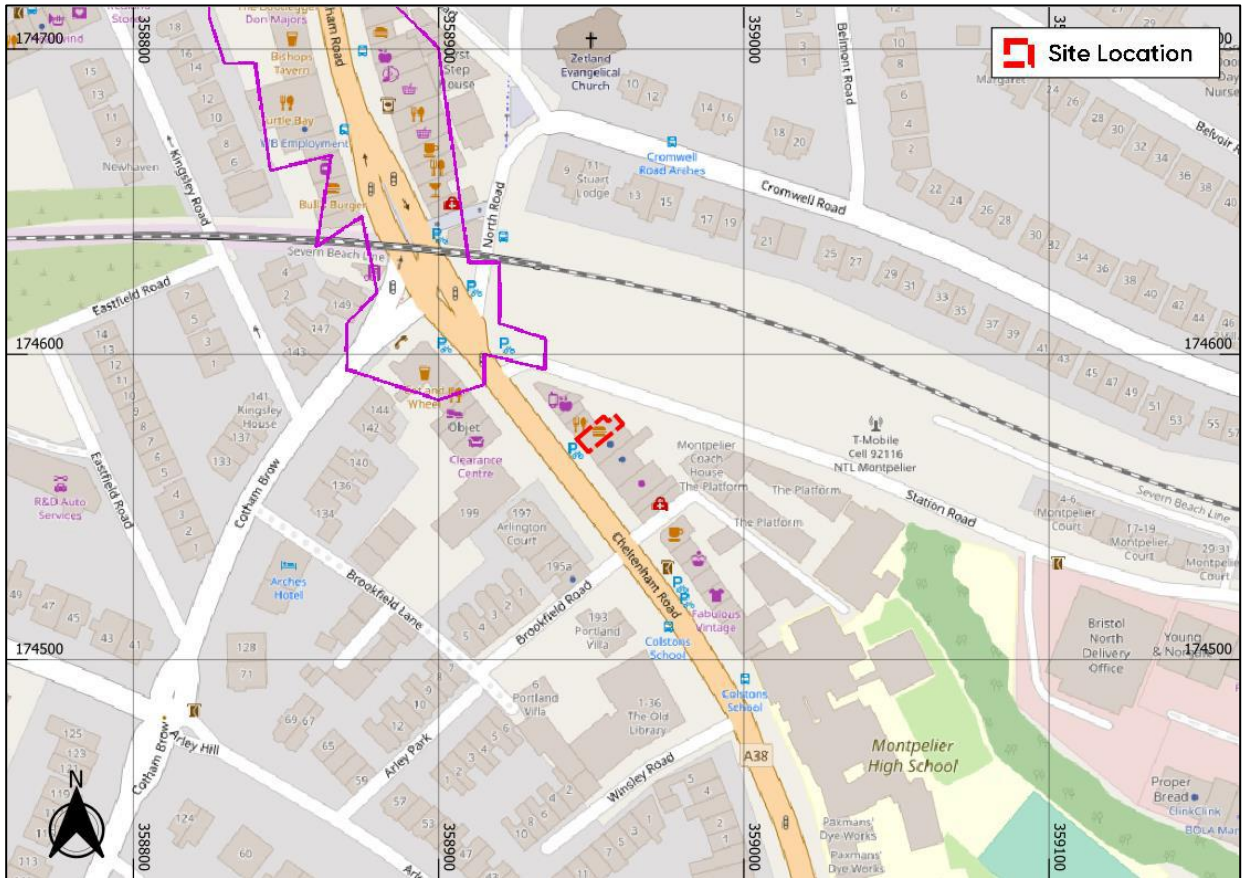


Figure 6: EA Flood Alert Areas (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors. Contains public sector information licensed under the Open Government Licence v3.0)

- 3.2. The EA Flood Alert and Warning Service will notify those registered by telephone, email, and SMS when flooding is becoming more likely.
- 3.3. It is recommended that owners and management of the property sign up to this service and familiarise themselves with the flood alerts and warnings issued by the Environment Agency so the staff can understand what is recommended to be done when one is issued.

3.4. Flood Alerts tend to be issued earlier than Flood Warnings and can be issued more frequently as a result.



FLOOD ALERT

FLOOD ALERT

What it means?

- Flooding is possible, be prepared.

When is it used?

- Two hours to two days in advance of flooding.

Triggers

- Forecasts that indicate flooding from rivers may be likely.
- Forecasted intense rainfall for rivers that respond very rapidly.
- Forecast of high tides, surges, or hind winds.

What to do?

- Prepare to act on your flood plan.
- Prepare a flood kit of essential items
- Monitor local water levels, flood forecast, and weather conditions.
- Call Floodline on 0345 988 1188 for up to date information

FLOOD WARNING

What it means?

- Flooding is expected – immediate action is required.

When is it used?

- Half an hour to one day in advance of flooding.

Triggers

- High tides, and surges coupled with strong winds.
- Heavy rainfall forecast to cause flash flooding of rivers.
- Forecast flooding from rivers.

What to do?

- Move people, pets, and valuables to a safe place.



FLOOD WARNING

- Turn of gas, electricity and water supplies (if safe to do so).
- Put flood protection equipment in place (if possible).
- Call Floodline on 0345 988 1188 for up to date information.

SEVERE FLOOD WARNING

What it means?

- Severe flooding with danger to life.

When is it used?

- When flooding poses a significant threat to life or severe disruption to communities.

Triggers

- Actual flooding where the conditions pose a significant risk to life and/or distribution to the community.
- On sire observations from flooded locations
- A breach in defences or failure of a barrier that is likely to cause significant risk to life.
- Discussions with partners.

What to do?

- Stay in a safe place with a means of escape.
- Prepare to evacuate from your home.
- Co-operate with emergency services.
- Only when instructed to evacuate by Emergency Services, leave the property and follow the agreed evacuation plan.



SEVERE FLOOD WARNING

Met Office

- 3.5. The Met Office issues weather warnings up to 5 days in advance, through the National Severe Weather Warning Service, when severe weather has the potential to bring impacts to the UK. It is also possible to stay up to date with weather warnings through the Met Office app (available on both android and apple), social media (twitter, Facebook) or email alerts.
- 3.6. During periods of bad weather, site users should monitor local weather reports and sign up for the Met Office UK weather warnings. Warnings can be monitored through an Apple/Android app, X (formerly Twitter) or directly via emails.

- 3.7. The trigger events for implementation of the FEP are considered to be the receipt of either a Flood Alert from the EA, or a Red Weather Warning from the Met Office.
- 3.8. If either of the above trigger events occur, the responsible persons should notify the other persons and begin activation of the FEP discussed herein, as the probability of flooding in the area would increase following these triggers.

4. Site Evacuation Procedures

Preparation for Flood Events

4.1. There are a multitude of ways that a site owner/ management can prepare for the potential of a flood event. These are set out as follows:

- Important documents can be placed into sealable polythene bags to protect them from flood water, or can be placed in a high and secure location.
- Ensure that the insurance policy for the property covers for flood damage.
- Sign up to the Environment Agency's flood alert and warning service which will notify you by telephone/email/SMS when flooding is likely.

4.2. In addition, it is advised you prepare a flood kit which can be quickly accessed when flooding is imminent to equip you with everything you may need. You should consider the following:

- Important documents such as passports and insurance certificates – if these cannot be safely stored within the property it would be advised to take them with you as they are expensive to replace.
- Torch – In the case that it floods at night and power is affected (Wind Up torch is preferred)
- Radio – A wind up or battery radio will help to monitor local news and weather broadcasts for the latest flooding situation.
- Batteries – Have spare batteries in order to power the torch and radio should it be required.
- Bottled Water – Water from the tap could become contaminated during a flood so bottled water should be available.
- First Aid Kit – Keep a first aid kit to hand in case of minor injuries. Put any prescription medication in your kit so that you can have easy access to it.
- Mobile Phone – Keep a fully charged mobile with you so that you can contact people in an emergency or call for help. If the phone has internet access you can use it to monitor the local news and latest flood situation.

- Waterproof Clothing – Keep wellies and rubber gloves available should you need to enter the flood water.
- Non-Perishable or Tinned Food

4.3. In the event of a flood you may not be able to find these essential items so it is important to prepare in advance. Completing a commercial property flood plan will assist in helping you decide what practical actions to take before and during a flood which will help reduce the damage flooding could cause.

What to Do / Prepare – During Flooding

4.4. The main priority during a flooding event is your own safety and the safety of any staff or site users. As such a key part of protecting yourself and your customers is making sure that you are fully aware of the ongoing situation and know where to access the most up to date information. Below is a list of advised actions that should be carried out during a flood event:

- Switch off all electrical and gas appliances at the mains – make sure beforehand that you know how to do this quickly.
- Monitor websites distributing flooding information including www.environment-agency.gov.uk.
- Monitor local press, radio, and regional TV.
- Pay close attention to the advice given by emergency services and local authority. Take all of the warnings seriously and respond quickly.
- Do not enter flood water. Six inches of fast flowing water can knock a person over and there may be unseen hazards beneath the surface.
- Do not drive through flood water. Less than two feet of flood water can be enough to float a vehicle.
- Avoid contact with flood water when possible. Flood water is typically contaminated with sewage and other hazardous substance. Wear rubber gloves and boots and wash thoroughly if you do come into contact with flood water. Do not attempt to swim through flood water.
- Do not enter a property that has been flooded unless you are sure it is structurally safe. If in doubt, have the property checked by a professional.

- Do not turn on your electrical or gas supplies until they have been checked by a professionally qualified electrician or engineer. Take care of gas leaks – do not smoke or use open flames.
- Do not use petrol or diesel generators indoors as they produce carbon monoxide. If using portable heating appliances to dry out your home ensure that they are well ventilated and are monitored carefully.

Flood Evacuation Plan

- 4.5. The EA modelled 1:100 year +CC (30%) fluvial extent for the Cranbrook in combination with the EA RoFSW dataset, have been used to inform this FEP and the subsequent evacuation routes.
- 4.6. As can be seen from Figure 4, the hazard rating on site would be less than 0.75 (Low Hazard) but northwest on Cheltenham Road would be between 1.25 and 2.00 (Danger for Most) in places. As such, it is not recommended to evacuate the site to the northwest.
- 4.7. Review of the EA Risk of Flooding from Surface Water (RoFSW) dataset indicates that the site mostly at a 'Very Low' risk of pluvial flooding, but could be partially affected in the modelled 'Medium' risk event – which is equivalent to a 1 in 100 year event (Figure 5). It should be noted that the modelled 'Medium' risk event (1 in 100 year) is actually greater than the modelled 'Low' risk event (1 in 1000 year) in terms of flood extent immediately adjacent to the site. To the northeast of the site, the modelled 'Low' risk extent is greater.
- 4.8. Due to the modelled 'Medium' risk (1 in 100 year) event providing greater flood extents and depths at the site itself this event has been used as the design event for the purpose of defining a flood evacuation route.
- 4.9. Analysis of the RoFSW dataset indicates that the land to the rear of the site could experience flood depths of over 1200mm in the modelled 1 in 100 year event (Figure 7). On Cheltenham Road at the front of the site, the highway could remain unaffected immediately in front of the site and to the southeast, however, to the northwest and under the railway, depths could exceed 600mm.
- 4.10. As can also be seen from Figure 7, due to the flood depths northwest on Cheltenham Road, the hazard ratings could also reach 1.25-2.00 (Danger for Most) in the modelled 1 in 100 year event.

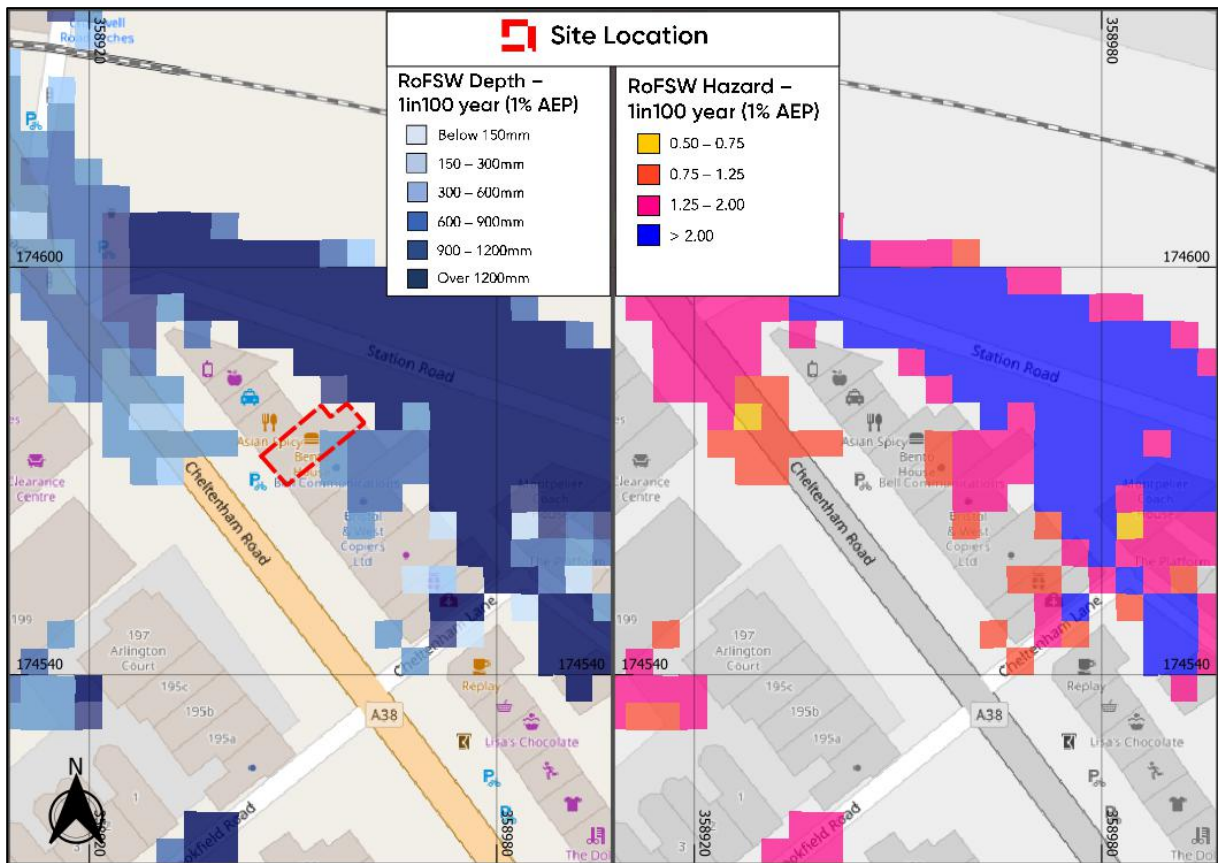


Figure 7: EA Modelled 1:100 Year Flood Depths and Hazard Ratings (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors. Contains public sector information licensed under the Open Government Licence v3.0)

- 4.11. As such, it is recommended that upon receipt of a Flood Alert or a Red Weather Warning, the site is evacuated and staff and customers evacuate the site by travelling southeast on Cheltenham Road (Figure 8). Given the commercial nature of the site it is then envisaged that staff and customers would travel via this route to their permanent place of residence.
- 4.12. Figures 4 and 8 have demonstrated that safe access/ egress should be possible in the modelled 1 in 100 year +CC (30%) and 1 in 100 year event given that the route on Cheltenham Road southeast of the site remains dry in this event, or a Low Hazard for the fluvial event. As such it is not envisaged that safe refuge would need to be sought on the site.

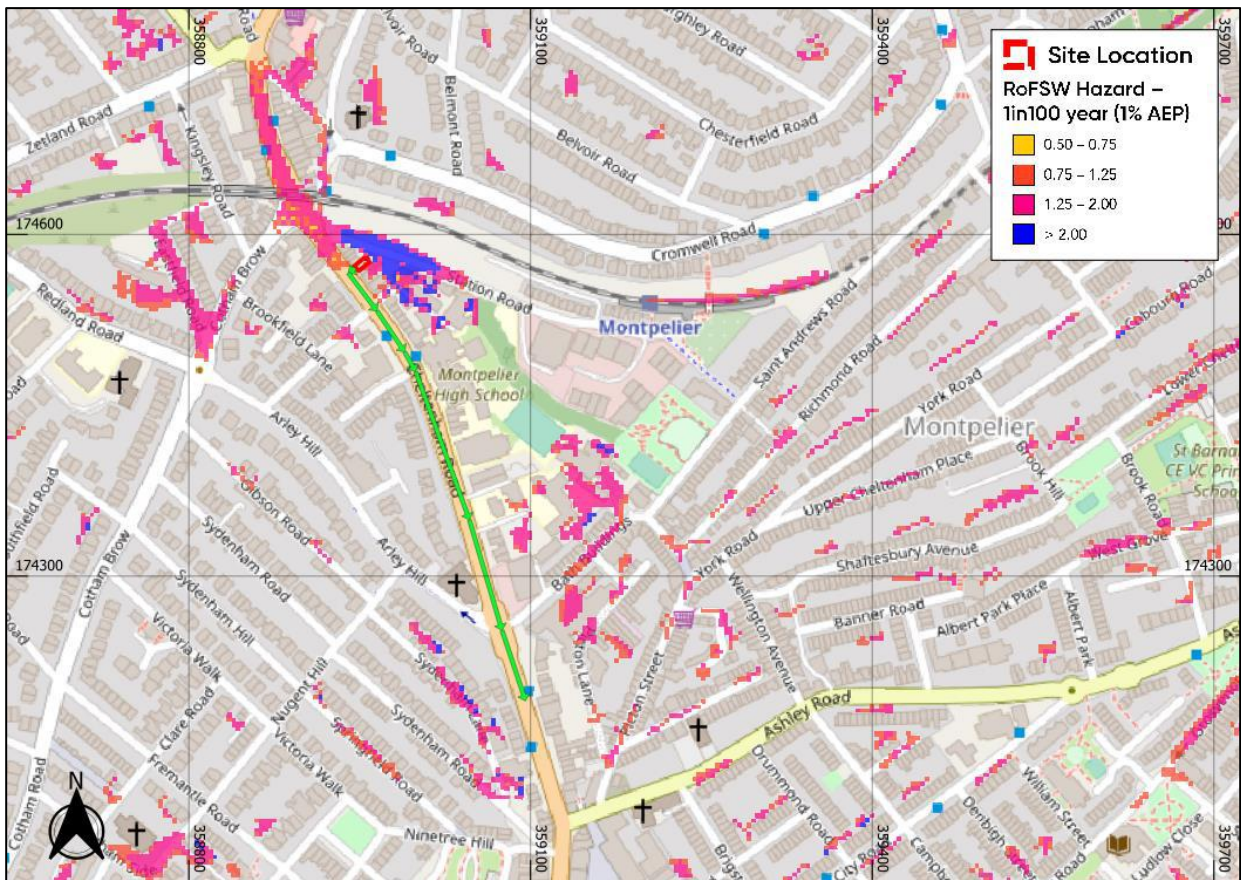


Figure 8: Proposed Flood Evacuation Route and EA Modelled 1:100 Year Flood Depths and Hazard Ratings (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors. Contains public sector information licensed under the Open Government Licence v3.0)

- 4.13. Upon receipt of a Flood Alert or Red Weather Warning (trigger events) the restaurant should be evacuated, closed, and remain so until the warnings are lifted. Both site staff and customers should be informed of the recommended flood evacuation route set out above so as to avoid the areas of greatest risk/ hazard.

5. Provision for Refuge

- 5.1. Figures 4 and 8 have demonstrated that safe access/ egress should be possible in the modelled 1 in 100 year event given that the route on Cheltenham Road southeast of the site remains dry in this event. As such it is not envisaged that safe refuge would need to be sought on the site.
- 5.2. However, in an extreme event (beyond the design event) where flood depths in front of the site have exceeded 25cm and safe access/ egress cannot be achieved, there may be a need to seek refuge on site.
- 5.3. A flood kit should be kept on site (referenced in Section 4) for such an event. Given that the site is a restaurant it is expected that sufficient food and water supplies will be available should staff and customers be unable to evacuate.

6. Review and Training

- 6.1. This FEP should be reviewed by no later than October 2026 in accordance with the wording of Condition 10.
- 6.2. All existing members of staff with designated roles and responsibilities should be trained as required. This also applies for new staff in those roles.
- 6.3. A log of Flood Evacuation Plan training should be kept within the restaurants Health & Safety file.